CCPS Science Unit Plan

Grade	3rd	Subject	Science	Unit	1
Unit Name	Rocks, Soils, Minerals		Timeline	6 weeks	
How to use the Framework	This Framework should be used to implement daily science instruction. The resources and instructional strategies reflected in the Framework will provide a foundation for effective implementation and student mastery of standards. Please see the hyperlinked abbreviation document to ensure understanding of all abbreviations used with this framework. Science Framework Abbreviations				
Unit Overview	*All resources related to this Framework are either embedded in this document or can be located via the Science Department website. **Background:** The science and engineering practice in the standard is to obtain, evaluate, and communicate information. This is the overarching science and engineering practice for each of the standards. The goal of this science and engineering practice is for students to obtain information, evaluate information, and then communicate information. Below, each of the elements has its own science and engineering practice. A rock is made up of minerals. Rocks have physical attributes that can be observed. A mineral is a pure and naturally occurring substance. Soil is a naturally occurring material partly made up of weathered rocks and once living organisms. Weathering breaks larger rocks into smaller rocks and erosion carries rocks and soil and deposits it in another location. Water and/or wind are two factors that change rock and soil. **Prerequisites:** **SKE2. Obtain, evaluate, and communicate information to describe the physical attributes of earth materials (soil, rocks, water, and air).** a. Ask questions to identify and describe earth materials—soil, rocks, water, and air. b. Construct an argument supported by evidence for how rocks can be grouped by physical attributes (size, weight, texture, color). c. Use tools to observe and record physical attributes of soil such as texture and color. **Throughout this unit, the student should:** ● *Analyze* data to classify rocks based on physical attributes. ● *Plan and carry* out investigations to describe properties of soils and soil types. ● *Observe* the local environment to construct an explanation of how water and wind have changed the soils and rocks over time. **Throughout this unit, the teacher should:** ● *ensure* that students can ask questions to explore the attributes of rocks ● *support* the students' plans as they carry out investigations ● *guide* constructed explanations about how water and wind have changed the soils and rocks over time ● *model evaluating to* analyze and interpret data to identify how water and wind have changed the soils and rocks over time. Teacher Notes				
Standards	GSE	Science and Engineering Practices	Crosscutting Concepts		

	S3E1. Obtain, evaluate, and communicate information about the physical attributes of rocks and soils. **a**. Ask questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests. (Clarification statement: Mohs scale should be studied at this level. Cleavage, streak and the classification of rocks as sedimentary, igneous, and metamorphic are studied in sixth grade.) **b**. Plan and carry out investigations to describe properties (color, texture, capacity to retain water, and ability to support growth of plants) of soils and soil types (sand, clay, loam). **c**. Make observations of the local environment to construct an explanation of how water and/or wind have made changes to soil and/or rocks over time. (Clarification statement: Examples could include ripples in dirt on a playground and a hole formed under gutters.)	**Asking** questions and **analyze** data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests. **Plan and carry out investigations** to describe properties (color, texture, capacity to retain water and ability to support growth of plants) of soil and soil types (sand, clay, loam). **Constructing explanations** of how water and/or wind have made changes to soil and/or rocks over time.	**Structure and Function** The shape and stability of structures of natural and designed objects are related to their function/s. **Patterns** Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them. **Energy and matter:** Flows, cycles, and conservation. Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.
NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas		

The Phenomenon Protocol

Anchoring Phenomena	Learning Targets
Rocks in your Region	The student will be able to ask questions about rocks and their physical attributes (color, texture, luster, and hardness). The student will be able to analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests.
Georgia Grown	The student will be able to plan and carry out investigations to describe soil properties (color, texture, capacity to retain water, and ability to support growth of plants). The student will be able to characterize soil according to its soil types (sand, clay, loam).
Erosion in the school yard	The students will be able to make observations of their local environment of how water and/or wind have made changes to rocks and soil over time. The student will be able to make observations of their local environment and construct an explanation about how rocks and soil change over time.

Weekly Lesson Tasks

Navigation: Week 1 | Week 2 | Week 3 | Week 4| Week 5 | Week 6| Return to top | Assessment Prep

Week 1

Standards| Phenomenon| Weekly Lessons

GSE: S3E1a	**Focused Concept:** Ask questions about rocks and their physical attributes (color, texture, luster, and hardness).
Learning Target:	The student will be able to analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests.
Lab Safety:	**General Safety Practices for the Elementary Science Classroom- TOC.docx.pdf**

SEP Teacher Tip: (Day 1 and 3)
To support students with the Science & Engineering Practices for this week, follow the guidance in this protocol: Analyze and Interpret Data.pdf

Phenomenon: Rocks in your Region	**DQ:** *What physical properties do common rocks and minerals have in the regions of Georgia?*

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
Phenomenon: **(10-15 minutes)** **Show students the phenomenon card.** Rocks in your Region See, Think, Wonder Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity** **(10-15 minutes)** Rock Description	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What physical properties do common rocks and minerals have in the regions of Georgia?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the	**Review the Driving Question:** **(1-2 minutes)** *What physical properties do common rocks and minerals have in the regions of Georgia?* **Graphic Organizer** **(2-3 minutes for students to access)** **U-Investigate Lab: Savvas: pg. 175** **How can you classify minerals?** If your students need more direction on this lab, use the following procedure.	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: Rocks and Minerals The text for this week's lesson can be found at…. **Group A:**What are Minerals pg. 1 **Group B:** What are Rocks pg. 1 **Group C:** Observing Properties pg. 2 **Group D:** Look Out pg. 3-4 The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy:	**Review the Phenomenon** **(5-7 minutes)** Allow students to review the initial observations and questions from see, think, wonder strategy on Day 1. Have students review initial ideas. Ask students: *Have any of your ideas about the phenomenon changed? How?* Have students review their initial questions. Ask students: *What questions generated on Day 1 can you answer, now? What are your answers to the questions?* **Claim-Evidence-Reasoning** **(15 -25 minutes)**

