Platte County

HOME OF THE PIRATES

SCIENCE CURRICULUM

SIXTH GRADE

Board Approval Date: pending
May 2024

6 Science: Earth Processes

Overview

Grade: 6

Quarter(s): 1 and 2

Pacing: 8 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8. ESS2.A.2	CONSTRUCT an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
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.	To be aligned with High School Earth Science Power Standards.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.ESS2.A.1	Develop and use a model to illustrate that energy from the Earth's interior drives convection which cycles Earth's crust leading to melting, crystallization, weathering and deformation of large rock formation, including generation of ocean seafloor at ridges, submergence of ocean seafloor at trenches mountain building and active volcanic chains.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8. ESS2.A.2	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	3	**SCIENCE AND ENGINEERING PRACTICES** **Constructing and Explanations of Designing Solutions** • Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe nature operate today as they did in the past and will continue to do so in the future • Construct an explanation that describes how geoscience processes have occurred rapidly, gradually, or over large spans of time and over small to large spatial scales.

CROSSCUTTING CONCEPTS

Scale, Proportion and Quantity

- Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small to be directly observed.
- On both large and small spatial scales, gather evidence of geoscience processes to construct an explanation

DISCIPLINARY CORE IDEAS

Earth's Materials and Systems

- The planets interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.

The Roles of Water in Earth's Surface Processes

- Water's movements = both on the land and underground - cause weathering and erosion, which change the land's surface features and create underground formations.

DESE Questions Examples:

The first image of Northern Chandeleur Islands located in the Gulf of Mexico was taken in July 2001. The second image was taken at the same site on August 31, 2005.

Image 1

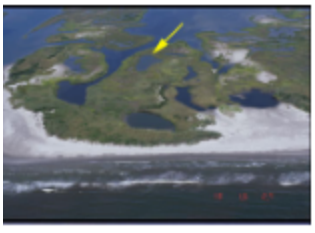
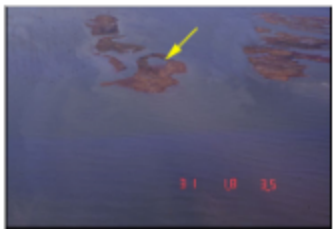


Image 2



1. Make a claim and support it with a piece of evidence from the photos to explain what happened during the four year time span.

"Unwrapped" Content (nouns) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do/possible evidence)**	**"Unwrapped" Understanding (students need to understand/big ideas)**

• explanation • evidence • geoscience processes • Earth's surface • time • spatial scales	**CONSTRUCT an explanation:** • The slow and large motion of Earth's plate and the results of those motions • Surface weathering, erosion, movement, and the deposition of sediment ranging from large to microscopic scale • Rapid catastrophic events	**DISCIPLINARY CORE IDEAS** **Earth's Materials and Systems** • The planets interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. **The Roles of Water in Earth's Surface Processes** • Water's movements = both on the land and underground - cause weathering and erosion, which change the land's surface features and create underground formations.

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• Explanation • Evidence • Geoscience Processes • Time • Spatial Scales	• Plan • Conduct • Natural Processes • Earth's Surfaces

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

4	**Student has mastered understanding of the entire standard(s) and makes little to no errors when asked to demonstrate and apply their learning.**
	● **To be completed in the 2024-2025 School Year**
3	**Student consistently shows understanding for most components of the standard(s) with few errors when asked to demonstrate and apply their learning.**
	●
2	**Student can sometimes show understanding for some of the components of the standard(s), yet there are a few aspects that they are still learning and improving upon.**
	●
1	**Student rarely shows understanding for any component of the standard(s) and are still needing significant teaching to apply their learning.**
	●

Additional Information

Professional Resource Suggestions	Instructional Resources
DESE ● MO Performance Level Descriptors ● Item Specifications ● Science Curriculum Hub	**District Provided:** ● Savvas ○ Topics 1,4,5 ● Gizmos ○ Erosion Rates ○ Rock Cycle ○ Plate Tectonics ○ Weathering ○ River Erosion **Other:** ● MO Leap Blocks

