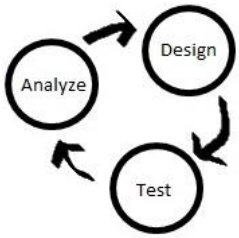
Grade 5 Science

Instruction in Grade 5 Science is centered on eleven units of instruction: How Scientists Work, The Engineering Process, Cells to Body Systems, Ecosystems, Energy and Ecosystems, Natural Resources, Changes to Earth's Surfaces, The Rock Cycle, Fossils, Earth's Oceans, and Matter.

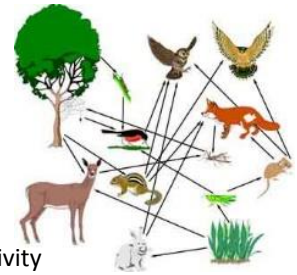
By the end of 5th grade, students will…

1. Answer questions by careful observation and investigation:
    - Understand the importance of scientists and how science affects our world
    - Design controlled experiments and explain the importance of a control
    - Demonstrate the ability to predict; hypothesis; identify and control variables; experiment; formulate and use models; and collect, record, and interpret data
    - Use scientific tools properly

2. Apply knowledge of science to design solutions to practical problems
    - Understand how technology improves our lives
    - Identify how engineers find solutions to problems
    - Explain why a prototype is developed
    - Explain the steps of the design process
    - Design a solution to a problem and use engineering to solve a problem
    - Create a plan and prototype of a pencil box and boat/raft



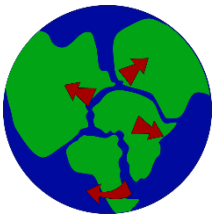
3. Recognize that all living things are made of cells that work together to make up tissues, organs and organ systems
    - Describe how cells are the basic unit of structure and function in living things
    - Identify and explain the parts of a plant and animal cell
    - Explain the cell theory
    - Use microscopes to observe cell structure of different kinds of cells
    - Describe the relationship between organs, organ systems and organism
    - Understand how our bodies, move, breathe, circulate blood, digest food, remove wastes, send messages and how the body regulates temperature



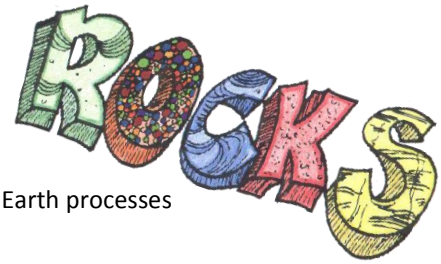
4. Understand that ecosystems change over time, both naturally and as a result of human activity
    - Know what an ecosystems is and explain how organisms interact with living and nonliving things in their ecosystem
    - Identify organisms and explain how they interact with living and nonliving things in its ecosystem
    - Describe and explain how environmental changes affect organisms (succession and extinction)
    - Model how drought and floods affects plant growth
    - Describe the difference in plant growth during normal conditions, drought conditions and flood conditions

5. Understand that living things interact with one another in an ecosystem and energy flows from the sun to plants to animals
    - Identify producers and consumers
    - Define and describe photosynthesis
    - Learn how organisms obtain nutrients
    - Describe how energy moves through an ecosystem
    - Observe the growth of a fungus
    - Describe the decomposition process
    - Classify a fungus as a decomposer and explain why decomposers are important to an ecosystem
    - Tell what happens during the decomposition process

6. Recognize that natural resources are essential to life and must be used with care
    - Explain what a resource is and identify some of the resources found in the United States
    - Identify renewable and nonrenewable resources and tell how you use each
    - Describe air, water, and land pollution
    - Understand the importance of conservation
    - Identify ways in which people can contribute to conservation efforts
    - Draw conclusions about how recycled paper can conserve resources
    - Explain how making new paper out of old paper helps conserve resources



7. Realize the Earth's surface is constantly changing
    - Explain the difference between weathering, erosion, and deposition
    - Contrast physical weathering and erosion
    - Describe how water can erode rock
    - Explain how the movements of tectonic plates result in the formation of earthquakes and volcanoes
    - Demonstrate how plates interact at each type of plate boundary

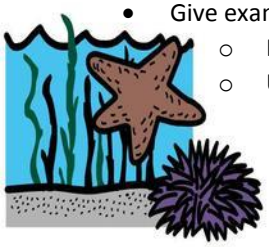


8. Discover that rocks and minerals are formed and changed through different Earth processes
    - Name minerals and tell how they form
    - Identify the physical properties of minerals and sort by physical properties
    - Demonstrate how you would test a mineral for hardness
    - Give examples of an igneous rock, a sedimentary rock, and a metamorphic rock
    - Describe how igneous rock becomes metamorphic rock
    - Demonstrate how plates interact at each type of plate boundary

9. Fossils help us understand Earth's history

- Describe ways in which fossils can form
- Recognize different types of fossils
- Explain how fossils can be used to learn about ancient ecosystems
- Draw a diagram to show how scientists use fossils to find the ages of rock layers

10. Realize oceans are complex systems that interact with Earth's land, air, and organisms
    - Draw a cross-section of her ocean floor and label as many features as you can
    - Describe what the ocean floor looks like
    - Explain what causes tides, and when tides are highest and lowest
    - Explain how ocean waves and currents shape the shore
    - Describe how temperature and salinity affect ocean currents
    - Explain how ocean ecosystems change with depth
    - Give examples of organisms that live in each ecosystem
        - Recognize different ocean ecosystem
        - Understand how environment affects ocean ecosystems



11. Observe, describe and measure the properties of matter
    - Name a common solid, liquid and gas and describe the physical properties of each substance
    - Identify properties that may change during a change of state
    - Compare and contrast physical and chemical changes
    - Describe ways that a mixture can be separated
    - Compare and contrast mixtures and solutions
    - Name factors that can affect the rate at which substances dissolve
    - Describe the structure of an atom
    - Identify some elements and describe how elements differ from one another
    - Compare an element to a compound