Objective:
Students describe rocks and then classify them based on different properties**.**

Materials
Rock Description Cards
Mineral samples of varying sizes, shapes, colors, and textures (per student)
Whiteboard (per teacher)
Penny (per group)
Nail (per group)
Butter knife (per group)
Permanent marker (per group)
Pink, rectangular eraser (per group)
Dry-erase markers (per teacher)

Guiding Questions:

What properties can we use to describe rocks?

What tools might you use to help you observe and describe your rocks?

**TEACHER NOTE:
Teacher should model the text with a nail and knife.

Students may need help establishing the criteria they'll use to sort the samples. Ask guiding questions to help students make the connection between gathering data and using it to classify objects.

Assessment Prep Activity:
Following the task, click the link above. Have students practice applying their knowledge to an assessment question.

graphic organizer.

Be sure to create a reference for students to have throughout the week.

****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)
(10-12 minutes)
Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster with students.

As a class or in student groups,

1. Label the mineral specimens A, B, and C.
2. Observe and describe each specimen.
3. In the first column, write Color and record the color of each sample.
4. In the second column, write Shine. Hold the mineral to the light and record a description of how it appears.
5. In the third column, write Texture. Feel each sample and write down how it feels.
6. Compare the results in the table and identify properties that the minerals share.

Students may need to be told that the nail should be used to test the hardness of a mineral. Students should use care when handling the nail.

Investigation
(35 - 40 minutes)

Objective: Students examine mineral samples and record observations to compare the minerals.

Materials:
Mineral sample
Hand Lens
Magnet
Nail

Guiding Questions:

Explain how the properties of minerals help classify them.

Explain one property used to classify minerals. What do you

3-5 Text Annotation Prot…

Students should complete the following student handout as they work through the text annotation protocol:

3-5 Information Analysis Student Organizer (editable)
3-5 Information Analysis …

During the teacher-led discussion, the teacher should ask the following questions:

What are some of the properties scientists use to identify minerals?
How do scientists test and compare the hardness of a rock?
What are some different textures of a rock?

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Words

rock
mineral
luster
texture
hardness

Vocabulary Strategy

Students will write a response to the following driving question in the CER format.

CER Protocol

DQ:*What physical properties do common rocks and minerals have in the regions of Georgia?*

Review the claim-evidence-reasoning poster with the students

**TEACHER NOTE: Provide students with sentence starters by sharing on the board:

3-5 Claim-Evidence-Rea…

Have students write their claim-evidence-reasoning

writing a claim
Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.

writing evidence
Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning
Students will use textual evidence from the "text

	provide students with this week's claim- evidence-reasoning sample. Student Sample The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoning… (PDF) *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoning… **Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn	*look at and how do you describe the property?* **TEACHER NOTE: Allow students to reference the anchor to determine which properties they would like to use to classify their minerals Mineral Properties Students will most likely observe color first since this is the most obvious means of comparison. Encourage them to look at other properties, such as texture, shine, and hardness. Assessment Prep Activity: Following the task, click the link above. Have students practice applying their knowledge to an assessment question.	**(10-15 minutes)** **Connect the two** Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer discussion, etc.). The teacher should model researching the word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word. Allow students to work in collaborative groups to discuss and research the other provided vocabulary terms and repeat the modeled instructional strategy. Have students collaborate, in groups, to complete the strategy for the other vocabulary terms. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	annotation graphic organizer" to generate the reasoning or justification in the CER format. Have students use the following template to write their claim-evidence-reasoning (CER) 3-5 Student Writing Template (editable) 3-5 Student Writing Template (pdf) **TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?* **Assessment for Learning:** **(10-15 minutes)** Have students complete the following assessment to conclude this week's lesson. Rocks and Minerals Week 1 **Assessment can also be found on Illuminate**

	vocabulary on Day 4.			