Unit Designer Notes	**Content Limits/Assessment Boundaries:** ● Tasks should focus on relative time scales. ● Tasks should not require the memorization of facts, observations, or data that can be used as evidence. **ClarificationStatement:** ● Emphasis is on how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geothermal reactions), and how many geoscience processes (such as earthquakes, volcanoes, or meteor impacts) usually behave gradually but are punctuated by catastrophic events, Examples of geoscience processes include surface weathering and deposition by the movements of water, ice, and wind. Emphasis on geoscience processes that shape local geographic features, where appropriate.

6 Science: Engineering Design

Overview

Grade: 6

Quarter(s): 1,2,3,4

Pacing: 2 weeks in Quarter 1; 1 week each in Quarters 2-4

Unit Power Standard(s) Code	Unit Power Standard(s) Description
ETS1.B.3	DEVELOP a model to GENERATE data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
ETS1.A.1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost **ETS1.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.Developing PossibleSolutions **ETS1.C.1** Plan and carryout fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.Optimizing the Solution Process	N/A

Unit Supporting Standards Code	Unit Supporting Standards Description
ETS1.A.1	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution
ETS1.B.1	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
ETS1.B.3	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an	3	**SCIENCE AND ENGINEERING PRACTICES** **Developing and Using Models** • Develop a model to generate data to test ideas about designed systems including those representing inputs and outputs.

	optimal design can be achieved.		• Develop a model to generate data for repeated testing and modification of a proposed object, tool, or process for the purpose of the achievement of optimal design. **<u>DISCIPLINARY CORE IDEAS</u>** **Developing Possible Solutions** • A solution needs to be tested and then modified on the basis of the test results in order to improve it. • Models of all kinds are important for testing solutions. **Optimizing the Design Solution** • The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution.
DESE Questions Examples:	To be added as DESE Item Specifications are updated.		

"Unwrapped" Content (<u>nouns</u>) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
• Model • Data • Object • Tool • Process • Optimal design	**DEVELOP a model to GENERATE data:** • For iterative testing • For modification of proposed object, tool, or process such that an optimal design can be reached	**Students will understand that:** • A solution needs to be tested and then modified on the basis of the test results in order to improve it. • Models of all kinds are important for testing solutions. **Students will understand how to optimize the Design Solution by using:** • The iterative process of testing
New Academic Vocabulary	**Scaffolded (Review) Academic Vocabulary**	

• Optimal design • Data • Tool • Process	• Model

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

4	**Student has mastered understanding of the entire standard(s) and makes little to no errors when asked to demonstrate and apply their learning.** • **To be completed in the 2024-2025 School Year.**
3	**Student consistently shows understanding for most components of the standard(s) with few errors when asked to demonstrate and apply their learning.** •
2	**Student can sometimes show understanding for some of the components of the standard(s), yet there are a few aspects that they are still learning and improving upon.** •
1	**Student rarely shows understanding for any component of the standard(s) and are still needing significant teaching to apply their learning.** •

Additional Information

Professional Resource Suggestions	Instructional Resources

DESE
• MO Performance Level Descriptors
• Item Specifications
• Science Curriculum Hub
	District Provided:
	• Savvas
	  ○
	• Gizmos
	  ○ Earthquake proof homes
	  ○ Flood and storm proof homes
	Other:
	• MO Leap Blocks

Unit Designer Notes	**Content Limits/Assessment Boundaries:** • N/A **ClarificationStatement:** • N/A

