DELTA SCIENCE MODULES
II & III

Grades K-8

Correlation with

Delta Education
...because children learn by doing.®

March 2004

Nebraska Science Standards

Grades K-1

In the primary grades, students should learn science at their developmental level. Young children develop concepts, vocabulary, and inquiry skills by observing common materials and organisms. When engaged in science inquiry, they develop the ability to ask questions, investigate the world around them, and use their observations to create reasonable explanations for their questions.

Delta Science Modules II and III are inquiry-based and activity centered. The fundamentals of scientific inquiry are imbedded in all DSM II and III at a developmentally appropriate level. The following correlation of the Nebraska Science Standards to the Delta Science Modules, Editions II & III is to show representative examples of investigations from DSMs that address the content standards. A citation does not reflect all of the investigations or activities from Delta Science Modules that might address a particular standard.

Note that Delta Science Modules II & III are developed for grade level clusters of K-1 to provide maximum flexibility. If the Nebraska Standard fits a standard in a grade above or below the recommended level, it may be cited.

STANDARD	DSM II OR III MODULES AND ACTIVITIES	T.G. PAGES AND/OR DSM READER PAGES
1.1 Unifying Concepts and Processes Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world. **1.1.1 By the end of first grade, students will develop an understanding of systems, order, and organization.** **Student demonstrations:**		
• Use one or more of the five senses to observe objects within the student's environment.	All DSM modules encourage students to use their senses and simple instruments to make observations. Some examples from kindergarten are: <u>Finding the Moon</u> Activity 1,3, 4, 5, 7, 8, 9 & 10 <u>From Seed to Plant</u> Activity 1, 3, 4, 5, 6, 9, 10, 11, 12, & 13 <u>Investigating Water</u> Activity 1, 2, 3, 4, 5, 6, 7, 9, 10 & 11 <u>Observing an Aquarium</u> Activity 3, 4, 5, 6, 8, 9, 10, & 11 <u>Properties</u> Activity 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 & 12 <u>Sunshine and Shadows</u> Activity 1, 3, 4, 5, 6, 7, 8, 9, 10 & 11;	 T.G. Pages 13-20; 29-54; 63-92; T.G. Pages 15-20; 33-58; 73-104; T.G. Pages 13-62; 73-94; T.G. Pages 31-68; 79-116; T.G. Pages 19-94; T.G. Pages 13-18; 27-88; Delta III Science Reader pgs. 12 & 13

• Use observations to sort objects by their characteristics.	Properties Activity 2, 4, 5, 10, 11, 12 & 13; Investigating Water Activity 5 & 7;	T.G. Pages 19-24; 33-46; 75-100;Delta III Science Reader pgs. 3-13; T.G. Pages 41-46;55-62; Delta III Science Reader pgs. 6-13
1.1.2 By the end of first grade, students will develop an understanding of evidence, models, and explanation. **Student demonstration:**		
• Describe and record how a model, such as photos, maps, globes, illustrations, stuffed animals, toys, and building blocks can represent an object, living thing, or an event.	Throughout the Delta Science Modules, students create and use models to help them understand or demonstrate their mastery of science concepts. The following are a few examples: Finding the Moon Activity 2, 7, 8, 10 & 11 From Seed to Plant Activity 1, 2 & 13	T.G. Pages 21-28; 63-76; 85-98; T.G. Pages 15-32; 97-104;
1.1.3 By the end of first grade, students will develop an understanding of change, constancy, and measurement. **Student demonstrations:**		
• Recognize that change can be noted and measured.	Finding the Moon Activity 3, 4, 5, 9 & 10 From Seed to Plant Activity 2, 4, 5, 6, 7, 9, 11, 12, & 13; Investigating Water Activity 3, 7, 9, 10, 11 & 12; Observing an Aquarium Activity 7, 8, 9, 10 & 11 Sunshine and Shadows Activity 4, 6, 7, 8 & 9;	T.G. Pages 29-54; 77-92; T.G. Pages 21-32; 39-66; 73-78; 85-104;Delta III Science Reader pgs. 4-5, & 10-11 T.G. Pages 27-34; 55-62; 73-100;Delta III Science Reader pgs. 4-10; T.G. Pages 69-116; T.G. Pages 33-42; 49-76; Delta III Science Reader pgs. 8-9, 12-13
• Recognize that things change in some ways and stay the same in others.	Finding the Moon Activity 3, 4, 5, 9 & 10 From Seed to Plant Activity 2, 4, 5, 6, 7, 9, 11, 12, & 13; Investigating Water Activity 3, 7, 9, 10, 11 & 12; Observing an Aquarium Activity 7, 8, 9, 10 & 11	T.G. Pages 29-5477-92; T.G. Pages 21-32; 39-66; 73-78; 85-104;Delta III Science Reader pgs. 4-5, & 10-11 T.G. Pages 27-34; 55-62; 73-100;Delta III Science Reader pgs. 4-10; T.G. Pages 69-116;

	Sunshine and Shadows Activity 4, 6, 7, 8 & 9;	T.G. Pages 33-42; 49-76;Delta III Science Reader pgs. 8-9, 12-13
• Compare two or more objects using direct comparisons of measurement, such as shorter, longer, taller, heavier, and lighter.	Finding the Moon Activity 2 & 9 Sunshine and Shadows Activity 1, 4, 6, 8 & 9 From Seed to Plant Activity 7, 8 & 11 Observing an Aquarium Activity 6, & 10 Investigating Water Activity 3, 5, 8 & 10 Properties Activity 3, 6 & 10	T.G. Pages 21-28; 77-84; T.G. Pages 13-18; 33-42; 49-56; 67-76; T.G. Pages 59-72; 85-90; T.G. Pages 57-68; 97-108; T.G. Pages 27-34; 41-46; 63-72; 81-88; T.G. Pages 25-32; 47-52; 75-80;
• Use both standard units of measurement, such as inches and centimeters, and nonstandard units of measurement, such as string and paper clips	Length and Capacity Activity 1, 2 & 3 Properties Activity 3, 6 & 9 "Connections" *Science and Math"* From Seed to Plant Activity 7	T.G. Pages 7-26; T.G. Pages 25-32; 47-52; 67-74; "Connections" *Science and Math* T.G. Pages 59-66;
• Use appropriate measurement systems for different purposes.	Length and Capacity Activity 4,5, 6, 9, 10, & 11 From Seed to Plant Activity 7	T.G. Pages 27-48; 69-88;
1.1.4 By the end of first grade, students will develop an understanding of form and function. **Student demonstrations:**		
• Demonstrate how the shape of a tool is related to its use	Investigating Water Activity 2 & 12 Properties Activity 4 Sunshine and Shadows Activity 5	T.G. Pages 21-26; 95-100; T.G. Pages 33-40; T.G. Pages 43-48;
• Explain how living things interact with their environment because of specific characteristics, such as how the long neck of the giraffe helps it to reach its food.	Observing an Aquarium Activity 4, 5, & 6 From Seed to Plant Activity 4	T.G. Pages 39-68; T.G. Pages 39-44;
1.2 Science as Inquiry		

Science as inquiry requires students to combine processes and scientific knowledge with scientific reasoning and critical thinking to develop their understanding of science. **1.2.1 By the end of first grade, students will develop the abilities needed to do scientific inquiry.** **Student demonstrations:**		
• Ask questions about their surroundings.	<u>Finding the Moon</u> Activity 6, 7, & 12 <u>From Seed to Plant</u> Activity 5, 8, & 11 <u>Investigating Water</u> Activity 5, 6, 7, 9, & 12 <u>Observing an Aquarium</u> Activity 8, 9, & 11 <u>Sunshine and Shadows</u> Activity 5, 7, 8, 9, 10 & 11 <u>Properties</u> Activity 10 & 12	T.G. Pages 55-70; 99-104; T.G. Pages 45-52; 67-72; 85-90; T.G. Pages 41-62; 73-80; 95-100; T.G. Pages 79-96; 109-116; T.G. Pages 43-48; 57-88; T.G. Pages 75-80; 87-94;
• Plan and conduct a simple investigation.	All DSM modules have students conduct scientific investigations and students must identify questions and are guided to "discover" the answers or operationally define a relationship. Some Grades K-1 examples include: <u>Observing an Aquarium</u> Activity 3-6, Activity 8-10, <u>Finding the Moon</u> Activity 6, 7, & 12 <u>From Seed to Plant</u> Activity 5, 8, & 11 <u>Investigating Water</u> Activity 5, 6, 7, 9, & 12	 T.G. Pages 31-68; Pages 79-108 T.G. Pages 55-70; Pages 99-104; T.G. Pages 45-52; Pages 67-72; Pages 85-90; T.G. Pages 41-62; Pages 73-80; Pages 95-100;
• Collect scientific information from careful observation.	All DSM Module activities are designed to collect data and investigate its results. Activity Sheets accompany the lessons on which students record data. <u>Finding the Moon</u> Activity 4 <u>From Seed to Plant</u> Activity 1,2, 3, 4, 5, 6, 7, & 10	 T.G. Pages 39-46; T.G. Pages 15-56; Pages 79-84;
• Use simple equipment and tools, such as magnifying glasses,	<u>Sunshine and Shadows</u> Activity 3, 5, 6, 8, 9, & 11	T.G. Pages 27-32; 43-56; 67-76;

thermometers, and balance scales, to extend the senses.	 From Seed to Plant Activity 3, 7 & 8 Observing an Aquarium Activity 4, 5, 6 & 11 Investigating Water Activity 2, 6 & 12 Properties Activity 6, 7, 8 & 11	83-88; T.G. Pages 33-38; 59-72; T.G. Pages 39-68; 109-116; T.G. Pages 21-26; 47-54; 95-100; T.G. Pages 47-66; 81-86;
• Share findings with classmates, families, and community members.	Delta Science Modules encourage and promote cooperative learning strategies. The quantity of materials included in each kit allows small groups of students (2 or 4) to investigate and record observations and report what he or she has learned. The interaction between team members is an integral part of each activity and the nature of the Activity Sheets promotes the collection and reporting of data by group or by individuals.	
1.3 Physical Science Physical science focuses on science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **1.3.1 By the end of first grade, students will develop an understanding of the characteristics of materials.** **Student demonstrations:**		
• Observe and describe characteristics of common materials, such as paper, wood, metal, and wool.	Properties Activity 1-13 Investigating Water Activity 1-13 From Seed to Plant Activity 7, 10 & 11	This Module is a multi-sensory study of properties in which students describe, sort, and classify objects (solids) by size, color, shape, texture, weight, buoyancy, and magnetism. They also investigate the properties of liquids and gases. T.G. Pages 13-100; DSM III Science Reader pgs. 3-12 In this module (12 activities) students explore, plan, and carry out investigations with water including properties, buoyancy, forms and the water cycle. T.G. Pages 13-100; DSM III Science Reader pgs. 2-3 T.G. Pages 59-66; 79-90; DSM III Science Reader pgs. 12 & 14
• Investigate how common materials will float, sink, mix, dissolve, or not dissolve in various liquids.	Properties Activity 11 Investigating Water	T.G. Pages 81-86; DSM III Science Reader pg. 11

	Activity 5 & 7	T.G. Pages 41-46; 55-62; DSM III Science Reader pgs. 12 & 13
• Observe that materials can exist as a solid, liquid, or gas.	Investigating Water Activity 9, 10 & 11 Properties Activity	T.G. Pages 73-94; DSM III Science Reader pgs. 4-10 & 13 DSM III Science Reader pg. 15
1.4 Life Science Life science focuses on science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **1.4.1 By the end of first grade, students will develop an understanding of the characteristics of living things.** **Student demonstrations:**		
• Differentiate between living and nonliving things.	From Seed to Plant Activity 1,3 & 14 Observing an Aquarium Activity 2, 11 & 12	T.G. Pages 15-20; 33-38; 105-110; DSM III Science Reader pg. 12 T.G. Pages 23-30; 109-126;DSM III Science Reader pgs. 1-2
• Investigate how living things need food, water, and air to survive.	From Seed to Plant Activity 2, 8, 11 & 14 Observing an Aquarium Activity 1, 2, & 11	T.G. Pages 21-32; 67-72; 85-90; 105-110; DSM III Science Reader pg. 12 T.G. Pages 15-30; 109-116; DSM III Science Reader pgs. 8-9 & 12
• Describe how roots, stems, and leaves serve different functions for plants.	From Seed to Plant Activity 4, 9, 10 & 12	T.G. Pages 39-44; 73-78; 79-84; 91-96; DSM III Science Reader pgs. 6-9
• Compare and contrast animals by specific characteristics, such as body covering, diet, and habitat.	Observing an Aquarium Activity 2, 11 & 12	T.G. Pages 23-30; 109-126; DSM III Science Reader pgs. 4-9 & 14-15
• Observe and recognize that organisms live and survive in distinct habitats.	From Seed to Plant Activity 2, 4, & 14 Observing an Aquarium Activity 3, 4, 5, & 6	T.G. Pages 21-32; 39-44; 105-110; DSM III Science Reader pg. 12 T.G. Pages 31-68;DSM III Science Reader pgs. 14 - 15
1.4.2 By the end of first grade, students will develop an understanding of the life cycles of organisms. **Student demonstrations:**		
• Describe how living things change as they grow.	Observing an Aquarium Activity 4, 5, & 10 From Seed to Plant Activity 2, 4, 5, 6, 7, 11, 12 & 13	T.G. Pages 39-56; 97-108; DSM III Science Reader pgs. 10 & 11 T.G. Pages 21-32; 39-66; 85-104; DSM III Science Reader pgs. 4-5 & 10-11;

