



Southmoreland School District

Fourth Grade Science Curriculum Overview

Fourth Grade Science Overview:

The fourth grade science curriculum is divided into three modules: (1) Life Science, (2) Physical Science, and (3) Earth and Space Science. Fourth grade students develop and practice classifying, analyzing, observing, categorizing, and record keeping skills to demonstrate grade-appropriate proficiency in planning and carrying out investigations and developing and using models. They experience science through the active construction of ideas while developing inquiry skills that are central to helping them think as scientists. Students investigate the world around them by asking questions that help develop scientific concepts, facts, and expand their vocabulary. In addition, students formulate predictions based on observed cause and effect relationships and structure and function as organizing concepts for these disciplinary core ideas. The students demonstrate scientific reasoning and logic by participating in scientific activities, using scientific language and tools, and representing data in tables and graphical displays. They dive into more complex studies and develop deeper understandings of scientific concepts from previous years as they actively investigate and conduct scientific inquiry to solve problems. Students develop an understanding of the purpose of the engineering design process and how some failed designs are turned into successful technology. Finally, students extend their scientific knowledge and communicate their learning as they describe and summarize scientific processes, both orally and in writing, as a result of the inquiry process. The Pennsylvania Integrated Standards for Science, Environment, Ecology, Technology and Engineering (Grades K-5) guide the elementary level study of the natural and human-made world through inquiry, problem-solving, critical thinking, and authentic exploration. The integration of these disciplines in the elementary standards highlights the interconnectedness of scientific study, the integral relationship between humans and the environment, and the importance of integrating the teaching and learning of science with other disciplines.

Module Titles:

Module 1: Life Science

Module 2: Physical Science

Module 3: Earth and Space Science

Module Overviews:

Module 1: Life Science

The goal of this module is for students to explore the structures and processes that transform molecules into organisms. Fourth grade students construct an argument that plants and animals have internal and external structures that function to support



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survival, growth, behavior, and reproduction. They use a model to describe how animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. Finally, students develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Module 2: Physical Science

The goal of this module is for students to construct an explanation of the relationship between energy and waves. Fourth grade students use evidence to construct an explanation relating the speed of an object to the energy of that object. They make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. Students ask questions and predict outcomes about the changes in energy that occur when objects collide. In addition, students apply scientific ideas to design, test, and refine a device that converts energy from one form to another. The students develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. They develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. Finally, students generate and compare multiple solutions that use patterns to transfer information.

Module 3: Earth and Space Science

The goal of this module is for students to identify Earth, its systems, and its place within the universe. Fourth grade students identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. They communicate observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. Students analyze and interpret data from maps to describe patterns of Earth's features. In addition, students combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. Finally, students generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.