

MSAD #54 Science Curriculum

Content Area: Science
 Unit: Unifying Themes

Grade: Grade 2
 MLR Span: PreK-2

MLR Content Standard: A: Unifying Themes

Students apply the principles of systems, models, constancy and change, and scale in science and technology.

*Assessment

Unifying Themes:	MLR Performance Indicators	MSAD #54 Objectives	Instructional Resources/Activities
A1 Systems	1. Students recognize that parts work together, and make up whole man-made and natural objects. a. Explain that most man-made and natural objects are made of parts. b. Explain that when put together, parts can do things they could not do separately.	Students will:	Standards A-C are unifying themes and should be embedded in standards D and E. Please work to accomplish these objectives when you complete the units in standards D and E. a1-b1. Balance and Motion Unit
A2 Models	2. Students identify models and the objects they represent to learn about their features. a. Describe ways in which toys and pictures are like the real things they model. b. Use a model as a tool to describe the motion of objects or the features of plants and animals.	Students will	a1-b1. Balance and Motion Unit b1. Insects Unit

<p>A3 Constancy and Change</p>	<p>3. Students observe that in the physical setting, the living environment, and the technological world some things change over time and some things stay the same.</p> <p>a. Describe the size, weight, color, or movement of things over varying lengths of time and note qualities that change or remain the same.</p>	<p>Students will:</p>	<p>a1. Balance and Motion Unit</p> <p>a1. Insects Unit</p>
<p>A4 Scale</p>	<p>4. Students observe differences in scale.</p> <p>a. Compare significantly different sizes, weights, ages, and speeds of objects.</p>	<p>Students will:</p>	<p>a1. Balance and Motion Unit</p>

MSAD #54 Science Curriculum

Content Area: Science
Unit: Skills & Traits

Grade: Grade 2
MLR Span: PreK-2

MLR Content Standard: B. The Skills and Traits of Scientific Inquiry And Technological Design

Students plan, conduct, analyze data from and communicate results of in-depth scientific investigations; and they use a systematic process, tools, equipment, and a variety of materials to create a technological design and produce a solution or product to meet a specified need.

Skills and Traits	MLR Performance Indicators	MSAD #54 Objectives	Instructional Resources/Activities
<p>B1 Skills and Traits of Scientific Inquiry</p>	<p>1.Students conduct and communicate results of simple investigations.</p> <p>a.Ask questions and make observations about objects, organisms and events in the environment.</p> <p>b.Safely conduct simple investigations to answer questions.</p> <p>c.Use simple instruments with basic units of measurement to gather data and extend the senses.</p> <p>d.Know what constitutes evidence that can be used to construct a reasonable explanation.</p> <p>e.Use writing, speaking, and drawing to communicate investigations and explanations.</p>	<p>Students will:</p>	<p>a1-e1. All Units</p>

<p>B2 Skills and Traits of Technological Design</p>	<p>2.Students use a simple design process and basic tools and materials to solve a problem or create a product.</p> <p>a.Describe a design problem in their own words.</p> <p>b.Propose a way to build something or cause something to work better.</p> <p>c.Use suitable tools, materials, safe techniques, and measurements to implement a proposed solution to a design problem.</p> <p>d.Judge how well a product or design solved a problem.</p> <p>e.Present a design or solution to a problem using oral, written, or pictorial means of communication.</p>	<p>Students will</p>	<p>a1-e1. All units</p>
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MSAD #54 Science Curriculum

Content Area: Science
 Unit: Scientific & Technological Enterprise

Grade: Grade 2
 MLR Span: PreK-2

MLR Content Standard: **C. The Scientific and Technological Enterprise**
 Students understand the history and nature of scientific knowledge and technology, the processes of inquiry and technological design, and the impacts science and technology have on society and the environment.

