

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?