6 Science: Natural Resources

Overview

Grade: 6

Quarter(s): 3

Pacing: 6 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8ESS3.C.1	ANALYZE data to DEFINE the relationship for how increases in human population and per-capita consumption of natural resources IMPACT Earth's System.
6-8ESS3.A.1	CONSTRUCT a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes and human activity.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
4.ESS3.A.1 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. **5.ESS3.C.1** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	To be aligned with High School Earth Science Power Standards.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.ESS3.C.2	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
6-8.ESS3.D.1	Analyze evidence of the factors that have caused the change in global temperatures over the past century.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8ESS3.C.1	Analyze data to define the relationship for how increases in human population and per-capita consumption of natural resources	3	**SCIENCE AND ENGINEERING PRACTICES** **Analyzing and Interpreting Data** • Examine the environmental impact of human water and land usage and pollution to design a method for monitoring and minimizing those impacts. **DISCIPLINARY CORE IDEAS** **Human Impacts on Earth's Systems**

	imipact Earth's System.		• Typically, as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. **<u>CROSSCUTTING CONCEPTS</u>** **Cause And Effect** • Cause and effect relationships may be used to predict phenomena in natural or designed systems **Influence of Science, Engineering, and Technology on Society and the Natural World** • All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. **Science Addresses Questions About the Natural And Material World** • Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes.
6-8ESS3.A.1	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes and human activity.	3	**<u>SCIENCE AND ENGINEERING PRACTICES</u>** **Constructing Explanations and Designing Solutions** • Construct a scientific explanation based on evidence that demonstrates how human activity and geoscience processes, both past and current, cause uneven distribution of Earth's resources. **<u>DISCIPLINARY CORE IDEAS</u>** **Human Impacts on Earth Systems** • Typically,as human populations per-capita consumption of natural resources increases, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. **<u>CROSSCUTTING CONCEPTS</u>** **Influence of Science, Engineering, and Technology on Society and the Natural**

			world ● All human activity draws on natural resources and has both short-and long-term consequences, positive as well as negative, for the health of people and the natural environment.
DESE Questions Examples:	To be added as DESE Item Specifications are updated.		

"Unwrapped" Content (nouns) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
● Data ● Relationship ● Human population ● Per Capita consumption ● Natural resource ● Scientific explanation ● Evidence ● Uneven distribution ● Earth minerals ● Earth energy ● Earth groundwater resources ● Past geological process ● Current geological process ● Human action	**6-8.ESS3.A.1** **CONSTRUCT a scientific explanation based on:** ● type and distribution of an example of each type of Earth resources: mineral, Energy, and groundwater. ● evidence for the past and ● Current geologic processes (e.g., volcanic activity, sedimentary processes) ● That have resulted in the formation of each of the given resources. ● the ways in which the extraction of each type of resource by humans changes how much and where more of that resource can be found. **6-8ESS3.C.1** **Students IDENTIFY evidence to support the claim from the given materials, including:** ● changes in the size of human population(s) in a given region or ecosystem over a given time span. ● per-capita consumption of resources by humans in a given region or	DISCIPLINARY CORE IDEAS **6-8ESS3.C.1** ● Typically, as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless theActivities and technologies involved are engineered otherwise. **6-8ESS3.A.1** ● Typically, as human populations and per-capita consumption of natural resources increases, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.

	ecosystem over a given time span. • changes in Earth systems in a given region or ecosystem over a given time span. • the ways engineered solutions have altered the effects of human activities on Earth's system.	

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• Per capita consumption • Scientific explanation • Geological processes • Natural resource • Evidence • Distribution • Minerals • Energy • Groundwater resources • Human action	• Data • Relationship • Population

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

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3	**Student consistently shows understanding for most components of the standard(s) with few errors when asked to demonstrate and apply their learning.**
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	•

Additional Information

<table>
<tr><th>Professional Resource Suggestions</th><th>Instructional Resources</th></tr>
<tr><td>DESE
● MO Performance Level Descriptors
● Item Specifications
● Science Curriculum Hub</td><td>District Provided:
● Savvas
○ Use: Topic 6 and 7

● Gizmos
○ Greenhouse Effect
○ Household Energy Usage
○ Carbon Cycle
● Water Pollution

Other Resources:
● Inconvenient Truth video
● MO Leap Blocks</td></tr>
<tr><td>Curriculum Designer Notes:</td><td colspan="2">6-8ESS3.A.1
<u>Content Limits/Assessment Boundaries:</u>
● Tasks should provide students with all needed evidence.