• Describe how offspring resemble their parents.	Observing an Aquarium Activity 10 From Seed to Plant Activity 13	T.G. Pages 97-108; DSM III Science Reader pgs. 10 & 11 T.G. Pages 97-104; DSM III Science Reader pgs. 4-5 & 10-11;
1.5 Earth and Space Science Earth and space science focuses on science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **1.5.1 By the end of first grade, students will develop an understanding of the characteristics of earth materials.** **Student demonstrations:**		
• Observe that materials of the earth, such as water, support life.	From Seed to Plant Activity 2, 8 & 14 Observing an Aquarium Activity 1, 2, 3, 11 & 12	T.G. Pages 21-32; 67-72; 105-110; DSM III Science Reader pgs. 4-5 & 12 T.G. Pages 15-38; 109-126; DSM III Science Reader pgs. 2-3
• Observe that the earth's surface is made up of a variety of rocks, minerals, and soils.	Soil Science (Recommended for Grades 2-3) Activity 1, 2, 3, 4, 5 & 7	T.G. Pages 15-50; 59-68; DSM III Science Reader pgs. 2-3
1.5.2 By the end of first grade, students will develop an understanding of the objects in the sky. **Student demonstrations:**		
• Recognize objects in the sky, such as the sun, moon, and stars.	Sunshine and Shadows Activity 1, 4, & 6 Finding the Moon Activity 3	T.G. Pages 13-18; 33-42; 49-56; DSM III Science Reader pgs. 8-9 T.G. Pages 29-38;
• Recognize that the sun provides heat and light.	From Seed to Plant Activity 11 Sunshine and Shadows	T.G. Pages 85-90; DSM III Science Reader pgs. 4-5 DSM III Science Reader pgs. 2-3
1.5.3 By the end of first grade, students will develop an understanding of the changes in the earth and sky. Student demonstrations:		
• Describe daily weather changes.	Sunshine and Shadows Weather Watching (Recommended for Grades 2-3) Activity 1	DSM III Science Reader pgs. 12-13 T.G. Pages 13-20;DSM III Science Reader pgs. 2-3 & 8-9;
• Describe seasonal weather changes.	Sunshine and Shadows Weather Watching (Recommended for Grades 2-3) Activity 1	DSM III Science Reader pgs. 12-13 T.G. Pages 13-20;DSM III Science Reader pgs. 2-3 & 8-9;

1.6 Science and Technology An understanding of science and technology establishes connections between the natural and designed world, linking science and technology. **1.6.1 By the end of first grade, students will develop an understanding of technological design.** **Student demonstration:**		
• Explain how the use of common household tools is determined by their design.	Properties Activity 12	T.G. Page 93 "*Science At Home"*
1.6.2 By the end of first grade, students will develop an understanding of science and technology. **Student demonstrations:**		
• Use various tools, such as a magnifying glass, thermometer, or measuring tape, to improve observations and measurements.	Sunshine and Shadows Activity 3, 5, 6, 8, 9, & 11 From Seed to Plant Activity 3, 7 & 8 Observing an Aquarium Activity 4, 5, 6 & 11 Investigating Water Activity 2, 6 & 12 Properties Activity 6, 7, 8 & 11	T.G. Pages 27-32; 43-56; 67-76; 83-88; T.G. Pages 33-38; 59-72; T.G. Pages 39-68; 109-116; T.G. Pages 21-26; 47-54; 95-100; T.G. Pages 47-66; 81-86;
• Identify, investigate, and solve a problem in the home or school.	Properties Activity 3, 10 From Seed to Plant Activity 8 & 11 Observing an Aquarium Activity 11	"*Science at Home*" T.G. Page 31; "Connections" *Science, Technology and Society* Page 10; "*Science at Home*" T.G. Page 71; "*Science at Home*" T.G. Page 88; "*Science at Home*" T.G. Page 3115;
• Identify the technology used in different occupations.	Sunshine and Shadows Activity 7 Observing an Aquarium Finding the Moon Properties Activity 13 From Seed to Plant	T.G. Page 63"Connections" *Science and Careers;* DSM III Science Reader pg. 12; "Connections" *Science and Careers* T.G. Page 46; DSM III Science Reader pg. 13 DSM III Science Reader pg. 13 "Connections" *Science and Careers* T.G. Page 94

	Activity 3	"Connections" *Science and Careers* T.G. Page 38
1.7 Science in Personal and Social Perspectives A personal and social perspective of science helps a student to understand and act on personal and social issues. This perspective builds a foundation for future decision making. **1.7.1 By the end of first grade, students will develop an understanding of personal health.** **Student demonstrations:**		
• Follow safety rules for home and school.	All DSM Modules contain safety information for teachers and students. For the teachers safety precautions are printed in shaded boxes within the context of the lesson instructions and on student activity sheets.	
• Engage in personal care that will maintain and improve health.	Sunshine and Shadows Activity 10	"Connections" *Science and Health* T.G. Page 82
• Describe a healthy diet.	Observing an Aquarium Activity 7 This standard may be best addressed in a health curriculum.	"Connections" *Science and Health* T.G. Page 78
• Explain that substances can benefit or damage the way the body functions.	This standard may be best addressed in a health curriculum.	
1.7.2 By the end of first grade, students will develop an understanding of resources. **Student demonstration:**		
• Observe and describe how reducing, reusing, and recycling help our environment.	Investigating Water Activity 12	T.G. Pages 95-100;
1.8 History and Nature of Science The history and nature of science illustrates different aspects of scientific inquiry, the human aspects of science, and the role that science has played in the development of various cultures. **1.8.1 By the end of first grade, students will develop an understanding of science as a human endeavor.** **Student demonstrations:**		
• Recognize the contributions to science made by men and women from many countries.	Two features in the DSM II & III program provide opportunities for students to become acquainted with scientists having varying cultural backgrounds. One is the *Science and Social Studies* component that appears in the "Connection" feature that follows every science activity. The other is in the Delta III Science Reader feature *People in Science.* See the following specific examples: Sunshine and Shadows	

	Activity 12	T.G. Page 94 "Connections" *Science and Social Studies*
• Conduct an investigation as an individual.	Individual inquiry is important to the philosophy of Delta Science Modules. Often students share materials as a group however, the teacher is directed to invite students to perform individual investigations. This is most evident in the "Materials" section of the lesson plan *For each student:* Also, teachers are requested to duplicate an *Activity Sheet* for each student.	
• Conduct an investigation as part of a team.	Delta Science Modules encourage and promote cooperative learning strategies. The quantity of materials included in each kit allows small groups of students (2 or 4) to investigate and record observations and report what he or she has learned. The interaction between team members is an integral part of each activity and the nature of the Activity Sheets promotes the collection and reporting of data by group or by individuals.	

Nebraska Science Standards

Grades 2-4

In the intermediate grades, students learn science concepts, vocabulary, and inquiry skills at their developmental level. Students should develop knowledge and process skills while engaged in science inquiry. They should ask simple questions, design and conduct investigations (in the form of a "fair" test), and present their results to others.

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Note that Delta Science Modules II & III are developed for grade level clusters of 2-3, & 3-4 to provide maximum flexibility. If the Nebraska Standard fits a standard in a grade above or below the recommended level, it may be cited.

STANDARD	DSM II OR III MODULES AND ACTIVITIES	T.G. PAGES AND/OR DSM READER PAGES
4.1 Unifying Concepts and Processes Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world. **4.1.1 By the end of fourth grade, students will develop an understanding of systems, order, and organization.** **Student demonstrations:**		
• Describe the parts that make up a system.	<u>Classroom Plants</u> Activity 3, 5, 6, 7, 8, 9, 10, & 11 <u>Force and Motion</u> Activity 3, 6, 7, 8, & 9 <u>Butterflies and Moths</u> Activity 2, 6, 9 & 10 <u>Plant and Animal Populations</u> Activity 2, 6, & 7 <u>Soil Science</u> Activity 1, 4, 5 & 12 <u>Weather Watching</u> Activity 2 <u>Using Your Senses</u> Activity 1, 5, 8, 10 & 11 <u>Electrical Circuits</u> Activity 1, 3, & 4 <u>Solar System</u>	T.G. Pages 29-38; T.G. Pages 47-104; T.G. Pages 31-40; 57-90; T.G. Pages 23-30; 53-60; 79-96; T.G. Pages 25-34; 59-76; T.G. Pages 15-20; 37-50; 107-114; T.G. Pages 21-28; T.G. Pages 13-22; 45-52; 67-74; 81-96; T.G. Pages 13-20; 27-44;

	Activity 1, 6, 8, & 10 <u>Water Cycle</u> Activity 2-6, 9, 11, & 13	T.G. Pages 13-20; 51-58; 65-72; 83-92; T.G. Pages 23-60; 77-90; 107-114;
• Relate how the parts of a system affect the whole system.	<u>Force and Motion</u> Activity 3, 4, 7, 8, & 9 <u>Butterflies and Moths</u> Activity 2, 3 & 10 <u>Plant and Animal Populations</u> Activity 2, 4, 6, 7, 10 & 11 <u>Weather Watching</u> Activity 1, 3, 9, 10, & 12 <u>Using Your Senses</u> Activity 1, 2, 3, 5, 6, 8, 9 & 12 <u>States of Matter</u> Activity 5, 6 & 12 <u>Soil Science</u> Activity 2, 4,5, 8, 9, 10, 11, & 12 <u>Sink or Float?</u> Activity 8, 9, 10 11 & 12 <u>Classroom Plants</u> Activity 5, 6, 7, 8, 9, 10, & 11 <u>Food Chains and Webs</u> Activity 3, 9, 11 &12 <u>Water Cycle</u> Activity 11& 13	T.G. Pages 31-48; 65-90; T.G. Pages 23-38; 89-96; T.G. Pages 25-34; 43-50; 59-76; T.G. Pages 13-20; 29-36; 45-60; 77-100; 109-116; T.G. Pages 13-36; 45-60; 75-80; 97-104; T.G. Pages 41-64; 99-102; T.G. Pages 21-28; 37-50; 69-114; T.G. Pages 61-98; T.G. Pages 47-112; T.G. Pages 31-38; 73-80; 89-102; T.G. Pages 91-98; 107-114;
4.1.2 By the end of fourth grade, students will develop an understanding of evidence, models, and explanation. **Student demonstrations:**		
• Use evidence gathered from an investigation to develop a scientific explanation.	<u>Sink or Float?</u> Activity 5 & 7 <u>Magnets</u> Activity 3, 4 & 11 <u>Sound</u> Activity 10 & 11	T.G. Pages 37-46; 55-60; Pages 25-34; 71-76; T.G. Pages 83-98;
• Create a model, graph, or illustration that represents an object, living thing, or an event in the student's environment.	<u>Plant and Animal Populations</u> Activity 9 & 12 <u>Butterflies and Moths</u> Activity 8	T.G. Pages 85-94; 111-118; T.G. Pages 71-78;

