



Southmoreland School District

8th Grade Physical Science Curriculum Overview

Physical Science 8 Overview:

This is a combination inquiry science and traditional science program of learning through SEPUP (the Science Education for Public Understanding Program) and a variety of textbooks and resources. SEPUP is an instructional model that integrates scientific inquiry with a thematic approach for teaching science in the context of personal and social issues. To motivate students, a personal or societal issue provides a framework for each SEPUP unit, and students' questions are addressed in the subsequent series of activities. This issue then provides a context for the activities to follow. Each activity begins with a challenge, a specific question or goal. To tackle the challenge, students collect evidence in guided or open-ended investigations. Reading activities provide background information, extend investigations, and help students make connections. Students also run experiments, collect data, and analyze their evidence, all of which builds scientific knowledge to help them address the central issue. At the end of a unit, students use their evidence and new knowledge in a culminating activity or activities that require them to reach a decision or to solve the original problem. Through these activities, they learn how science affects peoples' lives.

Module Titles:

Module 1: Studying Substances Scientifically and Introduction to Matter

Module 2: Interactions with matter

Module 3: Force and Motion

Module 4: Energy and Work

Module Overviews:

Module 1: Studying Substances Scientifically and Introduction to Matter

Students discover physical and chemical properties through hands-on experience.

Density, one of the properties, is also explored through mathematics as students develop a working definition. Then we move into identifying unknown substances through their new found skills while introducing physical and chemical changes. States and changes of matter are explored more in-depth with a new found understanding of the structure of matter as the atomic structure is introduced along with the history and the organization of matter with the Periodic Table and its history. Finally matter is categorized into elements, compounds and mixtures to allow for a deeper picture of the manifestation of energy into form. Throughout the unit laboratory Safety, and how to handle hazardous materials are reviewed.



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Module 2: Interactions with matter

Conservation of Mass is used to transition into the next module giving reason as to why matter isn't lost and how we categorize the various avenues through which this happens. To do this they will learn different types of compounds (including acids and bases and organic compounds), different types of chemical bonding, chemical reactions types and rates of reactions. This unit ends with balancing chemical equations, and atomic energy. Throughout the unit we explore choices that scientists and engineers make when designing new products.

Module 3: Force and Motion

Through the exploration of vehicle safety many of the force and motion concepts are studied. These topics are force and friction, and Newton's laws. Then with several labs forces in fluids and gas laws are introduced. Experimental design is used to study work and simple machines. Finally an introduction to gravity and motion and the law that governs their relationship is learned. Mathematics, one of our tools of science, is used often throughout this unit.

Module 4: Energy and Work

Through the excitement of roller coasters students will study kinetic and potential energy. Electric power plants help the students study energy transfer and transformation, and other types of energy. Throughout both students discover energy efficiency, energy, conservation of energy, and energy resources. Finally students will explore heat and heat technology, along with sound and light through a variety of mini labs.