Week 2 Standards | Phenomenon | Weekly Lessons				
GSE: S3E1a	**Focused Concept:** Ask questions about rocks and their physical attributes (color, texture, luster, and hardness).			
Learning Target	The student will be able to analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests.			
Lab Safety	**General Safety Practices for the Elementary Science Classroom- TOC.docx.pdf**			
SEP Teacher Tip: (Day 1 and 3) To support students with the Science & Engineering Practices for this week, follow the guidance in this protocol: Analyze and Interpret Data.pdf				
Phenomenon: Rocks in your Region		**DQ:** *What physical properties do common rocks and minerals have in the regions of Georgia?*		
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon: **(10-15 minutes)** **Show students the phenomenon card.** **Rocks in your Region** **See, Think, Wonder** Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity** **(10-15 minutes)** **Gizmo:**Minerals Identification	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What physical properties do common rocks and minerals have in the regions of Georgia?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on	**Review the Driving Question:** **(1-2 minutes)** *What physical properties do common rocks and minerals have in the regions of Georgia?* **Graphic Organizer** **(2-3 minutes for students to access)** Students will need and will use the student Gizmo lab sheet for "Mineral Identification" provided in the Unit 1 Supporting Resource Folder **Materials** **Gizmo:** Mineral Identification Recording Sheet Computer Teacher Guide	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: Rocks and Minerals The text for this week's lesson can be found at…. **Group A:** Read Numbers 1, 2, 3 **Group B:** Read Numbers 4 and 5 **Group C:** Read Numbers 6 and 7 **Group D:** Read Numbers 8, 9, 10 The teacher should facilitate the following process.Have the	**Review the Phenomenon** **(5-7 minutes)** Allow students to review the initial observations and questions from see, think, wonder strategy on Day 1. Have students review initial ideas. Ask students: *Have any of your ideas about the phenomenon changed? How?* Have students review their initial questions. Ask students: *What questions generated on Day 1 can you answer, now? What are your answers to the questions?* **Claim-Evidence-Reasoning** **(15 -25 minutes)**

Complete only the Background and Warm-up on this day

Objective:
Observe and measure the properties of a mineral sample, and then use a key to identify the mineral.

Materials
Mineral Identification
Recording Sheet
Computer
Teacher Guide

Safety: Teachers will remind students to use positive technology habits.

****Teacher Note:**

Complete Prior Knowledge Questions and Gizmo Warm-UP of the Mineral Identification lab.

Assessment Prep Activity:
Following the task, click the link above. Have students practice applying their knowledge to an assessment question.

chart paper with the students or the teacher can complete the graphic organizer.

Be sure to create a reference for students to have throughout the week.
****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)
(10-12 minutes)
Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster

Investigation
(35 - 40 minutes)

Objective:
Observe and measure the properties of a mineral sample, and then use a key to identify the mineral.

Which properties were most useful for identifying minerals? Why?
• Which properties were least useful for identifying minerals? Why? (Color is an example, as many minerals are found in a variety of colors.)
• What are at least four ways you could distinguish gold from pyrite? (Gold is denser and softer than pyrite. Pyrite has a dark streak and cubic crystals.)

****Teacher Note:**

Complete Activity A and Activity B of the Mineral Identification lab.

Have students follow the provided procedure in the Mineral Identification lab. Facilitate and monitor student progress

Ask the students the following questions as they are working:

Review and project the following:
Properties of Rocks.pdf

Safety: Teachers will remind students to follow all safe and

students follow the text protocol facilitation directions provided in the following strategy:

3-5 Text Annotation Prot…

Students should complete the following student handout as they work through the text annotation protocol:

3-5 Information Analysis Student Organizer (editable)
3-5 Information Analysis…

During the teacher-led discussion, the teacher should ask the following questions:

What are minerals made of?
What are rocks made of ?
Explain why some rocks can be hard and some rocks can be soft?

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Words

rock
mineral
luster
texture
hardness

Vocabulary Strategy
(10-15 minutes)

Students will write a response to the following driving question in the CER format.

CER Protocol
DQ:*What physical properties do common rocks and minerals have in the regions of Georgia?*

Review the claim-evidence-reasoning poster with the students

**TEACHER NOTE: Provide students with sentence starters by sharing on the board:
K-2 Claim-Evidence-Rea…

3-5 Claim-Evidence-Rea…

Have students write their claim-evidence-reasoning

writing a claim
Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.

writing evidence
Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning
Students will use textual evidence from the "text annotation graphic organizer" to

	with students. As a class or in student groups, provide students with this week's claim-evidence-reasoning sample. Student Sample The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoni… (PDF) *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoni… **Teacher Note:** As students review the student samples, they	positive technology rules for engaging with online platforms Assessment Prep Activity: Following the task, click the link above. Have students practice applying their knowledge to an assessment question.	**Connect the two** Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer discussion, etc.). The teacher should model researching the word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word. Allow students to work in collaborative groups to discuss and research the other provided vocabulary terms and repeat the modeled instructional strategy. Have students collaborate, in groups, to complete the strategy for the other vocabulary terms. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	generate the reasoning or justification in the CER format. Have students use the following template to write their claim-evidence-reasoning (CER) 3-5 Student Writing Template (editable) 3-5 Student Writing Template (pdf) **TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?* **Assessment for Learning:** **(10-15 minutes)** Have students complete the following assessment to conclude this week's lesson. **Rocks and Minerals Week 2 Quiz** **Assessment can be found in illuminate**

	will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.			

