

Amplify Science

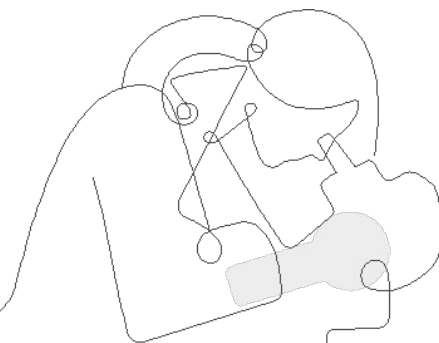
Unit 3: The Earth System (with an assessment focus)

Grade 5, Part 1

School/District Name: LAUSD

Date:

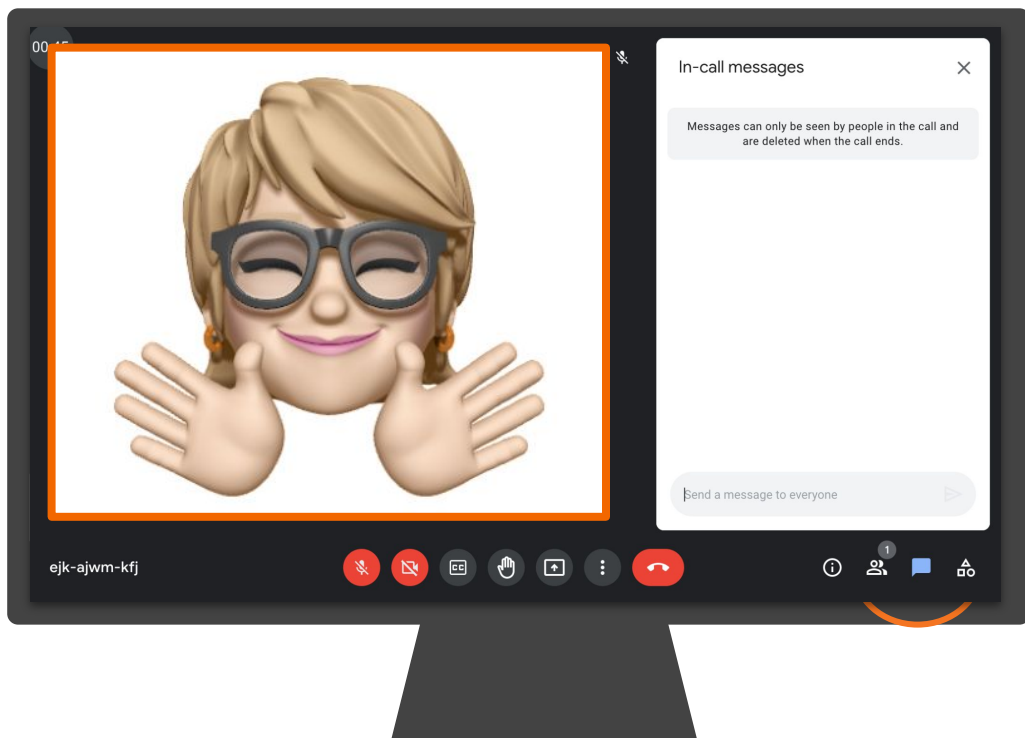
Presented by:



Ice Breaker!

Who do we have in the room today?

- **Question:** In the chat, share what experience you have had with assessments in the Amplify Science curriculum.



Schoology

- To join Amplify ES Group: **W4PK-W466-63F5B**



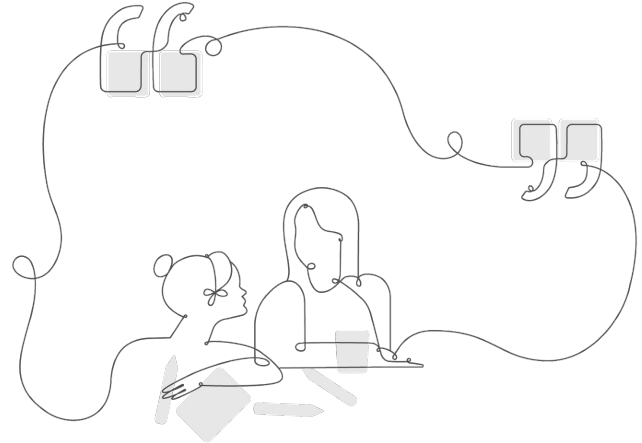
Upcoming LAUSD Office Hours

Last working Monday of the month

Next Office Hour:

January 31, 2022

- Monday, (4-5pm)



<https://meet.google.com/uwc-uuaz-qdc?authuser=0>

Part 1



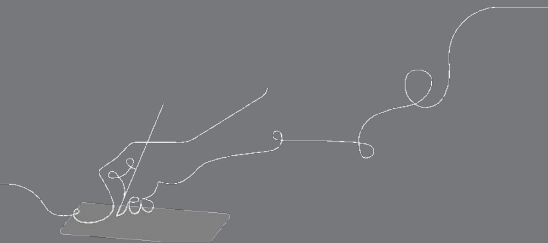
Plan for the day: Part 1

- Introduction and Framing
- Unit Overview
- Formative Assessments
- Closing

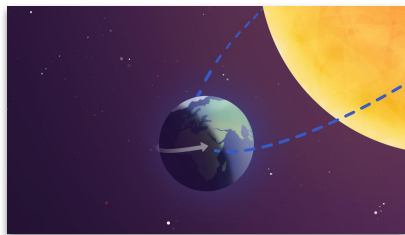
Overarching goals

By the end of this workshop, you will be able to:

- ❑ Internalize the unit
- ❑ Describe the overall structure of the Assessment System
- ❑ Describe the overall structure and purpose the Formative Assessments.



Year at a Glance: Grade 5

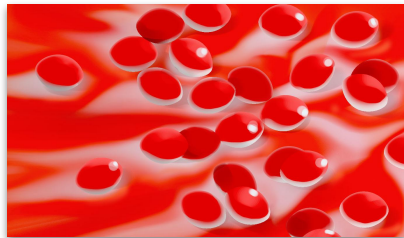


Patterns of Earth and Sky

Domain: Earth and Space Science

Unit type: Investigation

Student role:
Astronomers

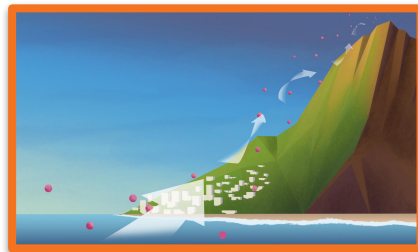


Modeling Matter

Domain: Physical Science

Unit type: Modeling

Student role: Food scientists



The Earth System

Domain: Earth and Space Science

Unit type: Engineering Design

Student role: Water resource engineers



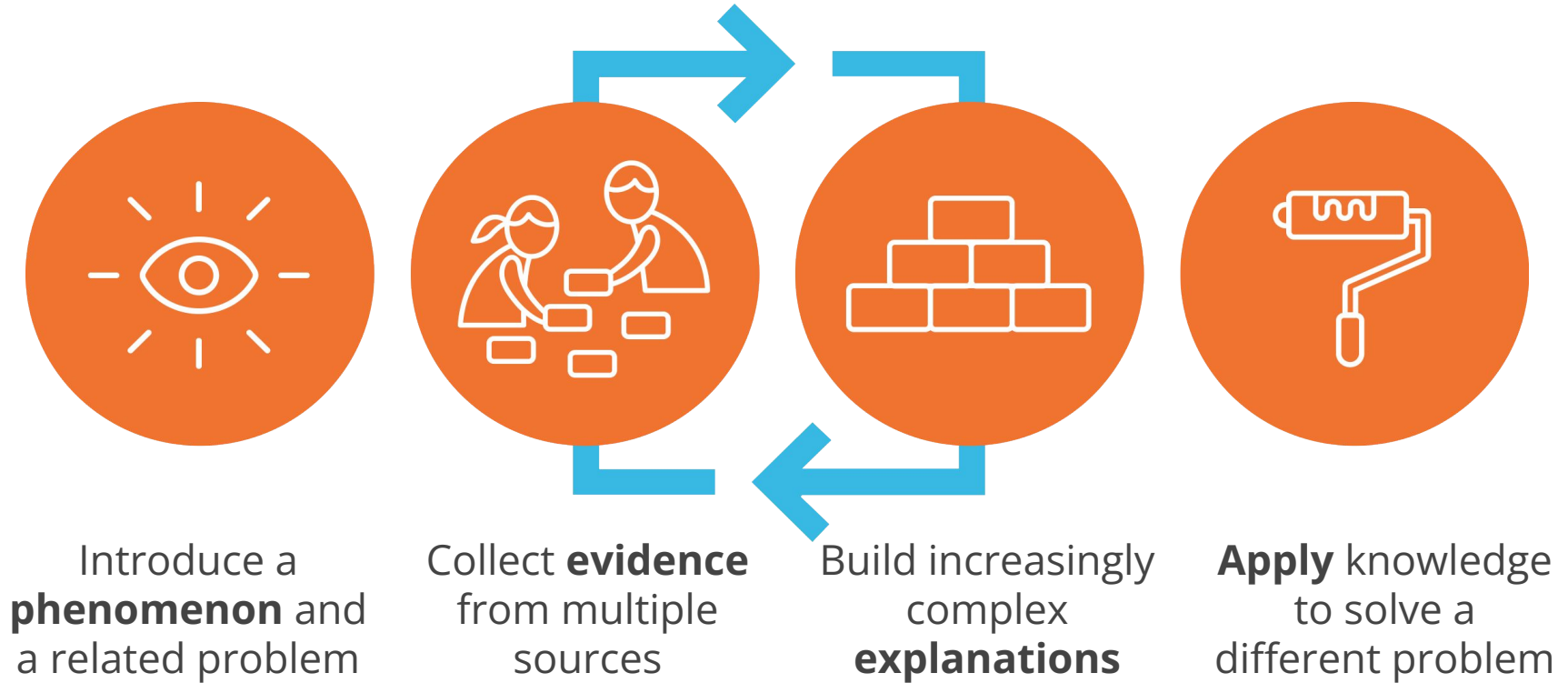
Ecosystem Restoration

Domain: Life Science

Unit type: Argumentation

Student role: Ecologists

Amplify Science Approach





Plan for the day: Part 1

- Introduction and Framing
- **Unit Overview**
- Formative Assessments
- Closing

The Earth System

Problem: What can determine how much water is available for human use?

Role: Water Resource Engineer

The cities of East Ferris and West Ferris are located on different sides of a mountain on the fictional Ferris Island. East Ferris is having a water shortage while West Ferris is not. Students learn about the Earth system so they can help figure out what is causing the water shortage on one part of the island

The Earth System

Coherent Storylines



Chapter 1: Why is East Ferris running out of water while West Ferris is not?

3 Lessons



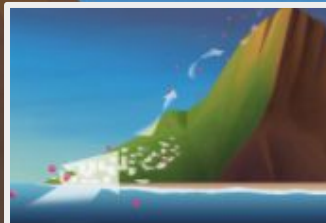
Chapter 2: Why does more rain form over West Ferris than East Ferris?

8 Lessons



Chapter 3: Why is more water vapor getting cold over West Ferris than East Ferris?

4 Lessons



Chapter 4: Why is there more water vapor high up over West Ferris than East Ferris?

5 Lessons



Chapter 5: How can East Ferris turn wastewater into clean freshwater?

6 Lessons

The background is a stylized illustration. It features a large, dark brown mountain range on the left and center. To the right, a golden pyramid is visible. In the foreground, there are several white, rectangular blocks or buildings. The sky is a gradient of blue, and the bottom of the image shows a dark blue body of water with a light blue, torn-paper-like edge.

Explaining the phenomenon: Science Concepts

What **science concepts** do you think students need to understand in order to **explain the phenomenon**?

The Earth System Progress Build

Prior knowledge (preconceptions): Prior knowledge (preconceptions): Students are expected to have experienced rain and to have seen beaded water on a cold cup or dew on surfaces after a cold night.

Level 3

Mountains can redirect water vapor higher in the atmosphere.

Level 2

Water vapor condenses as it moves higher, to where the atmosphere is colder.

Level 1

Rain can happen when water vapor gets cold and condenses into liquid water.

Prior knowledge

Deep, causal understanding

Key Unit Guide Documents for Planning

The interface displays a list of documents for planning a unit, organized into two main sections: Planning for the Unit and Printable Resources.

Planning for the Unit

- Unit Overview
- Unit Map
- Progress Build
- Getting Ready to Teach
- Materials and Preparation
- Science Background
- Standards at a Glance

Teacher References

- Lesson Overview Compilation
- Standards and Goals
- 3-D Statements
- Assessment System
- Embedded Formative Assessments
- Books in This Unit
- Apps in This Unit
- Flextensions in This Unit

Printable Resources

- Coherence Flowcharts
- Copymaster Compilation
- Flextension Compilation
- Investigation Notebook
- Multi-Language Glossary
- NGSS Information for Parents and Guardians
- Print Materials (8.5" x 11")
- Print Materials (11" x 17")

Offline Preparation

Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access.

Offline Guide

Core Unit Planning & Internalization

Unit Title:

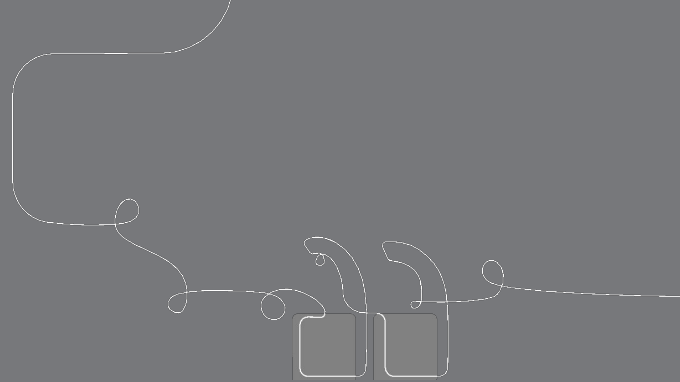
The Earth System

Overview

[Resources: Unit Overview, Teacher's Guide, Coherence Flowchart, Unit Map, 3-D Statements]

<p>What is the phenomenon/real-world problem students are investigating in your unit?</p> <p>What can determine how much water is available for human use?</p>	<p>Student Role:</p> <p>Water Resource Engineer</p>
<p>Unit Question:</p> <p>How do rocks and fossils tell us about the way Earth changes over time?</p>	<p>Relationship between the Unit Phenomenon and Unit Question:</p> <p>Students use their understanding of how parts of the Earth system interact to explain why one side of Ferris Island is experiencing a water shortage.</p>
<p>By the end of the unit, students figure out...</p> <p>More water vapor moves up in the atmosphere over West Ferris because a mountain directs the wind blowing from the ocean upward. This causes water vapor in the air to cool, condense, and fall as rain over West Ferris. Air that continues on over the mountain does not have enough water vapor left to condense and fall as rain over East Ferris.</p>	
<p>How do students engage with three-dimensional learning to figure out the phenomenon/real-world problem in your unit?</p> <p>Students investigate how interactions between the parts of the Earth system affect the movement and distribution of water (systems and system models), and they apply their understanding to design solutions for a water shortage. Students also obtain information from firsthand investigations, models, and text to figure out how new substances can form through chemical reactions, even though no matter is created or destroyed (energy and matter).</p>	

Questions?

