

# GRADE THREE

## Goal

Third grade continues to use the unifying concepts taught in grades K-2 including evidence, explanation, measurement, order and organization, and change. Students at third grade focus on the study of systems as their unit of investigation. They learn that a system is an interrelated group of objects or components that form a functioning unit. The natural and human designed world is complex; it is too large and complicated for students to investigate and comprehend all at once. The third grade program allows students to identify small components of a system for in-depth investigation. Each investigational unit addresses a particular system. Plants, soils, earth/moon/sun, and the human body are each investigated as systems. The following explanations characterize the strands at the third grade level.

## Nature of Science

The Nature of Science Strand helps students understand the human dimensions of science, the nature of scientific thought, and science's role in society. Students develop an understanding of patterns in systems, which in later grades allows them to understand basic laws and theories that explain how things work in the world. Teachers build on students' natural inclination to ask questions and investigate their world. Cooperative groups of students conduct investigations that begin with a question and progress toward finding and communicating an answer. Stories, films, videos, and multimedia resources introduce women and men from diverse groups who have contributed to science. These examples highlight how scientists work, showing how they pose and answer questions, the procedures they use, and their contributions to science, technology, and society.

## Science as Inquiry

Students experience science in a way that engages them in active building of ideas and explanations, and gives them more opportunities to develop the ability to do science. Teaching science as inquiry requires a learning environment that engages students in hands-on activities and investigations. For example, if students ask each other

how plants can survive in a particular environment, they might want to identify and compare the various environments where plants naturally occur. To develop the ability to do scientific inquiry, students plan and conduct a simple investigation, use simple equipment and tools to gather data, use data to construct reasonable explanations, and communicate evidence and explanations to others.

## **Science and Technology**

Students become interested in technology as they design projects, use tools well, measure things carefully, make reasonable estimations, calculate accurately, and communicate clearly. They should begin to enjoy opportunities to clarify a problem, generate criteria for an acceptable solution, suggest possible solutions, try one out, and then make adjustments or start over with a new proposed solution. It is important for students to find out that there is more than one way to design a product or solve a problem. They also learn that some designs and solutions are better than others. To accomplish this, several groups of students can be asked to design and solve the same problem and then discuss the advantages and disadvantages of each solution with other students. Students see that solving one problem may lead to other problems. They are introduced to the balance between constraints and social impact.

## **Personal and Social Perspectives**

A variety of experiences give students an initial understanding of various science-related personal and societal challenges. The *National Science Education Standards* (page 138) state "Central ideas related to health, populations, resources, and environments provide the foundations for students' eventual understandings and actions as citizens." Students learn that resources are the things that we get from the living and nonliving environment to meet human needs and wants. For example, they also learn that natural resources are limited and should be respected and used wisely. When students investigate making soil through composting, they learn that resources can be extended through recycling and wise use.

## Science – Grade 3

The focus for third grade students is on identifying systems and patterns in systems. Systems are the units of investigations. A system is an interrelated group of objects or components that form a functioning unit. Students learn to identify portions of a system to facilitate investigation. Systems have boundaries, components, resources, flow and feedback. Guide student learning to continue to emphasize the unifying concepts previously introduced including evidence, explanation, measurement, order, organization, and change as well as the introduction at grade three of systems. The strands provide a context for teaching the content goals.

**Strands:** Nature of Science, Science as Inquiry, Science and Technology, Science in Personal and Social Perspectives

**COMPETENCY GOAL 1: The learner will conduct investigations and build an understanding of plant growth and adaptations.**

**Objectives:**

- 1.01 Observe and measure how the quantities and qualities of nutrients, light, and water in the environment affect plant growth.
- 1.02 Observe and describe how environmental conditions determine how well plants survive and grow in a particular environment.
- 1.03 Investigate and describe how plants pass through distinct stages in their life cycle including.
  - Growth.
  - Survival.
  - Reproduction.
- 1.04 Explain why the number of seeds a plant produces depends on variables such as light, water, nutrients, and pollination.
- 1.05 Observe and discuss how bees pollinate flowers.
- 1.06 Observe, describe and record properties of germinating seeds.

**COMPETENCY GOAL 2: The learner will conduct investigations to build an understanding of soil properties.**

**Objectives:**

- 2.01 Observe and describe the properties of soil:
  - Color.
  - Texture.
  - Capacity to hold water.
- 2.02 Investigate and observe that different soils absorb water at different rates.
- 2.03 Determine the ability of soil to support the growth of many plants, including those important to our food supply.

- 2.04 Identify the basic components of soil:
  - Sand.
  - Clay.
  - Humus.
- 2.05 Determine how composting can be used to recycle discarded plant and animal material.
- 2.06 Determine the relationship between heat and decaying plant matter in a compost pile.

**COMPETENCY GOAL 3: The learner will make observations and use appropriate technology to build an understanding of the earth/moon/sun system.**

**Objectives:**

- 3.01 Observe that light travels in a straight line until it strikes an object and is reflected and/or absorbed.
- 3.02 Observe that objects in the sky have patterns of movement including:
  - Sun.
  - Moon.
  - Stars.
- 3.03 Using shadows, follow and record the apparent movement of the sun in the sky during the day.
- 3.04 Use appropriate tools to make observations of the moon.
- 3.05 Observe and record the change in the apparent shape of the moon from day to day over several months and describe the pattern of changes.
- 3.06 Observe that patterns of stars in the sky stay the same, although they appear to move across the sky nightly.

**COMPETENCY GOAL 4: The learner will conduct investigations and use appropriate technology to build an understanding of the form and function of the skeletal and muscle systems of the human body.**

**Objectives:**

- 4.01 Identify the skeleton as a system of the human body.
- 4.02 Describe several functions of bones:
  - Support.
  - Protection.
  - Locomotion.
- 4.03 Describe the functions of different types of joints:
  - Hinge.
  - Ball and socket.
  - Gliding.
- 4.04 Describe how different kinds of joints allow movement and compare this to the movement of mechanical devices.
- 4.05 Observe and describe how muscles cause the body to move.