Week 3 Standards | Phenomenon | Weekly Lessons				
GSE: S3E1b	**Focused Concept:** Plan and carry out investigations to describe soil properties (color, texture, capacity to retain water, and ability to support growth of plants).			
Learning Targets:	The student will be able to plan and carry out investigations to describe soil properties (color, texture, capacity to retain water, and ability to support growth of plants).			
Lab Safety:	**General Safety Practices for the Elementary Science Classroom- TOC.docx.pdf**			
SEP Teacher Tip: Day (1 and 3) To support students with the Science & Engineering Practices for this week, follow the guidance in this protocol: Plan and Carry Out Investigations.pdf				
Phenomenon: Georgia Grown	**DQ:** *What are common crops in your region? What is the soil like and how does the soil help with plant growth?*			
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon: **(10-15 minutes)** **Show students the phenomenon card and view website** **Georgia Grown** **See, Think, Wonder** Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week.	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What are common crops in your region? What is the soil like and how does the soil help with plant growth?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving	**Review the Driving Question:** **(1-2 minutes)** *What are common crops in your region? What is the soil like and how does the soil help with plant growth?* **Graphic Organizer** **(2-3 minutes for students to access)** Students will need and will use the student Gizmo lab sheet for "Growing Plants" provided in the Unit 1 Supporting Resource Folder	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Savvas:** **Reader: All about Earth's Features** The text for this week's lesson can be found at…. **Group A:** Why is Soil Important? pg. 8-9 **Group B:** What is Soil? pg. 10-11 **Group C:** Soil Layers pg. 12-	**Review the Phenomenon** **(5-7 minutes)** Allow students to review the initial observations and questions from see, think, wonder strategy on Day 1. Have students review initial ideas. Ask students: *Have any of your ideas about the phenomenon changed? How?* Have students review their initial questions. Ask students: *What questions generated on Day 1 can you answer, now?*

Inquiry Activity:
(10-15 minutes)

Gizmo: Growing Plants
Complete the Prior Knowledge and Warm-up ONLY during this time

Objective:
Determine what a seed needs to grow into a healthy plant.

Materials
Growing Plants Recording Sheet
Computer

Guided Question:

What is the best way to measure a plant: height or mass? (Some plants may be tall but have very small leaves and little overall mass. Are these plants the healthiest plants?)

**TEACHER NOTE:

View the Teacher Guide for facilitation instructions for this inquiry activity

Safety: Teachers will remind students to use positive technology habits.

Assessment Prep Activity:
Following the task, click the link above. Have students practice applying their knowledge to an assessment question.

Question

Click here to access question words reference chart

The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.

Be sure to create a reference for students to have throughout the week.
****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)
(10-12 minutes)
Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and

Materials
Growing Plants Recording Sheet
Computer

Investigation Facilitation
(35 - 40 minutes)

Gizmo: Growing Plants
Activity A, Activity B, and Activity C

Materials:
Growing Plants Recording Sheet
Computer

Objective:
Design a controlled experiment to investigate questions.

Collect data from multiple trials.

Analyze data using tables and graphs.

Guiding Questions:

Why do plants in dim light grow taller than plants in full light?
• What does it mean for an experiment to be fair or controlled? If you are testing the effect of one variable, such as water, what should you do with the remaining variables?
• Are results for the same experiment always exactly the same? Why or why not?
How much data do you need before your results can be trusted?

Soil Properties pg. 13
Group D: How do Humans affect soil? 14-15

The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy:

3-5 Text Annotation Prot…

Students should complete the following student handout as they work through the text annotation protocol:

3-5 Information Analysis Student Organizer (editable)
3-5 Information Analysis…

During the teacher-led discussion, the teacher should ask the following questions:

What is the difference between the different soil particles?
What three properties of soil do scientists look at and why?

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Words

soil
sand
clay
loam

What are your answers to the questions?

Claim-Evidence-Reasoning
(15 -25 minutes)
Students will write a response to the following driving question in the CER format.

CER Protocol

DQ:*What are common crops in your region? What is the soil like and how does the soil help with plant growth?*

Review the claim-evidence-reasoning poster with the students

**TEACHER NOTE: Provide students with sentence starters by sharing on the board:
K-2 Claim-Evidence-Rea…

3-5 Claim-Evidence-Rea…

Have students write their claim-evidence-reasoning

writing a claim
Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.

writing evidence
Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of

	explain what they learn in science investigations and science ideas." Review the claim-evidence-reasoning poster with students. As a class or in student groups, provide students with this week's claim-evidence-reasoning sample. Student Samples The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoni… (PDF) *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.*	**TEACHER NOTE: Teacher Guide **Safety:** Teachers will remind students to use positive technology habits. Assessment Prep Activity: Following the task, click the link above. Have students practice applying their knowledge to an assessment question.	**Vocabulary Strategy** **(10-15 minutes)** **Connect the Two** Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer discussion, etc.). The teacher should model researching the word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word. Allow students to work in collaborative groups to discuss and research the other provided vocabulary terms and repeat the modeled instructional strategy. Have students collaborate, in groups, to complete the strategy for the other vocabulary terms. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	the data they provide to support their claim. **writing the reasoning** Students will use textual evidence from the "text annotation graphic organizer" to generate the reasoning or justification in the CER format. Have students use the following template to write their claim-evidence-reasoning (CER) 3-5 Student Writing Template (editable) 3-5 Student Writing Template (pdf) **TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?* **Assessment for Learning:** **(10-15 minutes)** Have students complete the following assessment to conclude this week's lesson. **Soil Week 1**

	Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoni… **Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.			**Assessment can be found in illuminate**

Week 4 Standards | Phenomenon | Weekly Lessons				
GSE: S3E1b	**Focused Concept:** Plan and carry out investigations to describe soil properties (color, texture, capacity to retain water, and ability to support growth of plants).			
Learning Target:	The student will be able to plan and carry out investigations to describe soil properties (color, texture, capacity to retain water, and ability to support growth of plants).			
Lab Safety:	**General Safety Practices for the Elementary Science Classroom- TOC.docx.pdf**			
SEP Teacher Tip: Day (1 and 3) To support students with the Science & Engineering Practices for this week, follow the guidance in this protocol: Plan and Carry Out Investigations.pdf				
Phenomenon: Georgia Grown	**DQ:** *What are common crops in your region? What is the soil like and how does the soil help with plant growth?*			
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon **(10-15 minutes)** **Show students the phenomenon card and view website** **See, Think, Wonder** Teachers should provide	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What are common crops in your region? What is the soil like and*	**Review the Driving Question:** **(1-2 minutes)** *What are common crops in your region? What is the soil like and how does the soil help with plant growth?* **Graphic Organizer:**	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Savvas:** **Reader: All about Earth's Features**	**Review the Phenomenon** **(5-7 minutes)** Allow students to review the initial observations and questions from see, think, wonder strategy on Day 1.

students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week.

