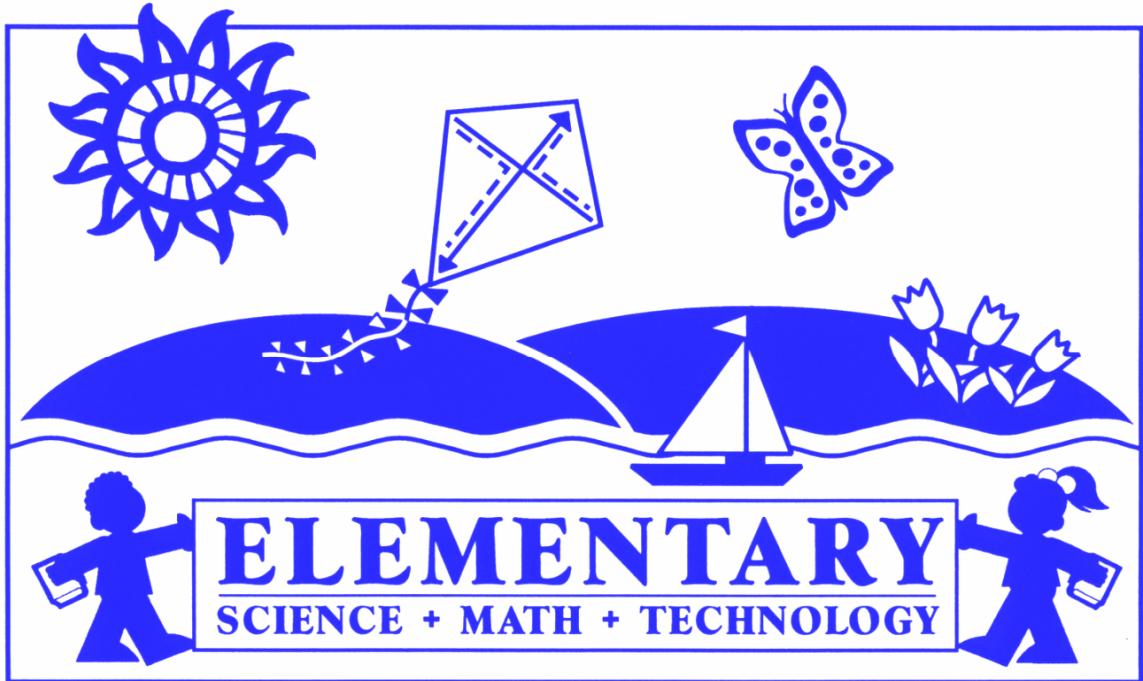


ELEMENTARY SCIENCE KITS



State Standard Science Program (SSSP)

Science Readiness Level—Grade Six
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Program Overview – SSSP

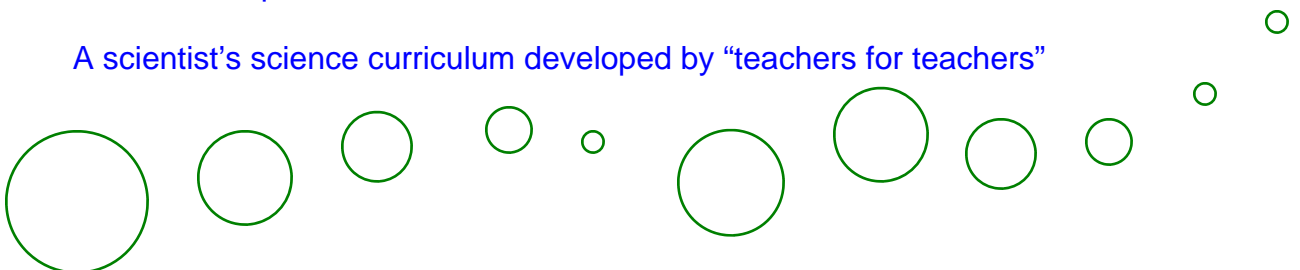
The State Standards Science Program and Assessments represent a major effort to improve the instruction of elementary science and to create a scientifically literate society.

