



Greenwich Public Schools Curriculum Overview

Grade 3: Science

Families as Partners in Learning

In Grade 3, instructional time is focused on using the properties of matter to identify and organize them by their physical and chemical properties; analysis and interpretation of data from maps to identify the patterns in the change of Earth's landscape over time; and adaptation of organisms to changes in their environment over time.

All grade 3 units of study are directly aligned with the approved Next Generation Science Standards

The GPS Science Program uses the practice of inquiry-based science instruction, applying science concepts to real-world scenarios. Students are required to communicate results and their process to teachers and peers, using a variety of methods to demonstrate their learning and construct viable arguments and critique the reasoning of others, engaging in evidence-based arguments.

Unit	Student Learning Expectations
<p>Unit 1: Science Notebook Launch</p> <p>Enduring Understandings:</p> <ul style="list-style-type: none">• Students learn about the world around them through asking questions and making observations.• Data analysis, interpretation and evaluation help students to apply science concepts in multiple contexts.	<p>Students will Do:</p> <ul style="list-style-type: none">• Students will make observations and ask questions about the world around them.• Students will learn how to design and conduct simple investigations.• Students will learn how to organize, analyze, interpret, and present their data.• Students will model a natural phenomena.• Students will draw a conclusion and support their claims with evidence. <p>Click Next Generation Science Standards to learn more.</p>



<p>Unit 2: Applied Chemistry</p> <p>Enduring Understandings:</p> <ul style="list-style-type: none"> Materials can be identified and organized by their physical and chemical properties. Physical and chemical properties of materials make them more or less effective for a given purpose. 	<p>Students will Do:</p> <ul style="list-style-type: none"> Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that forms new substances.] Make observations and measurements to identify materials based on their properties. [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] Conduct an investigation to determine whether the mixing of two or more substances results in new substances. <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> Developing and using models Planning and carrying out investigations
<p>Unit 3: Earth Materials</p> <p>Enduring Understandings:</p> <ul style="list-style-type: none"> There are patterns in the change of landscape over time. 	<p>Students will Do:</p> <ul style="list-style-type: none"> Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. [Clarification Statement: Examples of evidence from patterns could include rock layers with shell fossils above rock layers with plant fossils and no shells, indicating a change from water to land over time; and, a canyon



	<p>with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.]</p> <ul style="list-style-type: none"> • Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. [Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.] • Analyze and interpret data from maps to describe patterns of Earth's features. [Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor as well as maps of the locations of mountains, continental boundaries, volcanoes and earthquakes.] • Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. • Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. • Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. <p>Science and Engineering Practices:</p> <ul style="list-style-type: none"> • Planning and carrying out investigations
<p>Unit 4: Plant/Animal Adaptations</p> <p>Enduring Understandings:</p> <ul style="list-style-type: none"> • Animals must adapt and respond to their environment in order to survive (this includes genetics and behavior). • Traits are inherited from parents and variations in traits provide advantages or disadvantages for survival. 	<p>Students will Do:</p> <ul style="list-style-type: none"> • Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] • Construct an argument that some animals form groups that help members survive. • Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] • Use evidence to support the explanation that traits can be influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]



- Change happens in the environment and has positive and negative effects.
- Plants and animals have unique life cycles including being born, growing and developing, and dying.

- Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]
- Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]
- Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.]
- Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.]

Science and Engineering Practices:

- Asking questions (for science) and defining problems (engineering)
- Developing and using models