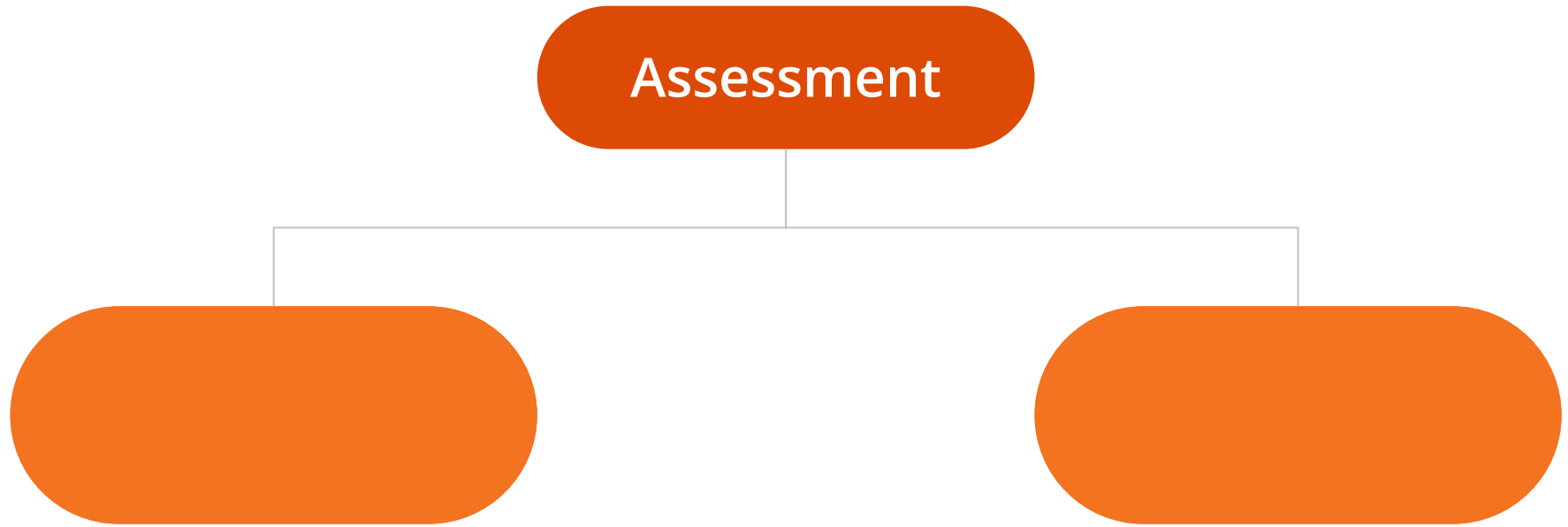




Plan for the day: Part 1

- Introduction and Framing
- Unit Overview
- **Formative Assessments**
- Closing

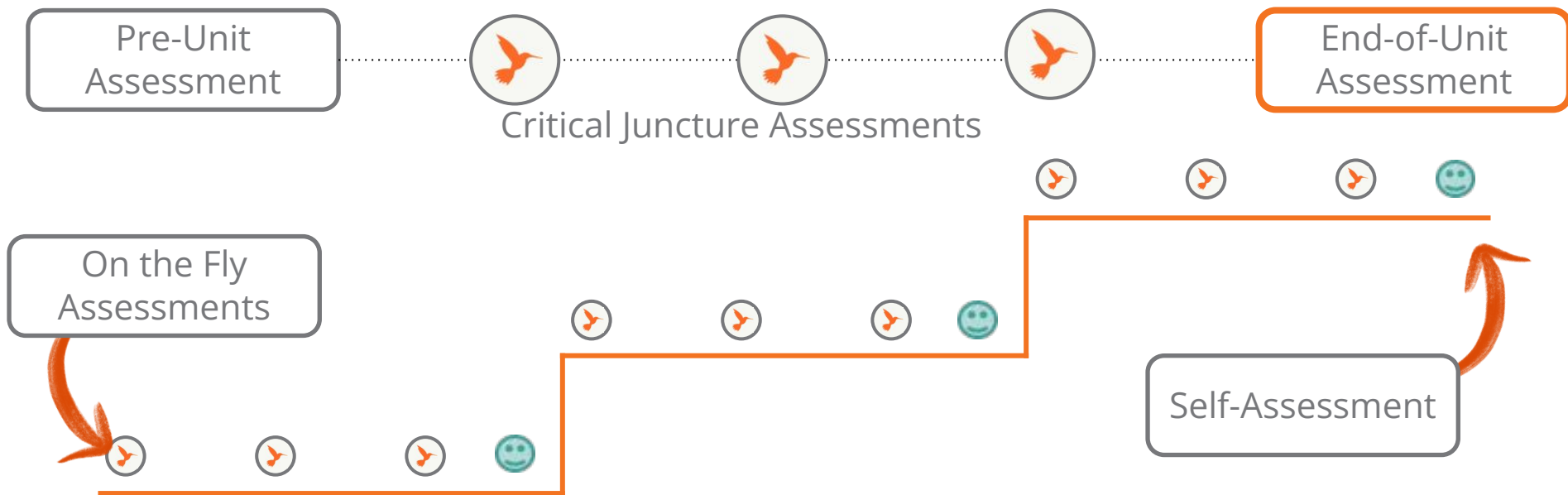
Why do we assess our students?



Why do we assess our students?

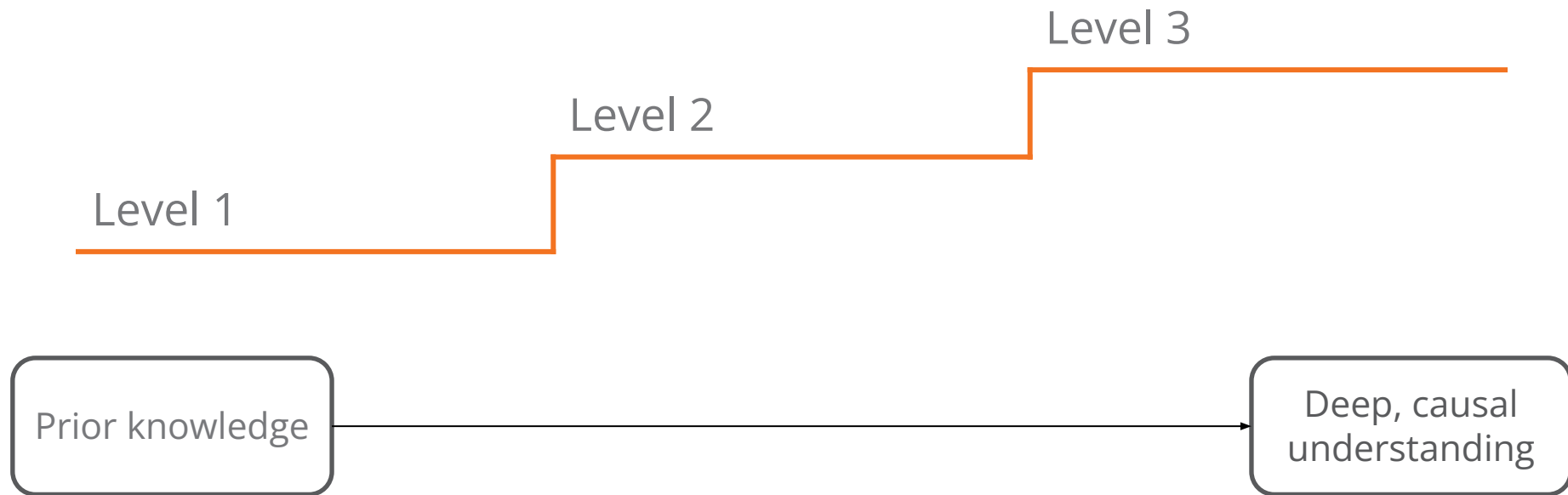


K-5 Assessment System



Progress Build

A unit-specific learning progression



The Earth System Progress Build

Prior knowledge (preconceptions): Prior knowledge (preconceptions): Students are expected to have experienced rain and to have seen beaded water on a cold cup or dew on surfaces after a cold night.

What new ideas are added at Level 2?

What new ideas are added at Level 3?

Level 3

Mountains can redirect water vapor higher in the atmosphere.

Level 2

Water vapor condenses as it moves higher, to where the atmosphere is colder.

Level 1

Rain can happen when water vapor gets cold and condenses into liquid water.

Prior knowledge

Deep, causal understanding

Progress Build analysis

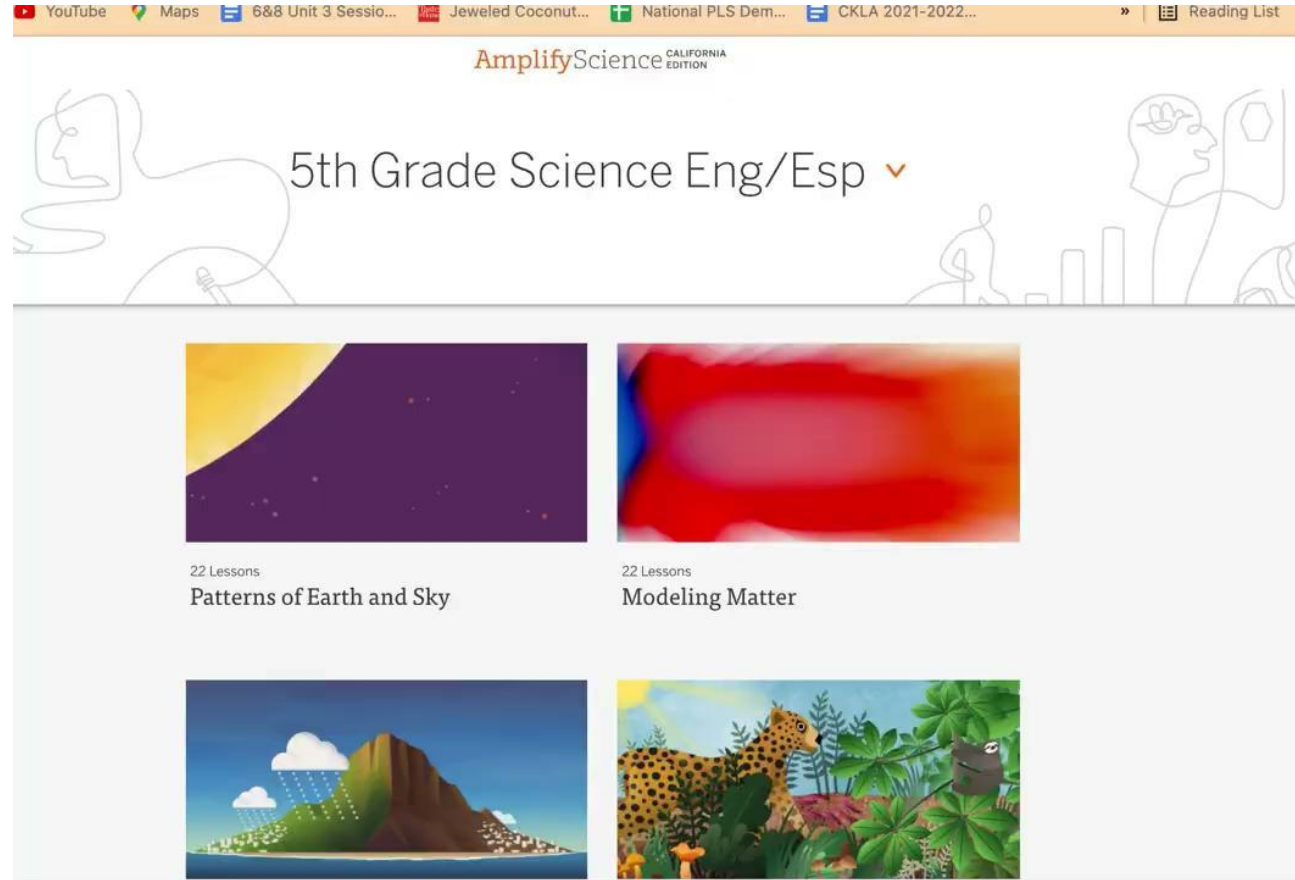
Work time

Skim your unit's Progress Build.

YouTube Maps 6&8 Unit 3 Sessio... Jeweled Coconut... National PLS Dem... CKLA 2021-2022... » Reading List

AmplifyScience CALIFORNIA EDITION

5th Grade Science Eng/Esp ▾



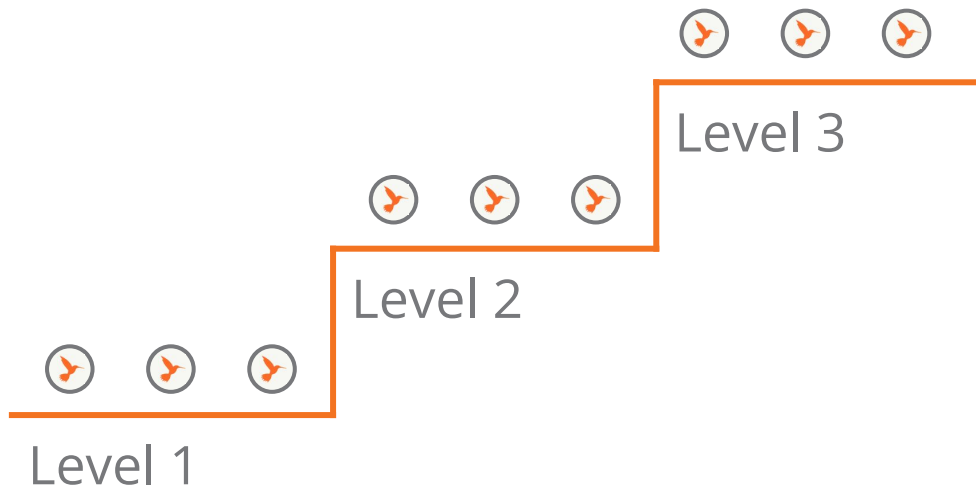
22 Lessons
Patterns of Earth and Sky

22 Lessons
Modeling Matter

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On-the-Fly Assessments

- Track student progress within a Progress Build level
- Embedded into instruction
- Assessment resource includes “Look for” and “Now what”





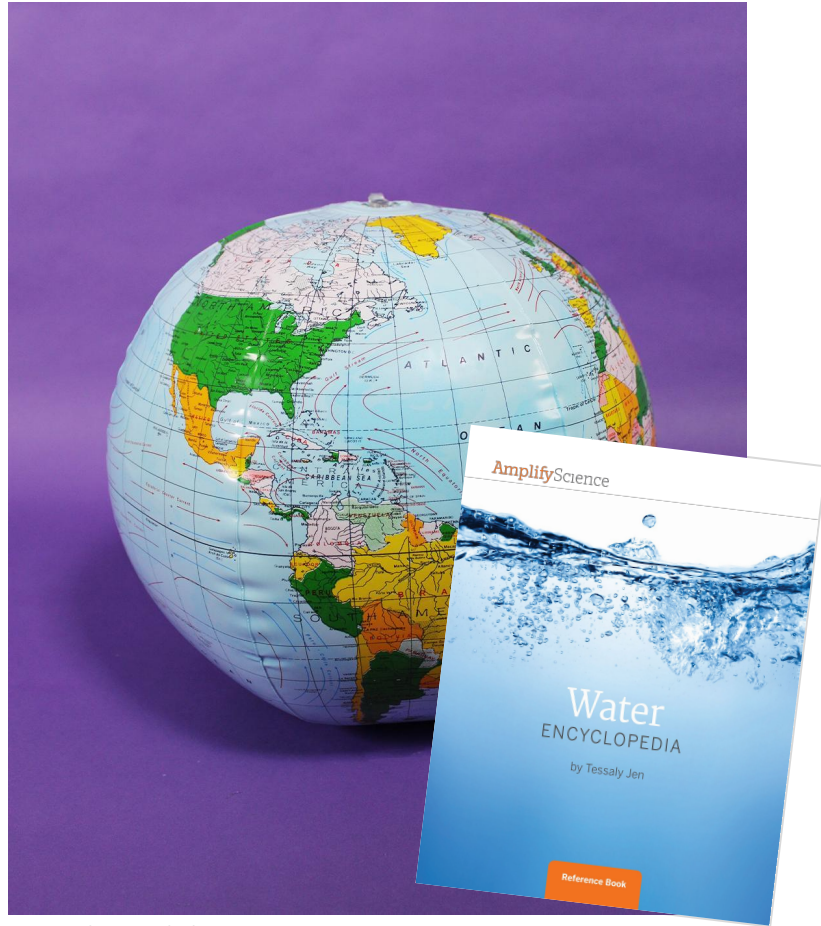
Grade 5 | The Earth System

Lesson 1.2: Water Shortages, Water Solutions

Activity 1

Discussing Water Use





In the previous lesson, we used a globe and a book to learn about water.



