

ACTON PUBLIC SCHOOLS

GRADE THREE SCIENCE PROGRAM

Soils  
(Life/Earth Science)

Key Questions

- Where does soil come from, and why is it important to the earth?
- What is in the soil?

Concepts

1. Soil contains particles of different sizes.
2. Soil may contain animals, plants, and their remains.
3. Over time, dead plants become part of the soil.
4. Composting – especially with worms – is an effective way to recycle old plants and other discarded organic matter.
5. Sand, clay and humus are three of the basic components in soil.
6. Invertebrates are animals without backbones. Most soil critters, such as earthworms, are invertebrates.

Skills

*Students will*

1. perform simple tests, such as sifting soils in order to describe and analyze soil components.

Attitudes

*Students will*

1. develop enthusiasm for investigating soil;
2. appreciate the importance of soil for plant growth and animal life;
3. accept that a range of outcomes is valid.

Owls/Web Of Life  
(mini-study – Life Science)

Organizing Questions

- What is a food web? What is an owl's place in a food web?
- How can we learn about food webs from nature?
- What makes an owl a bird? (animal classification) What makes a vole/mouse a mammal?

## Owls/Web of Life (cont'd.)

### Concepts

*Through study and the use of owl pellets, students will*

1. describe the unique *characteristics* of birds (e.g. hard egg, feathers) and mammals (e.g., fur, feed milk to young);
2. describe the physical *adaptations* that help owls survive;
3. recognize that different owls live in different *habitats*;
4. illustrate a typical *food web* that shows an owl's relationship to its habitat;
5. recognize and describe *predator/prey* relationships.

### Recommended kit/materials

*Owls*, Curriculum outline with suggested activities, Acton Public Schools, 1998.

*Web of Life*, Ranger Rick Science Big Book, Newbridge Publication, 1996.

## Chemical Tests (Physical Science)

### Key Questions

- How do we use chemicals in our daily lives?
- What science processes would be helpful in attempting to identify unknown chemicals?

### Concepts

1. Common household chemicals have different physical and chemical properties.
2. Chemicals undergo changes in form, color, or texture when they are mixed together, separated, or heated.
3. Some chemicals can be identified by their interaction with water, vinegar, iodine, red cabbage juice, and heat.
4. Different types of mixtures, such as solutions or suspensions, are created when solids are combined with water.
5. Evaporation and filtration are methods for separating mixtures of solids and liquids.

### Skills

*Students will*

1. observe and describe properties of materials;
2. learn to perform different physical and chemical tests;
3. predict, observe, describe, and record results of tests;
4. analyze and draw conclusions from the results of tests;

5. compare and contrast test results to define the properties of household chemicals so they can be identified;
6. support conclusions with reasons based on experiences;
7. communicate results and reflect on experiences through writing and discussion;
8. apply previously-learned knowledge and skills to new situations to solve a problem;
9. develop proper lab techniques to ensure safety and avoid contamination.

### **Attitudes**

#### ***Students will***

1. develop interest in and enthusiasm toward exploring and investigating properties of chemicals;
2. recognize the importance of guidelines for experimentation;
3. develop an awareness of the importance of chemicals in our lives;
4. develop an appreciation for the safe handling of chemicals;

### **Recommended kit/materials**

*Chemical Tests*, Science and Technology For Children (STC) kit, National Science Resources Center, Smithsonian Institution, 1994. (Carolina Biological Supply Company)

## **Electric Circuits** **(Physical Science)**

### **Key Questions**

- How does electricity affect our lives today? What things in our class require electricity to work?
- What is a complete circuit, and how would you make one using a battery, wire and a bulb?

### **Concepts**

1. A complete electric circuit is required for electricity to light a bulb.
2. A complete circuit can be constructed in more than one way using the same materials.
3. Different types of electric circuits show different characteristics.
4. A switch can be used to complete or interrupt a circuit.
5. Some materials conduct electricity; these are called conductors.
6. Some materials do not conduct electricity; these are called insulators.
7. Electricity can produce light and heat.

## Electric Circuits (cont'd)

### Skills

#### *Students will*

1. wire simple electric circuits;
2. predict, observe, describe, and record results of experiments with electricity;
3. draw conclusions about circuits from the results of experiments;
4. build and use a simple circuit tester;
5. use symbols and drawings to represent the different parts of an electric circuit and build a simple switch;
6. apply troubleshooting strategies to complete an incomplete circuit;
7. apply information about electric circuits to design and build a flashlight or similar device;
8. apply information about electric circuits to design and wire a house or other structure;
9. read to learn more about electricity;
10. communicate results and ideas through writing, drawing, and discussion.

### Attitudes

#### *Students will*

1. appreciate the need for safety rules when working with electricity;
2. develop an interest in electricity;
3. develop confidence in being able to analyze and solve a problem.

### Recommended kit/materials

*Electric Circuits*, Science and Technology For Children (STC) kit, National Science Resources Center, Smithsonian Institution, 1994. (Carolina Biological Supply Company)