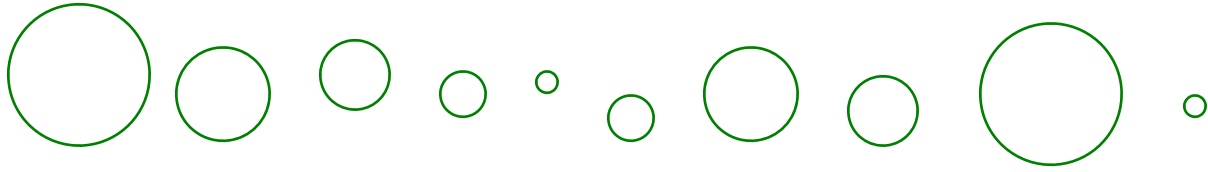
The program has available over 40 units of instruction correlated to the **New York State Math, Science and Technology Standards**. Students perform experiments and pursue ideas and investigations on their own initiative while the teacher provides individual attention and direction. Development of positive attitudes toward science by students is encouraged through hands-on activities.

Kits of material are fabricated and refurbished by Oneida BOCES. Schedule lists for individual teachers are generated by our Science Center. When kits are returned to us they are replenished and sent to teachers in other classrooms. The program's goal is to respond continually to suggestions by teachers. This input improves and enhances the kits' content. The kits also include performance and objective assessments which teachers may choose to use with their own tests, plus an additional post-test. This test can be used as an A.I.S. test for students who need more instruction on the kit's concepts or as a pre-test to assess students' prior knowledge before teaching the topic.

The State Standards Science Program is:

- Instructional support correlated to the **Science Core Curriculum Guides** and the **New York State Math, Science and Technology Standards** that emphasize inquiry process skills
- A hands-on interdisciplinary service that converts a regular classroom into a science laboratory while integrating other subjects in an active thinking process
- A change agent for improving the instruction of elementary science
- A flexible modular approach to elementary science with a teacher-friendly manual
- An integrated literacy unit providing trade books for teachers and/or students to read plus core vocabulary cards
- A listing of bibliographies, mediaographies and field trips which provide additional help to students and teachers
- A scientist's science curriculum developed by "teachers for teachers"





Science Readiness Level (developmentally appropriate for ages 4-6)

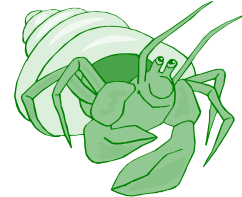
In the two life science kits **Changes in Plants** and **Changes in Frogs**, the children observe the life cycle of these living things. They will be able to describe if an object is non-living or living and how living things change and grow. In these kits the students will use simple tools such as a magnifying lens and a tape measure. A **Nutrition** kit has



now been added for students to learn about the different food groups and proper names of fruits and vegetables. The **Health and Safety** kit teaches children good health habits: proper hand washing, dental health, getting enough sleep and exercising. In addition, the students study fire and poison safety.

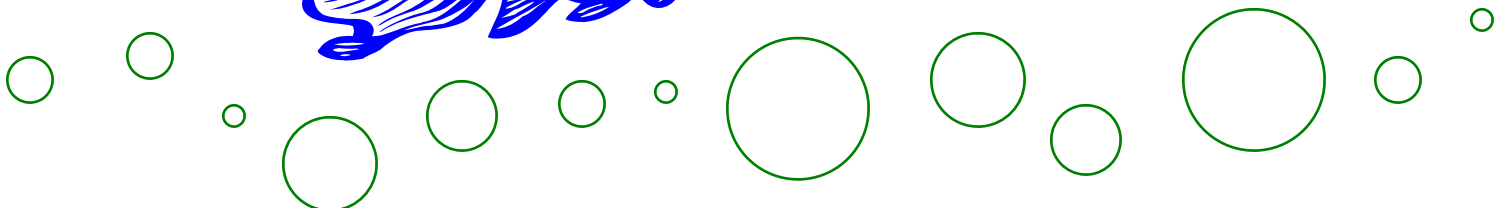
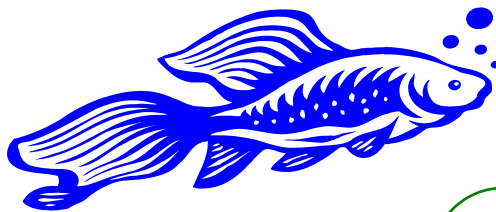
Kindergarten