What did we learn about where **most of the water** is on Earth? What about where freshwater is on Earth?



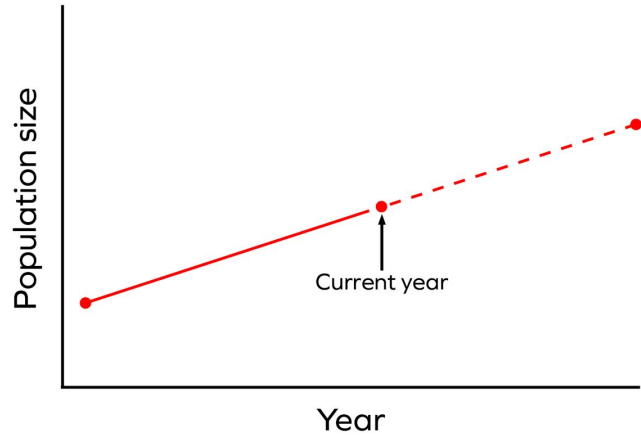
Chapter 1 Question

Why is East Ferris running out of water while West Ferris is not?



East Ferris is on an island, so it is surrounded by **salt water** in the ocean. Like us, people on Ferris Island need **freshwater**, not salt water, for their daily activities.

East Ferris's Population Growth

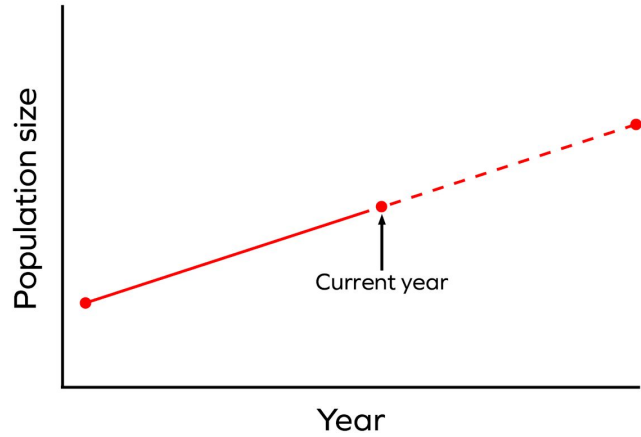


Mayor McKnight provided this data about the population in East Ferris.



What do you notice?

East Ferris's Population Growth



What do you think the **population size** has to do with the **water shortage**?

Today, we are going to investigate this question:

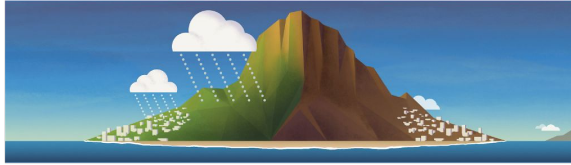
How can people affect how much freshwater is available?

Activity 2

Introducing Synthesizing



AmplifyScience

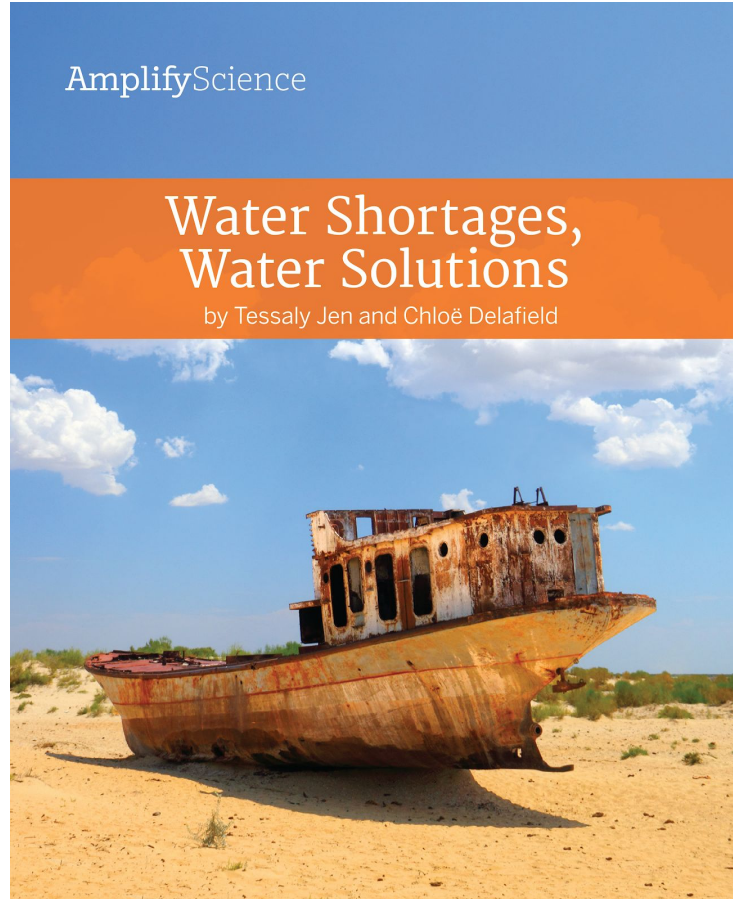


The Earth System:

Investigating Water Shortages

Investigation Notebook

We are going to use an
Investigation Notebook
like scientists use.



We will read this book about **what causes water shortages** around the world and some of the **ways people deal with water shortages.**

Name: _____ Date: _____

Synthesizing Ideas About Water Shortages

1. Read the question below.
2. Recall big ideas from *Water Encyclopedia* that help you answer the question, and record them in the first box.
3. Read pages 4–7 of *Water Shortages, Water Solutions* and record big ideas that help you answer the question in the second box.
4. Connect ideas together to answer the question.
5. Record your new understanding in the third box.

Question: How can people reduce water use?

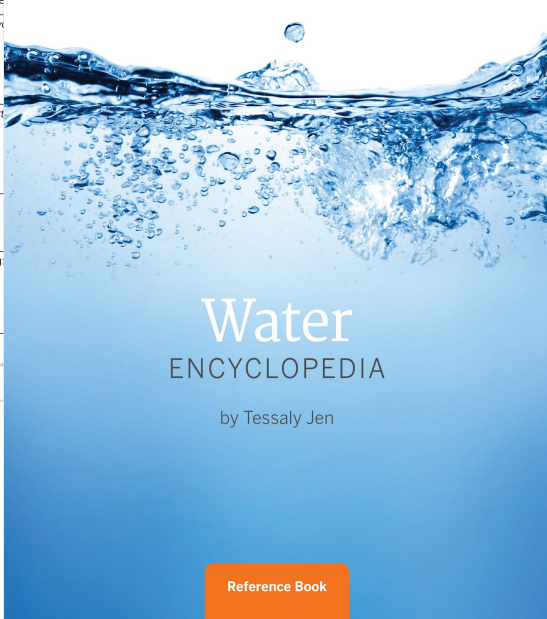
Source: *Water Encyclopedia*

Ideas:

Source: *Water Shortages, Water Solutions*

Ideas:

New understanding:



The image shows the front cover of the 'Water Encyclopedia' Reference Book. The cover has a blue gradient background with a dynamic splash of water at the top. The title 'Water' is in a large, white, serif font, with 'ENCYCLOPEDIA' in a smaller, white, sans-serif font below it. At the bottom, it says 'by Tessaly Jen'. In the top left corner, the 'AmplifyScience' logo is visible. In the bottom right corner, there is an orange button that says 'Reference Book'. A small number '4' is visible in the bottom left corner of the page.

We're going to record big ideas, not small details.

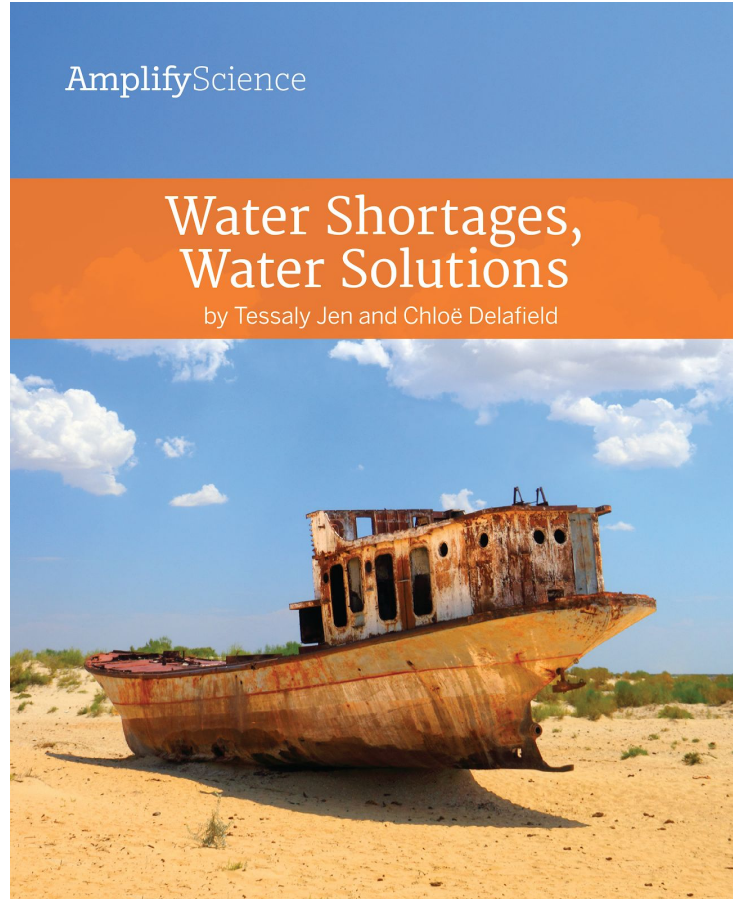


What was one **big idea** that we learned from the graphs we examined in *Water Encyclopedia*?

Activity 3

Partner Reading





Take a few minutes to
look through the book.
Notice how it is
organized.

Introduction

Everyone needs water to survive. However, more than a billion people around the world do not have enough water. Water is a limited **resource**, and there is often not enough of it available where and when people need it. There are many things that can cause a lack of available water, called a water shortage. A water shortage doesn't necessarily mean there is no water around. It means that there is not enough clean, usable freshwater available to meet people's needs.



This reservoir collects freshwater for people to use. The water level is very low because of drought. The water normally goes to the top of the white part of the hill.

Overuse, pollution, and **drought** are three major causes of water shortages. Each of these issues is more common in some places than others, but most parts of the world are affected by water shortages. This book is about water shortages in the United States and around the world, and some **solutions** to water problems.



This river is polluted and the water is not safe for people to use. Pollution like this contributes to water shortages.

Overuse, pollution, and **drought** are three major causes of water shortages. Each of these issues is more common in some places than others, but most parts of the world are affected by water shortages. This book is about water shortages in the United States and around the world, and some **solutions** to water problems.



This river is polluted and the water is not safe for people to use. Pollution like this contributes to water shortages.

I think this first sentence is a **big idea** since it is what the book is going to be about. It also relates to our question of how people can affect how much water is available.

Name: _____ Date: _____

Synthesizing Ideas About Water Shortages

1. Read the question below.
2. Recall big ideas from *Water Encyclopedia* that help you answer the question, and record them in the first box.
3. Read pages 4–7 of *Water Shortages, Water Solutions* and record big ideas that help you answer the question in the second box.
4. Connect ideas together to come up with a new understanding that answers the question.
5. Record your new understanding in the box below the arrow.

Question: How can people affect how much freshwater is available?

Source: *Water Encyclopedia*

Ideas:

Most of Earth's water is salt water, so there is not a lot of freshwater on Earth.Source: *Water Shortages, Water Solutions*

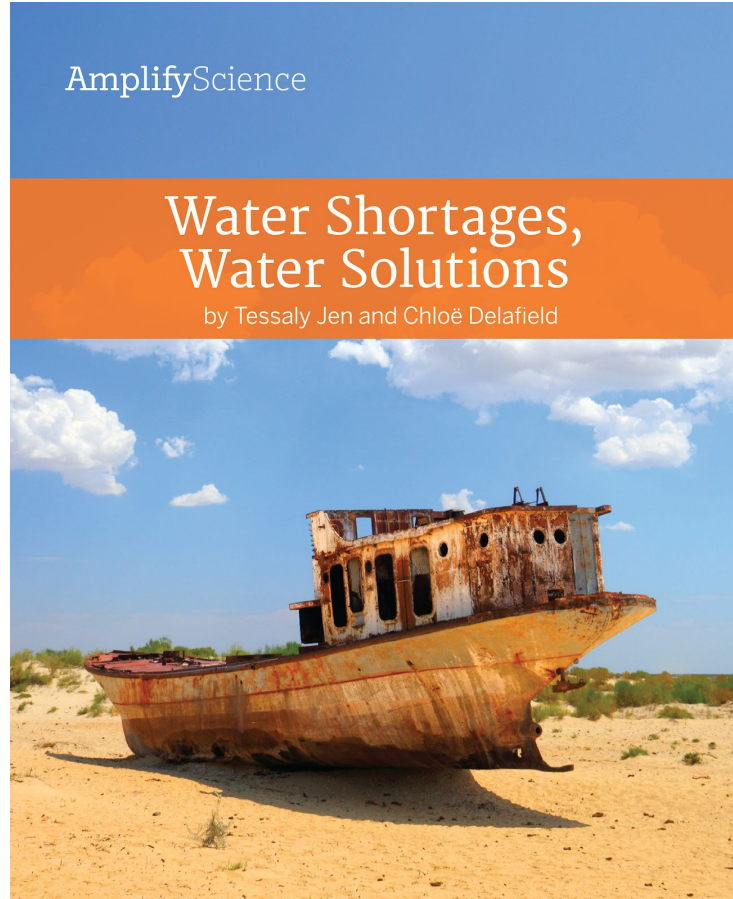
Ideas:

Overuse, pollution, and drought are three major causes of water shortages.

New understanding:



Record this big idea in your notebooks.



Read the rest of the book. **Discuss and record** any other big ideas from the book that you think help answer our Investigation Question.

Activity 4

Synthesizing Ideas About Water Shortages



Name: _____ Date: _____

Synthesizing Ideas About Water Shortages

1. Read the question below.
2. Recall big ideas from *Water Encyclopedia* that help you answer the question, and record them in the first box.
3. Read pages 4–7 of *Water Shortages, Water Solutions* and record big ideas that help you answer the question in the second box.
4. Connect ideas together to come up with a new understanding that answers the question.
5. Record your new understanding in the box below the arrow.

Question: How can people affect how much freshwater is available?

Source: *Water Encyclopedia*

Ideas:

Source: *Water Shortages, Water Solutions*

Ideas:



New understanding:



What **big ideas** did you discuss and record as you read *Water Shortages, Water Solutions*?



On-the-Fly Assessment 1:

Now what? If students are having trouble getting started with synthesizing, or if they are connecting unrelated ideas, you may want to **model by using an example from *Water Shortages, Water Solutions*. (Pages 8–9, “Drought Down Under,”** will work well for this purpose. Discuss the key idea that when people use water and it isn’t replaced by rain, the amount available in reservoirs can go down.) Depending on how many students need this support, you could either **coach a few students individually, work with a small group, or model synthesizing with the whole class.** As you guide student thinking with this sense-making strategy, remind students that they are trying to figure out how people might help to cause a water shortage.

