

Unit: Changes in Matter

Essential Question: What Changes Do I Observe Around Me?

VOCABULARY: solid, liquid, change, heat, energy, flow, property, mixture, temperature, claim, evidence, data, fair test, dissolve

National Standards or Core Standards

- Macroscopic states and characteristic properties of matter depend on the type, arrangement and motion of particles at the molecular and atomic scales.
- The same material can exist as a solid or a liquid depending on temperature.
- Solids have a definite shape while liquids flow to the lowest level in the container.
- Objects can be described and sorted by physical properties.
- The study of the designed world is the study of designed systems, processes, materials and products and of the technologies and the scientific principles by which they function.
- Everything that people make, needs to be designed and needs engineering processes to make them. Designs can change over time to make things work better. People design and make things to meet their needs and desires.

Guiding Questions	Big Ideas of Science	Assessments of Knowledge & Skills	Teaching Resources & Technology
<p>How are solids and liquids alike and different? What happens when something dissolves? What is a mixture? How can we separate mixtures? How are changes alike and different? How can we create a recipe for change?</p>	<p>Matter has distinct properties.</p> <ul style="list-style-type: none"> • Matter can exist as a solid or a liquid, depending on the temperature. • Solids have a definite shape. • Liquids take the shape of the container. • When something dissolves it does not disappear. • Materials in mixtures keep their properties. (ie: In a salad, one can distinguish the ingredients: tomatoes, lettuce, cucumbers, carrots.) • Matter changes. <ul style="list-style-type: none"> • Changes that happen very fast or very slowly are sometimes hard to see. • Changing temperature can cause a substance to change form but it can still remain the same substance. (e.g. melting and freezing) 	<p>Formative Assessments</p> <ul style="list-style-type: none"> • Journal entries with “change” observations. • Scientific Drawings of changes with captions. <p>Formative Understandings</p> <ul style="list-style-type: none"> • Conduct fair tests • Record data • Analyze data • Propose design based upon analysis of data • Support ideas with evidence from data 	<p>CORE MATERIALS: The STC Program: Changes unit STC Planner KIDS Discover: Changes</p> <p>National Geographic Literacy States of Matter Solids, Liquids, & Gases in Cities Solids, Liquids, & Gases at Campsites Solids, Liquids, & Gases at the Beach Postcards from My Trip Ranger for a Day Shell Shapes</p>

Unit: Habitats**Essential Question:** What evidence can we find to support our claim that habitats change over time?**VOCABULARY:** habitat, organism, structure (part), function (job), basic needs, depend, claim, evidence, prediction, fair test, observe, record, data, change**National Standards or Core Standards**

- Organisms have structures and functions that facilitate their life processes, growth, and reproduction.
- Molecules to Organisms/ Structures and Processes Organisms: populations of organisms obtain necessary resources from their environment which includes other organisms and physical factors.
- Ecosystems: Interactions, Energy, and Dynamics

Guiding Questions	Big Ideas of Science	Assessment of Knowledge and Skills	Teaching Resources & Technology
<p>How do the structures (external parts) of organisms help them meet their basic needs?</p> <p>How do organisms get and use what they need to live and grow?</p> <p>Where do organisms get what they need to live?</p> <p>How do organisms depend on one another and their environment?</p> <p>How do habitats change? (support with evidence)</p>	<p>Organisms have basic parts that help them meet their needs</p> <ul style="list-style-type: none"> •All living things have various external parts. •Different animals use their body parts in different ways to see, hear, grasp objects, seek, find and take in food and move from place to place. •All living things grow and respond to their environment. •Animals and plants meet their needs for survival in different ways. •Plants and animals both need to take in water, and animals need to take in food. In addition, plants need light and minerals. <p>Organisms depend on each other and their environment</p> <ul style="list-style-type: none"> •Animals depend on plants and other animals for food. •Plants depend on air, water and light to grow. <p>Living and many nonliving materials cycle over time</p> <ul style="list-style-type: none"> •Many materials from living things are used again by other living things. <p>Habitats continuously change</p> <ul style="list-style-type: none"> •Changes in habitats can occur slowly or rapidly. •Scientists use their carefully recorded observations to look for evidence of change 	<p>Formative Understandings</p> <ul style="list-style-type: none"> • Identify structures (parts) and their functions • Identify basic needs and tell ways animals and plants depend on each other • Explain what a fair test is • Explain what you would change or keep the same in a test • Record data • Use data to determine ideal habitat • Observe and record change over time • Make a claim and give evidence • Create scientific drawings in journals/notebooks 	<p>CORE MATERIALS:</p> <p>National Geographic Science:</p> <ul style="list-style-type: none"> •Habitats Classroom Set •Gr 1 Science Methods & Process Skills Big Book •Gr 1 Science Methods & Process Skills Teacher's Guide <p><i>Possible sources of authentic data collection and sharing:</i></p> <ul style="list-style-type: none"> •Bird count/Audubon Society •Our Tree Named Steve-adopting a tree as a habitat

UNIT: Weather and Air

Essential Question: What changes do I observe around me?

