CCPS Science Unit Plan

Grade	3rd	Subject	Science	Unit #	5
Unit Name	Pollution and Conservation		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. CCPS Department of Science Website for access to all unit frameworks.				
Unit Overview	*All resources related to this Framework are either embedded in this document or can be located via the Science Department website. **Background:** There have been many efforts over the years to try to improve environments affected by pollution. Some examples are cleaning up oil spills, improving the water quality in streams, rivers, lakes, and the ocean, laws to protect pieces of land and the animals and plants that live in them, and organizations have been formed to lead efforts in educating others about the effects of pollution and cleaning up the environment. Recycling of materials is one solution that is used with plastics, glass, metals, and some other materials. The used materials are collected and then processed to be new materials that can be used again. Another solution that has been discussed is reusing materials when possible. This is for things like plastic containers that hold food when bought from the grocery store. When the container is empty it can be washed and used to hold leftovers. Conservation of resources is another idea to protect plants and animals.This is about using only the materials that you need. An example of this is turning the water off when you brush your teeth to avoid water that you are not using to go down the drain. **Prerequisites:** **S1L1. Obtain, evaluate, and communicate information about the basic needs of plants and animals.** **S2E3. Obtain, evaluate, and communicate information about how weather, plants, animals, and humans cause changes to the environment.** **Throughout this unit, the student should:** ● *Ask questions t*o collect information and create records of sources and effects of pollution on the plants and animals. ● *Explore, research, and communicate* solutions, such as conservation of resources and recycling of materials, to protect plants and animals. **Throughout this unit, the teacher should:** ● *ensure* that students can ask questions to explore the source and effects of pollution of the plants and animals ● *guide* constructed explanations about solutions, such as conservation of resource and recycling of materials, to protect plants and animals Teacher Notes				

Standards	

GSE	Science and Engineering Practices	Crosscutting Concepts
S3L2. Obtain, evaluate, and communicate information about the effects of pollution (air, land, and water) and humans on the environment. **a. Ask questions to collect information and create records of sources and effects of pollution on the plants and animals.** **b. Explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.**	**Asking Questions and Defining Problems:** A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world works and which can be empirically tested. **Obtaining, Evaluating, and Communicating Information:** Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity.	**Stability and Change** For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand. **Cause and effect:** Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.

NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas

The Phenomenon Protocol

Anchoring Phenomena	**Learning Targets**
Air Quality in my Town	I can ask questions to collect information over the effects of pollution on plants and animals.
Rubber Ducks	I can explore various solutions to protect plants and animals

Weekly Lesson Tasks

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Week 1 Standards| Phenomenon	Weekly Lessons	
GSE:S3L2.a	**Focused Concept:** The student will be able to ask questions to collect information and create records of sources and effects of pollution on the plants and animals.

Learning Target:	I can ask questions to collect information over the effects of pollution on plants and animals.
Lab Safety and Materials:	General Safety Practices ES
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions

Phenomenon: Air Quality in my Town	**DQ:** *How does air quality affect plants and animals?*

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
Phenomenon: **(5-7 minutes)** **Show students the phenomenon card.** **Air Quality in my Town** **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)** Pollution Gallery Walk **Objective:** Students will demonstrate prior knowledge about Pollution (air, water, and land) **Materials:** Pollution Gallery Walk	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *How does air quality affect plants and animals?* 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	**Graphic Organizer** **(2-3 minutes for students to access)** **Inquiry Activity** **The Adventure of a Lady Fish and Fringed Champion** **Investigation** **(35 - 40 minutes)** **Objective:** Have students think about the Engage activity and the different types of pollution the fish encountered during its swim. **Materials:** 1 Set of Organism Pictures (per class) Student Handout (per student) Slideshow (per class) *Should be projected, if possible. 2 Large glass beakers (per class) Water Tape Green food coloring Confetti Brown sugar	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: The text for this week's lesson can be found at…. **Weather Watching** **Trouble in the Ocean** **Group A: Weather Watching pg. 1** **Group B: Weather Watching pg. 2** **Group C: Trouble in the Ocean pg. 1** **Group D: Trouble in the Ocean pg 2.** 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	**Summary and Assessment for Learning:** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol **Driving Question:** *How does air quality affect plants and animals?* 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