Scientific & Technological Enterprise	MLR Performance Indicators	MSAD #54 Objectives	Instructional Resources/Activities
<p>C1 Understandings of Inquiry</p>	<p>1.Students describe the use of questions and accurate communication in scientists’ work.</p> <p>a.Describe how scientific investigations involve asking and answering a question.</p> <p>b.Point out the importance of describing things and investigations accurately so others can learn about them or repeat them.</p>	<p>Students will</p>	<p>a1. – b1. All Units</p>
<p>C2 Understandings About Science and Technology</p>	<p>2.Students recognize that people have always engaged in science and technology and that there is a difference between the natural and designed worlds.</p> <p>a.Recognize that people have always had problems and invented tools and ways of doing things to solve problems.</p> <p>b.Distinguish between objects that occur in nature</p>	<p>Students will</p>	<p>a1 and b1. All Units</p>

	and objects that are man-made.		
C3 Science, Technology, and Society	No performance indicator.		
C4 History and Nature of Science	No performance indicator.		

MSAD #54 Science Curriculum

Content Area: Science
Unit: Physical Setting

Grade: Grade 2
MLR Span: PreK-2

MLR Content Standard: **D. The Physical Setting**

Students understand the universal nature of matter, energy, force, and motion and identify how these relationships are exhibited in Earth Systems, in the solar system, and throughout the universe.

Physical Setting	MLR Performance Indicators	MSAD #54 Objectives	Instructional Resources/Activities
D1 Universe and Solar System	<p>1.Students describe the movement of objects across the sky, as seen from Earth.</p> <p>a.Describe how the sun and moon seem to move across the sky.</p> <p>b.Describe the changes in the appearance of the moon from day to day.</p>	<p>Students will</p> <p>a1. graph weather observations taken over a period of a month.</p> <p>a2. look for patterns in changes in weather condition, precipitation, and temperature throughout the seasons.</p> <p>b1. monitor and record the changing appearance of the moon over a month.</p> <p>a3 and b2. use a calendar to monitor daily weather and record sunrise/sunset times once a week.</p>	<p>a1-a2.See FOSS module (Air and Weather) TM guide for instructional activities, strategies, and assessments.</p>
D2 Earth	<p>2.Students describe the Earth's weather and surface materials and the different ways they change.</p> <p>a.Explain that the sun warms the air, water, and land.</p>	<p>Students will</p> <p>a1 and b1. graph weather observations taken over a period of a month.</p> <p>a2 and b2. look for patterns in changes in weather condition,</p>	<p>a1-a2, b1-b4. See FOSS module (Air and Weather) TM guide for instructional activities, strategies, and assessments.</p>

	<p>b. Describe the way in which weather changes over months.</p> <p>c. Describe what happens to water left in an open container as compared to water left in a closed container.</p>	<p>precipitation, and temperature throughout the seasons.</p> <p>b3. monitor and record nightly weather.</p> <p>b4. observe the evidence of the effects wind speed, wind direction and wind strength.</p>	
<p>D3 Matter and Energy</p>	<p>3. Students use observable characteristics to describe objects and materials and changes to physical properties of materials.</p> <p>a. Describe objects in terms of what they are made of and their physical properties.</p> <p>b. Describe changes in properties of materials when mixed, heated, frozen, or cut.</p>	<p>Students will</p> <p>a1. communicate observations and comparisons of balanced objects, using precise vocabulary.</p> <p>a2. explore variables that influence the spinning of tops, zoomers, and twirlers.</p> <p>a3. observe and compare rolling systems with different-sized wheels.</p>	<p>a1-a3. See FOSS module (Balance and Motion) TM guide for instructional activities, strategies, and assessments.</p>
<p>D4 Force and Motion</p>	<p>4. Students describe how objects move in different ways.</p>	<p>Students will</p>	

	<p>a. Describe different ways things move and what it takes to start objects moving, keep objects moving, or stop objects.</p> <p>b. Give examples of things that make sound by vibrating.</p>	<p>a1. discover and explore numerous ways to balance different materials.</p> <p>a2. explore variables that influence the spinning of tops, zoomers, and twirlers.</p>	<p>a1-a2. See FOSS module (Balance and Motion) TM guide for instructional activities, strategies, and assessments.</p> <p>b. Teacher directed extension to meet this standard should be developed (GEMS Bees kit.)</p>
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MSAD #54 Science Curriculum

Content Area: Science
Unit: The Living Environment

Grade: Grade 2
MLR Span: Prek-2

MLR Content Standard: E. The Living Environment

Students understand that cells are the basic unit of life, that all life as we know it has evolved through genetic transfer and natural selection to create a great diversity of organisms, and that these organisms create interdependent webs through which matter and energy flow. Students understand similarities and differences between humans and other organisms and the interconnections of these interdependent webs.