Additional formative assessment information

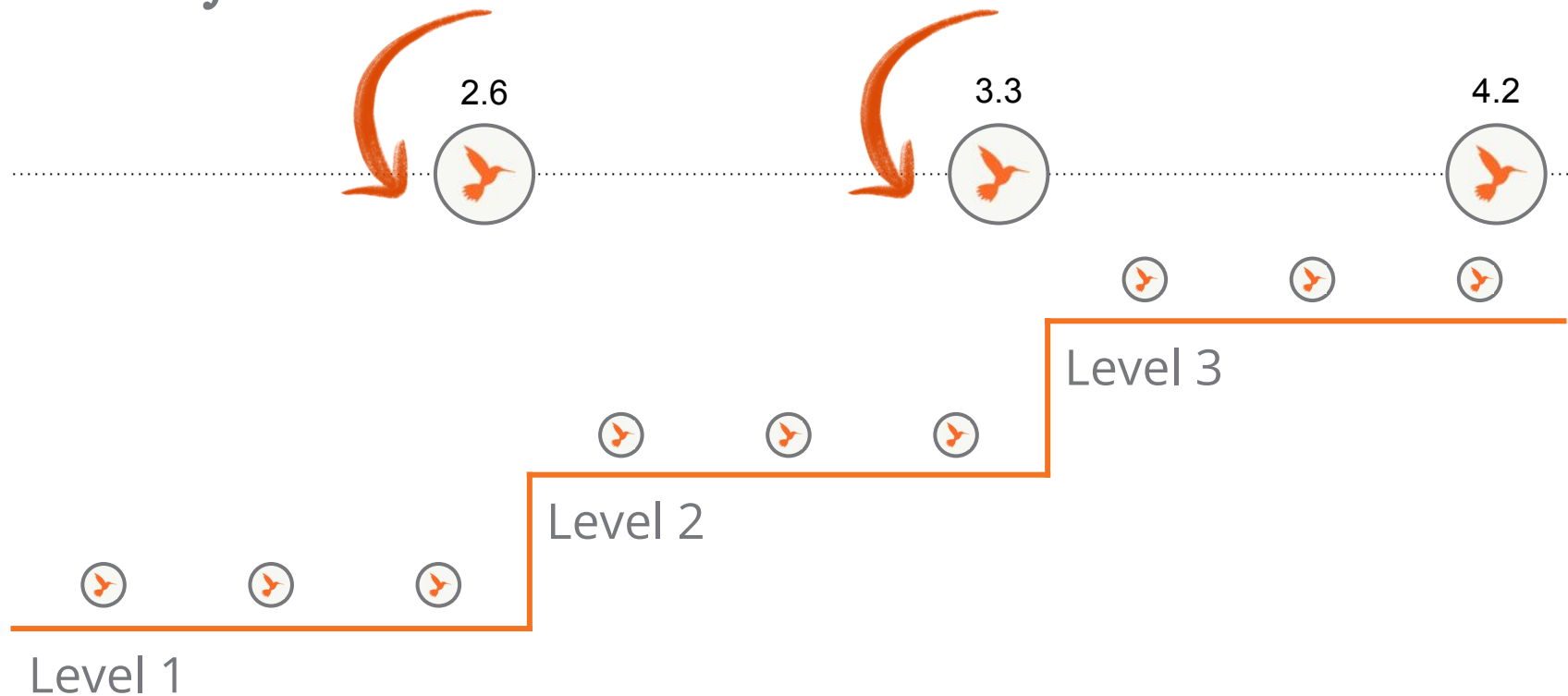
On-the-Fly Assessments

In addition to assessing concepts in the Progress Build, some On-the-Fly Assessments provide data about:

- Science and Engineering Practices
- Crosscutting Concepts
- Literacy skills
- Student collaboration

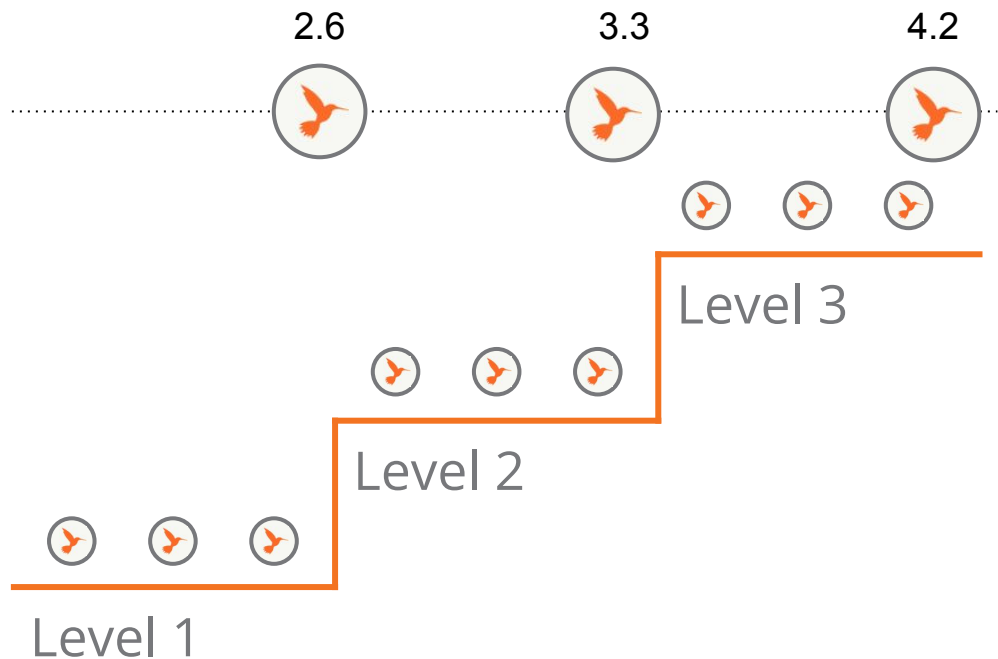


Critical Juncture Assessments



Critical Juncture Assessments

- Track student progress between Progress Build levels
- Embedded into instruction
- Assessment resource includes “Assess Understanding” and “Tailor Instruction”



An illustration of the water cycle. At the top, there are three white, fluffy clouds against a blue sky. Numerous small blue spheres, representing water molecules, are clustered within the clouds. Some blue spheres are also shown falling from the clouds as raindrops, depicted as blue lines with a small blue sphere at the end. The background is a gradient of blue, transitioning from a lighter blue at the top to a darker blue at the bottom. In the bottom left corner, there are stylized green and brown hills. Scattered throughout the sky are many small red spheres, representing water vapor or dust particles. The overall scene depicts the process of condensation and precipitation.

Grade 5 | The Earth System

Lesson 2.6: Explaining How Raindrops Form

Activity 1

Roundtable Discussion Routine



Today, we will respond to the mayor's request and write **explanations** for the people of East Ferris about why more rain forms over West Ferris than East Ferris.

To prepare for writing, we will discuss what we've learned so far.

You'll each take a turn leading a discussion about **condensation** and **evaporation** with your fellow water resource engineers.

Activity 2

Explaining How Raindrops Form



In order to help Mayor McKnight, we need to write detailed **explanations** to the people of East Ferris about why more rain forms over West Ferris than East Ferris.

All **explanations** in science are based on **evidence**.

We have evidence about how rain forms from our investigations, from books we've read, and from the Sim.

What Is a Scientific Explanation?

1. It answers a question about how or why something happens.
2. It is based on ideas you learned from investigations and text.
3. It is written for an audience.
4. It describes things that are not easy to observe.
5. It uses scientific language.

What Is a Scientific Explanation?

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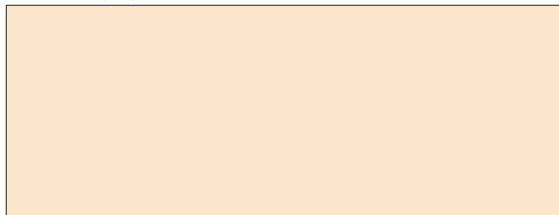
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5. It uses scientific language.

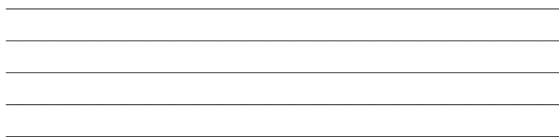
Name: _____ Date: _____

Scientific Explanation of How Raindrops Form

1. In the box below, write scientific words that you will use in your explanation.
2. Your audience is the people of East Ferris.
3. Write an explanation that answers Question 1 below.
4. Make sure you include what is happening at the nanoscale as part of your explanation
5. After you have written your explanation for Question 1, answer Question 2 on the next page following the same steps.

Scientific language

Question 1: Why does a lot of rain form over West Ferris?



Record the science words you would like to use to explain your ideas.

Name: _____ Date: _____

Scientific Explanation of How Raindrops Form (continued)

Question 2: Why doesn't much rain form over East Ferris?

Make a diagram if it helps you explain your thinking. Label your diagram.



Turn to page 33 in your notebooks.

After you write your explanations, you can add a **diagram** if it helps explain your thinking.

Tailor Instruction: For students who are not demonstrating an understanding of how rain forms in the context of evaporation and condensation, take note of where the misunderstanding is coming from. **For students having trouble with the phenomenon at the nanoscale, you can return to the Sim (with the Water Molecules toggle ON).** Help students use the key to observe separated water molecules in the air as water vapor, and clustered groups of water molecules as liquid water. Make sure students observe that clouds (liquid water) do not form without water molecules grouping together. Direct students to run the Sim and then press ANALYZE. In Analyze, have students use the Atmosphere Window to observe the molecules in water vapor and liquid water more closely. Help students observe that the water molecules are the same in both the vapor and liquid phases—it is the way molecules are clustered together or spread apart that changes with phase.

For students who have trouble understanding how liquid water can come from invisible water at the observable scale, return to pages 7–10 of *Drinking Cleopatra's Tears*, and remind them of their investigations in Lessons 2.1 and 2.2. You can also draw on students' everyday experiences of water vapor in the air, such as how the air can feel “wet” on a humid day, or how the bathroom can feel damp after a shower.

Formative assessment information

Locating assessment resources

Full text of assessment

- Embedded Formative Assessments document
- Instructional guide
- Classroom Slides notes

The Earth System
Teacher References

Embedded Formative Assessments

Activity 2

Lesson 2.6: Explaining How Raindrops Form

Name: _____ Date: _____

Scientific Explanation of How Raindrops Form

1. In the box below, write scientific words that you will use in your explanation.
2. Your audience is the people of East Ferris.
3. Write an explanation that answers Question 1 below.
4. Make sure you include what is happening at the macroscale (as part of your explanation).
5. After you have written your explanation for Question 1, answer Question 2 on the next page following the same steps.

Scientific language

Question 1: Why does a lot of rain form over West Ferris?

Write your scientific explanation.

CRITICAL JUNCTURE

Teacher action:
Circulate as students write. After students write, call on a few students to share their ideas with the class.

Critical Junction Assessment 1:
Why More Rain Forms Over West Ferris
Assess understanding: In Activity 2, students construct an explanation in response to the question "Why does a lot of rain form over West Ferris?" The purpose of this Critical Junction is to gauge students' understanding of the process of condensation in the context of rainfall. Students should demonstrate an understanding of the following critical concepts in their written explanations and, if applicable, their diagrams:

- Raindrops (liquid water) form from water vapor in the atmosphere.
- Raindrops form when water vapor gets cold.
- Water molecules are far apart in water vapor.
- Molecules of water come together when they condense.

As you review students' explanations and diagrams (if applicable), take note of whether they demonstrate an understanding of these ideas. For further

Additional formative assessment information

Locating assessment resources

Full text of assessment

- Embedded Formative Assessments document
- Instructional guide
- Classroom slides notes

Additional resources

- Lesson Brief: Digital Resources

Lesson 1.2:
Water Shortages, Water Solutions

1. TEACHER-LED DISCUSSION
Discussing Water Use

2. TEACHER-LED DISCUSSION
Introducing Synthesizing

3. READING
Partner Reading

4. TEACHER-LED DISCUSSION
Synthesizing Ideas About Water Shortages

RESET LESSON

Overview

Materials & Preparation

Differentiation

Standards

Vocabulary

Unplugged?

Overview

Students read *Water Shortages, Water Solutions* to learn more about how humans can affect the availability of freshwater. Students start the lesson by activating prior knowledge as they brainstorm ways in which they use water and reflect on the big ideas they learned in the previous lesson. Students are introduced to the sense-making strategy of synthesizing, which they will use throughout the unit to understand what they are reading and to make sense of ideas they are investigating. After the teacher models thinking about and recording big ideas, students read *Water Shortages, Water Solutions* in pairs. Through reading and discussing the book, students learn how droughts, overuse, and pollution cause water shortages around the world, and they see the impacts that water shortages have on humans. The purpose of this lesson is for students to recognize some

Digital Resources

- Classroom Slides 1.2 | PowerPoint
- Classroom Slides 1.2 | Google Slides
- All Projections
- Optional: Chapter 1 Home Investigation: Saving Water copymaster
- Hands-On Flexextension lesson guide: Modeling Water Movement
- Hands-On Flexextension copymaster: Modeling Water Movement

GENERATE PRINTABLE LESSON GUIDE

Additional formative assessment information

Possible student responses

- Within assessments:
 - “Look fors” (OtF)
 - “Assess Understanding” (CJ)
- Possible responses within the Instructional Guide
- Digital resources
 - Assessment Guides
 - Teacher References

The screenshot displays the AmplifyScience California Edition interface for 'The Earth System' Lesson 2.6. The top navigation bar includes the AmplifyScience logo, 'CALIFORNIA EDITION', and the lesson title. Below this, a horizontal menu shows three activity tabs: 'Lesson Brief (3 Activities)', '1 STUDENT-TO-STUDENT DISCUSSION Roundtable Discussion Routine', and '2 WRITING Explaining How Raindrops Form' (which is highlighted with a purple bar). To the right of these tabs are icons for a speech bubble, a pencil, and a group of people. Below the navigation bar, the title 'Explaining How Raindrops Form' is centered. Underneath, a description states: 'Students write a scientific explanation about why a lot of rain forms over West Ferris. (25 min)'. To the right of this text are two icons: 'EMBEDDED FORMATIVE ASSESSMENT' and 'INSTRUCTIONAL GUIDE'. Below the description, a horizontal menu has four tabs: 'Step-by-step', 'Teacher Support', 'Possible Responses' (which is highlighted with a blue bar and circled in orange), and 'My Notes'. The main content area below the tabs is titled 'Investigation Notebook' and contains the text: 'Scientific Explanation of How Raindrops Form (pages 32–33)'. It then lists two questions: 'Question 1: Why does a lot of rain form over West Ferris?' and 'Question 2: Why doesn't much rain form over East Ferris?'. The answers provided are: 'A lot of rain forms over West Ferris because a lot of water vapor condenses to form liquid water in the atmosphere over West Ferris. During condensation, the water molecules that make up water vapor get cold and get closer together to form liquid water. There is a lot of water vapor getting cold in West Ferris, so a lot of rain forms there.' and 'Not as much water condenses over East Ferris because it's not as cold there.'

Embedded formative assessments

On-the-Fly and Critical Juncture Assessments

1. Use the Embedded Formative Assessments document to get familiar with On-the-Fly and Critical Juncture Assessments in your unit.
2. Download the classroom slides for a lesson with an On the Fly assessment or Critical Juncture.
3. Read through the teacher notes and make note of any possible student responses. (You can copy and paste them into your notes for that slide.)



Embedded Formative Assessments

On-the-Fly Assessments and Critical Juncture Assessments (listed below in lesson order) are embedded formative assessments designed to help the teacher monitor and support students' progress throughout the unit. These assessments represent the most opportune moments for a glimpse into students' developing conceptual understanding and their facility with the practices. Each assessment opportunity indicates the specific concepts and practices to look for or listen for as students engage with the learning experiences, followed by suggestions to the teacher of what to do, based on what was observed.

Lesson 1.2, Activity 3

On-the-Fly Assessment 1: Systems Thinking About Survival Needs and Environment

Look for: As students discuss their inferences about whether or not an organism is likely or not likely to survive in a given environment, listen to how they are incorporating the environment into their reasoning. Students should be building an understanding that in order to determine whether or not an organism is likely to survive, they must think about the organism and its needs and also about the affordances of the environment. This is an early opportunity for students to practice systems thinking. Students should be learning to recognize that in order to answer the question about their organism (on page 5, Needs for Survival, in their notebooks), they must include in their thinking all the important parts of the system—the organism and its needs as well as the environment with which the organism interacts. Look for students who are focused on their organisms or their organisms' needs without reference to the environment. Some students are likely to have ideas about some organisms being inherently good or bad at surviving or better at surviving than another organism, regardless of environment.

