

Exploring Phenomena or Engineering Problems - Planning and Carrying Out Investigations

<p>1.2.1 Students will be able to design and conduct investigations in the classroom, laboratory, and/or field to test students' ideas and questions, and will organize and collect data to provide evidence to support claims the students make about phenomena.</p>	
K	<p>0P.1.2.1.1 Collect and organize observational data to determine the effect of sunlight on Earth's surface. Examples of Earth's surface may include sand, soil, rocks, and water. Data may be organized in pictographs or bar graphs. Examples of observations may include heating, growth of plants, melting of snow, and shadows.</p>
K	<p>0L.1.2.1.2 Make observations of plants and animals to compare the diversity of life in different habitats. Emphasis is on the diversity of living things in a variety of different habitats and patterns across those habitats.</p>
1	<p>1P.1.2.1.1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. Examples of vibrating materials that make sound may include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate may include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.</p>
2	<p>2P.1.2.1.1 Plan and conduct an investigation to describe how heating and cooling affects different kinds of materials based upon their observable properties. Examples of materials may include metals, cloth, plastics, styrofoam, wood and glass.</p>
3	<p>3P.1.2.1.1 Plan and conduct a controlled investigation to determine the effect of placing objects made with different materials in the path of a beam of light. Emphasis is on conducting fair tests by controlling variables. Examples of materials may include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).</p>
3	<p>3L.1.2.1.2 Plan and conduct an investigation to determine how amounts of sunlight and water impact the growth of a plant. Emphasis of the practice is on conducting fair tests and using data to support explanations. Examples of investigations may include simple experiments with fast growing plants.</p>

4	4E.1.2.1.1 Make observations and measurements to provide evidence of the effects of weathering or the rate of erosion by the forces of water, ice, wind, or vegetation.* Emphasis is on predicting the rate of change when variables are changed. Examples of variables to test may 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.
4	4E.1.2.1.2 Plan and carry out fair tests in which variables are controlled and failure points are considered to improve a model or prototype to prevent erosion.* Examples of prototypes to prevent erosion include retaining walls, wind breaks, use of shrubs or other vegetation, and drainage systems.
5	5P.1.2.1.2 Conduct an investigation to determine whether the mixing of two or more substances results in new substances. Emphasis is on conducting fair tests by controlling variables.
5	5P.1.2.1.3 Evaluate appropriate methods and tools to identify materials based on their properties prior to investigation. Examples of materials to be identified may include baking soda and other powders, metals, minerals, and liquids. Examples of properties may include color, hardness, reflectivity, electrical conductivity, ability to conduct heat, response to magnetic forces, and solubility; density is not intended as an identifiable property.
5	5L.1.2.1.4 Plan and conduct an investigation to obtain evidence that plants get the materials they need for growth chiefly from air and water. Examples of plants may include aquatic plants that grow without soil. Examples of observational evidence may include growth patterns for plants grown in different environments.