Inquiry Activity
(10-15 minutes)

GaDoe Lab: Water Retention

Materials:
My Soil
Sand
Clay
Loam
Pipette
Water

Objective:
In this lesson, students learn about the attributes of soil, and which one retains the most water.

Guiding Questions:

Which soil sample will support plant growth, and why?

Which soil retains the most water?

**TEACHER NOTE:

Provide student groups with a ½-1 cup of each soil (clay, sand, loam). Give each group a container and three coffee filters.

Assessment Prep Activity:
Following the task, click the link above. Have students practice

how does the soil help with plant growth?

Use the strategy to support students with making connections and understanding the driving question (DQ).

Visualizing the Driving Question

Click here to access question words reference chart

The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer.

Be sure to create a reference for students to have throughout the week.
****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)
(10-12 minutes)
Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of

(2-3 minutes for students to access)
Mystery Science
How do you Build a City out of Mud?

Materials:

Lab Sheet

Objective:
In this lesson, students learn about a unique building material: mud! The properties of mud depend on the properties of the soil it's made from.

Investigation:
(35 - 40 minutes)

Prepare Dixie Cups

Divide your Dixie cups into three equal piles. Use a marker to write "A" on each cup in one pile, write "B" on each cup in the second pile, and write "C" on each cup in the third pile.

Add 2 teaspoons of cornmeal into each cup that is labeled "A." This is a model for sandy soil.

Add 2 teaspoons of flour into each cup that is labeled "B." This is a model for clay soil.

Add 1 teaspoon of flour and 1 teaspoon of cornmeal into each cup that is labeled "C." Gently shake these cups to mix the cornmeal and flour together. This is a model for a mix of sand and clay soil.

Prepare Water Cups

The text for this week's lesson can be found at….

Group A: Urbanization/ The Dirty Thirties pg. 16-17
Group B: How can Farmers Protect Soil? pg. 18-19
Group C: Soil Building pg. 20-21
Group D: Use of Cover Crops/ Crop Rotation pg. 22-23

The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy:

3-5 Text Annotation Prot…

Students should complete the following student handout as they work through the text annotation protocol:

3-5 Information Analysis Student Organizer (editable)
3-5 Information Analysis…

During the teacher-led discussion, the teacher should ask the following questions:

What happens if soil loses nutrients and water over time?

How can farmers protect soil? Why is soil building important?

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to

Have students review initial ideas. Ask students: *Have any of your ideas about the phenomenon changed? How?*

Have students review their initial questions. Ask students: *What questions generated on Day 1 can you answer, now? What are your answers to the questions?*

Claim-Evidence-Reasoning
(15 -25 minutes)
Students will write a response to the following driving question in the CER format.

CER Protocol

***DQ:**What are common crops in your region? What is the soil like and how does the soil help with plant growth?*

Review the claim-evidence-reasoning poster with the students

**TEACHER NOTE: Provide students with sentence starters by sharing on the board:
K-2 Claim-Evidence-Rea…

3-5 Claim-Evidence-Rea…

Have students write their claim-evidence-reasoning

writing a claim
Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information

applying their knowledge to an assessment question.	developing skills for effective argumentation. The teacher should state the following to students: “Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas.” Review the claim-evidence-reasoning poster with students. As a class or in student groups, provide students with this week’s claim-evidence-reasoning sample. The teacher will pull students samples from earlier in the unit for peer review. Be sure to hide student names. Share with student samples from a CER your students have completed this unit. Be sure to remove or hide student names. Ask students to analyze their peers' work during this week’s unit to review the C-E-R strategy. The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc)	Fill each Solo cup about a quarter full of water. Each pair of students will only need a few spoonfuls. Teacher Tip Making a mud model is very fun, but it can also be distracting! We recommend waiting to distribute the cups of water and spoons until Step 5 of the activity, after students have explored the dry soil models. Guided Question: *Which soil sample is best for building and why, based on their properties?* *Which soil sample is good for building and why, based on their properties?* **TEACHER NOTE: We suggest students work in pairs. You will need access to water for this activity. Making a mud model is very fun, but it can also be distracting! We recommend waiting to distribute the cups of water and spoons until Step 5 of the activity, after students have explored the dry soil models. Assessment Prep Activity: Following the task, click the link above. Have students practice applying their knowledge to an assessment question.	be placed in groups or have an understanding of how the groups will change to limit time used for transitioning. **Vocabulary Words** soil sand clay loam **Vocabulary Strategy** **(10-15 minutes)** **Connect the two** Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer discussion, etc.). The teacher should model researching the word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word. Allow students to work in collaborative groups to discuss and research the other provided vocabulary terms and repeat the modeled instructional strategy. Have students collaborate, in groups, to complete the strategy for the other vocabulary terms. Allow groups to share their thinking through academic dialogue and compare their	analysis protocol to develop an answer to the question. **writing evidence** Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim. **writing the reasoning** Students will use textual evidence from the “text annotation graphic organizer” to generate the reasoning or justification in the CER format. Have students use the following template to write their claim-evidence-reasoning (CER) 3-5 Student Writing Template (editable) 3-5 Student Writing Template (pdf) **TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?*