Now what? In order to focus students on the idea that an organism's chances of survival depend on what is in its environment, have students look at the Red-Eyed Tree Frog Organism Card and the Tropical Forest Environment Card. Have students make an inference about how likely the red-eyed tree frog is to survive in a tropical forest. If students do not bring it up, point out that the tree frog can find food and water and can possibly avoid predators in the tropical forest environment. In addition, the temperature in a tropical forest is not too hot or too cold for the tree frog. Guide students to agree on the inference that the tree frog is likely to survive in this environment. Then, ask students if the tree frog is just better at surviving than the red fox, for whom the tropical forest would be too hot. Have students share their ideas and then focus them on the Grassland Environment Card. Ask students to make an inference about how likely the red-eyed tree frog is to survive in a grassland environment. Lead a discussion in which students conclude that a grassland environment does not have enough water, nor is the temperature good for the tree frog, so it is not likely to survive in a grassland environment. Emphasize that what is in an organism's environment affects how well the organism can survive. Depending on the needs of your class, you may wish to conduct a whole-class discussion, a small-group discussion, or discuss with individual students.

NGSS connection: This formative assessment reveals student knowledge and use of the crosscutting concept of Systems and System Models and the Disciplinary Core Ideas LS4.C: Adaptation and LS4.D: Biodiversity and Humans.

Additional 3-D Assessment Opportunities

To assess students on the practice of Analyzing and Interpreting Data (SEP 4), look for students to analyze and interpret data from the cards using logical reasoning to make sense of whether or not their organism could survive in different environments. Look for students to interpret the data from both organism and environment cards together, making logical connections about organism needs and affordances of different environments.

Additional formative assessment information

Student Self-Assessments

- End of each chapter
- Grades K-1: Pair Share activity
- Grades 2-5: Independent Investigation Notebook activity



Level

Name: _____ Date: _____

Chapter 1: Check Your Understanding

This is a chance for you to reflect on your learning so far. This is not a test. Be open and truthful when you respond.

Scientists and engineers investigate in order to explain how or why something happens. Am I getting closer to figuring out why East Ferris gets very little rain even though West Ferris gets a lot of rain?

I understand why East Ferris is having a water shortage. _____ Yes _____ Not yet

I understand where water molecules in the atmosphere come from. _____ Yes _____ Not yet

I understand what happens to water molecules when they form raindrops above Ferris Island. _____ Yes _____ Not yet

I understand why raindrops are most likely to form in certain parts of the atmosphere above West Ferris. _____ Yes _____ Not yet

I understand how water molecules get to the part of the atmosphere where raindrops form above West Ferris. _____ Yes _____ Not yet

I understand that most scientists and engineers work in teams. _____ Yes _____ Not yet



Data Collection Tool

Student res

Teacher:

Unit Name:

Directions:

1. Navigate to the lesson.
2. Select the embedded What?.
3. Determine the Look for below:
 - a. Look for 1: _____
 - b. Look for 2: _____
 - c. Look for 3: _____
 - d. Look for 4: _____
 - e. Look for 5: _____
4. Use the chart below described above.
5. Place a plus (+) if student backsplash (/) if student demonstrates no understanding.
6. After data collection is the Now What? for id _____

Grade 2: Plant and Animal Relationships
Lesson 2.1: Activity 4 Debriefing Plant Parts (OTF)

Look for 1: A plant is a system made up of different parts (leaves, stems, roots).

Look for 2: Each plant part has a unique role so that the plant can live and grow.

Student Name	Look for 1	Look for 2	Notes
Jennifer		X	Named roots as the only part that had a role in keeping the plant alive
Michael			
Trent	X	X	Didn't identify a plant as a system w/parts
Adelina			
Wanda		X	Didn't identify a plant as a system w/parts
Jonathan			
William			
Zena		X	Didn't identify a plant as a system w/parts
Christine			
Dorothy	X	X	Didn't identify a plant as a system w/parts
Laura		X	Didn't describe parts as having unique roles
Shawn			
Anthony			
Tristian	X	X	Didn't identify a plant as a system w/parts

[illegible]

Jamboard

What did you learn about these assessments?

On the Fly

Critical Juncture



Plan for the day: Part 1

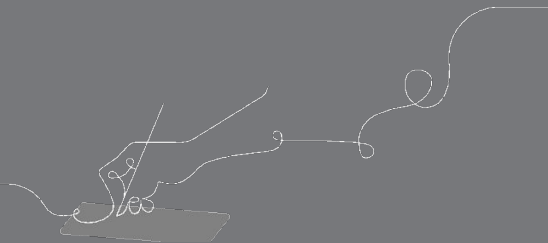
- Introduction and Framing
- Unit Overview
- Formative Assessments
- Closing

Overarching goals

By the end of this workshop, you will be able to:

- ❑ Internalize the unit
- ❑ Describe the overall structure of the Assessment System
- ❑ Describe the overall structure and purpose the Formative Assessments.

e



Additional resources

Welcome, caregivers!

We hope you enjoy learning more about Amplify Science and what students are learning in science this year.

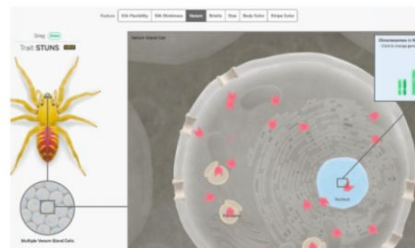
[Para acceder a este sitio en español haga clic aquí.](#)

Amplify welcomes you and your learner to the Science program for the new school year. We are very excited to provide you with exceptional learning opportunities through Science. Below are resources and helpful guides for enabling your student to have the most productive experience with our platform throughout the year.

 [Contact Us](#)



Grades 6-8



LAUSD Microsite-
<https://amplify.com/lausd-science>



Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the [Amplify Science Program Hub](#) (To help orient you to the new design, watch this [video](#) and view this [reference guide](#).)
- Find out more about [Amplify Science@Home](#)
- Share the [Caregiver Hub](#) (Eng/Span) with your families
- For LAUSD ES Teachers- [Amplify Science & Benchmark Advance Crosswalk](#)
- Instructional guidance for a [Responsive Relaunch of Amplify Science in 21-22](#)

Click the button below to preview the digital Teacher's Guide, and check back for exciting updates to this site!

Additional resources and ongoing support

Customer Care

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.



help@amplify.com



800-823-1969



Amplify Chat



End of Part 1

Break

10:00 - 10:30

Amplify Science

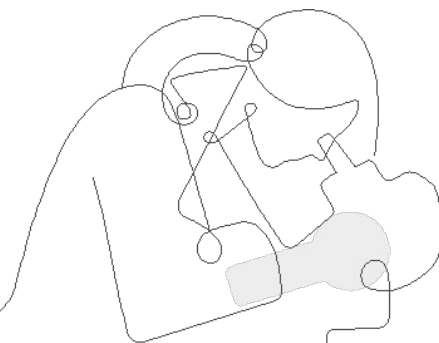
Unit 3: The Earth System (with an assessment focus)

Grade 5, Part 2

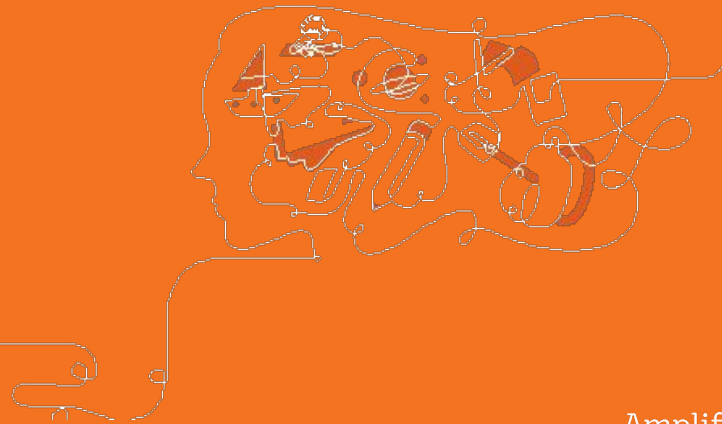
School/District Name: LAUSD

Date:

Presented by:



Part 2

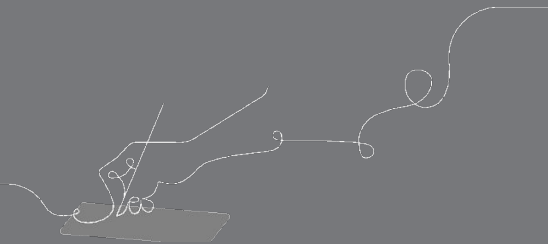


Overarching goals

By the end of this workshop, you will be able to:

- ❑ Understand the pre and post assessments in this unit.
- ❑ Understand how the formative assessments build to the summative assessment.

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Plan for the day: Part 2

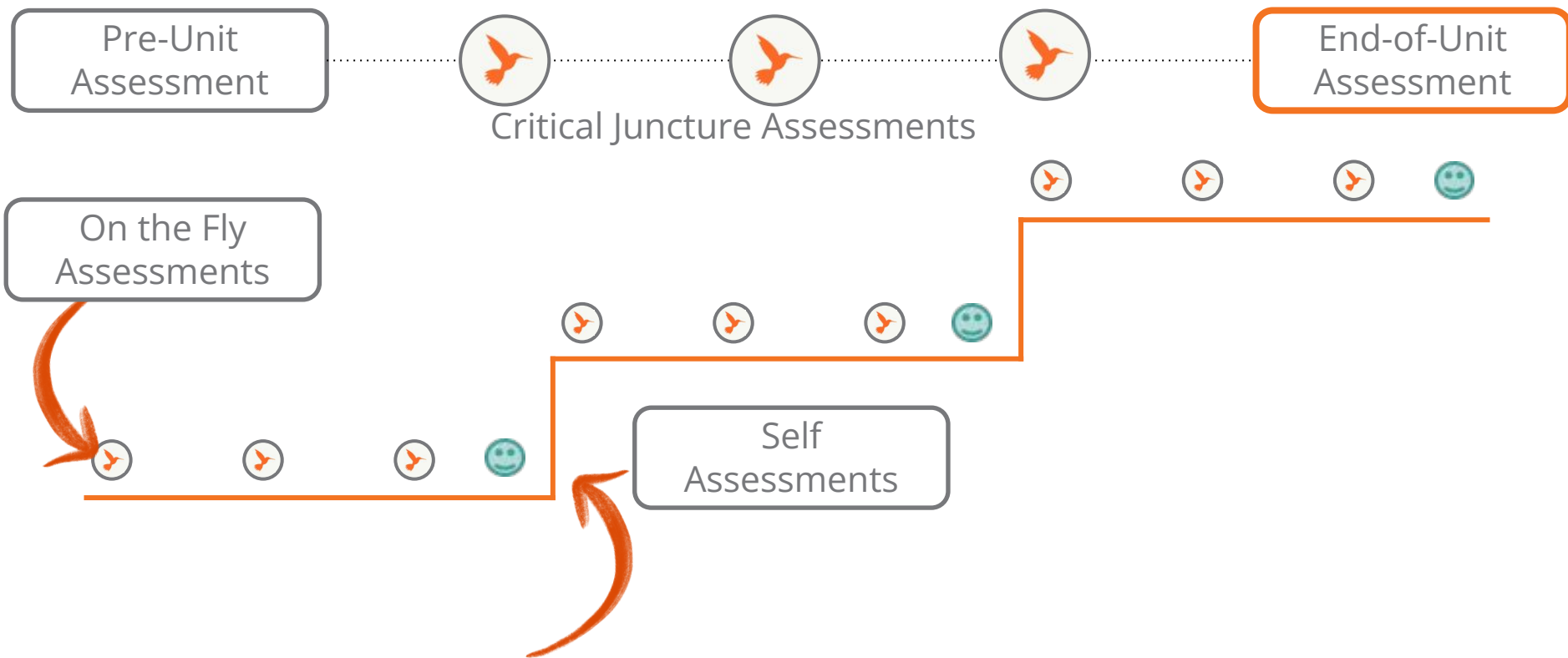
- Pre-Assessment
- Summative assessment
- Closing



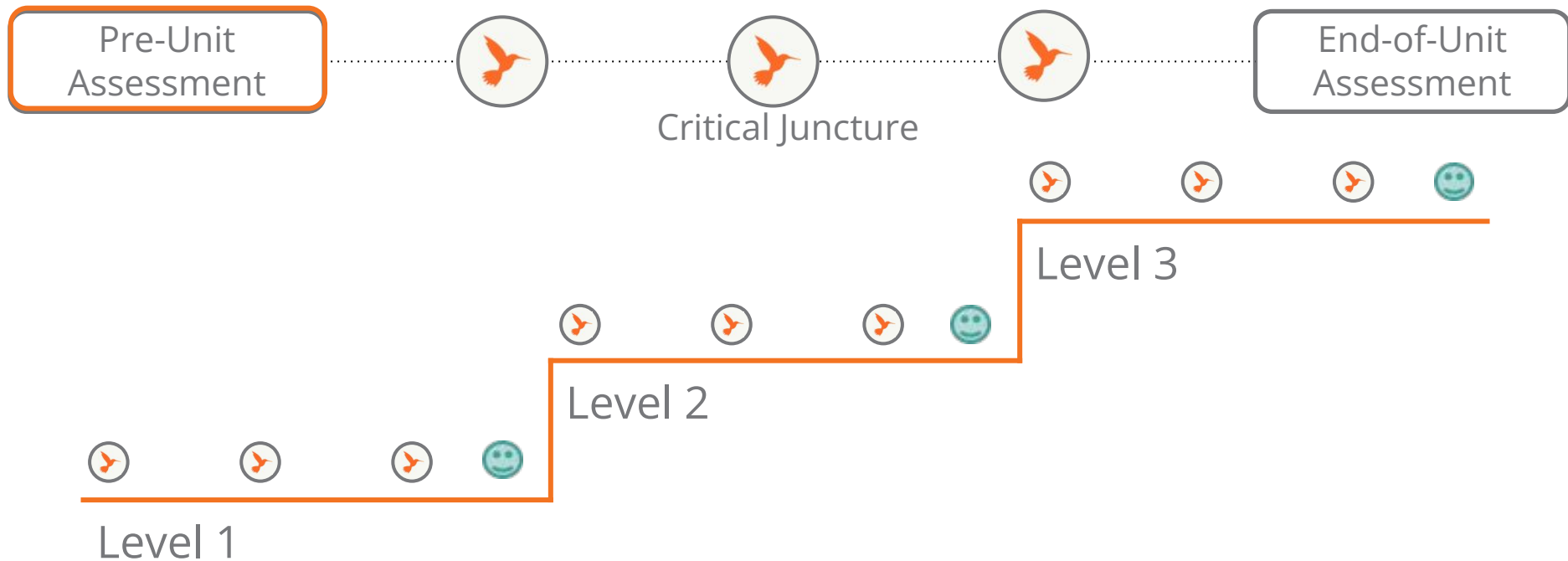
Plan for the day: Part 2

- Pre-Assessment
- Summative assessment
- Closing

K-5 Assessment System



K-5 Assessment System



A stylized, low-poly illustration of a mountain range. The mountains are rendered in various shades of brown, tan, and green, suggesting different geological layers or vegetation. The sky is a clear blue. In the foreground, there's a dark blue area representing water, with a light blue, torn-paper-like edge separating it from the land.

Grade 5 | The Earth System

Lesson 1.1: Pre-Unit Assessment

Activity 1

Introducing the Unit





We are beginning a unit about **water**.

On Ferris Island, the city of **East Ferris does not have enough water**. They need our help to solve this problem.



For this unit, we will take on the role of **water resource engineers** helping East Ferris with their water problem.