Cards Notebook/journal **TEACHER NOTE: The teacher will display the images from for the Pollution Picture Walk from the National Geographic The teacher will determine the amount of time needed to view each picture and allow the students to make notes, discuss, or journal about each picture.	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. 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	Olive oil **TEACHER NOTE: Have students think about the Engage activity and the different types of pollution the fish encountered during its swim. Ask them to jot down some ideas about how pollution might affect Earth's ecosystems. Now ask students to get with a partner to discuss their ideas. Instruct students to challenge their partners by asking the following question: Why do you think your idea is a good example of how pollution might affect Earth's ecosystem?	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 effects of Global Warming?* *How can we slow down Global Warming?* *How does pollution harm sea animals?* *How do humans threaten sea animals?* **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** **environment** **pollution** **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	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) **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?*

	Observations Document (google doc) Claim-Evidence-Reasoning O… (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 Q… ****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 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.	*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. **Pollution Week 1 Quiz** **Assessment can be found in illuminate**

Small Group Tasks	**Write for teacher group; leveled readers**	**Discovery Education: Mystery Science**		

Week 2	
GSE:S3L2.a	**Focused Concept:**The student will be able to ask questions to collect information and create records of sources and effects of pollution on the plants and animals.
Learning Target	I can ask questions to collect information over the effects of pollution on plants and animals.

Lab Safety and Materials	General Safety Practices ES
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions

Phenomenon: Air Quality in my Town			**DQ:***How does air quality affect plants and animals?*	
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon: **(5-7 minutes)** **Show students the phenomenon card.** **Air Quality in my Town** **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)** Pollution and Conservation **Objective:** Students will create a poster advertising the harmful effects of pollution. **Materials:** Beach Pollution Handout (per student) Preventing Pollution Poster (per student) Markers or pencil crayons (per student)	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *How does air quality affect plants and animals?* 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	**Graphic Organizer** **(2-3 minutes for students to access)** Inquiry Activity: GMOs and the Environment **Investigation** **(35 - 40 minutes)** **Objective:** Students will explore how farmers can maximize yield while limiting ecosystem damage using genetically modified corn. **Materials:** Student Lab Sheet Laptop **TEACHER NOTE: Teacher Guide Complete Prior Knowledge Question and GIZMO Warm-up	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: The text for this week's lesson can be found at…. **Opossum Creek** **Group A: Opossum Creek Numbers 1 and 2** **Group B: Opossum Creek Numbers 3 and 4** **Group C: Opossum Creek Numbers 5 and 5** **Group D: Opossum Creek Numbers 7, 8, 9, 10, 11** 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	**Summary and Assessment for Learning:** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol **Driving Question:** *How does air quality affect plants and animals?* 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

**TEACHER NOTE: If students need guidance as to what to put on their posters, ask the guiding questions below. It might be beneficial to print the picture of the beach in color or project it onto the board so students can see it better.	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. Student Sample The teacher or students should read over student sample(s) to analyze claim-evidence-reasoning		Student Organizer (editable) 3-5 Information Analysis… During the teacher-led discussion, the teacher should ask the following questions: *Explain how the bulldozed land will affect the animals living in that habitat?* *Explain what might happen when the replant the trees the cut down.* *Will the creek go back to normal? Why or why not, explain?* **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** **environment** **pollution** **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	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) **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?*

	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. Students will explicitly learn vocabulary on Day 4.		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.	*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. Pollution Week 2 Quiz **Assessment can be found in illuminate**
Small Group Tasks				