	Claim-Evidence-Reasoni… (PDF) *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoni… ****Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.		completed task with members of other groups.	**Assessment for Learning: (10-15 minutes)** Have students complete the following assessment to conclude this week's lesson. Soil Week 2 Quiz **Assessment is also in Illuminate**

Week 5 Standards | Phenomenon | Weekly Lessons	
GSE: S3E1c	**Focused Concept:** Make observations of their local environment of how water and/or wind have made changes to rocks and soil over time.
Learning Targets:	The students will be able to make observations of their local environment of how water and/or wind have made changes to rocks and soil over time.
Lab Safety:	**General Safety Practices for the Elementary Science Classroom- TOC.docx.pdf**

SEP Teacher Tip: (Day 1 and 3)

To support students with the Science & Engineering Practices for this week, follow the guidance in this protocol: Construct Explanations and Argue from Evidence.pdf

Phenomenon: Erosion in the school yard		**DQ:** *What could be some of the causes of erosion in the schoolyard?*		
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon **(10-15 minutes)** **Erosion in the school yard** **See, Think, Wonder** Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity:** **(10-15 minutes)** **What's in a Rock?** **Objective:** Students will generate questions about how the items are in the rocks and how the items might affect the rocks. **Materials:** **What's in a Rock? Google Slide** Guiding Questions: *Explain how different items are in rocks.* *Explain how items in rock affect*	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What could be some of the causes of erosion in the schoolyard?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer. Be sure to create a reference for students to have throughout the week. ****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary	**Review the Driving Question:** **(1-2 minutes)** *What could be some of the causes of erosion in the schoolyard?* **Graphic Organizer** **(2-3 minutes for students to access)** **U-Connect** **How can Land Affect Land?** **Savvas pg. 154** **Objective:** Students will make simple models to investigate the effect that rain has on landforms **Materials:** bottom half of milk jug 3 plastic cups with different amounts of soil water **Investigation** **(35 - 40 minutes)** If your students need more direction on this lab, use the following procedure. 1. Fill ¼ cup with packed soil. Turn it upside down on the bottom half of the gallon milk jug. Pack any loose soil together into a firm shape. 2. Make a second mound using ½ cup of firmly packed soil.	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Savvas:** **Textbook** **Grade 4 pg.186** The text for this week's lesson can be found at…. **Group A:** Chemical Erosion pg. 186 **Group B:** Physical Erosion pg.187 **Group C:** Erosion pg.187 **Group D:** Movement of Particles pg. 188 The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: 3-5 Text Annotation Prot… Students should complete the following student handout as they work through the text annotation protocol: 3-5 Information Analysis Student Organizer (editable) 3-5 Information Analysis…	**Review the Phenomenon** **(5-7 minutes)** Allow students to review the initial observations and questions from see, think, wonder strategy on Day 1. Have students review initial ideas. Ask students: *Have any of your ideas about the phenomenon changed? How?* Have students review their initial questions. Ask students: *What questions generated on Day 1 can you answer, now? What are your answers to the questions?* **Claim-Evidence-Reasoning** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol ***DQ:*** *What could be some of the causes of erosion in the schoolyard?* Review the claim-evidence-reasoning poster with the students

them.

**TEACHER NOTE:

Items growing in rocks, water frozen in rocks, water flowing over rocks, and wind blowing against rocks cause the rocks to break down and become different types of soil.

Assessment Prep Activity:
Following the task, click the link above. Have students practice applying their knowledge to an assessment question.

strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)
(10-12 minutes)
Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster with students.

As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

Student Samples

The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to

3. Make a third mound using 1 cup of firmly packed soil.
4. Fill the graduated cylinder with 100 mL of water. Pour the water into a sprinkler can or spray bottle.
5. Evenly shake the rain over the three mounds. Record your observations in the chart.
6. Measure an additional 100 mL of water and repeat step 5. Record your observations in the chart.

Guiding Questions:

Explain why the larger mounds show less erosion than the smaller mounds.

Explain how the water affects physical properties of landforms.

**TEACHER NOTE:

Students should observe that the larger mounds will show less erosion than the smaller mounds. Also, students should conclude that more rain results in more soil washing away.

Assessment Prep Activity:
Following the task, click the link above. Have students practice applying their knowledge to an assessment question.

During the teacher-led discussion, the teacher should ask the following questions:

What might happen to gravestones that are covered in plant materials such as moss or vines?
What might happen to gravestones that are covered in plant materials such as moss or vines?
What might happen to gravestones that are covered in plant materials such as moss or vines?

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy
(10-15 minutes)
Vocabulary Words

erosion
weathering

Vocabulary Strategy
Connect the two

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer discussion, etc.). The teacher should model researching the

**TEACHER NOTE: Provide students with sentence starters by sharing on the board:

3-5 Claim-Evidence-Rea…

Have students write their claim-evidence-reasoning

writing a claim
Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.

writing evidence
Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning
Students will use textual evidence from the "text annotation graphic organizer" to generate the reasoning or justification in the CER format.