To: Water Resource Engineers

From: Mayor McKnight, East Ferris City Hall

Subject: Water Shortage in East Ferris

I am worried about the availability of water in East Ferris. The people in this city depend on water for many things, and we are now beginning to have a water shortage. I think this is a big problem, but many of the people in East Ferris do not seem concerned. I know that West Ferris is not having a water shortage, but they get a lot of rain on their side of the island. Though East Ferris has never gotten much rain, we have only just begun to have problems with the availability of water. I need your help to explain to the people of East Ferris why our city is running out of water but West Ferris is not.



Unit Question

What can determine how much water is available for human use?



Chapter 1 Question

Why is East Ferris running out of water while West Ferris is not?

Activity 2

Writing Initial Explanations



Name: _____ Date: _____

Pre-Unit Writing: Explaining Rain on Ferris Island

Part 1

Explain your ideas about rain by answering these questions.

1. How do raindrops form?

2. Where does the water in raindrops come from?

The Earth System—Lesson 1.1

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The Earth System—Lesson 1.1

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3

We know that it **rains more in West Ferris** than in East Ferris. You will **reflect** on what you might already understand and what you don't yet understand about rain.

Name: _____ Date: _____

Pre-Unit Writing: Explaining Rain on Ferris Island**Part 1****Explain your ideas about rain by answering these questions.**

1. How do raindrops form?

2. Where does the water in raindrops come from?

The Earth System—Lesson 1.1

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The Earth System—Lesson 1.1

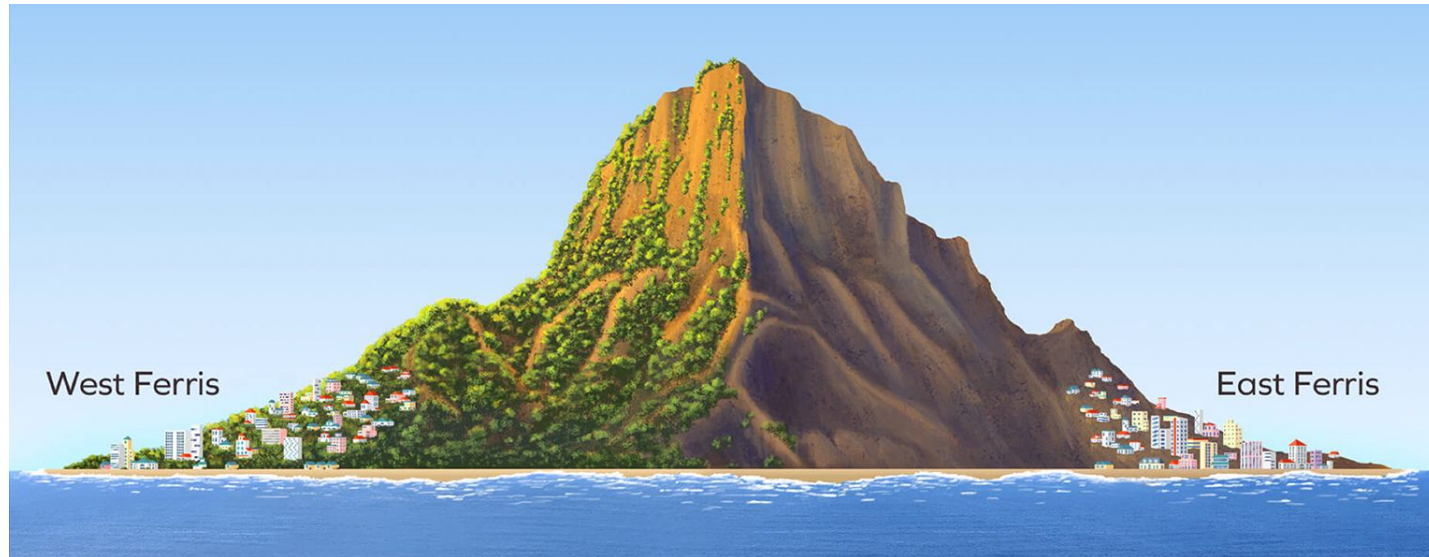
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3

There are **two parts to this assessment**. In the first part, you will share your ideas about **rain** in general. In the second part, you will share your ideas about **Ferris Island**.



Record your ideas about rain and Ferris Island.



Pre-Unit Assessment

Lesson 1.1

Locate the
Assessment Guide in
Lesson 1.1 of your
unit and read it.

Assessment Guide: Interpreting Students' Pre-Unit Explanations About Rain on Ferris Island

This pre-unit writing assessment is an opportunity for students to articulate their initial ideas about rain on Ferris Island, and provides a baseline for considering student growth over the course of the unit. See the 3-D Assessment Objectives (under Printable Resources) for a summary of how summative and formative assessments across the unit, grade and grade band reveal student knowledge and use of the three dimensions to support progress toward the focal Performance Expectations for this unit.

This pre-unit assessment provides students with an opportunity to connect their background knowledge and the initial ideas they have to the concepts they will be learning about in *The Earth System: Investigating Water Shortages* unit. It can also provide insight into students' thinking as you begin this unit of instruction. This will allow you to draw connections to students' experiences and to watch for alternate conceptions that might get in the way of students' understanding. In particular, look for the following:

Connecting to students' experiences. Examples of students' experiences they might reference that you can connect to the content of lessons in the unit:

- experience with humid and rainy days
- experience with condensation on a cup
- experience with droughts or other water shortages
- experience with some places getting a lot of rain and others getting very little rain

Building on prior knowledge. Examples of ideas that students can build on throughout the unit:

- Living things need water.
- Polluted water is not usable.
- Anything that takes up space is made of matter.

Applying crosscutting concepts. Examples of ways students could demonstrate facility with the crosscutting concept of Systems and System Models:

- Water from the surface (puddles, ocean) can evaporate and become part of the air. (Applying the idea that a system can be described in terms of its components and their interactions.)
- It rains more in West Ferris because of something to do with the mountain. (Applying the idea that a system can be described in terms of its components and their interactions.)

Gauging students' facility with science practices. Since students write a scientific explanation for this task, it offers an entry-level assessment of this important science and engineering practice, and students' writing may be reviewed by using the rubric provided in Lesson 2.6. However, because students' writing in response to this pre-unit assessment may be sparse and not fully demonstrate incoming facility with the science and engineering practice, we recommend using the extended writing task, and corresponding rubrics, in Lesson 2.6 (Assessment Guide: Reviewing Students' Chapter 2 Explanations About How Raindrops Form) as an entry-level assessment of this science and

The Earth System: Investigating Water Shortages (Grade 5)

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1

engineering practice. Additional entry-level assessments of other science and engineering practices and crosscutting concepts may be found in the following lessons: the crosscutting concept of Systems and System Models in Lesson 2.4 (On-the-Fly Assessment 5, Activity 4) and the science and engineering practices of Mathematics and Computational Thinking and Designing Solutions in Lesson 3.4 (On-the-Fly Assessment 8, Activity 3).

Common preconceptions, contrasted with accepted scientific understandings:

- **The atmosphere is not made of matter.** Because they cannot see it, many students might not consider air or the atmosphere to be made of anything. However, at the nanoscale, both air and the atmosphere are composed of a mix of molecules in the gas phase.
- **Water is an unlimited resource.** Water flows out of the tap on demand and is used for many things. However, there is a limited amount of water on Earth, especially freshwater that can be used by humans.
- **Clouds are water storage containers.** Clouds are not objects separate from the water that rains out of them. Clouds are in fact composed of tiny water droplets. When the water droplets come together and get large enough, they fall as rain.
- **Chemical reactions are always dramatic.** In fact, many chemical reactions are very slow or do not produce remarkable results at the observable scale.
- **Chemical reactions create or destroy atoms.** When a chemical reaction occurs, the atoms recombine to form new molecules, but the atoms themselves are not created or destroyed.

The assessment task in this lesson provides an opportunity to formatively assess students' preliminary understanding of the following standards:

Science and Engineering Practice

- Practice 6: Constructing Explanations and Designing Solutions

Disciplinary Core Ideas

- ESS2.A: Earth Materials and Systems:
 - Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)
- PS1.A: Structure and Properties of Matter:
 - Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)
 - The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)

Crosscutting Concept

- Systems and System Models

The Earth System: Investigating Water Shortages (Grade 5)

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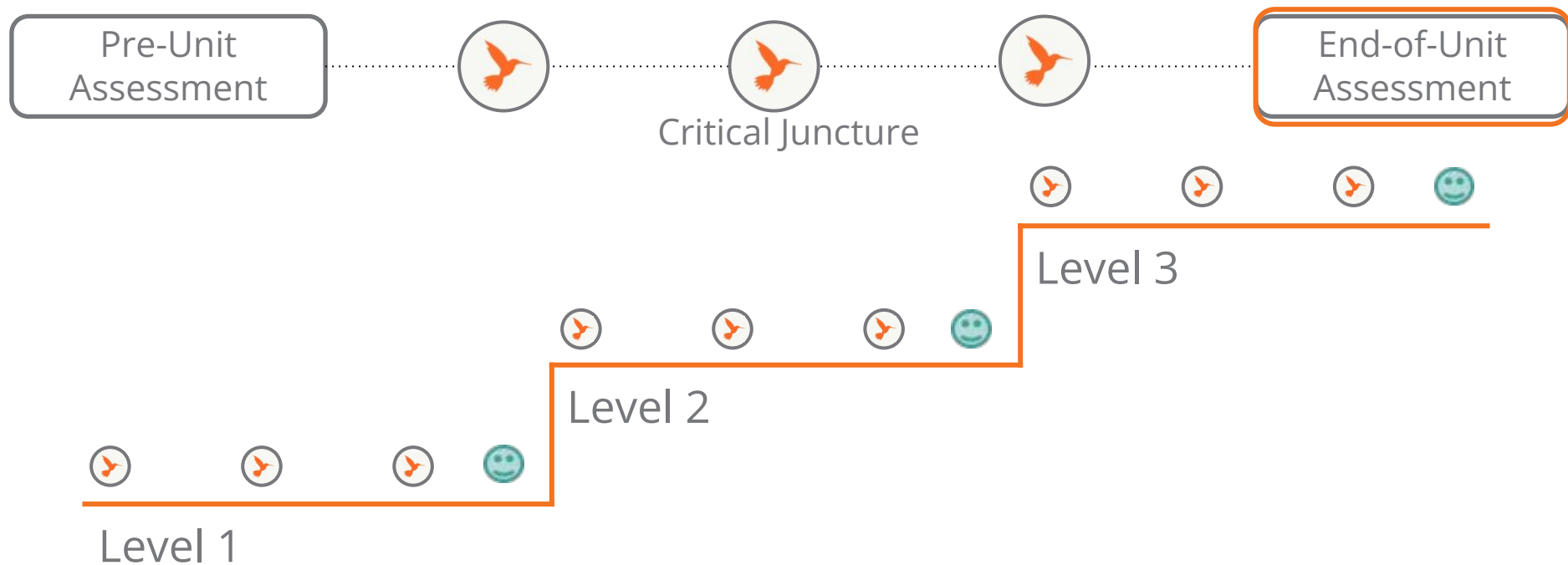
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Plan for the day: Part 2

- Pre Assessment
- Summative assessment
- Closing

K-5 Assessment System



End-of-Unit Assessment

3-dimensional assessment opportunity

- Summative assessment of mastery of science concepts
- Formative assessment of Science and Engineering Practices



There are 2 parts to this summative assessment.

Lesson 5.5 Part 2

Name: _____ Date: _____

End-of-Unit Writing Part 2:
Explaining Wastewater Treatment (*continued*)

Question: How does adding substances to wastewater allow engineers to get rid of harmful substances?

Make a diagram if it helps you explain your thinking. Label your diagram.

The Earth System—Lesson 5.5 (Version A)

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2



Grade 5 | The Earth System

Lesson 4.3: End-of-Unit Assessment Part 1

Activity 1

Roundtable Discussion





Today, we will explain why more rain forms over West Ferris than East Ferris. To prepare, we will review what we have figured out so far.



Remember, scientists and engineers often **discuss possible answers** to the questions they are investigating. We will discuss our ideas in **Roundtable Discussions.**

Name: _____ Date: _____

Roundtable Discussion: The Rain Shadow Effect

1. Each person in your group will take a turn being a Discussion Leader. With your group, assign each person a number from 1 to 4.
2. Discussion Leader 1 will ask the first Discussion Question and lead the group's discussion. The Discussion Leader may ask any of the Follow-up Questions to keep the discussion going.
3. Take turns asking questions until all four group members have had a turn leading the discussion.
4. Each Discussion Leader should be ready to share the group's thinking about their question with the class.

Discussion Questions:

Discussion Leader 1: What happens to water molecules during evaporation and condensation?

Discussion Leader 2: In what area of the atmosphere does water vapor condense most often? Why?

Discussion Leader 3: When wind blows from a body of water toward a mountain, why does it rain a lot on one side of the mountain?

Discussion Leader 4: When wind blows from a body of water toward a mountain, why does it rain only a little on one side of the mountain?

Follow-up Questions:

- What do you think?
- Why do you think so?
- Does anyone have a different idea?
- Do you agree or disagree? Why?

Turn to page 72 in your notebooks.

Let's review how a
Roundtable Discussion
works and the questions
we will discuss.

Name: _____ Date: _____

Roundtable Discussion: The Rain Shadow Effect

1. Each person in your group will take a turn being a Discussion Leader. With your group, assign each person a number from 1 to 4.
2. Discussion Leader 1 will ask the first Discussion Question and lead the group's discussion. The Discussion Leader may ask any of the Follow-up Questions to keep the discussion going.
3. Take turns asking questions until all four group members have had a turn leading the discussion.
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Discussion Questions:

Discussion Leader 1: What happens to water molecules during evaporation and condensation?

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Discussion Leader 3: When wind blows from a body of water toward a mountain, why does it rain a lot on one side of the mountain?

Discussion Leader 4: When wind blows from a body of water toward a mountain, why does it rain only a little on one side of the mountain?

Follow-up Questions:

- What do you think?
- Why do you think so?
- Does anyone have a different idea?
- Do you agree or disagree? Why?

The **follow-up questions** are good to ask as you are leading the discussion. They can help to keep things going and make sure everyone has a chance to talk.

Name: _____ Date: _____

Roundtable Discussion: The Rain Shadow Effect

1. Each person in your group will take a turn being a Discussion Leader. With your group, assign each person a number from 1 to 4.
2. Discussion Leader 1 will ask the first Discussion Question and lead the group's discussion. The Discussion Leader may ask any of the Follow-up Questions to keep the discussion going.
3. Take turns asking questions until all four group members have had a turn leading the discussion.
4. Each Discussion Leader should be ready to share the group's thinking about their question with the class.

Discussion Questions:

Discussion Leader 1: What happens to water molecules during evaporation and condensation?

Discussion Leader 2: In what area of the atmosphere does water vapor condense most often? Why?

Discussion Leader 3: When wind blows from a body of water toward a mountain, why does it rain a lot on one side of the mountain?

Discussion Leader 4: When wind blows from a body of water toward a mountain, why does it rain only a little on one side of the mountain?

Follow-up Questions:

- What do you think?
- Why do you think so?
- Does anyone have a different idea?
- Do you agree or disagree? Why?



Discuss the questions.

Activity 2

End-of-Unit Assessment Part 1



Name: _____ Date: _____

**End-of-Unit Writing Part 1:
Explaining the Rain Shadow on Ferris Island**

1. Write an explanation that answers the question below.
2. Your audience is the people of East Ferris.
3. Make sure you include what is happening at the nanoscale as part of your explanation.

Question: Why does more rain form over West Ferris than East Ferris?

continued)
r diagram.

You will write a **scientific explanation** for the people of East Ferris.

Let's read the directions together to make sure everyone understands what to do.