	Water Cycle Activity 11	T.G. Pages 91-98;
• Explain and answer questions about the model created and how it represents a part of their environment.	Plant and Animal Populations Activity 9 & 12 Butterflies and Moths Activity 8 Water Cycle Activity 11	T.G. Pages 91-98; 111-118; T.G. Pages 71-78; T.G. Pages 91-98;
• Use a variety of ways, such as sketches, charts, and graphs, to explain procedures or ideas.	Earth Movements Activity 5 & 6 Powders and Crystals Activity 2 & 3 Weather Watching Activity 1 & 2	T.G. Pages 47-62; T.G. Pages 13-26; T.G. Pages 13-28;
4.1.3 By the end of fourth grade, students will develop an understanding of change, constancy, and measurement. **Student demonstrations:**		
• Describe observable changes, such as speed, pattern, shape, position, and size.	Weather Watching Activity 3, 5, 6, 9, & 10 Soil Science Activity 2, 5, 11 & 12 Butterflies and Moths Activity 6, 9 & 11 Amazing Air Activity 5 Plant and Animal Populations Activity 2, 4, 5, 6, 7, 9 & 12 States of Matter Activity 4, 8, 9, 10 & 11	T.G. Pages 29-36; Pages 45-60; 77-100;DSM III Science Reader pgs. 4-7; T.G. Pages 21-28; 45-50; 99-114;DSM III Science Reader pg. 9; T.G. Pages 53-60; 79-88; 97-104; DSM III Science Reader pgs. 3, 8 & 13; T.G. Pages 43-50; T.G. Pages 25-34; 43-76; 85-94; 111-118; T.G. Pages 35-40; 65-98;
• Measure a change using appropriate tools and units of measurement.	Multiple *tools and measurement units to gather data* in science investigations are included at every grade level. A list of materials and equipment is usually found on page 3 of the Teacher's Manual. Some of the following devices and metric measurements are used at the subsequent grade levels: Length and Capacity	In this module (12 activities) students use tools to explore linear measures of length, width and height and they compare and

		measure the capacities of different-shaped containers. They also learn the importance of uniform standard units of measure.
	<u>States of Matter</u> Activity 1, 2, & 12	T.G. Pages 13-26; 99-102;
	<u>Amazing Air</u> Activity 3, 4, 5, 6, 8, 10 & 11	T.G. Pages 25-58; 69-76; 87-100;
	<u>Force and Motion</u> Activity 1, 5, & 9	T.G. Pages 13-22; 49-56; 73-82;
4.1.4 By the end of fourth grade, students will develop an understanding of form and function. **Student demonstration:**		
• Construct a device to perform a simple task and explain how it works.	<u>Amazing Air</u> Activity 7, 10, 11 & 12	T.G. Pages 59-68; 87-108;
	<u>Weather Instruments</u> Activity 4, & 5	T.G. Pages 37-50;
	<u>Electrical Circuits</u> Activity 5, 10, 11	T.G. Pages 45-50; 77-88;
	<u>Force and Motion</u> Activity 3, 5, 6, 8, 9 & 10	T.G. Pages 31-40; 49-64; 73-100;
	<u>Sink or Float?</u> Activity 12	T.G. Pages 91-98;
4.2 Science As Inquiry Science as inquiry requires students to combine processes and scientific knowledge with scientific reasoning and critical thinking to develop their understanding of science. **4.2.1 By the end of fourth grade, students will develop the abilities needed to do scientific inquiry.** **Student demonstrations:**		
• Ask a question about objects, organisms, and events in their surroundings.	<u>Sink or Float</u> Activity 1, 7 & 9	T.G. Pages 7-14; 55-60; 69-74;
	<u>Insect Life</u> Activity 2, 3 & 4	T.G. Pages 15-34;
	<u>Earth Movements</u> Activity 3 &4	T.G. Pages 39-54;
	<u>States of Matter</u> Activity 1, 2 & 3	T.G. Pages 13-34;
	<u>Weather Watching</u> Activity 1	T.G. Pages 13-20;
	<u>Water Cycle</u>	

	Activity 1 & 7	T.G. Pages 3-22; 61-68;
• Plan and conduct a simple investigation.	<u>Amazing Air</u> Activity 1 <u>Classroom Plants</u> Activity 6 & 11 <u>Force and Motion</u> Activity 4 & 7 <u>Length and Capacity</u> Activity 1 & 10 <u>Plant and Animal Population</u> Activity 1 <u>Sink or Float?</u> Activity 1 & 8 <u>Soil Science</u> Activity 2 & 5	All DSM modules have students conduct scientific investigations and students must identify questions and are guided to "discover" the answers or operationally define a relationship. Some examples include: T.G. Pages 7-14; T.G. Pages 43-52; 79-86; T.G. Pages 41-48; 65-72; T.G. Pages 7-12; 77-82; T.G. Pages 7-14; T.G. Pages 7-14; 61-68; T.G. Pages 21-28; 45-50;
• Employ simple equipment and tools to gather data and extend the senses.	<u>Amazing Air</u> Activity 12 <u>Classroom Plants</u> Activity 5 <u>Plant and Animal Populations</u> Activity 9 <u>Sink or Float?</u> Activity 9, 10, 11 & 12 <u>Soil Science</u> Activity 12 <u>States of Matter</u> Activity 5 <u>Force and Motion</u> Activity 1, 3, 6, 7, 8, & 11	T.G. Pages 7-14; T.G. Pages 37-42 T.G. Pages 67-74; T.G. Pages 69-98; T.G. Pages 107-114; T.G. Pages 41-50; T.G. Pages 13-22; 31-40; 67-82; 101-110;
• Use data to support explanations.	<u>Amazing Air</u> Activity 3, 4, 5, 7 & 10 <u>Force and Motion</u> Activity 1, 4, & 9	T.G. Pages 25-50; 59-68; 87-94; T.G. Pages 13-22; 41-48; 83-90;

	Length and Capacity Activity 1, 2, 3, 5, 6, 7, 9, 10, 11, & 12 States of Matter Activity 1, 2, & 11 Weather Watching Activity 3, 5, 8 & 11 Plant and Animal Population Activity 5, 6, 7 & 8 Powders and Crystals Activity 10, 11 & 12 Dinosaurs and Fossils Activity 6 & 7	T.G. Pages 7-26; 37-58; 69-94 T.G. Pages 13-26; 89-98; T.G. Pages 89-98; 45-50; 69-76; 101-108; T.G. Pages 51-84; T.G. Pages 71-94; T.G. Pages 47-60;
• Communicate procedures, results, and explanations of an investigation.	In all DSM II Modules recommended for Grades 2-4, students interact with a partner or in groups of four and all activities have *Activity Sheets* on which students communicate explanations, descriptions, and responses to questions, or collect data about the investigation. For evidence, refer to the Activity Sheets at the end of the referenced Teacher Guides. Weather Watching Activity 3 Plant and Animal Life Cycles Activity 3, 4, 6, 7 & 9 States of Matter Activity 4 & 6 Amazing Air Activity 6 Classroom Plants Activity 2 & 4 Using Your Senses Activity 9 & 11 Water Cycle Activity 11& 12 Force and Motion Activity 4 &5	T.G. Pages 29-36; T.G. Pages 24-38; 47-62; 71-78; T.G. Pages 35-40; Pages 51-56; T.G. Pages 51-58; T.G. Pages 15-20; 29-36; T.G. Pages 75-80; 89-96; T.G. Pages 91-106; T.G. Pages 41-56;

4.3 Physical Science

Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use.

4.3.1 By the end of fourth grade, students will develop an understanding of the characteristics of objects and materials.

Student demonstrations:

• Classify objects by observable characteristics, such as shape, size, and color.	Dinosaurs and Fossils Activity 9 & 10 Magnets Activity 2 & 3 Soils Science Activity 2 & 3 Plant and Animal Life Cycles Activity 1 Butterflies and Moths Activity 6 & 12 Classroom Plants Activity 2 Sink or Float? Activity 1 Sound Activity 6	T.G. Pages 67-82; T.G. Pages 19-28; T.G. Pages 21-36; T.G. Pages 7-14; T.G. Pages 53-60; 105-110; T.G. Pages 23-28; T.G. Pages 7-14; T.G. Pages 51-58;
• Investigate characteristics of common materials using tools, such as rulers, balances, thermometers, microscopes, and hand lenses.	Amazing Air Activity 12 Classroom Plants Activity 5 Plant and Animal Populations Activity 9 Sink or Float? Activity 9, 10, 11 & 12 Soil Science Activity 12 States of Matter Activity 5 Force and Motion Activity 1, 3, 6, 7, 8, & 11 Measuring	T.G. Pages 7-14; T.G. Pages 37-42 T.G. Pages 67-74; T.G. Pages 69-98; T.G. Pages 107-114; T.G. Pages 41-50; T.G. Pages 13-22; 31-40; 67-82; 101-110;

	Activity 5, 6, 10 & 12 <u>Weather Watching</u> Activity 2, 3, 4 & 5 <u>Small Things and Microscopes</u> Activity 1-12	T.G. Pages 37-50; 71-78; 87-96; T.G. Pages 21-50; T.G. Pages 7-84;
• Observe that materials can change from solid to liquid to gas by heating and from gas to liquid to solid by cooling.	<u>States of Matter</u> Activity 8, 9, 10 & 11 <u>Water Cycle</u> Activity 4, 8, 9 &12 <u>Looking at Liquids</u> Activity 11	T.G. Pages 65-102; T.G. Pages 39-44; 69-84; 99-106; T.G. Pages 77-82;
• Use reference points to describe the position of an object.	<u>Force and Motion</u> Activity 3 & 7 <u>Electrical Circuits</u> Activity 3 & 4 <u>Solar System</u> Activity 1, 2 & 8	T.G. Pages 31-40; 65-72; T.G. Pages 27-44; T.G. Pages 13-26; 65-72;
• Indicate an object's motion by tracing its position over time.	<u>Force and Motion</u> Activity 4, 5, 6 & 7 <u>Earth Movements</u> Activity 4, 5, 6 & 7 <u>Solar System</u> Activity 2 & 9 <u>Amazing Air</u> Activity 12	T.G. Pages 41-72; DSM III Science Reader pg. 3; T.G. Pages 39-70;DSM III Science Reader pgs. 6-7; T.G. Pages 21-26; 73-82;DSM III Science Reader pgs. 2-3; T.G. Pages101-108;
• Observe that the position and motion of objects can be changed by pushing or pulling.	<u>Force and Motion</u> Activity 1, 2, 3, 4, 5, 6, 7, 8 & 9 <u>Amazing Air</u> Activity 11 & 12 <u>Sound</u> Activity 10 & 11	T.G. Pages 13-90; DSM III Science Reader pgs. 2-11 T.G. Pages 95-108; T.G. Pages 83-98;DSM III Science Reader pgs. 2, 6, 12 & 13
• Demonstrate how sound is produced when objects vibrate.	<u>Sound</u> Activity 2, 6 & 12 <u>Using Your Senses</u> Activity 5 & 6	T.G. Pages 21-28; 51-58; Pages 99-106; DSM III Science Reader pgs. 2-4, 6-7, & 11-13; T.G. Pages 45-60; DSM III Science Reader pgs. 6-7
• Change the pitch of sound by changing the rate of vibration.	<u>Sound</u> Activity 8, 9, 10 & 11	T.G. Pages 67-98; DSM III Science Reader pgs. 6-7, 10, 12 & 13;

	Using Your Senses Activity 6	T.G. Pages 53-60; DSM III Science Reader pgs. 6-7
4.3.3 By the end of fourth grade, students will develop an understanding of light, heat, electricity, and magnetism. **Student demonstrations:**		
• Distinguish between reflection and refraction of light.	Water Cycle Activity 10 Lenses and Mirrors (Recommended for Grades 5-6) Activity 2, 4, 5 & 8	T.G. Pages 85-90; T.G. Pages 15-22; 29-34; 35-42; 57-62;
• Recognize heat can be produced in many ways, such as burning, rubbing, or mixing one substance with another.	Powders and Crystals Activity 9 Electrical Circuits Activity 8, 9, 10 & 11 Force and Motion Activity 4 States of Matter	T.G. Pages 63-70; T.G. Pages 63-88; DSM III Science Reader pgs. 2-3 T.G. Pages 41-48; DSM III Science Reader pg. 12
• Demonstrate heat can flow from one object to another by conduction.	States of Matter Activity 6 & 7 Using Your Senses Activity 9 Powders and Crystals Activity 9 Weather Instruments Activity 1	T.G. Pages 51-64; DSM III Science Reader pgs. 7, 9-10, & 12; T.G. Pages 75-80; T.G. Pages 63-70; T.G. Pages 13-22; DSM III Science Reader pgs. 3 & 14
• Use electricity to produce heat, sound, and magnetic effects.	Electrical Circuits Activity 8, 9, 10 & 11 Magnets Activity 10 & 11	T.G. Pages 57-88; DSM III Science Reader pgs. 2-3, 10-11; T.G. Pages 65-76;DSM III Science Reader pgs. 10-12 & 14-15;
• Demonstrate electrical circuits require a complete loop through which an electrical current can pass.	Electrical Circuits Activity 1, 2, 3, 4, 5, 6 & 7 Magnets Activity 11	T.G. Pages 13-62; DSM III Science Reader pgs. 3-7 & 10 T.G. Pages 71-76;
• Describe the physical properties of magnets.	Magnets Activity 1-10	In this module (12 activities) students investigate the principles