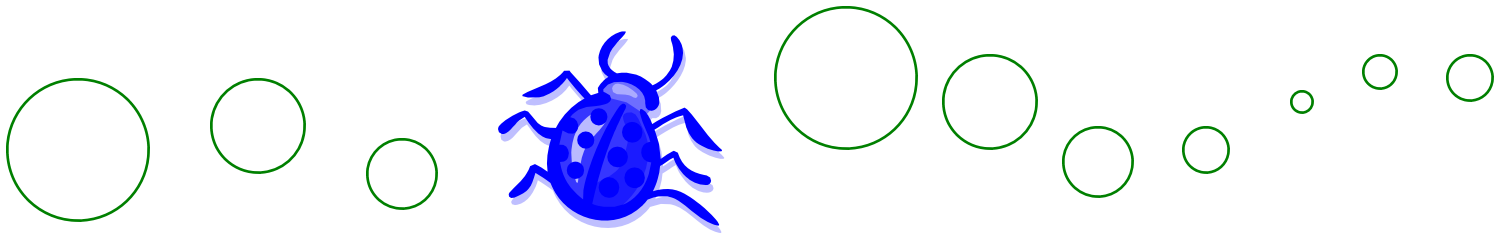
In the skills kit **Senses**, students observe and describe objects such as feathers, marbles, and rocks by using their five senses. The kit includes objects to smell such as coffee and cocoa plus sound boxes to listen to objects inside. In **Hermit Crabs Plus Plants**, students study hermit crabs by feeding, observing and caring for them. Also in this kit, students grow several plants. In the physical science unit **Seeing is Believing**, students investigate the properties of water. Also they learn how objects interact with light, and study the seasons, day/night, weather and other topics in Earth Science.



Grade 1

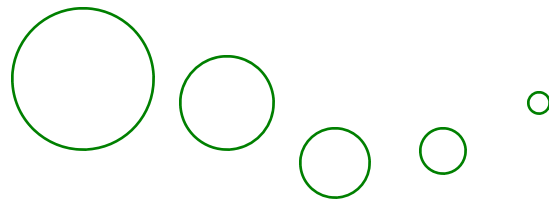
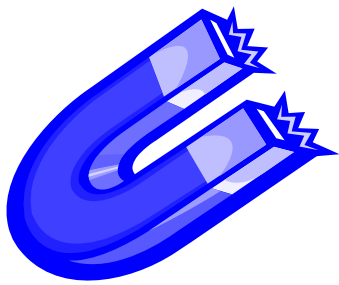
In the kits **Matching** and **Common Objects**, students observe and describe objects by color, shape, texture, size and weight. In the **Plant Characteristics** kit, students study plants and see how living things respond to stimuli. For Animal Life Science, classroom teachers have a choice of **Animal Characteristics** which contains the care of guinea pigs or the **Goldfish Kit**. By using either of these kits the students learn proper care of pets and other animals.