Have students use the following template to write their claim-evidence-reasoning (CER)

3-5 Student Writing Template (editable)
3-5 Student Writing Template (pdf)

	complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoni… (PDF) *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoni… **Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.		word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word. Allow students to work in collaborative groups to discuss and research the other provided vocabulary terms and repeat the modeled instructional strategy. Have students collaborate, in groups, to complete the strategy for the other vocabulary terms. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	**TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?* **Assessment for Learning: (10-15 minutes)** Have students complete the following assessment to conclude this week's lesson. Weathering and Erosion

GSE: S3E1c	**Focused Concept:** Make observations of their local environment of how water and/or wind have made changes to rocks and soil over time.
Learning Targets:	The student will be able to make observations of their local environment and construct an explanation about how rocks and soil change over time.
Lab Safety:	**General Safety Practices for the Elementary Science Classroom- TOC.docx.pdf**

SEP Teacher Tip: (Day 1 and 3)
To support students with the Science & Engineering Practices for this week, follow the guidance in this protocol: Construct Explanations and Argue from Evidence.pdf

Phenomenon: Erosion in the school yard

DQ: *What could be some of the causes of erosion in the schoolyard?*

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
Phenomenon Erosion in the school yard See, Think, Wonder Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' observations on chart paper and refer back to initial student ideas throughout the week. **Inquiry Activity** **(10-15 minutes)** **Gizmo:** Erosion Rates **Objective:** Explore erosion in a simulated 3D environment. Observe how the landscape evolves over time as it is shaped by the forces of flowing water. **Materials:** Erosion Rate Recording Sheet Computer	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What could be some of the causes of erosion in the schoolyard?* Use the strategy to support students with making connections and understanding the driving question (DQ). Visualizing the Driving Question Click here to access question words reference chart The process can be recorded on chart paper with the students or the teacher can complete the graphic organizer. Be sure to create a reference for students to have throughout the week.	**Review the Driving Question:** **(1-2 minutes)** *What could be some of the causes of erosion in the schoolyard?* **Graphic Organizer** **(2-3 minutes for students to access)** **U-Investigate** **Savvas pg. 185** How can a Rock wear Away? **Objective:** Students will investigate how water can break down different types of rocks. **Materials:** Clear jar with lid Hand lens Water Sandstone sample Limestone sample Chalk Safety goggles **Investigation**	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Savvas:** **Textbook** **Grade 4 pg. 190** The text for this week's lesson can be found at…. **Group A:** Deposition pg. 190 **Group B:**Changing in Landforms over Times pg.191 **Group C:** Powerful Plants pg. 193 **Group D:** The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy: 3-5 Text Annotation Prot… Students should complete the	**Review the Phenomenon** **(5-7 minutes)** Allow students to review the initial observations and questions from see, think, wonder strategy on Day 1. Have students review initial ideas. Ask students: *Have any of your ideas about the phenomenon changed? How?* Have students review their initial questions. Ask students: *What questions generated on Day 1 can you answer, now? What are your answers to the questions?* **Claim-Evidence-Reasoning** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol

Guiding Questions:

What are some ways that plants help slow erosion?
How might a canyon formed in a sandstone landscape differ from a canyon formed in a shale landscape?

**TEACHER NOTE:

Teacher Guide

Safety: Teachers will remind students to use positive technology habits.

Assessment Prep Activity:
Following the task, click the link above. Have students practice applying their knowledge to an assessment question.

****Teacher Note:** Students should not answer the driving question at this time. Students will need to collect information, data and understanding from the phenomenon strategy, inquiry activity, investigation, text or video protocol and vocabulary strategy to develop a response in the claim-evidence-reasoning format.

(3-5 teachers and students should focus on developing claim, evidence, and reasoning)

Claim-Evidence-Reasoning (CER)
(10-12 minutes)
Objective: Expose students to claim-evidence-reasoning (CER) student samples below to review and understand their peers' thoughts on the topic, initiating the process of developing skills for effective argumentation.

The teacher should state the following to students:

"Claim-Evidence-Reasoning or CER is a way of writing that helps students understand and explain what they learn in science investigations and science ideas."

Review the claim-evidence-reasoning poster with students.

As a class or in student groups, provide students with this week's claim-evidence-reasoning sample.

(35 - 40 minutes)
If your students need more direction on this lab, use the following procedure.

1. Make observations about each rock sample and take notes about its size, shape, color, and other characteristics.
2. Pour an equal amount of water into the jar for each rock sample investigation.
3. Place one rock sample in the jar.
4. Analyze to see if any changes occur to the rock as it sits in the water. Record observations.
5. Shake the jar for 1 minute. Record any changes in the rock or in the water. Shake the jar again for another minute and record any changes.
6. Repeat with each type of rock in a jar filled with clean water.

Guiding Questions:

What effect did the water have on limestone?

What effect did the water have on sandstone?

**TEACHER NOTE:

Students will plan and carry out an investigation that provides evidence to show how water can break down rock.

Students will notice that the water weathers the limestone and chalk more than the sandstone. The water in the jars with limestone and chalk will be cloudy.

following student handout as they work through the text annotation protocol:

3-5 Information Analysis Student Organizer (editable)
3-5 Information Analysis…

During the teacher-led discussion, the teacher should ask the following questions:

What might happen to gravestones that are covered in plant materials such as moss or vines?
How does deposition affect landforms?
In what ways do "powerful plants" help other plants?

