

# SCIENCE CURRICULUM

## FIFTH GRADE

### *THEME: SYSTEMS*

#### **Goal**

Students in fifth grade will determine that all living and non-living systems are made up of smaller parts and/or processes. The exploration of systems will develop students' higher-order thinking skills as students investigate how interrelated parts work together (part to whole).

Students will discover that systems are virtually everywhere. In-depth investigation should begin with those systems with which students are most familiar (e.g. playground, mall, theme park, etc.).

#### **Science Processes and Inquiry**

##### **1. The student will engage in investigations that lead to the discovery of science concepts.**

- a. Classify objects based on appropriate criteria.
- b. Develop and evaluate a testable question.
- c. Design and conduct a science investigation.
- d. Arrange the steps of a science problem in logical order.
- e. Select appropriate tools and make observations.
- f. Record data using charts, graphs, tables, and diagrams. Make inferences based on the data.
- g. Draw conclusions and develop descriptions, explanations, and predictions based on evidence.
- h. Communicate the results of an investigation and give explanations based on tests conducted, data collected, evidence examined, and conclusions drawn.

#### **Physical Science**

##### **1. Matter – The student will determine that matter is made up of elements and molecules.**

- a. Identify the basic atomic structure:
  - \*Nucleus
  - \*Protons
  - \*Neutrons
  - \*Electrons.
- b. Recognize that elements are made of one kind of atom and are organized in the Periodic Table by their chemical properties.

- c. Identify common elements and symbols.
- d. Identify common compounds and their formulas
- e. Determine that during chemical reactions, atoms rearrange to form products with different properties.
- f. Explain the characteristics of chemical change. Give examples (e.g. wood burning).
- g. Explain the characteristics of physical change. Give examples (e.g. water freezing).

## **Life Science**

### **1. Cells – The student will determine that cells are the basic units of living matter.**

- a. Identify and label the parts of a cell:
  - \*Membrane
  - \*Nucleus
  - \*Cytoplasm
- b. Compare/contrast plant and animal cells.
- c. Explain how cells are organized into tissues, organs, and systems.

### **2. Plants – The student will determine that plants have different structures that enable them to survive.**

- a. Identify the basic structure of vascular and nonvascular plants.
- b. Identify the main parts of flowers and their functions.
- c. Explain photosynthesis.
- d. Describe plant reproduction in:
  - \*Asexual Plants
  - \*Spore-Bearing Plants
  - \*Nonflowering Seed Plants
  - \*Flowering Plants

### **3. Human Body – The student will discover how the different systems of the human body help it operate.**

- a. Explain the functions of the systems of the body:
  - \*Digestive – salivary glands, small and large intestines
  - \*Excretory – kidneys, bladder
  - \*Muscular – involuntary and voluntary muscles
  - \*Skeletal – skeleton, spinal column, rib cage
  - \*Nervous – brain, spinal cord, nerves
- b. Explain how the eye works.
- c. Explain how the ear works.

## Earth Science

- 1. Weather – The student will describe how energy from the sun heats the Earth unevenly, causing air movements, resulting in changing weather patterns.**
  - a. Compile weather data to establish climate trends as well as the causes and effects of different types of severe weather.
  - b. Evaluate the oceans' effect on weather and climate.
  - c. Analyze the water cycle:
    - \*Evaporation
    - \*Condensation
    - \*Precipitation
    - \*Ground water
  - d. Analyze the formation of clouds and their relation to weather systems.
  - e. Compare/contrast high and low, warm and cold air pressures.
  - f. Describe how modern tools are used for predicting the weather.
  
- 2. Solar System – The student will observe that the solar system consists of planets and other bodies that orbit the Earth.**
  - a. Determine that the solar system includes the Earth, moon, sun, eight other planets (and their moons), and smaller objects such as asteroids, meteors, and comets.
  - b. Describe the relative scale of Earth to the sun, planets, and moon.
  - c. Describe how planetary motions cause night and day, the seasons, and eclipses.
  - d. Explain gravity and how the gravitational pull of the moon causes tides.
  - e. Identify stars and constellations.
  - f. Analyze space exploration (e.g. telescopes, the space shuttle).

### Experiential Location Suggestions:

Local Transportation Systems

School Food Program

Playground

Parks

Gardens

Telephone Company

Television/Radio Station

River

Water Treatment Plant

Mall

Car Repair Shop

Theme Park

### Other Theme Suggestions:

*Balance*

*Function*

*What Makes it Tick?*