



Sedalia School District #200

Level: Elementary

Subject Area: Science

Unit/Grade: G4 Unit 3 - 4th Grade

Essential Questions:

1. How do waves help us communicate?
2. How is information transferred from place to place?

Pacing

Priority Standards (Missouri Learning Standards and Show-Me Standards)

Big Idea

I CAN statements

First Quarter

G4 UNIT 3: Waves and Information Transfer

Aug. 27-
Oct. 18

4.PS4.A.1 Develop a model of waves to describe patterns in terms of amplitude or wavelength and that waves can cause objects to move.

[Missouri Learning Standards](#)
[Show Me Standards](#)

Students will explore properties and characteristics of waves and the patterns they create as well as use models to learn about ways in which waves create motion through the transfer of energy. They will also differentiate between wavelength and amplitude.
Students will investigate how light interacts with the surface of objects and explore a variety of communication devices that are the result of science, engineering, and technology.

- I can differentiate between wavelength and amplitude.
- I can observe how waves interact.
- I can describe the effects of matter on light.
- I can identify how light interacts with mirrors, lenses, prisms, and non-reflective surfaces.
- I can compare patterns in multiple methods of transferring information.
- I can transfer information using codes and pixilated image.



Sedalia School District #200

Level: Elementary

Subject Area: PLTW (Science)

Unit/Grade: Module 1 - 4th Grade

Essential Questions:

1. How are potential and kinetic energy related?
2. What happens to energy during a collision?

Pacing

Priority Standards (Missouri Learning Standards and Show-Me Standards)

Big Idea

I CAN statements

First
Quarter

Module 1: Energy Collisions

Aug. 27-
Oct. 18

4.PS2.B.2 Predict how changes in either the amount of force applied to an object or the mass of the object affects the motion (speed and direction) of the object.

4.PS3.A.1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.

4.PS3.B.1 Provide evidence to construct an explanation of an energy transformation.

4.PS3.B.2 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

4.PS3.C.1 Use models to explain that simple machines change the amount of effort force and/or direction of force.

[Missouri Learning Standards](#)
[Show Me Standards](#)

Mechanisms change energy by transferring direction, speed, type of movement, and force. Potential energy can be stored and released as kinetic energy. Students explain the relationship between the speed of an object and the energy of that object. They also predict the transfer of energy as a result of a collision between two objects.

- I can describe the difference between potential and kinetic energy and how they are related.
- I can list ways in which energy can be transferred.
- I can predict the transfer of energy as a result of a collision between two objects.



Sedalia School District #200

Level: Elementary

Subject Area: Science

Unit/Grade: G4 Unit 7 - 4th Grade

Essential Questions:

1. What do fossils tell us about ancient environments?
2. What are some patterns fossils show us?

Pacing

Priority Standards (Missouri Learning Standards and Show-Me Standards)

Big Idea

I CAN statements

Second
Quarter

G4 UNIT 7: Rocks and Fossils

Oct. 21-
Dec. 20

4.ESS1.4 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

[Missouri Learning Standards](#)
[Show Me Standards](#)

Rock layers provide evidence about how they were formed and information about the history of planet Earth. Students will also examine fossils representing life from different periods in Earth's history, determine the habitats in which those fossils lived, and draw conclusions about what modern-day organisms the fossils may be related to. Students use evidence to determine what past environments were like, examine the fossils in different layers of rock to reveal the history of planet Earth.

- I can construct explanations for the ways in which rock layers reveal patterns and reflect the history of planet Earth.
- I can examine fossil evidence to determine how and in what environments organisms of the past lived, based on their physical traits and similarities to living organisms.
- I can examine fossils and other geologic evidence to understand what past environments were like and how they have changed over time, and how changes to Earth's surface have affected them.



Sedalia School District #200

Level: Elementary

Subject Area: PLTW (Science)

Unit/Grade: Module 2 - 4th Grade

Essential Questions:

1. How are energy conversion and transfer related?
2. How can humans use energy conversion and transfer to meet needs and wants?
3. How is usable energy converted from resources in your area?
4. What are some energy conversions that take place to create usable energy in a community?

Pacing

Priority Standards (Missouri Learning Standards and Show-Me Standards)

Big Idea

I CAN statements

Second
Quarter

Module 2: Energy Conversion

Oct. 21-
Dec. 20

4.PS3.B.1 Provide evidence to construct an explanation of an energy transformation.

4.PS3.B.2 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

[Missouri Learning Standards](#)
[Show Me Standards](#)

Energy, and the conversion of energy to different forms is all around. Many devices convert electricity to usable forms of energy such as light and heat. Fuel sources can also convert energy from stored energy to usable electrical energy. Forms of energy include thermal, light, chemical, electrical, and mechanical.

- I can differentiate between potential and kinetic energy.
- I can explain how energy can be converted to meet a human need or want.
- I can compare and contrast the transfer and conversion of energy.
- I can apply scientific ideas about the conversion of energy to solve a simple design problem.