Week 3				
GSE:S3L2.a	**Focused Concept:** The student will be able to ask questions to collect information and create records of sources and effects of pollution on the plants and animals.			
Learning Target	I can ask questions to collect information over the effects of pollution on plants and animals.			
Lab Safety and Material	General Safety Practices ES			
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions			
Phenomenon: Air Quality in my Town			**DQ:***How does air quality affect plants and animals?*	
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon: **(5-7 minutes)** **Show students the phenomenon card.** **Air Quality in my Town** **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)** GMOs and the Environment **Objective:** Students will explore how farmers can maximize yield while limiting ecosystem damage using genetically	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *How does air quality affect plants and animals?* 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.	**Graphic Organizer** **(2-3 minutes for students to access)** Inquiry Activity: GMOs and the Environment **Investigation** **(35 - 40 minutes)** **Objective:** Students will explore how farmers can maximize yield while limiting ecosystem damage using genetically modified corn. **Materials:** Student Lab Sheet Laptop **TEACHER NOTE: Teacher Guide Complete Activity B and C	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Saving the Rainforest** **Trouble in the Ocean** **Earth Helper** The text for this week's lesson can be found at…. **Group A: Saving the Rainforest** **Group B: Trouble in the Ocean pg. 1** **Group C: Trouble in the Ocean pg. 2** **Group D: Earth Helper** The teacher should facilitate the following process.Have the students follow the text protocol facilitation directions provided in the following strategy:	**Summary and Assessment for Learning:** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol **Driving Question:** *How does air quality affect plants and animals?* 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…

modified corn. **Materials:** Student Lab Sheet Laptop **TEACHER NOTE: Teacher Guide Complete Activity A	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, provide students with this		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: *How does cutting down trees in the rainforest effect the animals?* *How does cutting down trees in the rainforest affect the air?* *How does recycling benefit the earth?* *Why are trees so important to the environment?* **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** **environment** **pollution** **Vocabulary Strategy** **(10-15 minutes)** **Connect the two**	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) **TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students'

	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 will begin to see or read		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.	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. **Pollution Week 3 Quiz** **Assessment can be found in illuminate**

	vocabulary. Begin or continue a reference chart of questions or observations about vocabulary. Students will explicitly learn vocabulary on Day 4.			
Small Group Tasks				

Week 4				
GSE:S3L2.b		**Focused Concept:** The students will be able to explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.		
Learning Target		I can explore various solutions to protect plants and animals		
Lab Safety and Material		General Safety Practices ES		
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:		Developing model construction questions Provide constructive feedback for building a model Student back pocket questions		
Phenomenon:Rubber Ducks			**DQ:***What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?*	
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon: **(5-7 minutes)** **Show students the phenomenon card.** **Rubber Ducks** **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	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?* Use the strategy to support students with making	**Graphic Organizer** **(2-3 minutes for students to access)** Inquiry Activity: 3 Dimension Task: Great Pacific Garbage Patch **Investigation** **(35 - 40 minutes)** **Objective:** This task is designed to get students involved with a	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Reduce, Reuse, Recycle** The text for this week's lesson can be found at…. **Group A: Reduce, Reuse, Recycle Numbers 1 and 2** **Group B: Reduce, Reuse, Recycle Numbers 3 and 4**	**Summary and Assessment for Learning:** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol **Driving Question:** *What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?*

the week. Inquiry Activity: **(10-15 minutes)** 3 Dimension Task: Great Pacific Garbage Patch **Objective:** This task is designed to get students involved with a phenomenon that will help students gain an understanding of all the dimensions of science learning. **Material:** Picture Cards NOAA Website **TEACHER NOTE: Students ask questions to collect and create records about to effects of pollution on plants and animals	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 developing skills for effective argumentation. The teacher should state the following to students:	phenomenon that will help students gain an understanding of all the dimensions of science learning. **Material:** small bits of wax paper small tub of water such as plastic shoe box large spoon to mix water, simulating ocean currents graphic organizer **TEACHER NOTE: Teacher should model (for step 1 in the group performance) Work in small groups to help build understanding of vocabulary and content Strategic partners for working through research on how the gyre effects ocean plants and animals. Provide sentence stems for students to use when formulating their explanations	**Group C: Reduce, Reuse, Recycle Numbers 5 and 6** 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: *How does mining coal affect the land?* *How does farming have a negative impact on the environment?* *What are some ways we can help our environment?* **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**	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 claim-evidence-reasoning (CER)

	"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. 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.*		**recycle** **reuse** **reduce** **litter** **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.	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. **Pollution Week 4 Quiz** **Assessment can be found in illuminate**

	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.			

