

Science Curriculum Map - Grade 4

Quarter 1

Unit 1 - Studying Science

Unit 2 - The Engineering Process

SCIENCE INQUIRY AND APPLICATION

During the years of PreK-4, all students must become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas:

- Observe and ask questions about the natural environment;
- Plan and conduct simple investigations;
- Employ simple equipment and tools to gather data and extend the senses;
- Use appropriate mathematics with data to construct reasonable explanations;
- Communicate about observations, investigations and explanations; and
- Review and ask questions about the observations and explanations of others.

Quarter 1 & 2

Unit 3 - Earth's Surface

EARTH AND SPACE SCIENCE (ESS)

Topic: Earth's Surface

This topic focuses on the variety of processes that shape and reshape Earth's surface.

- Earth's surface has specific characteristics and landforms that can be identified.
- The surface of Earth changes due to weathering.
- The surface of Earth changes due to erosion and deposition.
 - *The students can explain that 70 percent of the Earth's surface is covered with water and most of which is ocean.*
 - *The students can research and identify landforms and the processes in which they are created.*
 - *The students can design and construct a model of a landform and explain the processes in which it formed.*
 - *The students can synthesize information related to landforms and their processes and present the findings to others.*
 - *The students can explain the process of weathering in changing the Earth's surface.*
 - *The students can explain the process of erosion and deposition in changing the Earth's surface.*
 - *The students can differentiate between weathering erosion and deposition.*

- *The students can connect concepts of weathering, erosion and deposition to the real world.*
- *The students can design, construct and evaluate a model using research to prevent erosion.*

Quarter 2 & 3

LIFE SCIENCE (LS)

Unit 4 - Living Things and Their Environments

Unit 5 - Earth's Living History

Topic: Earth's Living History

This topic focuses on using fossil evidence and living organisms to observe that suitable habitats depend upon a combination of biotic and abiotic factors

- Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful.
- Fossils can be compared to one another and to present-day organisms according to their similarities and differences.
 - *The students can explain that some changes in an environment take a really long time to happen and some changes can be dramatic.*
 - *The students can conduct an experiment to show the effects of various factors on an organism.*
 - *The students can design and create a picture book to explain the ideas of environmental change.*
 - *The students can explain that some changes in an environment can be beneficial and some changes can be detrimental to different organisms in an ecosystem.*
 - *The students can compare an ecosystem in Ohio from the past to the present.*
 - *The students can create a plan to benefit an endangered species in Ohio.*
 - *The students can explain how fossils are used to learn about organisms that no longer exist.*
 - *The students can compare fossils to other fossils and living organisms to identify similarities and differences*
 - *The students can conduct experiments to discover how organisms can leave fossil evidence.*
 - *The students can infer possible facts about organisms and their environment based on observations of fossils or models of fossils*

Quarter 3 & 4
PHYSICAL SCIENCE (PS)
Unit 6 - Matter
Unit 7 - Forms of Energy
Unit 8 - Electricity

Topic: Electricity, Heat and Matter

This topic focuses on the conservation of matter and the processes of energy transfer and transformation, especially as they relate to heat and electrical energy

- When objects break into smaller pieces, dissolve, or change state, the total amount of matter is conserved.
- Energy can be transferred from one location to another or can be transformed from one form to another

- *The students can explain that when a solid is dissolved in a liquid, the total amount of matter remains constant.*
- *The students can explain that when matter changes state (solid, liquid, gas), the total amount of matter remains constant.*
- *The students can demonstrate and explain how electrical energy in circuits can be transformed to other forms of energy, including light, heat, sound and motion.*