<u>ClarificationStatement:</u>
● Emphasis is on how these resources are limited and typically non-renewable, and how their distributions are significantly changing as a result of removal by humans. Examples of uneven distribution of resources as a result of past processes include but are not limited to petroleum (locations the burial of organic marine sediments and subsequent geologic traps), metalores (locations of past volcanic and hydrothermal activity associated with subduction zones), and soil (locations of active weathering and/or deposition of rock

6-8ESS3.C.1
<u>Content Limits/Assessment Boundaries:</u>
● Tasks should be limited to given data sets (e.g., human population, per capita consumption of natural resources)

<u>ClarificationStatement:</u>
● Examples of evidence include grade-appropriate data bases on human populations and the rates of consumption of food and natural resources (such as freshwater,mineral,and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human population and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.</td></tr>
</table>

6 Science: Solar System

Overview

Grade: 6

Quarter(s): 4

Pacing: 8 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8 ESS1.A.3	DEVELOP and USE a model to DESCRIBE the role of gravity in the MOTIONS within galaxies and the solar system

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
ESS1.A.1 Support an argument that relative distance from Earth affects the apparent brightness of the sun compared to other stars. **ESS1.B.1** Make observations during different seasons to relate the amount of daylight to the time of year. **ESS1.B.2** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows,day and night, and the seasonal appearance of some stars in the night sky.	To be aligned with High School Earth Science Power Standards.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.ESS1.A.2	Develop and use a model of the Earth-Sun system to explain the cyclical pattern of seasons, which includes the Earth's tilt and directional angle of sunlight on different areas of Earth across the year.
6-8 ESS3.B.1	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8 ESS1.A.3	Develop and USE a model to describe the role of gravity in the motions within galaxies and the solar system	3	**SCIENCE AND ENGINEERING PRACTICES** **Developing and Using Models** • Develop and use a model to explain the cyclic patterns of lunar phase and eclipses of the sun and moon. **DISCIPLINARY CORE IDEAS** **The Universe and Its Stars** • Patterns of the apparent moon of the Sun,moon,and stars in the sky can be

			observed, described, predicted,and explained with models. **<u>CROSSCUTTING CONCEPTS</u>** **Patterns** ● Use patterns identify cause and effect relationships between the relative positions of Earth,the moon, and the Sun and the cyclic patterns of lunar phases and eclipses of the sun and moon.
DESE Questions Examples:	To be added as DESE Item Specifications are updated.		

"Unwrapped" Content (<u>nouns</u>) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
● Model ● Gravity ● Solar System ● Galaxies	**DEVELOP a model in which they identify the solar system, galaxy, and universe plus their relevant components of the system, including:** ● Gravity ● The solar system and collection of bodies including the Sun, planets, moons, and asteroids. ● The Milky Way galaxy as a collection of stars and their associated systems of objects. ● Other galaxies in the universe. **INDICATE relative spatial scales.** **DESCRIBE the relationships and interactions between components of the solar and galaxy systems.** **USE a model to DESCRIBE gravity and the patterns caused by gravity.**	**Students will understand that:** ● The solar system consists of the sun and a collection of objects including planets,their moons,and asteroids that are held in orbit around the sun by its gravitational pull on them ● The Solar System appears to have formed from a disk of dust and gas,drawn together by gravity ● Earth and its solar system are part of the MilkyWay galaxy, which is one of the many galaxies in the universe. Earth and the Solar System

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• Solar System • Galaxies	• Model • Roles • Gravity • Motion

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

4	**Student has mastered understanding of the entire standard(s) and makes little to no errors when asked to demonstrate and apply their learning.** • **To be completed in the 2024-2025 School Year**
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Additional Information

Professional Resource Suggestions

DESE

- MO Performance Level Descriptors
- Item Specifications
- Science Curriculum Hub

Instructional Resources

District Provided:

- Savvas
  - Topic 11
  - Topic 12
- Gizmos
  - Solar System
  - Solar System Explorer
  - Comparing Earth and Venus
  - 2D Eclipse
  - 3D Eclipse
  - Eclipse
  - Seasons in 3D

Other:

- MO Leap Blocks

Unit Designer Notes	**<u>Content Limits/Assessment Boundaries:</u>** ● Tasks should avoid Kepler's laws of orbital motion or the apparent retrograde motion of planets as viewed from Earth. ● Tasks should not require students to complete any calculations. **<u>ClarificationStatement:</u>** ● Emphasis for the model is on gravity as the force that holds together the solar system and the Milky Way galaxy and controls orbital motions within them. Examples of models can be physical or conceptual.

SCIENCE: EARTH'S ATMOSPHERE/WEATHER

Overview

Grade: 6

Quarter(s): 4

Pacing: 9 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8.ESS2.C.1	• DESIGN and DEVELOP a model to DESIGN the cycling of water through Earth's System driven by energy from the sun and the force of gravity.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
5.ESS2.C.1 Describe and graph the amount of percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	To be aligned with High School Earth Science Power Standards.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.ESS2.C.2	Research, collect, and analyze data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.
6-8.ESS2.C.3	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8.ESS2.C.1	DESIGN and DEVELOP a model to DESIGN the cycling of water through Earth's System driven by energy from the sun and the force of gravity.	3	**SCIENCE AND ENGINEERING PRACTICES** **Developing and Using Models** • Develop a model to describe unobservable mechanisms • Design and develop a model to describe the absorption or release of energy as water changes its state and moves through the hydrologic cycle. **CROSSCUTTING CONCEPTS:** **Energy and Matter** • Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. ○ Design and develop a model to describe the absorption or release of energy as

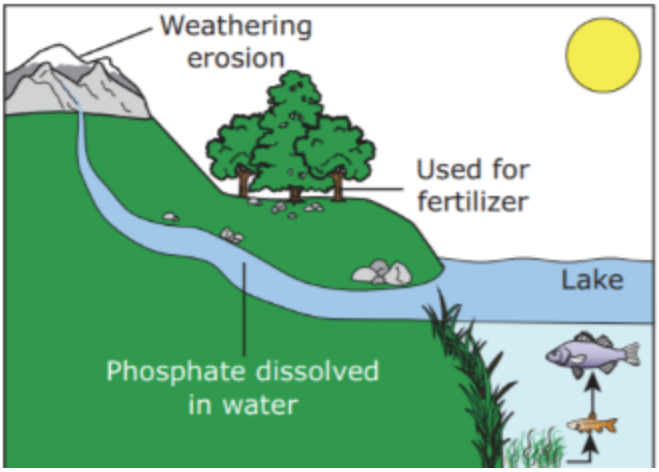
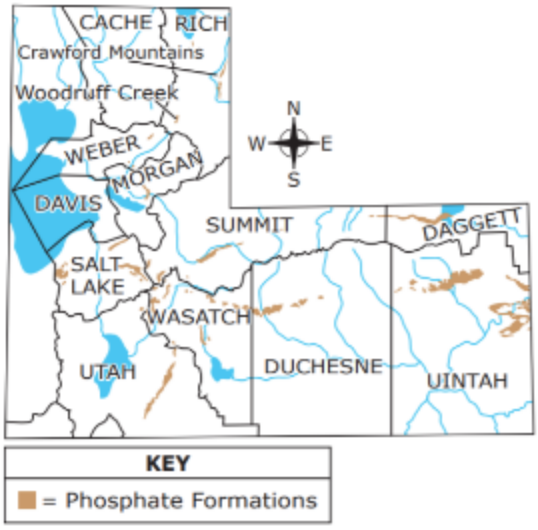
			water changes its state and moves through the hydrologic cycle. **<u>DISCIPLINARY CORE IDEAS</u>** **The Roles of Water in Earth's Surface Processes** ● Water continually cycles between land, ocean, and atmosphere via transpiration, evaporation, condensation, crystallization, and precipitation, as well as downhill flows of land. ○ Global movement of water and its changes in form are propelled by sunlight and gravity
DESE Questions Examples:	A student finds a rock and shows it to his teacher, who says it contains phosphate. The teacher explains that rocks containing phosphate are mined and broken down for use in fertilizer. The students conduct research to find out more about phosphate in the area where he lives. Phosphate is an essential mineral for living things. **Figure 1: Phosphate in Environment**  **Figure 2: Phosphate Deposits in Utah Counties**  	

