St. Raphael the Archangel
Science
4th Grade 2017-2018

Learning Goals- Students will:

Matter and Energy

1. Classify types of materials (e.g., water, salt, sugar, iron filings, salt water) into "like" substances (materials that have specific physical properties) or mixtures of substances by using their characteristic properties.
2. Construct and diagram a complete electric circuit by using a source (e.g., battery), means of transfer (e.g., wires), and receiver (e.g., resistance bulbs, motors, fans).
3. Describe and compare the masses of objects to the nearest gram using balances.
4. Describe and compare the volumes (the amount of space an object occupies) of objects using a graduated cylinder.
5. Distinguish between the components in a mixture/solution (e.g., trail mix, salad, soil, salt water).
6. Identify situations where no two objects can occupy the same space at the same time (e.g. water level rises when an object or substance such as a rock is placed in a quantity of water).
7. Identify and distinguish between physical and chemical changes.

Force and Motion

1. Classify different types of motion [straight line, curved, vibrating (back and forth)].
2. Describe an object's motion in terms of distance and time.
3. Identify the forces acting on the motion of objects traveling in a straight line (specify that forces should be acting in the same line as the motion, provide examples).
4. Observe and identify friction as a force that slows down or stops a moving object that is touching another object or surface.

Ecology

1. Research, identify and describe different environments (i.e. pond, forest, prairie) support the life of different types of plants and animals.
2. Identify examples in Missouri where human activity has had a beneficial or harmful effect on other organisms (e.g., feeding birds, littering vs. picking up trash, hunting/conservation of species, paving/restoring green space).

3. Identify internal cues (e.g., hunger) and external cues (e.g., changes in the environment) that cause organisms to behave in certain ways (e.g., hunting, migration, hibernation).
4. Identify specialized structures and describe how they help plants survive in their environment (e.g., root, cactus needles, thorns, winged seed, waxy leaves).
5. Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages).
6. Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism).

Earth Systems

1. Compare the physical properties (i.e., size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties.
2. Describe how erosion processes (i.e., action of gravity, waves, wind, rivers, glaciers) cause surface changes that create and/or change Earth's surface materials and/or landforms/ bodies of water.
3. Describe how weathering agents (e.g., water, chemicals, temperature, wind, plants) cause surface changes that create and/or change Earth's surface materials and/or landforms/ bodies of water.
4. Identify the major landforms/bodies of water on Earth (i.e., mountains, plains, river valleys, coastlines, canyons).

Scientific Inquiry

1. Communicate the procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, single line, pictograph), and writings.
2. Compare amounts/measurements.
3. Conduct a fair test to answer a question.
4. Evaluate the reasonableness of an explanation.
5. Formulate testable questions and explanations (hypotheses).
6. Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale, microscope)
7. Make qualitative observations using the five senses.
8. Measure mass using grams, temperature using degrees (Fahrenheit and Celsius) and volume to the nearest milliliter.
9. Use data as support for observed patterns and relationships, and to make predictions to be tested.
10. Use quantitative and qualitative data as support for reasonable explanations.

Science, Technology, and Human Activity

1. Describe how new technologies have helped scientists make better observations and measurements for investigations (e.g., telescopes, magnifiers, balances, microscopes, computers, stethoscopes, thermometers).
2. Research biographical information about various scientists and inventors from different gender and ethnic backgrounds, and describe how their work contributed to science and technology.