		that govern magnetic behavior including magnetic/nonmagnetic, opposites, poles attract/repel. They observe and measure changes caused by magnetic force. T.G. Pages 13-82; DSM III Science Reader pgs. 2-12 & 14-15;
4.4 Life Science Life science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **4.4.1 By the end of fourth grade, students will develop an understanding of the characteristics of living things.** **Student demonstrations:**		
• Describe the differences between plants and animals.	<u>Classroom Plants</u> Activity 1 <u>Plant and Animal Life Cycles</u> Activity 1 & 11 <u>Food Chains and Webs</u> Activity 3 <u>Plant and Animal Populations</u> Activity 1	T.G. Pages 15-22; DSM III Science Reader pgs. 2-3 T.G. Pages 7-14; 85-90; DSM III Science Reader pg. 2 T.G. Pages 31-38;DSM III Science Reader pgs. 6-7; T.G. Pages 15-24; DSM III Science Reader pgs. 2-3, 4-7 & 12-13;
• Describe the various structures of plants and animals necessary for growth, survival, and reproduction.	<u>Classroom Plants</u> Activity 2, 6, 7, 8 & 9 <u>Plant and Animal Life Cycles</u> Activity 2, 8 & 9 <u>Dinosaurs and Fossils</u> Activity 8 & 10 <u>Butterflies and Moths</u> Activity 1, 2, 3, 8 and 10 <u>Plant and Animal Populations</u> Activity 2, 3, 4, 6, 7, 10 & 11 <u>Animal Behavior</u> Activity 1 & 2	T.G. Pages 23-28; 55-86; DSM III Science Reader pgs. 3-13; T.G. Pages 15-24; 63-78; DSM III Science Reader pgs. 3–6 & 9; T.G. Pages 61-66; 75-82; DSM III Science Reader pgs. 6-11; T.G. Pages 15-38; 71-78; 89-96; DSM III Science Reader pgs. 4-7, 10-12; T.G. Pages 25-50; 59-76; 95-110; DSM III Science Reader pgs. 4-7, 11; T.G. Pages 7-18;
• Describe internal causes of behavior, such as hunger, and external causes of behavior, such as change in the environment, in living things.	<u>Animal Behavior</u> Activity 2, 3, 4, 5, 6 & 7 <u>Insect Life</u> Activity 8	T.G. Pages 13-52; T.G. Pages 55-60;

	Small Things and Microscopes Activity 13 Food Chains and Webs Activity 5, 6, 7, & 8 Butterflies and Moths Activity 2 & 4	T.G. Pages79-84; T.G. Pages 47-72; T.G. Pages 23-30; 39-46; DSM III Science Reader pgs. 14 & 15;
4.4.2 By the end of fourth grade, students will develop an understanding of the life cycles of living things. **Student demonstrations:**		
• Describe the life cycle of an organism.	Butterflies and Moths Activity 1, 6, 9, 11 Plant and Animal Life Cycles Activity 2, 3, 4, 5, 8, 9 & 10 Plant and Animal Populations Activity 5 Classroom Plants Activity 2, 3, & 9 Insect Life Activity 2 & 7	T.G. Pages 15-22; 53-60; 79-88; 97-104; DSM III Science Reader pgs. 8-13; T.G. Pages 15-46; 63-84; DSM III Science Reader pgs. 2-13; T.G. Pages 51-58; T.G. Pages 23-38; 81-86; DSM III Science Reader pg. 5 T.G. Pages 15-22; 47-54;
• Recognize inherited characteristics of living things, such as color and number of eyes.	Plant and Animal Life Cycles Activity 5 & 10 Animal Behavior Activity 3 Butterflies and Moths Activity 5, 6, 9, & 11 Plant and Animal Populations Activity 2, 4, 5, 6, & 11	T.G. Pages 39-46; 79-84; DSM III Science Reader pgs. 2 & 10; "Connections" *Science and Language Arts* T.G. Page 24; T.G. Pages 47-60; 79-88; 97-104; DSM III Science Reader pgs. 3, & 8-13 T.G. Pages 15-22; 29-52; 83-90;
• Recognize learned characteristics of living things, such as language or hunting for food.	Animal Behavior Activity 9	T.G. Pages 59-64; and "Connections" *Science Challenge*
4.4.3 By the end of fourth grade, students will develop an understanding of living things and environments. **Student demonstrations:**		
• Diagram a food chain.	Food Chains and Webs Activity 8, 10, 11 & 12 Insect Life Activity 10	T.G. Pages 67-72; 81-102;DSM III Science Reader pgs. 2-10, 14 & 15 T.G. Pages 67-72;

	Plant and Animal Populations Activity 10, 11 & 12	T.G. Pages 95-118;DSM III Science Reader pgs. 12-13
• Explain how environmental changes affect behavior and survival of living things.	Plant and Animal Populations Small Things and Microscopes Activity 13 Animal Behavior Activity 3,4, 5, 6 & 7	DSM III Science Reader pgs. 10 – 11 & 15
• Describe how humans and other living things cause positive and negative changes in their environment.	Food Chains and Webs Activity 11&12 Small Things and Microscopes Activity 13 Plant and Animal Populations Activity 7 Erosion (Recommended for Grades 5-6) Activity 11	T.G. Pages 89-102; DSM III Science Reader pgs. 10, 12 & 14; T.G. Pages 79-84; T.G. Pages 69-76;"Connections" *Science, Technology, and Society*, T.G. Page 76; "Connections" *Science and Social Studies*
4.5 Earth and Space Science Earth and space science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **4.5.1 By the end of fourth grade, students will develop an understanding of the characteristics of earth materials.** **Student demonstrations:** Identify characteristics of soils, rocks, water, and the atmosphere.		
• List earth materials that are used by humans	Soil Science Activity 7-10 Food Chains and Webs Activity 1 Amazing Air Activity 1 Classroom Plants Activity 3 & 12	T.G. Pages 59-98;DSM III Science Reader pgs. 10-12; T.G. Pages 15-22; T.G. Pages 7-14; T.G. Pages 29-38; 105-112; DSM III Science Reader pgs. 4 & 15;
• Select the best earth material for a specific human use.	Soil Science Activity 7 Amazing Air Activity 10 & 12 Water Cycle Activity 1 & 11	T.G. Pages 59-68;DSM III Science Reader pgs. 4, 10-12 & 15; T.G. Pages 87-94; 101-108; T.G. Pages 3-22; T.G. Page 98 "Connections" *Science Technology, and Society*; DSM III Science Reader pgs. 10-11 & 14 – 15;

• Describe an ancient environment based on fossil evidence.	Dinosaurs and Fossils Activity 7& 8 Earth Movements Activity 3	T.G. Pages 55-66; DSM III Science Reader pgs. 2-7 T.G. Pages 29-38; DSM III Science Reader pgs. 6-7;
4.5.2 By the end of fourth grade, students will develop an understanding of objects in the sky. Student demonstration:		
• Describe and observe how objects move in patterns, such as sun, moon, stars, and clouds.	Solar System Activity 2, 3 & 9 Weather Watching Activity 6, 9 & 11 Weather Instruments Activity 4 & 10	T.G. Pages 21-34; 73-82; DSM III Science Reader pgs. 2-3 & 6-7; T.G. Pages 51-60; 77-88; 101-108; DSM III Science Reader pgs. 10 & 11 T.G. Pages 37-42; 81-88; DSM III Science Reader pgs. 12-13;
4.5.3 By the end of fourth grade, students will develop an understanding of the changes in the earth and sky. **Student demonstrations:**		
• Describe how slow processes, such as erosion, and rapid processes, such as earthquakes, change the earth's surface.	Soil Science Activity 5, 6 & 12 Earth Movements Activity 5, 6, 7, 8, 9, 10, 11&12	T.G. Pages 45-58; 107-114; DSM III Science Reader pgs. 9-10; T.G. Pages 47-110;DSM III Science Reader pgs. 6-12 & 15
• Describe changes in weather using measurable quantities, such as temperature, precipitation, and wind direction and speed.	Weather Watching Activity 1-12 Weather Instruments Activity 1-12	In this Module (12 activities, recommended for grades 2-3), students observe, describe and measure aspects of weather. They measure daily changing temperature and wind strength, construct rain gauges, lightning rods and windsocks. They use cloud formations to predict weather patterns and explore causal conditions such as rainbows, thunderstorms, rainbows, hurricanes and tornadoes. T.G. Pages 13-116; DSM III Science Reader pgs. DSM III Science Reader pgs. 2-12, 14-15; In this module (12 activities, recommended for grades 3-5), students explore and measure weather conditions including temperature, barometric pressure, wind speed/direction, cloud formation, and precipitation.

		From weather data they gather, they draw conclusions about the connections between weather phenomena and how to predict weather changes. T.G. Pages 13-102; DSM III Science Reader pgs. 3-9
4.6 Science and Technology An understanding of science and technology establishes connections between the natural and designed world, by linking science with technology. **4.6.1 By the end of fourth grade, students will develop an understanding of technological design.** **Student demonstrations:**		
• Identify a simple problem.	Sink or Float Activity 12 Sound Activity 12 Amazing Air Activity 12	T.G. Pages 91-98; T.G. Pages 99-106; T.G. Pages101-108;
• Propose a solution to a simple problem.	Sink or Float Activity 12 Sound Activity 12 Amazing Air Activity 12	T.G. Pages 91-98; T.G. Pages 99-106; T.G. Pages101-108;
• Implement the proposed solution.	Sink or Float Activity 12 Sound Activity 12 Amazing Air Activity 12	T.G. Pages 91-98; T.G. Pages 99-106; T.G. Pages101-108;
• Evaluate the implementation.	Sink or Float Activity 12 Sound Activity 12 Amazing Air Activity 12	T.G. Pages 91-98; T.G. Pages 99-106; T.G. Pages101-108;
• Communicate the problem, design, and solution.	Sink or Float Activity 12 Sound Activity 12	T.G. Pages 91-98; T.G. Pages 99-106;

	Amazing Air Activity 12	T.G. Pages101-108;
4.6.2 By the end of fourth grade, students will develop an understanding of science and technology. **Student demonstrations:**		
• Recognize science as one way of answering questions and explaining the natural world.	Animal Behavior Activity 5, 6, & 7 Sink or Float Activity 9 Food Chains and Webs Activity 3 Electrical Circuits Activity 6, 7 & 12 Looking at Liquids Activity 7, 8 & 9	T.G. Pages 31-52; T.G. Pages 69-74; T.G. Pages 31-38; T.G. Pages 51-62; 89-94; T.G. Pages 49-70;
• Recognize that technology, such as tools and techniques, uses scientific knowledge to solve problems.	Force and Motion Activity 4 & 5 Amazing Air Activity 11 & 12 Magnets Activity 10, 11 & 12 Weather Instruments Activity 3, 4 & 6	T.G. Pages 41-56; T.G. Pages 95-108; T.G. Pages 65-82;DSM III Science Reader pgs. 10-12; T.G. Pages 31-42; 51-58; DSM III Science Reader pgs. 4, 5, 7 & 9
4.6.3 By the end of fourth grade, students will develop an understanding of the abilities to distinguish between natural objects and objects made by humans. **Student demonstration:**		
• Classify an object as either natural or manufactured.	Magnets Activity 2 & 9 Powders and Crystals Activity 11	"Connections" *Science and Language Arts* T.G. Page 24; T.G. Pages 59-64; "Connections" *Science Extension* T.G. Pages 86;
4.7 Science in Personal and Social Perspectives A personal and social perspective of science helps a student understand and act on personal and social issues. This perspective builds a foundation for future decision making. **4.7.1 By the end of fourth grade, students will develop an understanding of personal health.** **Student demonstrations:**		
• Explain how the body uses food and how various foods	Earth Movements Activity 3	"Connections" *Science and*

contribute to health.		*Health* T.G. Page 37;
• Describe how different substances, such as tobacco, alcohol, and drugs, can damage the body and alter how it functions.	This standard may be best addressed in a health curriculum at this level.	
4.7.2 By the end of fourth grade, students will develop an understanding of the types of resources. **Student demonstrations:**		
• List examples of resources which are basic materials, such as air, water, and soil.	<u>Water Cycle</u> Activity 1 <u>Soil Science</u> Activity 1 & 7	T.G. Pages 3-22; DSM III Science Reader pgs. 2-7 T.G. Pages 15-20; 59-68; DSM III Science Reader pgs. 2-3, 7-8 & 10-12;
• List examples of resources produced from basic materials, such as food, fuel, and building materials.	<u>Powders and Crystals</u> Activity 7 <u>Soil Science</u> Activity 7	"Connections" *Science, Technology, and Society;* T.G. Page 54; "Connections" *Science and the Arts;* T.G. Page 67;
• List examples of resources which are intangible materials, such as beauty, security, and quiet places.	<u>Food Chains and Webs</u>	DSM III Science Reader pg. 14
• Research and report on the supply of various resources.	<u>States of Matter</u> Activity 4 <u>Water Cycle</u> Activity 1 <u>Soil Science</u> Activity 7	"Connections" *Science and Social Studies;* T.G. Page 40; T.G. Pages 13-22; Connections" *Science, Technology, and Society;* T.G. Page 67;
4**.7.3 By the end of fourth grade, students will develop an understanding of environmental changes.** **Student demonstration:**		
• Distinguish between natural environmental changes and human influenced environmental changes.	<u>Soil Science</u> Activity 11 <u>Plant and Animal Populations</u> Activity 10	T.G. Pages 99-106; "Connections" *Science, Technology, and Society* T.G. Page 110;
4.7.4 By the end of fourth grade, students will develop an understanding of how science and technology helps communities resolve problems. **Student demonstration:**		