Small Group Tasks				

Week 5		
GSE:S3L2.b	**Focused Concept:** The students will be able to explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.	
Learning Target	I can explore various solutions to protect plants and animals	
Lab Safety and Material	General Safety Practices ES	
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions	
Phenomenon:Rubber Ducks		**DQ:***What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?*

Day 1: Opening	Day 2 : Guided Practice/ Transition	Day 3: Independent Practice	Day 4: Independent Practice	Day 5: Assessment / Summary
Phenomenon: **(5-7 minutes)** **Show students the phenomenon card.** **Rubber Ducks** **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)** 3 Dimensional Task: Pollution **Objective:** This task is designed to get students involved with a phenomenon that will help students gain an understanding of all the dimensions of science learning. **Materials:** Image EPA's Tale of Lake Lucy Effects of Pollution on Plants Graphic Organizer **TEACHER NOTE: Observe the image of the plants and make initial claims to what might have happened to the plants. Gather information from the EPA's Tale of Lucy Lake about	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?* 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	**Graphic Organizer** **(2-3 minutes for students to access)** **Inquiry Activity** 3 Dimensional Task: Pollution **Investigation** **(35 - 40 minutes)** **Objective:** This task is designed to get students involved with a phenomenon that will help students gain an understanding of all the dimensions of science learning. **Materials:** 3 identical potted plants water baking soda water (to simulate chemical pollution use 1 T baking soda to 1 cup of water) Vinegar (to simulate acid rain use 1 T vinegar to 1 cup of water) measuring spoons sunny location for plants Effects of Pollution on Plants Graphic Organizer **TEACHER NOTE: Students may work with strategic partners for recording observation Allow for alternative methods of communication findings (either speaking or drawing to communicate the effects of pollution) Students may work with small groups to assist in vocabulary	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Pollution and Conservation** The text for this week's lesson can be found at…. **Group A: Pollution and Conservation pg. 1** **Group B: Pollution and Conservation pg. 2** **Group C: Pollution and Conservation pg. 3** **Group D: Pollution and Conservation pg. 4** 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 are some ways humans pollute the environment?*	**Summary and Assessment for Learning:** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol **Driving Question:** *What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?* 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

the effects of pollution on plants. Ask questions to collect information about the effects (growth) of pollution on plants. (Record on Graphic Organizer)	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. The teacher will pull students samples from earlier in the unit for peer review. Be sure to hide student names. 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:	development Provide sentence stems for students to use when formulating their explanations	*How does pollution affect the habitats of animals?* *What are different ways water can be polluted, other than trash?* *How does land pollution lead to water pollution?* **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** **recycle** **reuse** **reduce** **litter** **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	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?* **Assessment for Learning:** **(10-15 minutes)** Have students complete the following assessment to conclude this week's lesson.

	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.		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.	**CER Population**
Small Group Tasks				
Week 6				