VOCABULARY: weather, wind, snow, change, temperature, pattern, measure, record, thermometer, cloud, fair test, claim, evidence

National Standards or Core Standards

• Weather and climate are regulated by complex interactions among the components of Earth's system, and change over varying time scales.

Guiding Questions	Big Ideas of Science	Assessments of Knowledge and Skills	Teaching Resources & Technology
<p>What is weather?</p> <p>How can we collect data to provide evidence that weather changes?</p> <p>How can we represent data?</p> <p>How can we use data to make predictions?</p> <p>How can we use our observations of clouds to make predictions?</p> <p>What are the properties of air?</p> <p>How can we design and build air catching devices?</p>	<p>Weather is the condition of sun, wind, snow or rain and temperature in a particular region at a particular time.</p> <ul style="list-style-type: none">• We measure and record data to describe weather conditions.• A thermometer is used to measure temperature.• Temperature can be measured in celsius and fahrenheit.• Weather changes from day to day.• Similar weather patterns occur year to year.• There are seasonal variations in weather.• Cloud formations are associated with weather conditions. <p>Air has distinct properties.</p> <ul style="list-style-type: none">• Air takes up space.• Air can exert pressure.• Air can be captured. (i.e., wind sock, parachute)	<p>Formative Understandings</p> <ul style="list-style-type: none">• Collect weather data• Record weather data• Graph weather data• Measure temperature in celsius and fahrenheit• Associate clouds with weather conditions <ul style="list-style-type: none">• Conduct fair tests to catch air• Use test results to propose designs• Build air catching device• Test air catching device• Evaluate results• Propose improvements	<p><i>CORE MATERIALS:</i></p> <p>FOSS Weather and Air</p> <p>National Geographic</p> <p>Weather & Seasons</p> <p>A Windy Place</p> <p>A Warm Place</p> <p>A Snowy Place</p> <p>Sometimes It's Windy, Snowy, Rainy, or Sunny</p> <p>What Can Clouds Bring?</p> <p>All Kinds of Snow</p>

Guiding Questions	Scientific and Engineering Practices	CONNECTED/ 21st Century Learning
<p>What process do you use to invent?</p> <p>How can I design and carry out a fair test to investigate the relationship of force to motion?</p> <p>Why do scientists ask questions?</p> <p>How do scientists use drawings and/or models to represent ideas and concepts?</p> <p>Why is mathematics a feature of science?</p> <p>How do scientists make a prediction?</p> <p>How do scientists collect analyze and interpret data/evidence?</p> <p>Why do scientists conduct fair tests?</p> <p>Why do scientists use graphs and tables to represent data?</p> <p>What is the language of science?</p>	<p>Scientists create and draw design plans using background knowledge.</p> <p>Scientists build and test their prototypes.</p> <p>Scientists analyze their results.</p> <p>Scientists use the results to improve or begin a new design.</p> <p>Scientists begin a fair test with a question.</p> <p>Scientists make predictions based upon their observations, data collection, experiences, & things they read.</p> <p>Scientists only change one thing in a fair test.</p> <p>Scientists conduct fair tests to determine which factor causes a change.</p> <p>Scientists develop a plan to follow.</p> <p>Scientists observe, record, measure, and analyze data to acquire evidence.</p> <p>Scientists use numbers and measurements to record and represent data.</p> <p>Scientists use tables and graphs to identify patterns and relationships within data.</p> <p>Scientists share their findings with others.</p> <p>Scientists construct drawings and/or models to aid explanation of ideas and concepts.</p> <p>Scientists embrace unexpected results.</p> <p>Scientists ask questions so they can learn about their world.</p> <p>The language of science is <i>claims and evidence</i>. Scientists develop claims based on evidence. The scientific community demands that claims are based on evidence.</p>	<p>Characteristics of Successful Learners/ Learning Process - inquiry project to design insulating device</p> <p>Collaboration- small group collaborative work for labs and analysis of data, peer feedback, Project-based learning</p> <p>Technology-SMART board for compiling data, Document Camera</p> <p>Communication- written proposals about improving devices (innovation)</p> <p>Teaching Styles, Learning Process, and Learning environment- Field trips for authentic data collection, math-science integration for data analysis</p>