



Friends School Haverford Science Curriculum

Science is taught within the classroom, the well-equipped laboratory, and the campus itself. The program is based on National Science Education Standards, actively guided by students' inquiry. Each year students extend their ability to observe, question, predict, test results and draw conclusions.

First graders begin the year "being scientists" as they practice skills of observing, describing, and wondering about the world around them. Hands-on explorations in the classroom and outdoors provide opportunities for students to sort, compare, test, keep records, use models and tools, and interpret evidence. They'll examine properties of solids, liquids and gases; they'll investigate air, water, and weather. They'll learn about similarities and differences in living things and how various organisms, including humans, get the things they need to survive and grow.

In **second grade** students explore natural plant dyes. They observe, learn about and appreciate plants as they turn natural wool into exciting colors (students use their wool in art class to weave). Then students dig into a study of soil: what it's made of, how it's formed, what lives in it, and why it is so important. They observe and experiment with changes in properties of natural and human-made materials, and learn how characteristics of living things help them survive. Throughout the year they'll develop skills of focused observation and accurate description, careful testing, analyzing information, and solving problems.

Third grade scientists gain experience investigating scientific questions as they propose and conduct "fair tests," collect and analyze data and form conclusions based on evidence. Practicing careful lab techniques, they develop their skills of predicting, measuring and graphing and apply their knowledge to solve problems. Students learn about inventors and the skills they use to create new inventions. Students challenge themselves to create new inventions and design and build wind cars. Students investigate earth materials, focusing on rocks and minerals as the building blocks of our planet. They compare physical and chemical changes in matter and experiment with acids and bases. Their study of plant growth and development includes the role of pollinators and the importance of interdependence in biological communities.

After honing the inquiry skills of developing and testing questions, **fourth graders** explore interactions between land, water, weather and living things. New Jersey and Pennsylvania geology, resources, history, and current daily life are the focus of our fall/winter unit in **fourth grade**. Water use and the unique habitats of the Pine Barrens are explored. We learn about coal mining and the impact upon Pennsylvania and follow up with a unit on electricity. Later in the year students discover the microscopic world and carry out their own original research as participants in the annual Science Symposium.

Fifth grade stresses investigative abilities. Thinking critically and logically about the relationship between explanation and evidence is important. Students develop greater competency at communicating experimental methods, following instructions, describing observations, summarizing results and reporting findings. Topics include simple machines, chemistry, space and flight, density, the human body and comparative anatomy.

Computer technology, including Internet access and SmartBoards, is used to collect and graph data, visit informative websites, take pictures and video of experiments, and create presentations in **Sixth grade**. Topics of study include space and flight (in partnership with 5th grade), ecology, energy, genetics, light and the eye, the importance of shade-grown Costa

Rican coffee, and worldwide bird migration and survival. Students learn about multiple intelligences and reflect upon their own areas of strengths. Students end the year with an Independent study in which they research a topic, design an experiment and share their results.

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