• Research and explain how science and technology affect the quality of life.	<u>Electrical Circuits</u> Activity 1 <u>Magnets</u> Activity 11 <u>Earth Movements</u> Activity 5, & 10	"Connections" *Science, Technology, and Society* T.G. Page 20; "Connections" *Science, Technology, and Society* T.G. Page 76*;* "Connections" *Science and Social Studies;* T.G. Page 54; Connections" *Science, Technology, and Society*, T.G. Page 96
4.8 History and Nature of Science The history and nature of science illustrates different aspects of scientific inquiry, the human aspects of science, and the role of science in the development of various cultures. **4.8.1 By the end of fourth grade, students will develop an understanding of science as a human endeavor.** **Student demonstrations:**		
• Research and report on the contributions to science and technology throughout history by men and women scientists of diverse cultures.	<u>Small Things and Microscopes</u> Activity 4 <u>Solar System</u> Activity 2 <u>Plant and Animal Life Cycles</u> <u>Classroom Plants</u> <u>Force and Motion</u> <u>Solar System</u> Activity 3	Two features in the DSM II & III program provide opportunities for students to become acquainted with scientists having varying cultural backgrounds. One is the *Science and Social Studies* and/or *Science and Careers* component that appears in the "Connection" feature that follows every science activity. The other is in the Delta III Science Reader feature *People in Science.* See the following specific examples: T.G. Page 25 "Connections" *Science, Technology, and Society;* T.G. Page 26 "Connections" *Science and Social Studies;* DSM III Science Reader pg. 14; DSM III Science Reader pg. 14; DSM III Science Reader pgs. 12-13; T.G. Pages 27-34; "Connections" *Science and Careers;*
• Research and report on how science is used in different	<u>Using Your Senses</u> Activity 3	T.G. Page 36 "Connections"

careers		*Science and Careers;*
	Weather Instruments Activity 3	T.G. Page 36 "Connections" *Science and Careers;*
	Classroom Plants Activity 12	T.G. Pages 105-112; and "Connections" *Science and Careers;*
	Earth Movements Activity 11	"Connections" *Science and Careers*, T.G. Page 103;
	Food Chains and Webs	DSM III Science Reader pg. 14;
	Butterflies and Moths	DSM III Science Reader pg. 14;
	Using Your Senses	DSM III Science Reader pg. 13;
	States of Matter	DSM III Science Reader pg. 14;
	Sound	DSM III Science Reader pg. 14;
• Research and report on how current scientific discoveries illustrate that science is never finished.	Earth Movements Activity 7	"Connections" *Science and Math;* T.G. Page 70;
	Powders and Crystals Activity 10	"Connections" *Science and Careers* T.G. Page 78*;*
	Magnets Activity 6	"Connections" *Science and Social Studies*, T.G. Page 78 *;*DSM III Science Reader pgs. 14-16;
	Solar System Activity 1 & 6	"Connections" *Science , Technology and Society;* T.G. Page 20 & 58*;*

Nebraska Science Standards

Grades 5-8

At the middle school level, students expand their scientific inquiry skills through knowledge, observations, ideas, and questions. Middle school students will begin to recognize the relationships between explanation and evidence. They understand that background knowledge and theories guide the design of investigations, the types of observations made, and the interpretation of data. Student investigations will shape and modify students' background knowledge.

FOSS modules are inquiry-based. The fundamentals of scientific inquiry are imbedded in all FOSS modules at a developmentally appropriate level. The following correlation of the Nebraska Science Standards to the Full Option Science System (FOSS) is to show representative examples of investigations from FOSS that address the content standards. A citation does *not* reflect all of the investigations or activities from FOSS that might address a particular standard. FOSS modules are inquiry-based.

Delta Science Modules II and III are activity centered and inquiry-based. The fundamentals of scientific inquiry are imbedded in all DSM II and III at a developmentally appropriate level. The following correlation of the Nebraska Science Standards to the Delta Science Modules, Editions II & III, is to show representative examples of investigations from DSMs that address the content standards. A citation does not reflect all of the investigations or activities from Delta Science Modules that might address a particular standard.

Note that Delta Science Modules II & III are developed for grade level clusters of 5-6, & 6+ to provide maximum flexibility. If the Nebraska Standard fits a standard in a grade above or below the recommended level, it may be cited.

STANDARD	DSM II AND III MODULES AND ACTIVITIES	T.G. PAGES AND/OR DSM READER PAGES
8.1 Unifying Concepts and Processes Unifying concepts and processes help students think about and integrate a range of basic ideas which builds an understanding of the natural world. **8.1.1 By the end of eighth grade, students will develop an understanding of systems, order, and organization.** **Student demonstrations**:		
• Recognize and describe integral parts and functions of any system.		
• Analyze and predict the interactions within a system and between systems.		
• Create and use classification schemes.		
• Interpret cause and effect relationships within and between systems.		

8.1.2 By the end of eighth grade, students will develop an understanding of evidence, models, and explanation. **Student demonstrations:**		
• Collect, manipulate, and analyze data from an experiment.	Plants in Our World Activity 3 Chemical Interactions Activity 11 & 12 Newton's Toy Box Activity 9, 11 & 12 Animal Behavior Activity 3,4, 5, 6, 7, 11 & 12 Electrical Circuits Activity 6 & 7 Food Chains and Webs Activity 3 & 8 Looking at Liquids Activity 2, 7 & 10	T.G. Pages19-24; T.G. Pages 81-92; T.G. Pages 51-54; 59-66; T.G. Pages 19-52; 71-82; T.G. Pages 51-62; T.G. Pages 31-38; 67-72; T.G. Pages 15-22; 49-56; 71-76;
• Observe and develop models, such as physical, mathematical, mental, and computer simulations.	Solar System Activity 2 Flight and Rocketry Activity 12 DNA-From Genes to Protein Activity 4 Earth, Moon, and Sun Activity 10	T.G. Pages 21-26; T.G. Pages 121-130; DSM III Science Reader pgs. 3, 6, 9, 10, 12-14; T.G. Pages 25-30; T.G. Pages 79-86;
• Interpret and explain products of experimentation.	Sound Activity 12 Color and Light Activity 2 & 5 Electrical Connections Activity 9 & 10 Chemical Interactions Activity 12 & 13	T.G. Pages 99-106; T.G. Pages 19-28; 45-52; T.G. Pages 71-82; T.G. Pages 87-98;
• Review investigative procedures and conclusions for reasonableness.	Powders and Crystals Activity 10 Lenses and Mirrors Activity 11	T.G. Pages 71-78; T.G. Pages 83-88;

	Solar Energy Activity 2 Earth Processes Activity 12	T.G. Pages 13-20; T.G. Pages 89-104;
• Select and use appropriate measurement units.	Measuring Activity 2 & 3 Simple Machines Activity 1, 2, & 3 Famous Scientists Activity 1 & 2 Chemical Interactions Activity 1 & 2	T.G. Pages 21-36; T.G. Pages 13-32; DSM III Science Reader pgs. 2-3 T.G. Pages 11-28; T.G. Pages 7-22;
• Quantify changes in systems.	Electromagnetism Activity 6 Solar Energy Activity 3-5 Weather Forecasting Activity 2 &5 Newton's Toy Box Activity 7 & 8	T.G. Pages 31-36; T.G. Pages 21-38; T.G. Pages 19-24; 41-48; T.G. Pages 39-50;
• Use English and metric systems of measurements.	Measuring Activity 5, 6, 7, 8, 10 & 12 Solar System Activity 8 Famous Scientists Activity 2 Astronomy Activity 5	T.G. Pages 37-64; 71-78; 87-96; T.G. Pages 65-72; T.G. Pages 21-28; T.G. Pages 43-52;
• Investigate and describe changes in terms of scale, rate, and pattern.	Dinosaurs and Fossils Activity 6 Erosion Activity 5 & 6 You and Your Body Activity 5 Plants in Our World Activity 3	T.G. Pages 41-46; T.G. Pages 35-46; T.G. Pages 41-48; T.G. Pages19-24;

8.1.4 By the end of eighth grade, students will develop an understanding of form and function. **Student demonstration:**		
• Demonstrate how the design of an object makes it possible for that object to perform a specialized task, such as a bicycle or airplane.	<u>Insect Life</u> Activity 5, 9 & 12 <u>Flight and Rocketry</u> Activity 5, 7, 8, 9 & 12 <u>Simple Machines</u> Activity 2 & 12 <u>Newton's Toy Box</u> Activity 10	T.G. Pages 35-40; 61-66; 79-84; T.G. Pages 55-64; 73-98; 121-130; DSM III Science Reader pgs. 2-14 T.G. Pages 19-24; 91-96; DSM III Science Reader pgs. 4-12 T.G. Pages 55-58;
8.2 Science as Inquiry Science as inquiry requires students to combine processes and scientific knowledge with scientific reasoning and critical thinking to develop their understanding of science. **8.2.1 By the end of eighth grade, students will develop the abilities needed to do scientific inquiry.** **Student demonstrations:**		
• Identify questions and form hypotheses that can be examined through scientific investigations.	In the DSM II & III Science modules, activities are designed around inquiry and students' questions. Indicators of inquiry in the lesson objectives are in the terms "discover", "predict" or "hypothesize". The following are examples: <u>Color and Light</u> Activity 10 & 12 <u>Electromagnetism</u> Activity 6 & 10 <u>Erosion</u> Activity 10 & 11 <u>Flight and Rocketry</u> Activity 3 & 5 <u>Fungi-Small Wonders</u> Activity 7, 8 & 11 <u>Lenses and Mirrors</u> Activity 2, 9 & 12 <u>Pollution</u> Activity 7 & 8 <u>Rocks and Minerals</u> Activity 9 & 10	T.G. Pages 85-92; 101-108; T.G. Pages 31-36; 57-64; T.G. Pages 67-80; T.G. Pages 33-44; 55-64; DSM III Science Reader pg. 14 T.G. Pages 45-56; 63-68; T.G. Pages 13-20; 67-74; 89-94; T.G. Pages 53-64; T.G. Pages 69-84;
• Design and conduct a scientific investigation.	<u>Erosion</u> Activity 7 & 8	T.G. Pages 47-60;

	Insect Life Activity 8 & 9	T.G. Pages 47-66;
	Fungi-Small Wonders Activity 11	T.G. Pages 69-74;
	Plants in Our World Activity 3	T.G. Pages19-24;
	Chemical Interactions Activity 11 & 12	T.G. Pages 81-92;
	Newton's Toy Box Activity 9, 11 & 12	T.G. Pages 51-54; 59-66;
	Animal Behavior Activity 3,4, 5, 6, 7, 11 & 12	T.G. Pages 19-52; 71-82;
	Looking at Liquids Activity 2, 7 & 10	T.G. Pages 15-22; 49-56; 71-76;
• Use appropriate tools and techniques to gather, analyze, and interpret data.		"Hands-on Science" is the nature of Delta Science Modules thus, the success of the lessons is dependent on developmentally-appropriate observations and use of data-gathering tools to provide evidence of scientific phenomena. Examples of how these are used can be found in the following references:
	Dinosaurs and Fossils Activity 3 & 4	T.G. Pages 23-34;
	Earth Movements: Activity 2, 6, 7, & 9	T.G. Pages 21-28; 55-70; 79-86;
	Erosion: Activity 2	T.G. Pages 15-22;
	Oceans: Activity 6, 7 & 8	T.G. Pages 65-98;
	You and Your Body: Activity 1, 2 & 6	T.G. Pages 13-28; 49-54;
	Fungi-Small Wonders Activity 2, 3, & 7	T.G. Pages 13-28; 45-50;
	Looking at Liquids Activity 5, 8, 11	T.G. Pages 35-42; 57-62; 77-82;
	Weather Forecasting Activity 3 & 5	T.G. Pages 25-32; 41-48;

