

Content Area: Science

Standard: Earth Systems Science

Prepared Graduates:

- Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet

Grade Level Expectation: Fourth Grade

Concepts and skills students master:

1. Earth is part of the solar system, which includes the Sun, Moon, and other bodies that orbit the Sun in predictable patterns that lead to observable paths of objects in the sky as seen from Earth

Evidence Outcomes

Students can:

- a. Gather, analyze, and interpret data about components of the solar system
- b. Utilize direct and indirect evidence to investigate the components of the solar system
- c. Gather, analyze, and interpret data about the Sunrise and Sunset, and Moon movements and phases
- d. Develop a scientific explanation regarding relationships of the components of the solar system

21st Century Skills and Readiness Competencies

Inquiry Questions:

- What are the patterns of movement for the Sun and Moon across the sky?
- How does Earth compare to other objects orbiting the Sun?
- How do we study the solar system?

Relevance and Application:

- Space exploration has produced data to answer questions about the solar system.
- Comets are observable objects seen from Earth which provide scientists data about the solar system.
- Orbits in a predictable pattern in space influence season's on Earth.

Nature of Science:

- Understand that models are developed to explain and predict natural phenomena that cannot be directly observed because they happen over long periods of time.
- Critically evaluate models of the solar system, identifying the strengths and weaknesses of the model in representing what happens in the real solar system.

Content Area: Science
Standard: Life Science

Prepared Graduates:

- Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment

Grade Level Expectation: Fourth Grade

Concepts and skills students master:

1. All living things share similar characteristics, but they also have differences that can be described and classified

Evidence Outcomes	21st Century Skills and Readiness Competencies
<p>Students can:</p> <ul style="list-style-type: none">a. Use evidence to develop a scientific explanation of what plants and animals need to surviveb. Use evidence to develop a scientific explanation for similarities and/or differences among different organisms (species)c. Analyze and interpret data representing variation in a traitd. Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate questions about characteristics of living things	<p>Inquiry Questions:</p> <ul style="list-style-type: none">• How have classification systems changed over time?• How are individuals in a related species similar and different? <p>Relevance and Application:</p> <ul style="list-style-type: none">• Human beings have use technology in order to survive in a variety of climates, such as heating and air conditioning.
	<p>Nature of Science:</p> <ul style="list-style-type: none">• Understand that all scientific knowledge is subject to new findings and that the presence of reproducible results yields a scientific theory.• Evaluate and provide feedback on evidence used by others to justify how they classified organisms.

Content Area: Science
Standard: Life Science

Prepared Graduates:
➤ Explain how biological evolution accounts for the unity and diversity of living organisms

Grade Level Expectation: Fourth Grade

Concepts and skills students master:
2. Comparing fossils to each other or to living organisms reveals features of prehistoric environments and provides information about organisms today

Evidence Outcomes

Students can:

- a. Use evidence to develop a scientific explanation for:
 - 1. What fossils tell us about a prehistoric environment
 - 2. What conclusions can be drawn from similarities between fossil evidence and living organisms
- b. Analyze and interpret data to generate evidence about the prehistoric environment
- c. Evaluate whether reasoning and conclusions about given fossils are supported by evidence
- d. Use computer simulations that model and recreate past environments for study and entertainment

21st Century Skills and Readiness Competencies

Inquiry Questions:

- What are some things fossils can't tell us?
- What conditions would most likely lead to something becoming a fossil?

Relevance and Application:

- Computers are used to model and recreate past environments for study and entertainment.

Nature of Science:

- Ask testable questions about past environments.
- Make predictions about past environments based on fossil evidence.
- Recognize that different interpretations of evidence are possible.

Content Area: Science
Standard: Life Science

Prepared Graduates:
➤ Explain and illustrate with examples how living systems interact with the biotic and abiotic environment

Grade Level Expectation: Fourth Grade

Concepts and skills students master:
3. There is interaction and interdependence between and among living and nonliving components of ecosystems

Evidence Outcomes

Students can:

- a. Use evidence to develop a scientific explanation on how organisms adapt to their habitat
- b. Identify the components that make a habitat type unique
- c. Compare and contrast different habitat types
- d. Create and evaluate models of the flow of nonliving components or resources through an ecosystem
- e. Make a plan to positively impact a local ecosystem
- f. Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate endangered habitats

21st Century Skills and Readiness Competencies

Inquiry Questions:

- How are resources shared among organisms in a specific ecosystem or habitat?
- How do nonliving components of an ecosystem influence living components?
- What would happen if the Sun’s energy no longer reached Earth?
- What would happen if water were removed from an ecosystem?

Relevance and Application:

- Humans can have positive and negative impacts on an ecosystem.
- Nonliving components are cycled and recycled through ecosystems and need to be protected and conserved.

Nature of Science:

- Understand that models are developed to explain and predict natural phenomena that cannot be directly observed because they happen over long periods of time.
- Evaluate models that show interactions between living and nonliving components of ecosystems, identifying the strengths and weaknesses of the model in representing what happens in the real world.

Content Area: Science
Standard: Physical Science

Prepared Graduates:
➤ Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable

Grade Level Expectation: Fourth Grade

Concepts and skills students master:
1. Energy comes in many forms such as light, heat, sound, magnetic, chemical, and electrical

Evidence Outcomes

Students can:

- a. Identify and describe the variety of energy sources
- b. Show that electricity in circuits requires a complete loop through which current can pass
- c. Describe the energy transformation that takes place in electrical circuits where light, heat, sound, and magnetic effects are produced
- d. Use multiple resources – including print, electronic, and human – to locate information about different sources of renewable and nonrenewable energy

21st Century Skills and Readiness Competencies

Inquiry Questions:

- How do we know that energy exists within a system such as in an electrical circuit?
- How can heat be transferred from one object to another?

Relevance and Application:

- There are multiple energy sources, both renewable and nonrenewable.
- Energy can be used or stored. For example, it can be stored in a battery and then used when running a portable media player such as an iPod.
- Transportation, manufacturing, and technology are driven by energy.

Nature of Science:

- Ask testable questions about energy, make a falsifiable hypothesis and design an inquiry based method of finding the answer, collect data, and form a conclusion.
- Understand that models are developed to explain and predict phenomena that cannot be directly observed.
- Critically evaluate models of energy, identifying the strengths and weaknesses of the model in representing what happens in the real world.
- Create plans to decrease electrical energy use for one week and evaluate the results.