**TEACHER NOTE: Read and review the annotation protocol prior to providing this lesson to students. Students will need to be placed in groups or have an understanding of how the groups will change to limit time used for transitioning.

Vocabulary Strategy
(10-15 minutes)
Vocabulary Words
erosion
weathering

Vocabulary Protocol
Connect the two

Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer

DQ:*What could be some of the causes of erosion in the schoolyard?*

Review the claim-evidence-reasoning poster with the students

**TEACHER NOTE: Provide students with sentence starters by sharing on the board:
K-2 Claim-Evidence-Rea…

3-5 Claim-Evidence-Rea…

Have students write their claim-evidence-reasoning

writing a claim
Have students develop a claim which is their answer to the driving question, claim. Students should use all their knowledge from the phenomenon, inquiry activity, investigation, and information analysis protocol to develop an answer to the question.

writing evidence
Students should provide observational or numerical data as their evidence from their investigation and write a short caption or brief description of the data they provide to support their claim.

writing the reasoning
Students will use textual evidence from the "text annotation graphic organizer" to generate the reasoning or justification in the CER format.

Have students use the following template to write their

	Student Sample The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning protocol. Ask students to use the CER observations chart to complete the following analysis protocol: Claim-Evidence-Reasoning Record Observations Document (google doc) Claim-Evidence-Reasoni… (PDF) *1. Identify the student's claim in the sample and have the teacher or students write their observations or questions.* *2. Identify the student's evidence in the sample and have the teacher or students write their observations or questions.* *3. Identify the student's reasoning in the sample and have the teacher or students write their observations or questions.* Ask the following questions to students as they analyze the student samples: Claim-Evidence-Reasoni… **Teacher Note:** As students review the student samples, they will begin to see or read vocabulary. Begin or continue a reference chart of questions or observations about vocabulary.	Review the concept of having controls in investigations. For example, students may want to make sure the same amount of water is in the jar when they observe each rock sample. Assessment Prep Activity: Following the task, click the link above. Have students practice applying their knowledge to an assessment question.	discussion, etc.). The teacher should model researching the word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word. Allow students to work in collaborative groups to discuss and research the other provided vocabulary terms and repeat the modeled instructional strategy. Have students collaborate, in groups, to complete the strategy for the other vocabulary terms. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	claim-evidence-reasoning (CER) 3-5 Student Writing Template (editable) 3-5 Student Writing Template (pdf) **TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students' samples. Ask the following questions: *How are your thoughts or understanding similar to another writer on the topic? How are your thoughts or understanding different to another writer on the topic? What would you like to learn more about? Why?* **Assessment for Learning: (10-15 minutes)** Have students complete the following assessment to conclude this week's lesson. Weathering and Erosion Quiz

	Students will explicitly learn vocabulary on Day 4.			

Assessment Prep (5-7 minutes)

Assessment Prep

Prepare students for assessment by reviewing the following Assessment Prep Presentation.

Objective: Have students make connections between in class tasks and assessment questions to provide an opportunity for students to analyze and interpret the expectations of test and quiz questions and apply knowledge of experience to answering the assessment questions accurately

Facilitation: The teacher will select an assessment question that relates to the concept of the day. Students should only analyze one question each day the *"Assessment Prep Activity"* is provided in the plan. Students should engage in discussion to argue and develop reasoning for answer choices that are both correct and incorrect.

Goal: The goal is to practice the skills of test taking, such as: process of elimination, reasoned assumption, avoiding premature selection, checking for consistency, time management, using context clues, reading questions carefully, etc to build confidence in students as they perform on summative assessments throughout the year.

Use the following:

Rocks, Mineral, Soil Assessment Prep Questions

Provide the following guidance:

Place students in groups and display the assessment question. Complete the following assessment prep protocol:

Ask the students the following questions as they work through the assessment prep protocol.

- *What is the question asking you?*
- *What do you know about the vocabulary or concept in the question?*
- *Is this question similar to any investigations or tasks we've completed?*
- *How can what you've done help you answer this question?*
- *Just view the assessment question: What is the question asking you?*

Guide students to think about how their inquiry task and investigation experience connects to the question.
Using the answer choices provided, students should begin asking themselves and their group members:

- Identify a wrong answer: How do I know this answer is incorrect?
- Identify the right answer: How do we know this answer is correct?

Allow the students time to discuss in collaborative groups.

TEACHER NOTE: If students struggle with the question, review the same question on the very next day. Do not feel the need to rush to the next question to review. Assessment prep is not meant to be a lengthy activity when considering time. Provide students with five - seven minutes to analyze the question and check for understanding.

Labs / Investigations

Mandatory Labs	Explore Learning Gizmo	Mystery Science

How can a Rock wear Away? **How can Land Affect Land?** **Water Retention** **Rock Description** **How can you classify minerals?**	**Erosion Rates** **Growing Plants** **Minerals Identification**	**How do you Build a City out of Mud?**

Additional- Resources/Tasks	
Supplemental Labs	Plant Survival
Culminating Performance Task	Traits and Environment Lab.pdf
STEM Activities	**How can Land Affect Land?**
Guidance Document	Link the following : https://drive.google.com/file/d/1dDFitw1NesctodMZ9XAr7zc0-S5GZKPB/view?usp=drive_link