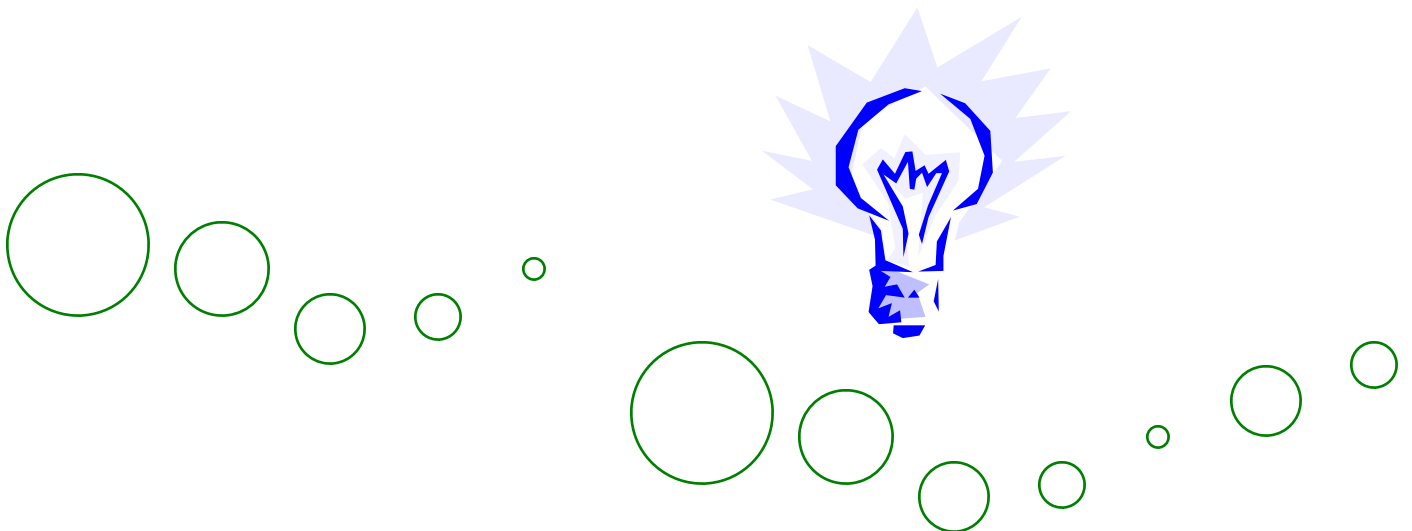
Grade 2

In the skills kit **Sorting**, students learn to use important math skills while using balances, and nonstandard units of measure (i.e. paper clips, washers, etc.), to weigh objects, plus take temperatures. In the unit **Life Stages**, students raise their own mealworms, ladybugs and pea plants. They learn humane treatment of living things and record data on the stages of growth and development of both plant and animal life cycles. For the **Physical Interactions** kit, students are introduced to the different forms of energy in our world and learn that all energy comes from the sun.



Grade 3

Students learn the important math skills of gathering and then graphing that information on a bar graph or pictograph. Students then apply these skills to a unit on weather in the **Gather, Graph, and Weather** kit. The life science kit is called **Life Cycles in Nature**. Students observe the process of metamorphosis and learn to care for and feed butterflies. Students practice humane treatment of insects and learn about how various types of plants have adapted to our environment. In physical science, students study the long-term effects of seasonal changes in the weather cycle. To emphasize technical design students construct simple electrical circuits and/or musical instruments in the kit **Exploring Changes in Our World**.





Grade 3 or 4

The kit **Buoyancy** can be taught in either grade 3 or 4. In this kit students explore the properties of water. Buoyancy is a very important property of water since this liquid covers so much of our Earth's surface. The children construct boats of plasticine and other materials using this kit. Also, students apply the basic geometry concepts of three dimensional shapes as they design and build their own bubblemakers.

