St. Mel's Catholic School

SCIENCE STANDARDS
Fourth Grade

Physical Sciences

1.0 Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept, students know:

1.1 how to design and build simple series and parallel circuit components such as wires, batteries, and bulbs.
1.2 how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.
1.3 that all electric currents produce magnetic fields and how to build a simple electromagnet.
1.4 the role of electromagnets in the construction of electric motors, electric generators, and simple devices such as doorbells and earphones.
1.5 electrically charged objects attract or repel each other; electricity is a force.
1.6 magnets have two poles labeled north and south, and like poles repel each other while unlike poles attract each other; magnetism is a force.
1.7 electrical energy can be converted to heat, light, and motion.
1.8 know the basic elements of gravity and friction.
1.9 understand the characteristics and uses of the six simple machines—plane and wedge, screw, pulley, lever, wheel and axle; identify simple machines with complex machines, and be able to combine simple machines to make complex machines.
1.10 understand the characteristics of light and sound and sources of light.
1.11 know how reflection, absorption, and transmission of light affects an object's appearance.
1.12 know how flat and curved mirrors affect light, and how objects refract light.
1.13 know how light waves are different from sound waves, and how light waves and sound waves travel.

Life Sciences

1.0 All organisms that God created need energy and matter to live and grow. As a basis for understanding this concept, students know:

1.1 plants are the primary source of matter and energy entering most food chains.
1.2 producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs, and may compete with each other for resources in an ecosystem.

1.3 decomposers, including many fungi, insects, and micro-organisms recycle matter from dead plants and animals.

2.0 Living things depend on one another and their environment for survival. As a basis for understanding this concept, students know:

2.1 ecosystems can be characterized in terms of their living and nonliving components.
2.2 for any particular environment (ocean and land food chains), some kind of plants and
animals survive well, some survive less well, and some cannot survive at all.
2.3 many plants depend on animals for pollination and seed dispersal, while animals depend on plants for food and shelter.
2.4 most micro-organisms do not cause disease and many are beneficial.
2.5 be appreciative of the complexities and differences of all God's living creations.

Earth Sciences

1.0 The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept, students know:

1.1 how to differentiate among igneous, sedimentary, and metamorphic rocks by their properties and methods of formation (the rock cycle).
1.2 how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica, and hornblende) and ore minerals using a table of diagnostic properties.
1.3 understand the Earth's surface and changes which affect it.
1.4 know the layers which form the Earth's crust, and the characteristics of each layer.
1.5 be able to identify examples of various layers of the Earth's crust, and how the various layers were formed.
1.6 know how wind, water, time, and geological shifts affect the Earth's surface.
1.7 know how humans change the Earth's surface, and their appreciation for the resources God has provided for us all.

2.0 Waves, wind, water, and ice shape and reshape the Earth's land surface. As a basis for understanding this concept, students know:

2.1 some changes in the Earth are due to slow processes, such as erosion (weathering, transport, and deposition), and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earth-quakes.
2.2 natural processes including freezing/thawing and growth of roots, cause rocks to break down into smaller pieces.
2.3 moving water erodes landforms, reshaping the land by taking it way in places and depositing it as pebbles, sand, silt, and mud in other places.

Investigation And Experimentation

1.0 Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content of the other three strands, students should develop their own questions and perform investigations. Students will:

1.1 differentiate observation from interpretation, and know that scientists' explanations come partly from what they observe and partly from how they interpret their

observations.
1.2 measure and estimate weight, length, or volume of objects.
1.3 formulate predictions and justify predictions based on cause and effect relationships.
1.4 conduct multiple trials to test a prediction and draw conclusions about the relationships between results and predictions.
1.5 construct and interpret graphs from measurements.
1.6 follow a set of written instructions for a scientific investigation.