	Famous Scientists Activity 1 & 7 Electrical Connections Activity 2, 4 & 8	T.G. Pages 11-20; 65-76; T.G. Pages 13-18; 25-30; 53-58;
• Develop descriptions, explanations, predictions, and models using evidence.	Earth Movements Activity 4 Pollution Activity 7 & 10 Newton's Toy Box Activity 8 & 9 Plants in Our World Activity 3, 6 & 7 Erosion Activity 2, 5, 6, 10, 11 & 12 Flight and Rocketry Activity 5, 7, 8, 11 & 12 Lenses and Mirrors Activity 3 & 10 Pond Life Activity 4; Rocks and Minerals Activity 2, 7 & 9	T.G. Pages 39-46; T.G. Pages 53-58; 71-76; T.G. Pages 45-54; T.G. Pages19-24; 37-50; T.G. Pages 15-22; 35-46; 67-91; T.G. Pages 55-64; 73-110; DSM III Science Reader pgs. 8, 10 & 12-13 T.G. Pages 21-26;75-82; T.G. Pages 27-34; T.G. Pages 21-28; 55-60; 69-76;
• Think critically and logically to make the relationship between evidence and explanations.	Solar Energy Activity 7, 8, 9, 10 & 11 Fungi-Small Wonders Activity 6 & 7 Chemical Interactions Activity 6, 9, 11 & 12 Weather Forecasting Activity 8 & 9 Pollution Activity 6, 7, & 10 Lens and Mirrors Activity 2, 4, 8 & 9 Fungi-Small Wonders Activity 9 & 11 Erosion	T.G. Pages 47-76; T.G. Pages 37-50; T.G. Pages 43-52; 65-72; 81-92; T.G. Pages 63-74; T.G. Pages 47-58; 71-76; T.G. Pages 13-20; 27-34; 55-74; T.G. Pages 57-68;

	Activity 2, 3, 10 & 11	T.G. Pages 15-28; 67-80;
• Recognize and analyze alternative explanations and predictions.	Flight and Rocketry Activity 6 Erosion Activity 10 & 11 Fungi-Small Wonders Activity 11 & 12 Pond Life Activity 12 Newton's Toy Box Activity 3	 T.G. Pages 65-72; T.G. Pages 67-80; T.G. Pages 69-80; T.G. Pages 81-86; T.G. Pages 19-24;
• Communicate scientific procedures and explanations.	Pond Life Activity 9, 10 & 12 Plants in Our World Activity 5, 6 & 8 Solar Energy Activity 2, 3, 4, 5, 6, 7, 8, 9, 11 & 12 Chemical Interactions Activity 12 Famous Scientists Activity 5 & 10	 T.G. Pages 63-74; 81-86; T.G. Pages 31-42; 51-56; T.G. Pages 13-64; 71-82; T.G. Pages 87-92; T.G. Pages 45-54; 95-104;
• Use mathematics in all aspects of scientific inquiry.	Solar Energy: Activity 3, 4, 5, 6, 7, 8, 9 & 10 Simple Machines Activity 1, 3, 4, 6, 8 & 11 You and Your Body: Activity 1, 2 & 6 Weather Forecasting Activity 2, 3, 5, 6 & 8 Lenses and Mirrors Activity 4 & 5 Famous Scientists Activity 8 Chemical Interactions Activity 1, 2, 7, 8 & 13 Earth, Moon, and Sun Activity 13	 T.G. Pages 13-70; T.G. Pages 13-18; 25-38; 49-56; 65-70; 83-90; DSM III Science Reader pgs. 3 T.G. Pages 13-26; 49-54; T.G. Pages 19-32; 41-54; 63-68; T.G. Pages 27-40; T.G. Pages 77-84; T.G. Pages 7-22; 53-64; 93-98; T.G. Pages 105-112;

	Electrical Connections Activity 8, 9 & 10 Newton's Toy Box Activity 7, 8, & 9	T.G. Pages 53-70; T.G. Pages 39-54;
8.3 Physical Science Physical science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **8.3.1 By the end of eighth grade, students will develop an understanding of properties and changes of properties in matter.** **Student demonstrations:**		
• Investigate and demonstrate that characteristic properties, such as density, boiling point, and solubility of substances, are not dependent on the quantity of the substance.	Oceans Activity 2 & 3 Powders and Crystals Activity 1, 5-12 Chemical Interactions Activity 1, 3, & 10 If Shipwrecks Could Talk Activity 5 Electrical Connections Activity 7	T.G. Pages 23-42; DSM III Science Reader pg. 3 T.G. Pages 7-12; 35-94; T.G. Pages 7-14; Pages 23-28; 73-80; T.G. Pages 47-56; T.G. Pages 45-52;
• Observe, describe, and measure physical and chemical properties of matter.	Oceans Activity 3 Rocks and Minerals Activity 3-6 Chemical Interactions Activity 6, 10 & 12	T.G. Pages 31-42;DSM III Science Reader pgs. 3 T.G. Pages 29-54;;DSM III Science Reader pgs. 3-6, & 11 T.G. Pages 43-52; 73-80; 87-92;
• Relate that all matter is composed of elements which may combine in a variety of ways to form compounds.	Chemical Interactions Activity 4, 5, 7, 8, 10, 12	T.G. Pages 29-42; 53-64; 73-80; 87-92;
• Investigate and relate that in chemical reactions, total mass is conserved.	Chemical Interactions Activity 11 & 12	T.G. Pages 81-92;
8.3.2 By the end of eighth grade, students will develop an understanding of motion and forces. **Student demonstrations:**		
• Investigate, describe, and represent the motion of an object by its position, direction of motion, and speed.	Flight and Rocketry Activity 1-5 Simple Machines	T.G. Pages 13-64; DSM III Science Reader pgs. 2-4 & 10-13

	Activity 1-9 Famous Scientists Activity 2 & 3 Newton's Toy Box Activity 1, 3, 5 & 7	T.G. Pages 13-70; DSM III Science Reader pgs. 2, 4-9, 14 & 15 Pages 21-34; T.G. Pages 7-12; 19-24; 31-34; 39-44;
• Investigate and demonstrate that the speed and/or direction of an object changes when a force is applied to that object.	Flight and Rocketry Activity 8-10 Simple Machines Activity 2, 5-9 Newton's Toy Box Activity 1, 3, 8, 10 & 11 Famous Scientists Activity 2	 T.G. Pages 81-110; DSM III Science Reader pgs. 3, 7, 9, 10 & 11 T.G. Pages 19-24; 39-76; DSM III Science Reader pgs. Science Reader pgs. 2, 4-9, 14 & 15 T.G. Pages 7-12; 19-24; 45-50; 59-62; T.G. Pages 21-28;
8.3.3 By the end of eighth grade, students will develop an understanding of the transfer of energy. **Student demonstrations:**		
• Investigate, explain, and give examples of the forms of energy, such as heat, light, chemical, sound, electrical, and how energy is transferred.	Sound Activity 2-4 (Recommended for Grades 3-4) Solar Energy Activity 1, 2 Electrical Circuits (Recommended for Grades 3-4) Activity 3-12 Electrical Connections Activity 2, & 6-11	T.G. Pages 21-44; DSM III Science Reader pgs. 2-3 T.G. Pages 7-20; T.G. Pages 27-94; DSM III Science Reader pgs. 2-5 T.G. Pages 13-18; 37-76;
• Investigate and describe energy transfer using simple machines.	Simple Machines Activity 2, 5, 7-12	 T.G. Pages 19-24;39-48; 57-96; DSM III Science Reader pgs. 2-10
• Investigate and describe how heat is transferred from a warmer object to a cooler object until both reach the same temperature.	Measuring (Recommended for Grades 3-4) Activity 11	T.G. Pages 79-86;
• Investigate and describe the properties of sound.	Sound Activities 1-12	In this module (12 activities) students investigate the phenomena of sound as energy in motion. They learn how structure and function of ear

		works as a sound receptacle. Students investigate pitch, volume, sound absorption and reflection and how musical instruments create sound. T.G. Pages 13-106;
• Investigate and describe the basic principles of electricity and magnetism.	Magnets (Recommended for Grades 3-4) Activity 1-12 Electrical Circuits (Recommended for Grades 3-4) Activity 1-12 Electromagnetism Activity 1-11 Electrical Connections Activity 1-10	In this module (12 activities) students investigate the principles that govern magnetic behavior including magnetic/nonmagnetic, opposites, poles attract/repel. They observe and measure changes caused by magnetic force. T.G. Pages 13-82; In this module (13 activities) students investigate simple (open and closed), parallel and series circuits. They discover what materials affect the flow of current and demonstrate resistance by comparing bulb brightness produced by different wires. T. G. Pages 13-94; DSM III Science Reader pgs. 2-11; T.G. Pages 13-84; T.G. Pages 76;
8.4 Life Science Life science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **8.4.1 By the end of eighth grade, students will develop an understanding of the structure and function in living systems.** **Student demonstrations:**		
• Investigate and describe the levels of organizations: cells, tissues, organs, organ systems, whole organisms, and ecosystems.	You and Your Body Activity 1, 2, 4, 6 & 7 Small Things and Microscopes Activity 7 & 9	Pages 13-26; 33-40; 49-60;DSM III Science Reader pgs. 2-4; T.G. Pages 43-48; 55-60;
• Investigate and describe how all living things are composed of cells.	Small Things and Microscopes Activity 7 - 9 Plants in Our World Activity 1, 2 & 4 DNA-From Genes to Proteins Activity 2-5	T.G. Pages 43-60; T.G. Pages 7-18; 25-30; T.G. Pages 19-36;

• Investigate and describe how cells sustain life through functions, such as growth and nutrition.	You and Your Body Activity 1 & 12	T.G. Pages 13-18; 85-90; DSM III Science Reader pgs. 2-4;
• Investigate and describe the specialized function performed by specialized cells, such as muscular and skeletal, in multi cellular organisms.	Small Things and Microscopes (Recommended for Grades 3-4) Activity 8 & 9 You and Your Body Activity 1, 2 & 7 Plants in Our World Activity 1, 4 & 10	T.G. Pages 49-60; T.G. Pages 13-26; 55-60; DSM III Science Reader pgs. 4-5, & 10 T.G. Pages 7-12; 25-30; 63-68;
• Investigate and describe the internal human body systems.	You and Your Body Activity 1-2, 4-6, 13 & 14	T.G. Pages 13-26; 33-54; 91-102; DSM III Science Reader pgs. 4-11
• Investigate and explain how disease affects the structure and/or function of an organism.	Small Things and Microscopes Activity 13 Pollution Activity 11 Fungi-Small Wonders Activity 2, 6 & 12 DNA-From Genes to Proteins Activity 11	T.G. Page 84 "Connections" *Science and Health;* T.G. Page 82 "Connections" *Science and Health;* T.G. Page 18 "Connections" *Science and Health;* T.G. Page 44 "Connections" *Science and Health;* T.G. Pages 75-80; T.G. Page 79 "Connections" *Science Extension;*
8.4.2 By the end of eighth grade, students will develop an understanding of reproduction and heredity. Student demonstrations:		
• Investigate and describe how all organisms reproduce through sexual or asexual reproduction.	Pond Life Activity 10 DNA-From Genes to Proteins Activity 11 Fungi-Small Wonders Activity 3	T.G. Pages 69-74; T.G. Page 79 "Connections" *Science and Math;* T.G. Pages 19-24;
• Investigate and relate that females produce eggs and males produce sperm in many species.	Plant and Animal Life Cycles Activity 8-10	T.G. Pages 63-84; DSM III Science Reader pgs. 4-5 & 13
• Investigate and state that chromosomes contain genes which influence heredity.	DNA-From Genes to Proteins Activity 3, 5-10 & 12	T.G. Pages 24; "Connections" *Science Challenge*; T.G. Pages 31-74; 81-88;
• Investigate and describe the	DNA-From Genes to Proteins	

effects of inherited traits on an organism's characteristics.	Activity 1 & 2	T.G. Pages 7-18;
8.4.3 By the end of eighth grade, students will develop an understanding of regulation and behavior. **Student demonstrations:**		
• Investigate and explain how all organisms obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.	Food Chains and Webs (Recommended for Grades 3-4) Activity 2-6 Plant and Animal Life Cycles (Recommended for Grades 3-4) Activity 2, 6, 9 & 10 Plants in Our World Activity 3, 8 & 11	T.G. Pages 23-58; DSM III Science Reader pgs. 4-6, 10 & 15; T.G. Pages 15-24; 47-52; 71-84; DSM III Science Reader pgs. 3-6 & 7-12; T.G. Pages19-24; 51-56; 69-76;
• Investigate and relate how an organism senses change in its internal or external environment and attempts to respond to keep conditions within a required range.	Oceans Activity 10 & 11 Pond Life Activity 3, 5, 6, 8, 9, & 10 Pollution Activity 5 & 10 Plants in Our World Activity 2, 4 & 10 Fungi-Small Wonders Activity 7, 10 & 11	T.G. Pages 113-134; DSM III Science Reader pgs. 12-13; T.G. Pages 19-26; 35-48; 57-74; T.G. Pages 39-46; 71-76; DSM III Science Reader pgs. 9-11 & 14 T.G. Pages 13-18; 25-30; 63-68; T.G. Pages 45-50; 63-74;
• Investigate and explain how behavior is a response to internal and external stimuli.	Animal Behavior (Recommended for Grades 3-4) Activity 3-12 Food Chains and Webs (Recommended for Grades 3-4) Activity 4-7 Fungi-Small Wonders Activity 5, 6, 7 & 11 Pond Life Activity 8-10 Plants in Our World Activity 5 & 6	T.G. Pages 19-82; T.G. Pages 39-66;DSM III Science Reader pgs. 4-5 & 14-15; T.G. Pages 31-50; 69-74; T.G. Pages 57-74; T.G. Pages 31-42;
• Investigate and explain how an organism's behavior evolves through environmental adaptation.	Pond Life Activity 8, 9 & 10 Animal Behavior Activity 3, 5, 6 & 7 Oceans	T.G. Pages 57-74; T.G. Pages 19-24;31-52;