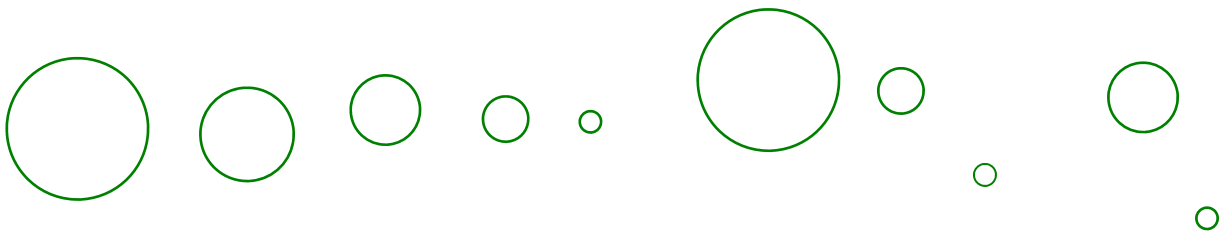


The **Sound** kit is an excellent optional elementary level technical design/science kit enabling students to build their own sound instruments while using math, science and technology skills. Before completing their own instruments, students learn about pitch, volume and frequency of sound. This kit also explains how we hear sounds and create them when we speak. Students gain experience in the math skills of measuring and estimating while developing their own sound instrument using sound cards as models. This kit strongly supports the New York State Elementary Level's technology goals.

Grade 4



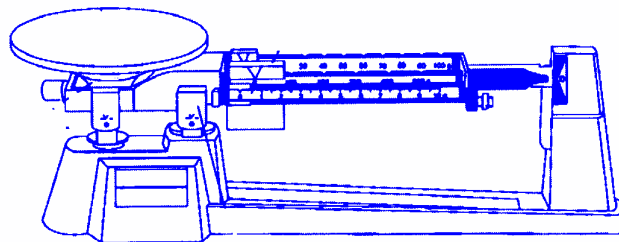
In the unit **Data-Data plus Astronomy**, students learn to read graphs and charts while learning the process skill of predicting and inferring while applying these skills to Astronomy. In the **Plants, Prey, and Predators** module, the concept that plants and animals consist of structures with specific functions is explored by the students. They study and plant tulip bulbs as an example of a plant's adaptation to our winters. In **Prey and Predators**, teachers may request owl pellets to help students learn more about the food chain while introducing the food webs. In the unit **Landforms and Boulders**, students investigate the properties of landforms, fossils and the non-living material which make up the earth's surface. For those teachers not using **Exploring Changes In Our World**, a new **Energy In Our World** kit can be used instead.





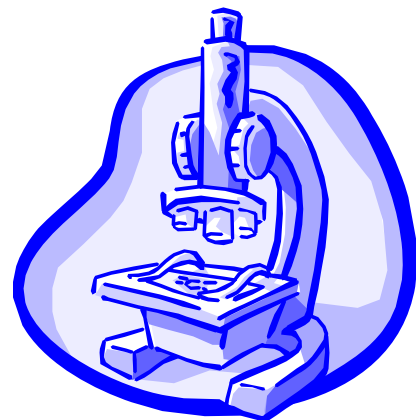
Grade 5

For the skill unit **Introduction to Controlled Studies**, students learn to begin using the scientific method to identify and control variables and use an elementary microscope. In **Chemical Relationships**, students investigate the physical and chemical properties of various powders and crystals. While using the kit **Classifying Plants and Animals**, students study responses of seeds and seedlings to different variables such as water, light, gravity and nutrients. Students also learn about the structure and behavior of crayfish and other plants and animals that live in a fresh water environment. Students are introduced to the triple beam balance while using this kit to weigh objects; a needed skill for the New York State 8th grade performance assessment.



Grade 6

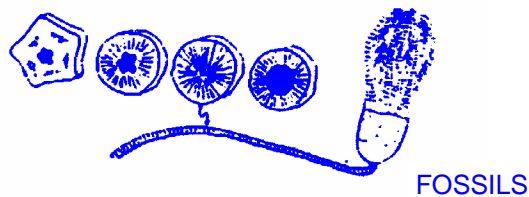
In the **Experimenting** kit, students carry out studies by following a scientific procedure and develop their technical writing skills. They learn how to use various scientific materials including using a microscope. The kit reinforces their knowledge of both the English and Metric Systems of measurement. During the unit **Environmental Factors**, students learn about scientific inquiry by studying the sensory systems of mealworms. They become familiar with the use of identification keys in field guides. Using experimentation in the **Energy** unit, students will understand energy transfer within a system. They study solar and light energy, plus electromagnetism. Students test the strength of an electromagnet, and build motors and buzzers. In light energy, they perform experiments to demonstrate reflection, refraction, and dispersion. In **Brine Shrimp** students learn about fresh water and water food chains, webs and the use of the intermediate level microscopes. Students learn to do experiments using a controlled study format. This requires that the student understand the need to control and identify variables so conclusions drawn are substantiated and valid.