Living Environment	MLR Performance Indicators	MSAD #54 Objectives	Instructional Resources/Activities
E1 Biodiversity	<p>1. Students describe similarities and differences in the observable behaviors, features, and needs of plants and animals.</p> <p>a. Describe similarities and differences in the way plants and animals look and the things that they do.</p> <p>b. Describe some features of plants and animals that help them live in different environments.</p> <p>c. Describe how organisms change during their lifetime.</p>	<p>Students will</p> <p>a1. observe the similarities and differences in the larvae, pupae, and adults of insects that go through simple and complete metamorphosis.</p> <p>b1. will experience some of the great diversity of forms in the animal kingdom.</p> <p>c1. observe the behaviors of insects at different stages of their life cycle.</p>	<p>a1-c1. See FOSS module (Insects) TM guide for instructional activities, strategies, and assessments.</p> <p>a1-c1. See GEMS (Bees) kit TM guide for instructional activities, strategies, and assessments.</p>
E2 Ecosystems	<p>2. Students understand how plants and animals depend on each other and the environment in which they live.</p> <p>a. Explain that animals use plants and other animals for food, shelter, and nesting.</p>	<p>Students will</p> <p>a1. understand and provide for the needs of insects (air, water, food, and space).</p>	<p>a1. See FOSS module (Insects) TM guide for instructional activities, strategies, and assessments.</p>

	<p>b. Compare different animals and plants that live in different environments of the world.</p>	<p>b1. compare different animals that live in different environments of the world</p>	<p>b1. See GEMS (Bees) kit TM guide for instructional activities, strategies, and assessments. a1-b1. Nonfiction trade books: Venn diagrams that compare the structures of different animals in different kingdoms.</p>
<p>E3 Cells</p>	<p>3. Students describe parts and wholes of living things, their basic needs, and the structures and processes that help them stay alive.</p> <p>a. List living things and their parts.</p> <p>b. Explain that parts of living things are so small we can only see them using magnifiers.</p> <p>c. List the basic things that most organisms need to survive.</p> <p>d. Identify structures that help organisms do things to stay alive.</p>	<p>Students will</p> <p>a1. label the parts of an insect diagram.</p> <p>a2 and d1. observe the similarities and differences in the larvae, pupae, and adults of insects that go through simple and complete metamorphosis.</p> <p>c1 and d2. understand and record the structures that different types of insects have and need to survive.</p>	<p>a1- d2. See FOSS module (Insects) TM guide for instructional activities, strategies, and assessments.</p> <p>a1-d2. Observe insects using magnifying glasses/ microscopes.</p> <p>a1-d2. Illustrations of insects.</p>
<p>E4 Heredity and Reproduction</p>	<p>4. Students describe the cycle of birth, development, and death in different organisms and the ways in which organisms resemble their parents.</p> <p>a. Give examples of how organisms are like their parents and not like them.</p> <p>b. Describe the life cycle of a plant or animal (including</p>	<p>Students will</p> <p>a1. will observe how the organism resembles a parent.</p> <p>b1. become familiar with the life sequences of different</p>	<p>a1. See FOSS module (Insects) TM guide for instructional activities, strategies, and assessments.</p> <p>a1. Science observation notebooks.</p>

<hr/> E5 Evolution	<p>being born, growing, reproducing, and dying).</p> <hr/> <p>5.Students describe similarities and differences between present day and past organisms that helped the organisms live in their environment.</p> <p>a.Describe some organisms' features that allow the organisms to live in places others cannot.</p> <p>b.Explain how some kinds of organisms that once lived on Earth have completely disappeared, although they were similar to some that are alive today.</p>	<p>insects.</p> <hr/> <p>Students will</p>	<hr/>
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