	Activity 10 – 12 <u>Pond Life</u> Activity 5 & 6 <u>Famous Scientists</u> Activity 9	T.G. Pages 113-142; T.G. Pages 35-48; T.G. Pages 85-94;
8.4.4 By the end of eighth grade, students will develop an understanding of populations and ecosystems. Student demonstrations:		
• Investigate and describe that a population consists of all individuals of a species at a given place and time.	<u>Food Chains and Webs</u> (Recommended for Grades 3-4) Activity 4 & 5 <u>Small Things and Microscopes</u> Activity 10, 11& 13 <u>Pond Life</u> Activity 1, 3-7	T.G. Pages 39-52;DSM III Science Reader pgs. 2-3 T.G. Pages 61-72; 79-84; T.G. Pages 7-12; 19-56;
• Investigate and describe the living and nonliving factors, such as air, water, and light that determine the number of organisms an ecosystem can support.	<u>Food Chains and Webs</u> Activity 1-3 <u>Pond Life</u> Activity 3, 4, 10 & 12	T.G. Pages 15-38;DSM III Science Reader pgs. 2-3 T.G. Pages 19-34; 69-74; 81-86;
• Describe an organism by the function it serves in an ecosystem, such as producer, consumer, and decomposer.	<u>Food Chains and Webs</u> (Recommended for Grades 3-4) Activity 3, 7-12 <u>Pond Life</u> Activity 11 <u>Plants in Our World</u> Activity 8 & 11 <u>Famous Scientists</u> Activity 10	T.G. Pages 31-38; 59-102;DSM III Science Reader pgs. 6-9; T.G. Pages 75-80; T.G. Pages 51-56; 69-76; T.G. Pages 95-104;
• Investigate and explain how energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis, and that energy then passes from organism to organism in food webs.	<u>Food Chains and Webs</u> (Recommended for Grades 3-4) Activity 3, 11 & 12 <u>Plants in Our World</u> Activity 3, 5, 9 &11 <u>Fungi-Small Wonders</u> Activity 1	T.G. Pages 31-38; 89-102; T.G. Pages19-24; 31-36; 57-62 & "Connections" *Science and Math;* T.G. Pages 69-76; T.G. Page 12, "Connections" *Science Extension*
8.4.5 By the end of eighth grade, students will develop an understanding of diversity and adaptations of organisms. **Student demonstrations:**		

• Analyze internal structures, similarity of chemical processes, and evidence of common ancestry to explain the unity among organisms.	Pond Life Activity 3 & 5-7 Fungi-Small Wonders Activity 2 & 4 Famous Scientists Activity 9 Food Chains and Webs (Recommended for Grades 3-4) Activity 10	T.G. Pages 19-26; 35-56; T.G. Pages 13-18; 25-30; T.G. Pages 85-94; T.G. Pages 81-88;
• Investigate and explain how organisms adapt to living and nonliving factors in a biome.	Pond Life Activity 8-10 Oceans Activity 10-12 Famous Scientists Activity 9	T.G. Pages 57-74; T.G. Pages 113-142; DSM III Science Reader pgs. 12-13; T.G. Pages 85-94;
• Investigate and explain how environmental changes created by nature and by humans may cause species extinction.	Dinosaurs and Fossils Activity 1 Food Chains and Webs Activity 10	T.G. Page 14, "Connections" *Science Challenge;* DSM III Science Reader pgs. 2-3 & 12; T.G. Page 74; "Connections" *Science, Technology, and Society*, DSM III Science Reader pgs. 10-11
8.5 Earth and Space Science Earth and space science focuses on the science facts, concepts, principles, theories, and models that are important for all students to know, understand, and use. **8.5.1 By the end of eighth grade, students will develop an understanding of the structure of the earth.** **Student demonstrations:**		
• Investigate and diagram the crust, mantle, and core of the earth.	Erosion Activity 1 Earth Movements (Recommended for Grades 3-4) Activity 1 &2 Earth Processes Activity 2, 11 &12	DSM III Science Reader pg. 2; T.G. Page 19 "Connections" *Science and the Arts;* T.G. Pages 13-28; DSM III Science Reader pgs. 2-3 T.G. Pages 15-22; 83-104;
• Investigate and describe how a combination of constructive and destructive weathering and erosion forces create land forms.	Earth Movements (Recommended for Grades 3-4) Activity 7-12 Oceans	T.G. Pages 63-110; DSM III Science Reader pgs. 6-13;

	Activity 4 & 6 <u>Erosion</u> Activity 1-3, 5-6, & 9-12 <u>Earth Processes</u> Activity 3, 5, 7, & 11-14	T.G. Pages 43-54; 65-74 & "Connections" *Science Extension*; DSM III Science Reader pg. 6; T.G. Pages 13-36; 43-58; 75-104; DSM III Science Reader pgs. 4-13; Pages 21-28; 39-44; 55-60; 83-112;
• Investigate and describe the composition of soils.	<u>Food Chains and Webs</u> (Recommended for Grades 3-4) Activity 1& 2 <u>Erosion</u> Activity 7 & 8 <u>Earth Processes</u> Activity 3	 T.G. Pages 15-30; T.G. Pages 59-74; DSM III Science Reader pg. 7 T.G. Pages 21-28;
• Investigate and describe the water cycle.	<u>Water Cycle</u> (Recommended for Grades 3-4) Activity 1-9, 11-13 <u>Weather Forecasting</u> Activity 9 <u>Oceans</u> Activity 5	 T.G. Pages 3-84; 91-114; DSM III Science Reader pgs. 8-12; T.G. Pages 69-74; DSM III Science Reader pgs. 4-5; T.G. Pages 55-64; DSM III Science Reader pg. 10
• Investigate and describe the composition of the atmosphere at different altitudes.	<u>Weather Forecasting</u> Activity 7, 9 & 10	 T.G. Pages 55-62; 69-80;DSM III Science Reader pgs. 2, 5, 7, & 14-15;
• Investigate and describe the major impact of topography, location, and oceans on climate.	<u>Oceans</u> Activity 5, 7 & 8 <u>Weather Forecasting</u> Activity 6 <u>Earth Movements</u>	 T.G. Pages 55-64; 75-88; & Pages 98 "Connections" *Science Challenge*; DSM III Science Reader pg. 10 T.G. Pages 54; "Connections" *Science Challenge* DSM III Science Reader pgs. 9 & 11 DSM III Science Reader pgs. 4-5 & 12-13
• Investigate and describe the effect of living organisms on weathering, the composition of rocks, and the atmosphere.	<u>Erosion</u> Activity 3 <u>Earth Processes</u> Activity 4	 T.G. Pages 29-36; T.G. Page 36; "Connections" *Science, Technology, and Society;*

8.5.2 By the end of eighth grade, students will develop an understanding of the earth's history. **Student demonstrations:**		
• Investigate and understand how earth processes that occur today, such as weather and natural catastrophes, are similar to those that occurred in the past.	<u>Earth Movements</u> (Recommended for Grades 3-4) Activity 5, 6, 7, 8, & 9; <u>Rocks and Minerals</u> Activity 2 & 9; <u>Erosion</u> Activity 1, 2, 9, 10 11 & 12; <u>Earth Processes</u> Activity 4-6, 13 & 14	T.G. Pages 47-86; DSM III Science Reader pgs. 6-13 & 15; T.G. Pages 21-28; 69-76; DSM III Science Reader pgs. 9-13; T.G. Pages 13-28; T.G. Pages 75-104; DSM III Science Reader pgs. 5-13 T.G. Pages 31-52; 95-112;
• Investigate and use the fossil record to provide evidence and explain how environmental conditions have changed.	<u>Dinosaurs and Fossils</u> (Recommended for Grades 3-4) Activity 1 & 8 <u>Earth Movements</u> (Recommended for Grades 3-4) Activity 1 & 3 <u>Rocks and Minerals</u> Activity 2 & 9	T.G. Pages 7-14; 53-58; DSM III Science Reader pgs. 2-5 & 12-13; Pages 13-20; 29-38; DSM III Science Reader pgs. 6-8 T.G. Pages 21-28; 69-76;DSM III Science Reader pgs.15;
8.5.3 By the end of eighth grade, students will develop an understanding of the earth in the solar system. **Student demonstrations:**		
• Investigate and list the components of the solar system, galaxies, and universe.	<u>Solar System</u> (Recommended for Grades 3-4) Activity 1, 10 & 11 <u>Astronomy</u> Activity 1, 3, 4, 6, 7 & 11 <u>Earth, Moon, and Sun</u> Activity 1-5	T.G. Pages 13-20; 83-92; 93-100; DSM III Science Reader pgs. 2-13; T.G. Pages 7-16; 25-42; 53-68; 93-100; T.G. Pages 7-44;
• Investigate and describe the motion of solar system objects in terms of the concepts of day, year, seasons, eclipses, and phases of the moon.	<u>Solar System</u> (Recommended for Grades 3-4) Activity 1, 2, 3, 9, 10 & 12 <u>Astronomy</u> Activity 1, 2, 3, 4, 5, & 6 <u>Earth, Moon, and Sun</u> Activity 6, 7, 8, 9, 10, & 11	T.G. Pages 13-34; 73-92; 101-110; DSM III Science Reader pgs. 2-3 & 6-7; T.G. Pages 7-60; T.G. Pages 45-94;
• Investigate and describe gravity's relationship to the solar system.	<u>Oceans</u> Activity 9	T.G. Pages 99-112; DSM III Science Reader pg. 9;

solar system.	Famous Scientists Activity 3 & 12 Earth, Moon, and Sun Activity 12	T.G. Pages 29-34; T.G. Pages 122, "Connections" *Science Extension*; T.G. Pages 95-104;
• Investigate and understand that the sun is a major source of energy for phenomena in the atmosphere and on the earth's surface.	Solar Energy Activity 1 & 2 Oceans Earth, Moon, and Sun Activity 9	T.G. Pages 7-20; DSM III Science Reader pg. 10 T.G. Pages 69-78;
• Investigate and describe the effect of the tilt of the earth's axis on seasons.	Astronomy Activity 5 Earth, Moon, and Sun Activity 9	T.G. Pages 43-52; T.G. Pages 69-78;
8.6 Science and Technology An understanding of science and technology establishes connections between the natural and designed world, linking science and technology. **8.6.1 By the end of eighth grade, students will develop an understanding of technological design.** Student demonstrations:		
• Identify appropriate problems for technological design.	Solar Energy Activity 9 & 13 Lenses and Mirrors Activity 12 Flight and Rocketry Activity 5 & 10 Erosion Activity 11 Famous Scientists Activity 4, 5 & 6 Electrical Connections Activity 11, 12, & 13	T.G. Pages 59-64; 83-88; T.G. Pages 89-94; T.G. Pages 55-64; 99-110; T.G. Pages 91-98; Pages 35-64; T.G. Pages 71-88;
• Design a solution or product.	Solar Energy Activity 11, 12 & 13 Lenses and Mirrors Activity 12 Flight and Rocketry Activity 5	T.G. Pages 71-88; T.G. Pages 89-94; T.G. Pages 55-64;