Sedalia School District #200

Level: Elementary

Subject Area: Science

Unit/Grade: G4 Unit 6 - 4th Grade

Essential Questions:

1. How does water shape Earth's surface?
2. How do other factors shape Earth's surface?
3. How are map patterns important to us?

Pacing

Priority Standards (Missouri Learning Standards and Show-Me Standards)

Big Idea

I CAN statements

Third
Quarter

G4 UNIT 6: Changes to the Earth's Surface

Jan. 7-
Mar. 13

4.ESS2.A.1 Plan and conduct scientific investigations or simulations to provide evidence how natural processes [e.g. weathering and erosion] shape Earth's surfaces.

4.ESS2.B.1 Analyze and interpret data from maps to describe patterns of Earth's features.

[Missouri Learning Standards](#)
[Show Me Standards](#)

Water, weathering, erosion, and deposition shape Earth's surface. Students will record evidence regarding how rainfall, weathering, erosion, and deposition shape Earth's surface and investigate how living things impact Earth and then examine the relationships between them all.

Maps can help locate the different land and water features of Earth as shown in the patterns of mountain ranges, ocean trenches, and other natural phenomena.

- I can explain how water shapes Earth's surface.
- I can describe ways in which water causes weathering, erosion, and deposition to take place.
- I can identify evidence about factors that shape Earth's surface, such as rainfall, organisms, weathering, erosion, and deposition.
- I can interpret map contents and use maps as sources of data about Earth's features.
- I can identify and explain where on Earth's surface earthquakes, volcanoes, mountains, and ocean trenches can be found.



Sedalia School District #200

Level: Elementary

Subject Area: PLTW (Science)

Unit/Grade: Module 3 - 4th Grade

Essential Questions:

1. How does a computer system work?
2. How do humans translate a problem so that a computer can operate on it?
3. What are the advantages that technology offers to humans that allow us to accomplish things we couldn't do without technology?

Pacing

Priority Standards (Missouri Learning Standards and Show-Me Standards)

Big Idea

I CAN statements

Third
Quarter

Module 3: Input/Output Computer Systems

Jan. 7-
Mar. 13

4.ETS1.A.1 Define a simple design problem reflecting a need or want that includes specified criteria for success and constraints on materials, time, or cost.

4.ETS.1.B.1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

4.ETS1.C Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

[Missouri Learning Standards](#)
[Show Me Standards](#)

Computer systems infrastructure includes basic computer hardware and digital data representation. A computer system is compared to a human brain, focusing on input, processing, and output. Students also learn how data is stored in a computer. Students also learn about collecting data and representing it visually using programming.

- I can explain why computer scientists break big problems into subproblems.
- I can identify basic input and output devices in computer systems.
- I can explain safe and responsible use of the Internet.
- I can give examples of real-life applications of computer systems.



Sedalia School District #200

Level: Elementary

Subject Area: Science

Unit/Grade: G4 Unit 8 - 4th Grade

Essential Questions:

1. How can people reduce the impact of land-based hazards?
2. How can people reduce the impact of water-based hazards?

Pacing

Priority Standards (Missouri Learning Standards and Show-Me Standards)

Big Idea

I CAN statements

Fourth
Quarter

G4 UNIT 8: Natural Resources and Hazards

Mar. 23-
May 21

4.ESS3.A.1 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

[Missouri Learning Standards](#)
[Show Me Standards](#)

Students will evaluate information about nonrenewable resources, protecting and reducing the use of nonrenewable resources. They will learn how people's needs and wants change over time as they demand new and better technologies. Students also learn about renewable energy resources and evaluate the benefits and drawbacks. Students learn and explore the causes and effects of natural hazards, such as volcanic eruptions, earthquakes, landslides, and wildfires. Students also study how to lessen the impacts of water-based hazards.

- I can understand that humans use energy and fuels derived from natural resources.
- I can evaluate the benefits and drawbacks of renewable resources.
- I can describe a variety of Earth processes on land that can be hazardous to humans and how these processes can be lessened.
- I can analyze a variety of water-based processes that can be hazardous to humans.



Sedalia School District #200

Level: Elementary

Subject Area: PLTW (Science)

Unit/Grade: Module 4 - 4th Grade

Essential Questions:

1. How does your body sense input from the outside world and make an appropriate response?
2. How can medical professionals use patient symptoms to diagnose brain injuries?
3. How does information we see in the media influence our decisions about healthy behavior?

Pacing	Priority Standards (Missouri Learning Standards and Show-Me Standards)	Big Idea	I CAN statements
Fourth Quarter Module 4: Input/Output Human Brain Mar. 23- May 21	4.LS1.A.1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and plant reproduction. 4.LS1.D.1 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. Missouri Learning Standards Show Me Standards	Students are introduced to the analogy of the brain as a computer. The human body has inputs and outputs. Signals pass from cell to cell to allow us to receive stimuli from the outside world, get this information for brain processing, and then send out a signal to generate a response. Students learn about concussions in this module and create a product to raise awareness.	• I can identify major regions of the human brain. • I can describe what happens in the human body from an initial stimulus to a response. • I can describe how each region within the brain helps control and regulate specific functions in the body. • I can describe how the organs responsible for each sense communicate with the brain.