GSE:S3L2.b	**Focused Concept:**The students will be able to explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.			
Learning Target	I can explore various solutions to protect plants and animals			
Lab Safety and Material	General Safety Practices ES			
SEP Teacher Tip: (Day 1 and 3) To support students with the science and engineering practices for this week, follow the guidance in this protocol:	Developing model construction questions Provide constructive feedback for building a model Student back pocket questions			
Phenomenon:Rubber Ducks			**DQ:***What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?*	
Day 1: Opening	**Day 2 : Guided Practice/ Transition**	**Day 3: Independent Practice**	**Day 4: Independent Practice**	**Day 5: Assessment / Summary**
Phenomenon: **(5-7 minutes)** **Show students the phenomenon card.** **Rubber Ducks** **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) **SEP Teacher Tip:** To support students with the science and engineering practices for this week, follow the guidance in this protocol: Developing model construction questions	**Introduce the Driving Question:** **(7 - 10 minutes)** Have students review the driving question: *What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?* 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.	**Graphic Organizer** **(2-3 minutes for students to access)** **Inquiry Activity:** **How can we Protect the Earth's Environment?** **Investigation** **(35 - 40 minutes)** **SEP Teacher Tip:** To support students with the science and engineering practices for this week, follow the guidance in this protocol: Developing model construction questions Provide constructive feedback for building a model Student back pocket questions **Objective:** In this lesson, students discover what happens in unbalanced ecosystems and how that can	**Text Annotation Strategy** **(30-45 minutes)** Have students read and annotate the following text: **Natural Resources Poster Contest** The text for this week's lesson can be found at…. **Group A: Natural Resources (paragraphs 1-5)** **Group B: Natural Resources (paragraphs 6-11)** **Group C: Poster Contest pg. 1** **Group D: Poster Contest pg. 2** 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	**Summary and Assessment for Learning:** **(15 -25 minutes)** Students will write a response to the following driving question in the CER format. CER Protocol **Driving Question:** *What can humans do to reduce the pollution going into the oceans and harming the animals and their habitat?* 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…

Provide constructive feedback for building a model

Student back pocket questions
Happy vs. Sad Earth

Objective:
Students will put pictures of things that are beneficial for the Earth, and those that are not, into the appropriate category.

Materials:

Happy vs. Sad Earth

****Teacher Note:**
Students will work in groups to sort the cards. They will sort them between what makes the earth happy and what makes the earth sad. Once they sort their card, they will explain why each action is either beneficial or harmful to the earth.

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, provide students with this

lead to an overabundance of algae and harmful algal blooms.

Materials:

Project Cards and Deck Maps
Prevent It! Spread the Word!
Consequences
Map of Laketown

**TEACHER NOTE:

We suggest students play the game in groups of three.

Prepare cups with bingo chips

Place 60 bingo chips into each cup.Each team of 3 students needs a cup with bingo chips.

Prepare decks of cards

Print out the four pages of Progress Cards and cut along all the dotted lines. If you have a paper cutter, this will make this task easy. Each group of three students needs a deck of cards, so you can place each deck into an envelope of secure together with a binder clip for easy distribution.

Organize group Materials

Once all the cards are prepared, each group of three students will need a Map of Laketown (2 pages), Prevent It projects (2 pages), Consequences, Bloom Buster Rules, and the Deck Mat, and the deck of Progress Cards (52 cards total).

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:

Explain in your own words, what is a natural resource?
How can we protect our natural resources?
What's the difference between renewable and nonrenewable resources?

**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

recycle
reuse
reduce
litter

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

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)

**TEACHER NOTE: Have students review the student sample(s) of claim-evidence-reasoning on Day 2. Have students compare their writing to those students'

	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. 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…		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.	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. **Open Ended Questions**

	**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.			
Small Group Tasks				

Assessment Prep (5-7 minutes)

Assessment Prep

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

Provide the following guidance:

Ask the students to use what they know about the tasks completed to answer the provided assessment prep question.

- 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 experience connects to the question.

Using the answer choices provided, ask the students the following:

- 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 it the next day. Do not rush to the next question; instructional time is the only time they have to prepare for the end-of-year assessment.

Labs / Investigations

Mandatory Labs	Explore Learning Gizmo	Mystery Science

3 Dimensional Task: Pollution 3 Dimension Task: Great Pacific Garbage Patch **The Adventure of a Lady Fish and Fringed Champion**	GMOs and the Environment	**How can we Protect the Earth's Environment?**

Additional- Resources/Tasks	
Supplemental Labs	
Culminating Performance Task	
STEM Activities	3 Dimensional Task: Pollution
Guidance Document	Link the following : https://drive.google.com/file/d/1dDFitw1NesctodMZ9XAr7zc0-S5GZKPB/view?usp=drive_link