	Fungi-Small Wonders Activity 7 & 11 If Shipwrecks Could Talk Activity 4	T.G. Pages 45-50; 69-74; T.G. Pages 35-46 and "Connections" *Science Extension*
• Implement a proposed design.	Electrical Connections Activity 11, 12, & 13 Flight and Rocketry Activity 5, 8 & 9 Lenses and Mirrors Activity 4 & 5 Solar Energy Activity 11 If Shipwrecks Could Talk Activity 4	T.G. Pages 71-88; T.G. Pages 55-64; 81-98; T.G. Pages 27-40; T.G. Page 76; "Connections" *Science Challenge;* T.G. Pages 35-46 and "Connections" *Science Extension*
• Evaluate completed technological designs or products.	Solar Energy Activity 11 If Shipwrecks Could Talk Activity 4 Lenses and Mirrors Activity 12	T.G. Page 76; "Connections" *Science Challenge;* T.G. Pages 35-46 and "Connections" *Science Extension* T.G. Pages 89-94;
• Communicate the process of technological design.	Solar Energy Activity 11 If Shipwrecks Could Talk Activity 4 Lenses and Mirrors Activity 12	T.G. Page 76; "Connections" *Science Challenge;* T.G. Pages 35-46 and "Connections" *Science Extension* T.G. Pages 89-94;
8.6.2 By the end of eighth grade, students will develop an understanding of science and technology. **Student demonstrations:**		
• Distinguish between scientific inquiry (asking questions about the natural world) and technological design (using science to solve practical problems).	Sound (Recommended for Grades 3-4) Activity 6 Famous Scientists	T.G. Pages 58; "Connections" *Science, Technology, and Society* This module is a prime example of the inquiry famous scientists employed as they devised a technological design that met a

		need for their time in history. Students investigate the concepts related to the work of these pioneers in their journey from inquiry to technological design.
	If Shipwrecks Could Talk Activity 4	T.G. Pages 35-46 and "Connections" *Science Extension*
• Describe how science and technology are reciprocal.	Color and Light Activity 13	T.G. Page 116 "Connections" *Science, Technology, and Society*;
	Famous Scientists Activity 4, 5, & 6 Science, Technology, and Society	T.G. Pages 35-64; T.G. Page 44; "Connections" *Science, Technology, and Society*;
	If Shipwrecks Could Talk Activity 4	T.G. Pages 35-46 and "Connections" *Science Extension*
	Electromagnetism Activity 9 & 10	T.G. Pages 63-76;
• List the avoidable and unavoidable limits of a technological design.	Pollution Activity 4	T.G. Page 38; "Connections" *Science, Technology, and Society*;
	Electrical Connections Activity 11	T.G. Page 30; "Connections" *Science, Technology, and Society*;
	Earth Processes Activity 11	T.G. Page 94; ; "Connections" *Science, Technology, and Society*;
• Recognize that solutions have intended and unintended consequences.	Powders and Crystals (Recommended for Grades 3-4) Activity 4	T.G. Page 34; "Connections" *Science, Technology, and Society*;
	Pond Life Activity 11	T.G. Page 80 "Connections" *Science, Technology, and Society*;
	Plants in Our World Activity 10	T.G. Page 68; "Connections" *Science, Technology, and Society*;
	Erosion Activity 11	T.G. Page 98; "Connections" *Science and Social Studies*

	Pollution Activity 9	T.G. Page 70; "Connections" *Science, Technology, and Society;* DSM III Science Reader pgs. 4-11 & 14;
8.7 Science in Personal and Social Perspectives A personal and social perspective of science helps a student understand and act on personal and social issues. This perspective builds a foundation for future decision making. **8.7.1 By the end of eighth grade, students will develop an understanding of personal health.** **Student demonstrations:**		
• Research and identify substances harmful to human beings in the natural environment, such as radon, lead, and nitrates.	Animal Behavior (Recommended for Grades 3-4) Activity 1 Chemical Interactions Activity 4 Pollution Activity 4,	 T.G. Page 12; "Connections" *Science and Health* T.G. Page 36; "Connections" *Science and Health* T.G. Page 38; "Connections" *Science and Health*
• Investigate and explain how personal choices can directly affect a person's health, such as exercise, nutrition, and use of drugs.	You and Your Body Activity 2, 3, 6, 7 Pollution Activity 4 DNA-From Genes to Proteins Activity 1 & 3	T.G. Page 25; "Connections" *Science and Health;* T.G. Page 39; "Connections" *Science and Health* T.G. Page 54; "Connections" *Science and Health;* T.G. Page 60; "Connections" *Science and Health* T.G. Page 38; "Connections" *Science and Health* & *Science Extension* T.G. Page 11; "Connections" *Science and Health;* T.G. 23; "Connections" *Science and Health*
8.7.2 By the end of eighth grade, students will develop an understanding of populations, resources, and environments. **Student demonstrations:**		
• Investigate and describe how population levels affect resources and the environment.		
• Investigate and understand that the causes of environmental degradation and resource depletion vary locally and globally.	Erosion Activity 11	T.G. Page 98; "Connections" *Science and Social Studies*

8.7.3 By the end of eighth grade, students will develop an understanding of natural hazards. **Student demonstrations:**		
• Investigate and describe the effect of natural hazards on the environment, such as earthquakes, landslides, wildfires, floods, and storms.	<u>Earth Movements</u> (Recommended for Grades 3-4) Activity 11 <u>Weather Forecasting</u> Activity 12 <u>Earth Processes</u> Activity 8; Activity 9 <u>Erosion</u>	T.G. Pages 97-104; and "Connections" *Science and Social Studies* T.G. Page 94; "Connections" *Science and Social Studies*; T.G. Pages 71-78; and "Connections" *Science and Social Studies* & *Science, Technology, and Society;* T.G. Pages 79-86; and "Connections" *Science and Social Studies;* DSM III Science Reader pgs. 4 & 15
• Investigate and describe human activities, such as urban growth, land use, and waste disposal, which can accelerate many natural changes.	<u>Erosion</u> Activity 3, 5 & 11 <u>Pollution</u> Activity 2, 4, 5, 6, 9 & 10 <u>Pond Life</u> Activity 11	T.G. Pages 29-36; 43-50;T.G. Page 98; "Connections" *Science and Social Studies*; T.G. Pages 19-24; 31-52; 9 "Connections" *Science, Technology, and Society* 65-76; DSM III Science Reader pgs. 2-13 & 14; T.G. Page 80; "Connections" *Science, Technology, and Society;*
8.7.4 By the end of eighth grade, students will develop an understanding of risks and benefits. **Student demonstrations:**		
• Analyze a type of hazard, such as natural, chemical, or biological, estimating the number of people that might be exposed and the number likely to suffer consequences.	<u>Erosion</u> Activity 10 <u>Electrical Circuits</u> (Recommended for Grades 3-4) Activity 2 <u>Pollution</u> Activity 10	T.G. Page 90; "Connections" *Science and Social Studies*; T.G. Page 26; "Connections" *Science and Health* T.G. Page 76; "Connections" *Science and Social Studies*;
• Describe how perceptions of risks and benefits influence personal and social decisions, such as seat belt usage and waste disposal	<u>Pollution</u> Activity 1 & 2	T.G. Pages 13-24 and ; "Connections" *Science, Technology, and Society;*

usage and waste disposal procedures.	You and Your Body Activity 3 DNA-From Genes to Proteins Activity 12	T.G. Page 32; "Connections" *Science and Health* T.G. Page 88; "Connections" *Science, Technology, and Society;*
8.7.5 By the end of eighth grade, students will develop an understanding of science and technology in society. **Student demonstrations:**		
• Understand the effect of science on society is neither entirely beneficial nor entirely detrimental.	Small Things and Microscopes (Recommended for Grades 3-4) Activity 4 Astronomy Activity 6 Famous Scientists Activity 4	T.G. Page 30; "Connections" *Science, Technology, and Society;* T.G. Page 60; "Connections" *Science Extension* T.G. Page 44; "Connections" *Science, Technology, and Society;*
• Understand that societal challenges often inspire questions for scientific research, but that science cannot answer all questions and technology cannot solve all human problems or meet all human needs.	Magnets (Recommended for Grades 3-4) Activity 3 Fungi-Small Wonders Activity 11 Chemical Interactions Activity 9	T.G. Page 30; "Connections" *Science, Technology, and Society;* T.G. Page 74; "Connections" *Science, Technology, and Society;* T.G. Page 72; "Connections" *Science, Technology, and Society;*
• State an example of when societal priorities influenced research priorities.	Fungi-Small Wonders Activity 11	T.G. Page 74; "Connections" *Science, Technology, and Society;*
• Practice the ethical codes followed by scientists, such as informing research subjects about risks and benefits, humane treatment of animals, and truth in reporting.		

8.8 History and Nature of Science An understanding of the history and nature of science illustrates different aspects of scientific inquiry, the human aspects of science, and the role of science in the development of various cultures. **8.8.1 By the end of eighth grade, students will develop an understanding of science as a human endeavor.** **Student demonstrations:**		
• Investigate and understand that women and men of various social and ethnic backgrounds, working alone or in teams engage in the activities of science, engineering, and related fields.	Two features in the DSM II & III program provide opportunities for students to become acquainted with scientists having varying cultural backgrounds. One is the *Science and Social Studies* component that appears in the "Connection" feature that follows every science activity. The other is in the Delta III Science Reader feature *People in Science.* See the following specific examples:	
	<u>Electromagnetism</u> Activity 11	T.G. Page 83 "Connections" *Science and Careers*
	<u>Electrical Connections</u> Activity 1	T.G. Page 12 "Connections" *Science and Social Studies*
	<u>Pond Life</u> Activity 10	T.G. Page 74 "Connections" *Science and Social Studies*
	<u>Chemical Interactions</u> Activity 6	T.G. Page 52 "Connections" *Science and Social Studies*
	<u>Famous Scientists</u>	Biographical supplement found within Teaching guide: Activity 1& 2 (Archimedes), Activity 3 & 4 (Galileo Galilei), Activity 5 & 6 (Thomas Edison), Activity 7 & 8 (Matthew Henson), Activity 9 & 10 (Rachel Carson), Activity 11 & 12 (Stephen Hawking)
	<u>You and Your Body</u>	DSM III Science Reader pgs. 12-13;
	<u>Oceans</u>	DSM III Science Reader pg. 14
	<u>Rocks and Minerals</u>	DSM III Science Reader pg. 14
	<u>Dinosaurs and Fossils</u>	DSM III Science Reader pg. 14
	<u>Color and Light</u>	DSM III Science Reader pg. 14
	<u>Pollution</u>	DSM III Science Reader pg. 14

	Flight and Rocketry	DSM III Science Reader pgs. 14 & 15
• Investigate and understand that scientists have different abilities, basic human qualities, and scientific habits of mind.	Pollution Activity 12 Science and Social Studies Plants in Our World Activity 8 Science and Social Studies Earth Processes Activity 7 Science, Technology, and Society	T.G. Page 88 "Connections" *Science and Social Studies* T.G. Page 56 "Connections" *Science and Social Studies;* T.G. Page 60 "Connections" *Science, Technology and Society;*
8.8.2 By the end of eighth grade, students will develop an understanding of the nature of science. **Student demonstrations:**		
• Formulate and test a hypothesis using observations, experiments, and theoretical and mathematical models.	Plants in Our World Activity 5 Pond Life Activity 12 Lenses and Mirrors Activity 12 Fungi-Small Wonders Activity 7 Flight and Rocketry Activity 5 *Reinforcement* Newton's Toy Box Activity 12 *Reinforcement*	T.G. Pages 31-36; T.G. Pages 81-86; T.G. Pages 89-94; T.G. Pages 45-50; T.G. Page 63; T.G. Page 65;
• Use questioning, response to criticism, and open communication when defending a conclusion.	Animal Behavior Activity 7 Solar Energy Activity 11 Famous Scientists Activity 7 Lenses and Mirrors Activity 12	T.G. Pages 45-52; T.G. Pages 71-76; T.G. Pages 65-76; T.G. Pages 89-94;
• Evaluate the results of scientific investigations, experiments, observations, theoretical models, and the explanations proposed by other scientists.	Animal Behavior Activity 11 Solar Energy Activity 12 Earth Processes Activity 14	T.G. Pages 71-76; T.G. Pages 77-82; T.G. Page 112, "Connections"

		Science Challenge;
	Famous Scientists Activity 11	T.G. Page 113, "Connections" *Science and Language Arts;*
• Distinguish between scientific fact and scientific theory.	Dinosaurs and Fossils (Recommended for Grades 3-4) Activity 1	T.G. Page14, "Connections" *Science Challenge;*
	Fungi-Small Wonders Activity 12	T.G. Pages 75-80;
	Chemical Interactions Activity 4	T.G. Page36, "Connections" *Science Extension;*
	Weather Forecasting Activity 11	T.G. Pages 81-86;
	Astronomy Activity 12	T.G. Pages 101-110;
	Earth Processes Activity 1	T.G. Pages 7-14;
8.8.3 By the end of eighth grade, students will develop an understanding of the history of science. **Student demonstration:**		
• Research and report on the difficulties experienced by a scientific innovator who had to overcome flawed, commonly held beliefs of his/her time to reach conclusions that we now take for granted.	Small Things and Microscopes Activity 9	T.G. Page 60 "Connections" *Science and Social Studies;*
	Famous Scientists Activity 3 & 4	T.G. Pages 29-44;