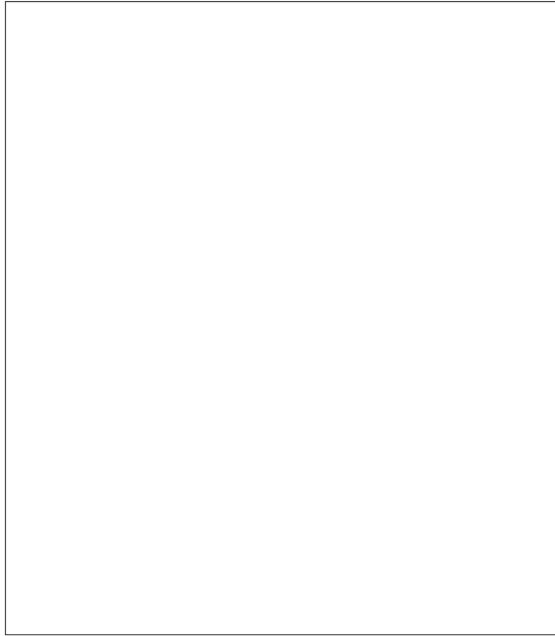
What Is a Scientific Explanation?

1. It answers a question about how or why something happens.
2. It is based on ideas you have learned from investigations and text.
3. It is written for an audience.
4. It describes things that are not easy to observe.
5. It uses scientific language.

Name: _____ Date: _____

End-of-Unit Writing Part 1:**Explaining the Rain Shadow on Ferris Island** (continued)

Make a diagram if it helps you explain your thinking. Label your diagram.



The Earth System—Lesson 4.3 (Version A)

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2

You can make a **diagram** to help **brainstorm** what you will explain or to support your explanation by illustrating what you have written about.

continued)
r diagram.



Write your explanation.

Locate End of Unit Assessment

Classroom Slides are now available for this lesson!
Find them in the [Digital Resources](#) below.

Lesson 4.3: End-of-Unit Assessment Part 1

2 WRITING
End-of-Unit Assessment
Part 1

3 STUDENT-TO-STUDENT
DISCUSSION
Solutions for East Ferris's
Water Shortage

RESET LESSON

Overview

Students' Explanations

In this lesson, students reflect on and express their understanding of what they have learned so far in *The Earth System* unit. The lesson begins with a Roundtable Discussion in which students review key ideas in groups of four. Next, students write a scientific explanation to the people of East Ferris about why more rain forms over West Ferris than East Ferris, the first of a two-part End-of-unit Assessment. The End-of-Unit Assessment is designed to reveal students' understanding of unit-specific science concepts, the crosscutting concept of Systems and System Models, and the practice of constructing explanations. Finally, students engage in the Think-Pair-Share routine to discuss solutions to East Ferris's water shortage problem and then record ideas in the Investigation Notebook. By explaining how rain forms over Ferris Island, students demonstrate their understanding of the rain shadow effect. The purpose of this lesson is for students to demonstrate all they have learned as they explain why more rain forms over West Ferris than East Ferris.

Unit Anchor Phenomenon: West Ferris has more freshwater than East Ferris.

Digital Resources

- Classroom Slides 4.3 | PowerPoint
- Classroom Slides 4.3 | Google Slides
- All Projections
- Assessment Guide: Assessing Students' End-of-Unit Part 1 Explanations About the Rain Shadow on Ferris Island
- End-of-Unit Writing Part 1: Explaining the Rain Shadow on Ferris Island Version A copymaster
- Optional: End-of-Unit Writing Part 1: Explaining the Rain Shadow on Ferris Island Version B copymaster
- The Earth System Investigation Notebook, pages 71-73

GENERATE PRINTABLE LESSON GUIDE

Digital Resources

 Classroom Slides 4.3 | PowerPoint


 Classroom Slides 4.3 | Google Slides

 All Projections

 **Assessment Guide: Assessing Students' End-of-Unit Part 1 Explanations About the Rain Shadow on Ferris Island**

 **End-of-Unit Writing Part 1: Explaining the Rain Shadow on Ferris Island Version A copymaster**

 **Optional: End-of-Unit Writing Part 1: Explaining the Rain Shadow on Ferris Island Version B copymaster**

 **The Earth System Investigation Notebook, pages 71-73**

There are 2 versions of the assessment

Version B

Name: _____ Date: _____

End-of-Unit Writing Part 1:

Explaining the Rain Shadow on Ferris Island

- Write an explanation that answers the question below.
- Your audience is the people of East Ferris.
- Make sure you include what is happening at the nanoscale as part of your explanation.
- Your explanation should also include:
 - a **topic sentence** that answers the question.
 - supporting sentences that tell **what happens** and **why**.

Question: Why does more rain form over West Ferris than East Ferris?

More rain forms over West Ferris than East Ferris because _____

When the wind blows, _____

This is why _____

1

The Earth System—Lesson 4.3 (Version B)

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End-of-Unit Assessment

Work time

Open and skim your End-of-Unit Assessment Guide for lesson 4.3

Question: Why does more rain form over West Ferris than over East Ferris?

Rubric 1: Assessing Students' Performance of the Practice of Constructing Explanations
Rubric 1 focuses on the first two criteria (causal and explanatory, clear and well-organized) and is designed to monitor and support students as they develop dexterity with the practice of constructing explanations. For each criterion, levels are described to monitor students' progress by indicating the degree to which students can independently demonstrate fluency with the scientific practice. Importantly, practices develop through regular opportunities for performance across multiple units, and mastery of the practice is outside the scope of a single unit. Thus, this rubric is intended to guide formative feedback to students rather than assign summative grades. It features targeted questions a teacher may use to assess a student's written work and provides specific feedback for future encounters with the practice.

Note that while the examples provided in this rubric accurately reflect the science concepts in the unit, students may provide alternate accounts that, if causal and explanatory in nature, still toward developing the practice of constructing a scientific explanation.

Assessment Guide: Assessing Students' End-of-Unit Part 1 Explanations About the Rain Shadow on Ferris Island

This End-of-Unit Assessment is an opportunity for students to show their growth over the course of the unit. See the 3-D Assessment Objectives (under Printable Resources) for a summary of how summative and formative assessments across the unit, grade and grade band reveal student knowledge and use of the three dimensions to support progress toward the local Performance Expectations for this unit.

Explanation is an important practice in science—explanations are the accounts that scientists construct for the things that we can observe in the natural world. There are three core criteria for scientific explanations that we use to assess their quality: causal and explanatory, clear and well-organized, and grounded in evidence (described below). To support students' understanding of the criteria by which they will be evaluated, the projection and notebook page (page 2) for What Is a Scientific Explanation? provide a list of features of a scientific explanation to which students can refer when constructing explanations and to which you can refer when reviewing explanations. In order to support students in working toward higher-quality explanations, the features presented to students are aligned with the three criteria that you will use to review students' explanations in this lesson. For more detail about how each of the core criteria align with the features of a scientific explanation that are presented to students, see Assessment Guide: Reviewing Students' Chapter 2 Explanations About How Raindrops Form in Lesson 2.6.

- **Causal and explanatory:** Explanations should describe how or why something happens as it does (e.g., why there is more rain in West Ferris) and should go beyond what is immediately observable (e.g., describing the movement of water molecules in the atmosphere).
- **Clear and well-organized:** Explanations should be written with a structure that makes them easy to understand and with a level of detail that is a good match for what the expected audience knows.
- **Grounded in evidence:** Explanations should be consistent with available evidence from investigations and reliable texts, although they do not need to explicitly refer to that evidence.

To assess students' written explanations—as a performance of the practice of constructing explanations and of their understanding of the concepts being explained—we have provided three rubrics. Rubric 1 focuses on the first two criteria (causal and explanatory, clear and well-organized) and is designed to formatively assess the practice of constructing explanations. Rubrics 2 and 3 focus on the third criterion (grounded in evidence) and are designed to summatively assess students' conceptual understanding. The three rubrics include guidance for numeric scoring. Rubric 1 provides guidance for formative feedback to students. Rubric 2 may be used summatively to

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Constructing Explanations

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Grade 5 | The Earth System

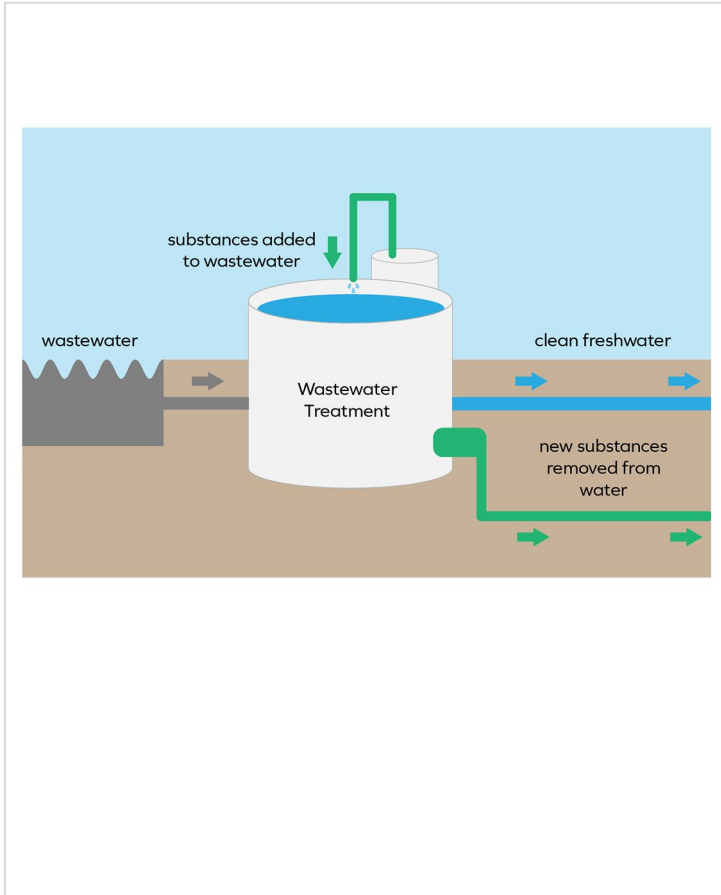
Lesson 5.5: End-of-Unit Assessment Part 2



Activity 1

Chemical Reactions in Wastewater Treatment



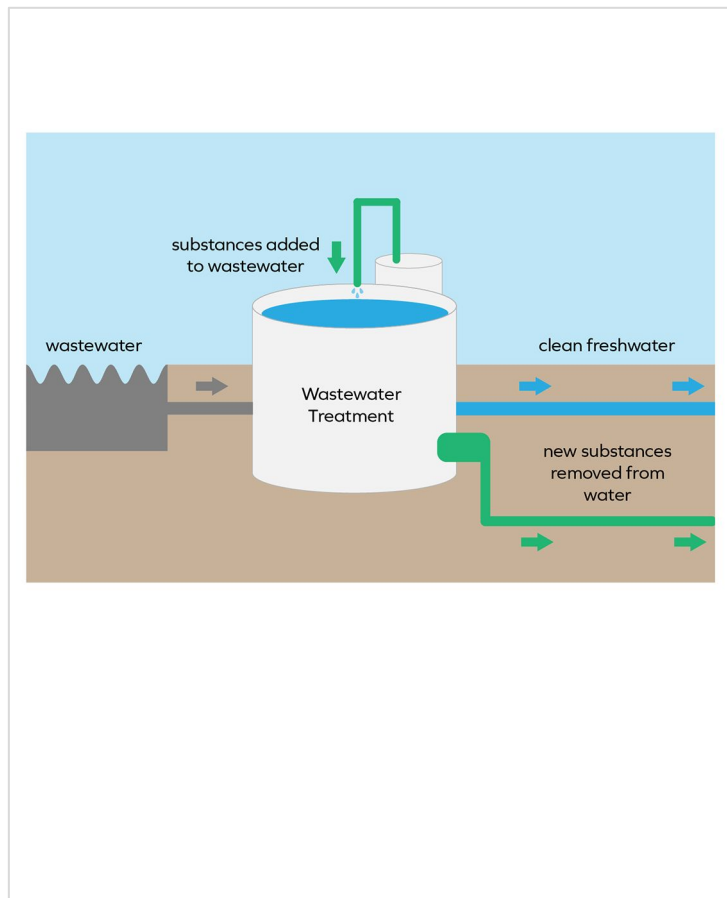


Remember, Mayor McKnight asked us to learn more about **wastewater treatment** as a possible **solution** to East Ferris's water shortage problem.



Chapter 5 Question

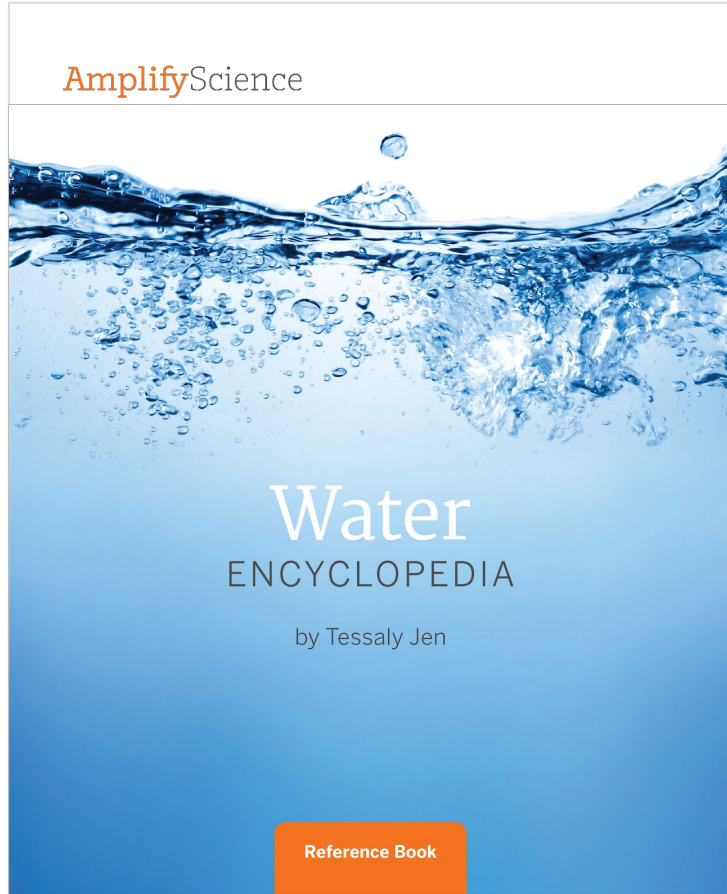
How can East Ferris turn wastewater into clean freshwater?



Let's reflect on the diagram and chemical reactions.



Based on what we have learned through our **investigations**, what do you think happens during **wastewater treatment**?



We have an idea that a **chemical reaction** happens during wastewater treatment.

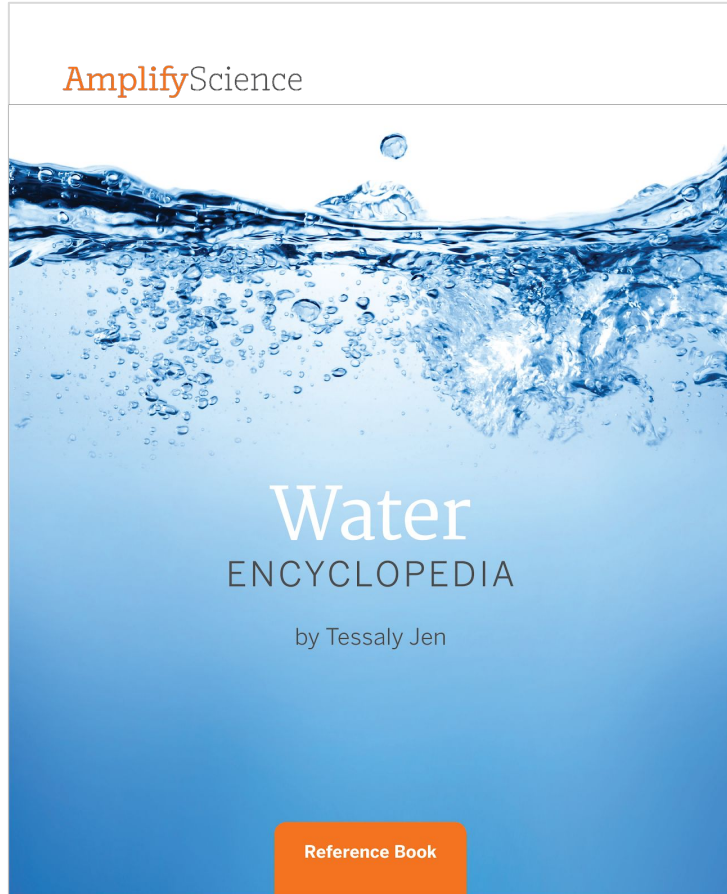
Let's read to see if we can find more **evidence** supporting our idea.