Table 1: Probability of Phosphate by Rock Type in Each County

County	Igneous Rock	Sedimentary Rock
Cache	Low	Low
Daggett	Low	High
Duchesne	Low	Medium
Morgan	Low	Low
Rich	Low	Medium
Salt Lake	Low	High
Summit	Low	Low
Uintah	Low	High
Utah	Low	Low
Wasatch	Low	High
Weber	Low	Medium

1. Which of these causes the water in the river to cycle through the area in Figure 1? Select **three** correct answers.
    a. Rocks
    b. The Sun
    c. Gravity
    d. The plants
    e. Phosphate
2. The student wants to make a model to show how phosphate cycles in this area. Put the descriptions of the parts of the model, beginning with the first step, in the correct order.

    Step 1: Water in the lake is heated by the sun, evaporating and leaving phosphate minerals behind.

"Unwrapped" Content (<u>nouns</u>) (students need to know)	"Unwrapped" Skills (VERBS) (students need to be able to do/possible evidence)	"Unwrapped" Understanding (students need to understand/big ideas)
• Model • Cycling of water • Earth's system • Energy • Sun • Force • Gravity	**In their model, students DESCRIBE the relevant relationships between components, including:** • Energy transfer from the sun warms on Earth, which can evaporate into the atmosphere. • Water vapor in the atmosphere forms clouds, which can cool and condense to produce precipitation that falls to the surface of Earth. • Gravity causes water on land to move downhill	**<u>DISCIPLINARY CORE IDEAS</u>** **The Roles of Water in Earth's Surface Processes** • Water continually cycles between land, ocean, and atmosphere via transpiration, evaporation, condensation, crystallization, and precipitation, as well as downhill flows of land. ○ Global movement of water and its changes

	(e.g. rivers and glaciers) and much of it eventually flows into oceans. • Some liquid and solid water remains on land in the form of bodies of water and ice sheets • Some water remains in the tissues of plants and other living organisms, and this water is released when the tissues decompose.	in form are propelled by sunlight and gravity

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• Earth's system • Cycling of water	• Design • Develop • Model • Energy • Sun • Force • Gravity

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

4	**Student has mastered understanding of the entire standard(s) and makes little to no errors when asked to demonstrate and apply their learning.**
	• **To be completed in the 2024-2025 School Year**
3	**Student consistently shows understanding for most components of the standard(s) with few errors when asked to demonstrate and apply their learning.**
	•
2	**Student can sometimes show understanding for some of the components of the standard(s), yet there are a few aspects that they are still learning and improving upon.**
	•
1	**Student rarely shows understanding for any component of the standard(s) and are still needing significant teaching to apply their learning.**
	•

Additional Information

Professional Resource Suggestions	Instructional Resources

<table>
<tr><td colspan="2">DESE
● MO Performance Level Descriptors
● Item Specifications
● Science Curriculum Hub</td><td>District Provided:
● Savvas
○ Topic 2
○ Topic 9
● Gizmos
○ Water Cycle

Other:
● MO Leap Blocks</td></tr>
<tr><td>Unit Designer Notes</td><td colspan="2"><u>Content Limits/Assessment Boundaries:</u>
● Tasks should avoid a quantitative understanding of latent heats of vaporization and fusion.
● Tasks should not require any calculations.

<u>ClarificationStatement:</u>
● Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical.</td></tr>
</table>