Grade 5 or 6

Simple Machines/Links – Math, Science and Technology Kit has been added to enhance the goals of integrating Math, Science and Technology. Students create a wind-driven vehicle. To complete this project, students conduct research to build their vehicles to teacher specifications. They gain experience in measuring, using tools to cut wood, and in the final assembly of the vehicle. A unit on simple machines has been added to this kit. The hand tools in the kit demonstrate how simple machines are used to make work easier for people. This kit supports the objectives for the *New York State Grade 8 Intermediate Level Science Assessment*.

Using the **Rocks and Minerals Kit**, students will build on previously developed skills of observation, classification, measurement and the collection of data. These skills will be applied to the development of concepts about the physical and Earth science systems which occur in our natural world. Also, students become familiar with ways to compare one rock to another and develop topography mapping skills.



Studies in the **Weather Kit** involve long-term data collecting involving direct student use of several weather instruments and the plotting and summarizing of the data collected from these instruments. Some discussion of energy and the energy transfers and changes which occur within weather systems may result from studying the local data. Students will design and construct their own weather instruments to use and compare their instruments to commercial ones.



Outer Space Kit has been developed to meet the intermediate level *Key Ideas for Astronomy*. This kit teaches students about orbital velocity, gravity and inertia. Students also study various constellations using Polaris and latitude as a guide.

The **Looking at Liquids** kit is an excellent optional unit enabling students to study the unique properties of water while comparing this substance to other liquids. This kit places a special emphasis on observing, manipulating and collecting data. The unit combines physical and earth science lessons with measurement skills using controlled studies.



Intermediate Academic Intervention Services

For those students who have failed or might fail the **N.Y.S Fourth Grade Assessment**, or who are unable to keep pace at their present grade level, **A.I.S. Science Kits** have been developed for students in grades 4-8. There are fourteen topics in this set of kits with each kit based upon a "Key Idea" in the **N.Y.S. Intermediate Science Core Curriculum** document and a set of four topics for reviewing the elementary science core curriculum. The materials in the kit have a lower reading level for greater student success in learning each topic. Additionally, they contain teaching strategies for teachers to help these students achieve. Teachers may borrow any of the kits by contacting the Science Center. They are available for a one-month period of time.

New York State Standards/Science Correlation

The Science Kits are designed and reviewed by teachers to provide examples of how the **New York State Science Core Curriculum** can be taught. Concepts, inquiry process skills, basic skills and activities that develop positive attitudes toward science are included in the teacher manuals that accompany each unit. The kits are organized in a way that allows for use of cooperative learning groups with individual accountability that features carefully field tested activities. Additional teacher manuals can be purchased separately for a nominal fee.

All K-6 and some Science Readiness units are leased through a cross-contract between your BOCES and Oneida BOCES, Box 70, Middle Settlement Road, New Hartford. Units are designed for use by one class (enough materials are provided for 30 students and one teacher) for a specific length of time (4 to 12 weeks, depending on the unit) and must be returned at the end of each use. Science Readiness kits are intended to serve 20 students. Kits are delivered and picked up at each individual elementary or middle school.

Each teacher in participating districts receives the newsletter **Seed to Circuit**. The staff development workshops are designed to help teachers feel secure about their science teaching, and this is a key aspect of our program. Teachers are encouraged to participate in a free in-service course prior to using the materials. These workshops allow teachers to delve deeply into the science standards and content areas. The teachers will learn the best practices for connecting literature and science.

For More Information

For more information about the State Standards Science Program, contact Pat Zuck, Science Program Specialist at (315) 793-8619 or the Science Center at (315) 793-8590. Our e-mail addresses are:

pzuck@oneida-boces.org or jdangler@oneida-boces.org

Please visit our website:

www.ohmboces.org/ppd_elem_science_program.htm

