

## **FIFTH GRADE SCIENCE**

### **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?*