Contents

How to Use This Book.....	4	Ocean.....	26
Chemical Reactions and Water.....	5	Phases of Water.....	28
Collecting Water for Human Use.....	6	Places Where Water Exists on Earth.....	30
Condensation of Water.....	8	Precipitation.....	32
Conserving Water.....	9	Properties of Water.....	33
Evaporation of Water.....	11	Shortages of Water.....	34
Freezing of Water.....	12	Surface Water.....	36
Freshwater and Salt Water.....	13	Transporting Water.....	37
Groundwater.....	14	Treating Water for Human Use.....	38
Habitats in Water.....	16	Wastewater.....	40
Human Body and Water.....	17	Water in the Solar System.....	41
Human Use of Water.....	18	Watersheds.....	42
Hydrosphere.....	20	Water Vapor.....	44
Ice.....	21	Weather and Water.....	46
Living Things and Water.....	22	Glossary.....	47
Melting and Water.....	23	Index.....	48
Microorganisms in Water.....	24		
Molecules of Water.....	25		



Use the **table of contents** to find the “Treating Water for Human Use” section. Then, **read** and **discuss** those pages.



What **evidence** did you find in *Water Encyclopedia* to support our idea that a **chemical reaction** happens during wastewater treatment?

Activity 2

Word Relationships





We'll continue using important science words to discuss **chemical reactions** and **wastewater treatment** in a Word Relationships routine.

Name: _____ Date: _____

Word Relationships

1. Work with your group to create sentences that use at least two of the word cards.
2. Create some sentences that explain what you have been learning.
3. Create some sentences that answer the question, How can East Ferris turn wastewater into freshwater? Encourage creative thinking.
4. Record a few of the sentences you created.
5. With your group, choose one sentence that can be shared with the class.

chemical reaction

matter

molecule

property

substance

wastewater

1.	_____

2.	_____

3.	_____

Turn to page 109 in your notebooks.



Create and record
sentences, using at least
two of the words in
each sentence.

Activity 3

End-of-Unit Assessment Part 2



Mayor McKnight wanted to know how **wastewater treatment** works because the people of East Ferris aren't sure about the idea of using water that was once wastewater.

We'll write to the people to explain how adding **substances** to wastewater allows engineers to get rid of harmful substances.

What Is a Scientific Explanation?

1. It answers a question about how or why something happens.
2. It is based on the ideas we have learned from investigations and text.
3. It is written for an audience.
4. It describes things that are not easy to observe.
5. It uses scientific language.

Name: _____ Date: _____

End-of-Unit Writing Part 2: Explaining Wastewater Treatment

1. In the box below, write scientific words that you will use in your explanation.
2. Your audience is the people of East Ferris.
3. Write an explanation that answers the question on the next page.
4. Make sure you include what is happening at the nanoscale as part of your explanation.

Scientific language

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engineers to

r diagram.

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Let's review the directions to make sure we all understand what to do.

Name: _____ Date: _____

**End-of-Unit Writing Part 2:
Explaining Wastewater Treatment**

- In the box below, write scientific words that you will use in your explanation.
- Your audience is the people of East Ferris.
- Write an explanation that answers the question on the next page.
- Make sure your explanation includes at least three scientific words from the list below.

Scientific language:

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Name: _____ Date: _____

**End-of-Unit Writing Part 2:
Explaining Wastewater Treatment (continued)**

Question: How does adding substances to wastewater allow engineers to get rid of harmful substances?

Make a diagram if it helps you explain your thinking. Label your diagram.

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Making a **diagram** can help you **brainstorm** what you will explain or **support your explanation** by illustrating what you have written about.

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Write your explanations.

Draw a diagram if it helps you explain your thinking.

In the next lesson, we'll have a chance to use everything we have learned to discuss our ideas about how **wastewater treatment** can help East Ferris.

End of Lesson



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Locate End of Unit Assessment

Classroom Slides are now available for this lesson!
Find them in the [Digital Resources below](#).

Lesson 5.5: End-of-Unit Assessment Part 2

CTIONS IN
TREATMENT

2 STUDENT-TO-STUDENT
DISCUSSION
Word Relationships

3 WRITING
End-of-Unit Assessment
Part 2

RESET LESSON

Overview

Students' Explanations

In this lesson, in which students write their final scientific explanations for the people of East Ferris, serves as the End-of-Unit Assessment. Students reflect on and communicate what they have learned about chemical reactions and wastewater treatment through group discussion and independent writing. They begin by reading about wastewater treatment in *Water Encyclopedia* to contextualize how chemical reactions are used in wastewater treatment plants. They then engage in the Word Relationships routine to discuss ideas they have learned using vocabulary related to chemical reactions and wastewater treatment. Finally, students write an explanation about how East Ferris can turn wastewater into freshwater, the second of a two-part End-of-Unit Assessment. The purpose of this lesson is for students to make the connection between chemical reactions and wastewater treatment and demonstrate what they have learned.

Unit Anchor Phenomenon: Wastewater can be treated to get freshwater.
Chapter-level Anchor Phenomenon: Wastewater can be turned into freshwater.

GENERATE PRINTABLE LESSON GUIDE

Digital Resources

- Classroom Slides 5.5 | PowerPoint
- Classroom Slides 5.5 | Google Slides
- All Projections
- Assessment Guide: Assessing Students' End-of-Unit Part 2 Explanations About Wastewater Treatment
- End-of-Unit Writing Part 2: Explaining Wastewater Treatment Version A copymaster
- Optional: End-of-Unit Writing Part 2: Explaining Wastewater Treatment Version B copymaster
- The Earth System Investigation Notebook, pages 108–109

Digital Resources

- Classroom Slides 5.5 | PowerPoint
- Classroom Slides 5.5 | Google Slides
- All Projections
- Assessment Guide: Assessing Students' End-of-Unit Part 2 Explanations About Wastewater Treatment
- End-of-Unit Writing Part 2: Explaining Wastewater Treatment Version A copymaster
- Optional: End-of-Unit Writing Part 2: Explaining Wastewater Treatment Version B copymaster
- The Earth System Investigation Notebook, pages 108–109

There are 2 versions of the assessment

Version B

Name: _____ Date: _____

End-of-Unit Writing Part 2:
Explaining Wastewater Treatment (continued)

Question: How does adding substances to wastewater allow engineers to get rid of harmful substances?

Adding substances to wastewater allows engineers to get rid of harmful substances because _____

New substances form when _____

This means that _____

Make a diagram if it helps you explain your thinking. Label your diagram.

The Earth System—Lesson 5.5 (Version B)

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End-of-Unit Assessment

Work time

Open and skim your End-of-Unit Assessment Guide for lesson 5.5

Assessment Guide: Assessing Students' End-of-Unit Designs for the RoboGrazer Mouth

This document provides a rubric for the End-of-Unit Assessment Part 2.

This End-of-Unit Assessment is an opportunity for students to show their growth over the course of the unit. See the 3-D Assessment Objectives (under Printable Resources) for a summary of how summative and formative assessments across the unit, grade and grade band reveal student knowledge and use of the three dimensions to support progress toward the focal Performance Expectations for this unit.

This task provides an opportunity to formatively assess the practices and crosscutting concept that have been a focus of instruction throughout the unit. The *Environments and Survival* unit has focused on the practice of engineering design and the crosscutting concept of Structure and Function. Since students' facility with the practices and crosscutting concepts develops over many years through experiences across multiple contexts, we expect students to continue to develop proficiency with them in future units.

Review students' RoboGrazer mouth designs to look for evidence of students using ideas they have learned about the structure and function of giraffe traits to inform their plans. You may use the rubric below to assess students' facility with the practice of Designing Solutions and their application of the crosscutting concept of Structure and Function.

Assessing Students' Designs and Application of the Crosscutting Concept of Structure and Function	
Criteria	Questions to keep in mind
Using ideas about traits to inform designs	<p>Is there evidence that students have incorporated the ideas they've learned about traits to inform their design of solutions?</p> <ul style="list-style-type: none">Do students justify the type of teeth they chose by referencing what is known about giraffe teeth?Do students justify their choice about the placement of teeth by referencing what is known about giraffe mouths?
Structure and Function: Substructures have shapes and parts that serve functions.	<p>Is there evidence of students' understanding of the crosscutting concept of Structure and Function?</p> <ul style="list-style-type: none">Do students describe the shapes of the substructures of the teeth they selected and connect that substructure to the specific function each tooth can serve within the structure of the mouth?Do students describe the structure of the mouth in terms of the placement of the different teeth and connect that structure to the function it can serve?

Environments and Survival: Snails, Robots, and Biomimicry (Grade 3)

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The assessment task in this lesson provides an opportunity to formatively assess students' preliminary understanding of the following standards:

Science and Engineering Practice

- Practice 6: Constructing Explanations and Designing Solutions

Disciplinary Core Ideas

- ETS1.B: Developing Possible Solutions:
 - Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
- LS4.B: Natural Selection:
 - Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)
- LS4.C: Adaptation:
 - For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

Crosscutting Concept

- Structure and Function

Environments and Survival: Snails, Robots, and Biomimicry (Grade 3)

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Questions?





Plan for the day: Part 1

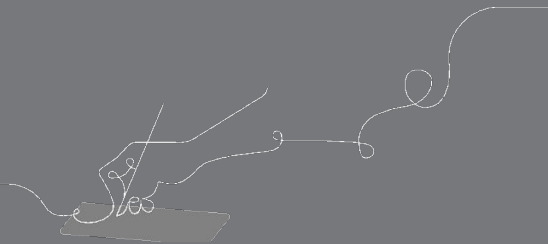
- Introduction and Framing
- Unit Internalization
- Formative Assessments
- Closing

Overarching goals

By the end of this workshop, you will be able to:

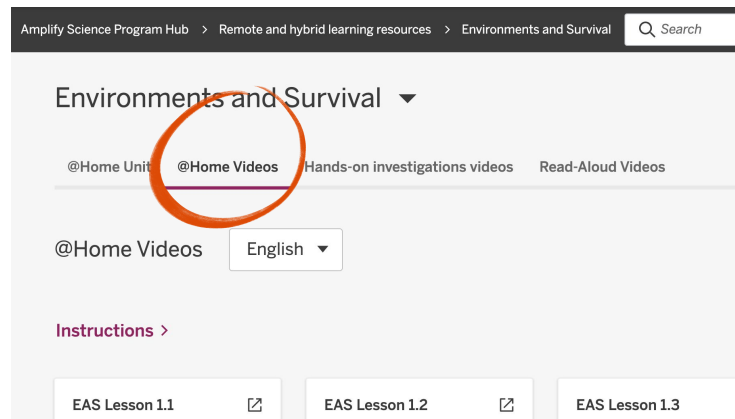
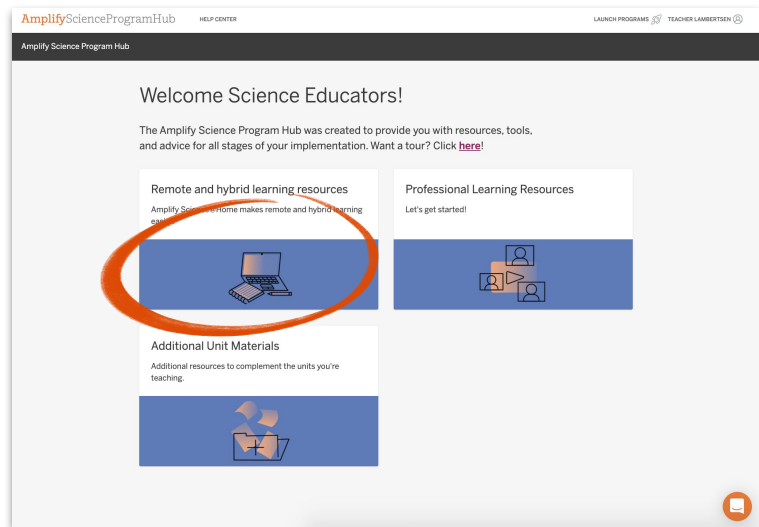
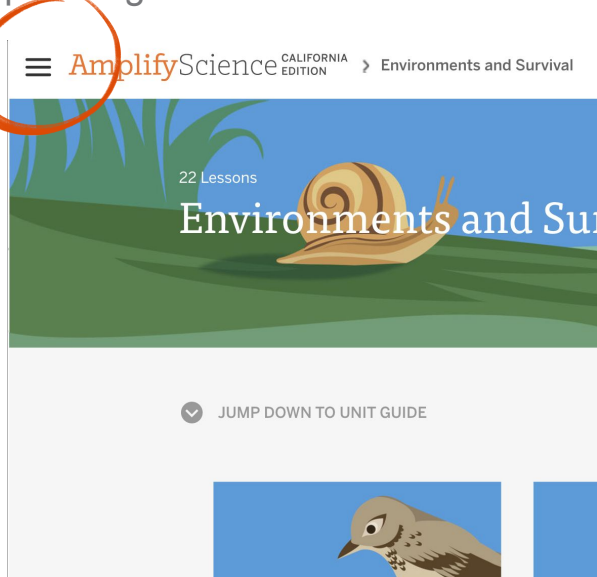
- ❑ Understand the pre and post assessments in this unit.
- ❑ Understand how the formative assessments build to the summative assessment.

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Program Hub

Use the Amplify Science Program Hub to find useful resources for implementing Amplify Science, including unit overview videos and planning tools.



LAUSD Microsite-
<https://amplify.com/lausd-science>



Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the [Amplify Science Program Hub](#) (To help orient you to the new design, watch this [video](#) and view this [reference guide](#).)
- Find out more about [Amplify Science@Home](#)
- Share the [Caregiver Hub](#) (Eng/Span) with your families
- For LAUSD ES Teachers- [Amplify Science & Benchmark Advance Crosswalk](#)
- Instructional guidance for a [Responsive Relaunch of Amplify Science in 21-22](#)

Click the button below to preview the digital Teacher's Guide, and check back for exciting updates to this site!

Additional resources and ongoing support

Customer Care

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.



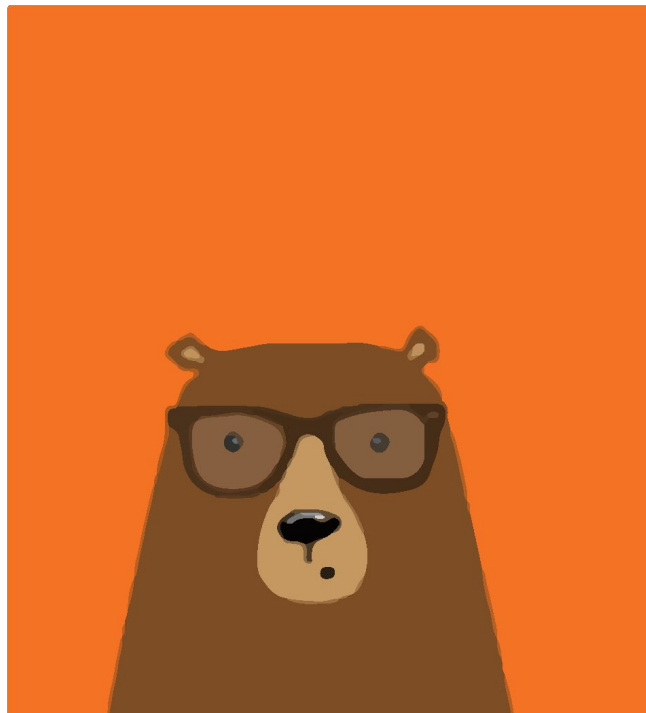
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Amplify Chat



End of Part 2