

## GRADE 5 SCIENCE

The Fifth Grade science program provides students with opportunities to develop and apply their understanding of science to a new situation. Student science investigations include developing a testable question, a hypothesis/prediction, a well-designed procedure, forming a conclusion, and communicating results. Students develop content knowledge in biology, chemistry, physics, earth/space, and environmental science. Science teaching and learning is challenging and rigorous for all students with an emphasis on reasoning.

The Fifth Grade units are:

### **Magnets and Motors**

Unit Summary: Children expand their knowledge of electricity by investigating the interaction of magnetism, electricity, and electromagnetism. They use magnets and compasses to build a working device and explore the characteristics of switches, circuits, and electromagnets. They build a working electric motor from scratch and learn how electricity is produced. *Magnets and Motors* was developed by the National Science Resources Center with support from the National Academy of Sciences and the Smithsonian Institution.

Major knowledge, skills, and concepts:

- Describe the properties of magnets
- Investigate electricity, magnetism, and electromagnetism
- Explain how electricity and magnetism are related
- Explore how electric motors work
- Use observations and scientific information to form predictions and hypotheses

### **Solar Energy**

Unit Summary: Children investigate sunlight as a heat source. During the unit the children build model houses, monitor temperature, and explore techniques for improving the efficiency of solar collectors. *Solar Energy* was developed at the Lawrence Hall of Science as part of their Full Option Science System (FOSS) with support of a National Science Foundation grant. The unit is published by *Encyclopaedia Britannica* and has been enhanced by the Montgomery County Public Schools, Department of Academic Programs

Major knowledge, skills, and concepts:

- Investigate sunlight as a source of heat
- Describe how the properties of different earth materials affect the transfer to solar energy
- Build a model house and explore techniques for improving solar collectors
- Recognize/develop well designed procedures to identify dependent and independent variables, and the need for controls and multiple trials

## **Structures**

Unit Summary: Children investigate structures and their strength. They observe structures in the school neighborhood and record the variety of sizes, shapes, materials, and functions of these structures. They build structures with straws, index cards, and additional classroom materials and determine designs that best handle loads and other stresses. The unit was developed by Education Development Center, Inc., with funding from the National Science Foundation.

Major knowledge, skills, and concepts:

- Investigate structures and record the variety of sizes, shapes, materials, and functions of these structures
- Investigate forces that act on structures
- Describe principals of good construction (e.g., function, durability, and aesthetic value )
- Design, plan, and construct a structure to meet predetermined specifications