1ST GRADE SCIENCE

Students should be able to use science and engineering practices and understand the following content:

Science and Engineering Practices

- Development of habits of mind that are necessary for scientific thinking and that allow students to engage in science in ways similar to those used by scientists and engineers
- Asking and answering questions about the natural world
- Developing and using models to (1) build understanding of phenomena, processes and relationships, (2) test devices or solutions, or (3) communicate ideas to others
- With teacher guidance, conduct structured investigations to answer scientific questions, test predictions, and develop explanations
- Collecting and analyzing data from investigations to construct explanations and communicate results
- Using mathematical and computational thinking in collecting and communicating data
- Using technology to collect data and in communication of results
- Use of appropriate safety procedures when conducting investigations

Physical Science

- Demonstrate an understanding of the properties of light and how shadows are formed
- Objects can be seen only when light shines on them.
- Some materials allow light to pass through them; some materials allow only some of the light to pass through; some materials allow no light to pass through
- Technology such as mirrors can change the direction of a beam of light
- Conduct structured investigations to determine what causes shadows and how shadows change when the position of the light source changes
- Investigate how mirrors and different kinds of materials interact with light

Earth Science

- Demonstrate an understanding of patterns of the Sun and the Moon and the Sun's effect on Earth
- Use data from various sources to describe and predict seasonal patterns of sunrise and sunset
- Use data from various sources to model, describe, and predict how the moon changes over time
- Describe how technology has aided in the study of the Sun, the Moon, planets, and stars
- Conduct structured investigations to answer questions about the effect of sunlight on Earth's surface
- Define problems related to the warming effect of sunlight and possible design solutions for this effect
- Demonstrate an understanding of the properties and uses of Earth's natural resources
- Compare the properties of Earth materials
- Develop and use models such as drawings and maps to describe patterns of land and water distribution on Earth
- Classify bodies of water
- Conduct structured investigations to answer questions about how moving water can change the shape of the land
- Natural resources are things that people use that come from the Earth. Natural resources can be conserved.
- Find information and communicate how natural resources are and can be conserved

Life Science

- Demonstrate an understanding of how plant structures help them grow and survive
- Recognize that plants have basic needs that must be met to grow and reproduce
- Recognize that plants respond to their environments (turning leaves toward light, roots grow down/gravity, seasonal loss of leaves, etc.)
- Construct explanations for how plant structures work together for the growth and reproduction of the plant
- Construct explanations for how a plant grows from seed to seed
- Observe, measure, and monitor plant growth over time
- Develop and use models to communicate the kinds of characteristics that aid in plant survival in various environments

Activities:

- Try placing different materials or objects in front of a flashlight and observe what happens.
- If you have some small mirrors available, hold them together in different ways to look at your image.
- Investigate the kinds of lenses that are used in sunglasses to filter light.
- If you have an outside space, a sunny day, and some sidewalk chalk, go outside and have someone trace your shadow every half-hour or so. What do you observe about your shadow during the day? How does your shadow length relate to the position of the sun in the sky?
- Keep a moon journal with your child. Go out and observe the moon, note the moon's shape and position in the sky, and make drawings Can you name the phases of the moon?
- Make a moon flipbook. (Search the web for directions.)
- Talk with your child about what you and she or he sees outdoors; daylight and darkness, moon, and stars.
- Visit a planetarium if one is nearby.
- Look at maps and globes and find the locations of water.
- Make a rock and mineral collection.
- Observe what kinds and where different earth materials are used in your area.
- Plant several different seeds and watch them sprout and grow. Measure the weekly growth with a ruler or tape measure.
- Look at different kinds of plants and ask your child to tell what she or he sees. Discuss the differences among them. Visit a garden center.
- Care for a household plant, noting that plants need air, water, nutrients, space, and light

Books:

- Carle, Eric. *The Tiny Seed*
- Dussling, Jennifer. *Looking at Rocks*
- Fowler, Allan. *So That's How the Moon Changes Shape!*
- Gibbons, Gail. *Sun Up, Sun Down*
- Heller, Ruth. *The Reason for a Flower*
- Murphy, Patricia J. *Push and Pull*
- Stille, Darlene R. *Push and Pull, Fast and Slow*
- Trumbauer, Lisa. *All About Sound*
- Woodman, Nancy. Dirt: *Jump Into Science*
- Swinburne, Stephen. *Guess Whose Shadow?*
- Dorros, Arthur. *Me and My Shadow*
- Hoban, Tana. *Shadows and Reflections*

Web Sites:

- AAAS Science Netlinks - www.sciencenetlinks.com
- Learning Network Parent Channel - www.familyeducation.com
- NASA website especially for children - http://kids.msfc.nasa.gov
- National Wildlife Federation - www.nwf.org/kids/
- South Carolina Department of Natural Resources - http://www.dnr.sc.gov/education.html