

These units are part of innovative science programs entitled Science and Technology for Children (STC) and Full Option Science Series (FOSS). These hands-on activities are designed to motivate young students. This program was developed by leaders in the fields of education and science. The National Science Resource Center has developed these units in association with the Smithsonian Institution and the National Academy of Sciences to improve the teaching of science and math in our nation's schools.

KINDERGARTEN/Grade 1—WOOD (FOSS)

Students take wood apart, put wood together, and sink, nail, and glue it. It's all part of an effort to learn the properties of different kinds of wood: pine, plywood, redwood, particleboard, and basswood. Students continue their explorations with experiences in woodworking: sanding, making sawdust wood and sandwich wood, staining wood and making wood constructions/sculptures.

GRADE K-1—FABRIC (FOSS)

In this unit, students investigate the properties of fabric. The students begin the unit by comparing ten different fabrics by observing the textures, visual characteristics, and the way fabric is woven. Later, fabric is tested for its absorption and stain resistance. Students also have the opportunity to dye, weave and sew pieces of fabric together.

GRADE K-1—BALLS AND RAMPS (Insights)

Students explore balls, ramps, and movement. Children begin by exploring a wide variety of balls and how they roll and bounce. Next, they make their own balls out of clay and other materials and test them. Finally, they explore the movement of balls down ramps, through tubes, and around bends.

GRADE 1-2—ORGANISMS (STC)

This unit provides experiences to help young children form basic ideas about living things. Students create and observe a woodland habitat containing loblolly pine seedlings, pillow moss, Bess beetles, as well as a freshwater habitat containing Elodea and Cabomba plants, ramshorn snails and guppies. In working through this unit, students refine their sensitivity and understanding of the diversity of life.

GRADE 1-2--SOLIDS AND LIQUIDS (STC)

In this unit, students get to shake, rattle, roll, drip, squish and stir a variety of objects while engaging in science explorations that directly relate to their lives. Students compare characteristics of a variety of solids and liquids and focus on properties and clear descriptions of matter.

GRADE 1-2—BUTTERFLIES (STC)

This unit highlights the life cycle of the Painted Lady butterfly (*Vanessa cardui*). The main objective of this unit is to introduce young children to the concept of life cycles. Students use observational and recording skills as they learn about the caterpillar's basic needs and record daily activities such as spinning silk, eating, eliminating wastes, and shedding

GRADE 2--BALANCING AND WEIGHING (STC)

This unit introduces young children to the relationship between balance and weight. Activities include making mobiles and balancing objects on a beam. Students learn to use an equal-arm balance. They compare and measure the weight of various objects and order them according to weight. Finally students apply what they have learned about balance and weight to problem-solving situations that involve dried foods.

The chrysalis and adult stages are also observed, with close attention given to development, anatomy and feeding.

GRADE 3--ROCKS AND MINERALS (STC)

In this unit, students study rocks and minerals and observe them carefully, noting similarities and differences. They then develop a classification system based on the physical characteristics they've observed. Then, using equipment provided in the kit, they test their rocks for various properties such as color, luster, hardness, streak and weight.

GRADE 3- SOUND (STC)

Students explore the basic characteristics of sound as well as how it is produced and received. They investigate tuning forks, nails, rulers, straws, slide whistles, and finally construct their own musical instrument.

GRADE 4-MOTION AND DESIGN (STC)

During this unit the children work with K'NEX building pieces to create wheeled vehicles. Throughout this unit students will explore the effects of force, friction and wind resistance on distance and speed. Students will go through some basic steps from drafting a design and making their vehicles to the evaluation process and refining their design.

GRADE 4-5-ELECTRIC CIRCUITS (STC)

Sounds like a pretty tough unit, right? Not after you experience the teacher training! Students learn the basic characteristics of electricity. They identify conductors and insulators, explore circuits and switches. The unit culminates with student teams designing, building and wiring a cardboard box house.

GRADE 5 and up—LANDFORMS (New FOSS Unit)

In this unit, students are introduced to fundamental earth science concepts. Students gain experiences with: models and maps, concepts of erosion and deposition, and concepts of contour and elevation. They also use stream tables to: observe the effect of water on surface features, and to conduct scientific investigations.

(Please note that this unit has about 20 hands-on lessons)

GRADE 5 and up—MIXTURES AND SOLUTIONS (New FOSS unit) Students are introduced to foundational concepts in chemistry. In this unit students gain experiences with: mixtures and solutions, concepts of concentration and saturation, the concept of chemical reaction,

vocabulary and terms associated with the periodic table of elements. Students are also introduced to the concept that all matter is made of very small particles called atoms and that atoms combine to form molecules.

(Please note that this unit has about 20 hands-on lessons.)

GRADE 6--THE TECHNOLOGY OF PAPER (STC)

Students begin this unit by exploring the properties and uses of paper. By testing six types of paper for opacity, smoothness, tear resistance, water absorption, and ink receptivity they deepen their understanding of the properties of paper. Students experiment with hand papermaking and explore such variables as paper additives. As an embedded assessment, students apply this information to creating their own recycled paper product which they test and evaluate.

GRADE 6-MAGNETS AND MOTORS (STC)

Students explore magnetism and electricity; discovering properties of magnets, switches, simple circuits, and electromagnets. They experiment with three electric motors and using an electric generator, they produce electricity to light a bulb and make a motor turn.

GRADE 6-EXPERIMENTS WITH PLANTS (STC)

Students learn how to conduct controlled experiments as they test how variations in nutrition, water, growing space, light and other essentials affect the growth and seed production of the plants. Students execute experiments, collect and assess data, and conduct presentations of their observations and conclusions