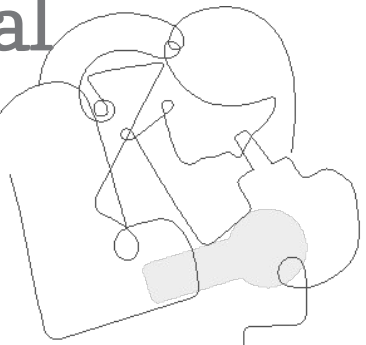
Amplify Science

Unit 3: Environment and Survival (with an assessment focus)

Grade 3, Part 1



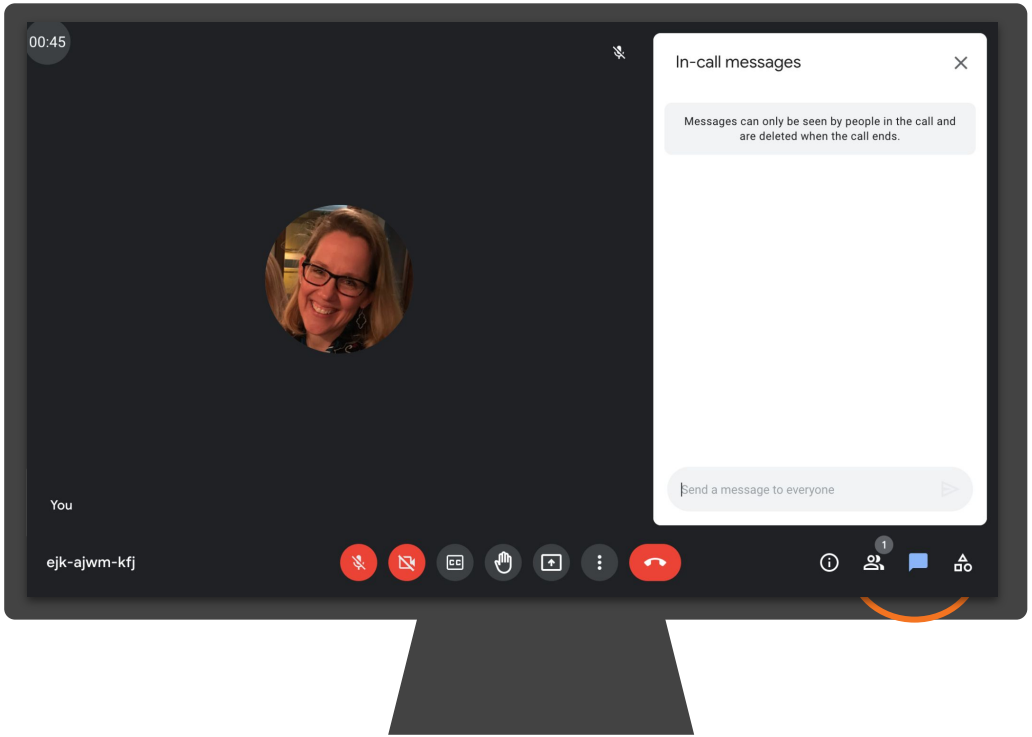
School/District Name: LAUSD
Date:
Presented by:

TOP RATED BY EDREPORTS

PLPG CERTIFIED PROVIDER

Ice Breaker!

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



Amplify's Purpose Statement

Dear teachers,

You do a job that is nearly impossible and **utterly essential**.

We are in your corner – extending your reach, saving you time, and enhancing your understanding of each student.

Thank you for working with us to craft rigorous and riveting learning experiences for your classroom.

We share your goal of **inspiring all students to think deeply, creatively, and for themselves.**

Sincerely,
Amplify

Norms: Establishing a culture of learners

- **Take risks:** Ask any questions, provide any answers.
- **Participate:** Share your thinking, participate in discussion and reflection.
- **Be fully present:** Unplug and immerse yourself in the moment.
- **Physical needs:** Stand up, get water, take breaks.

Schoology

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

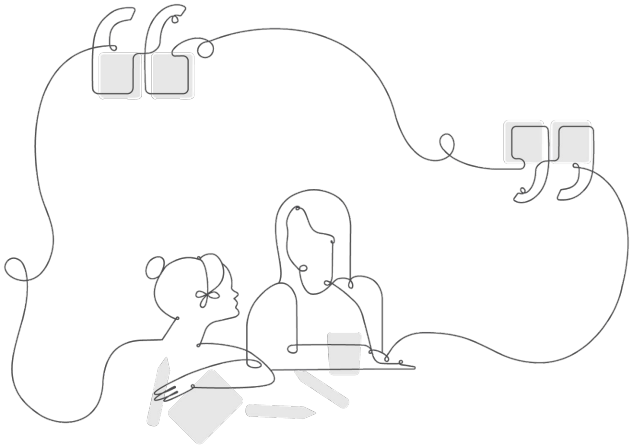
Upcoming LAUSD Office Hours

Last working Monday of the month

Next Office Hour:

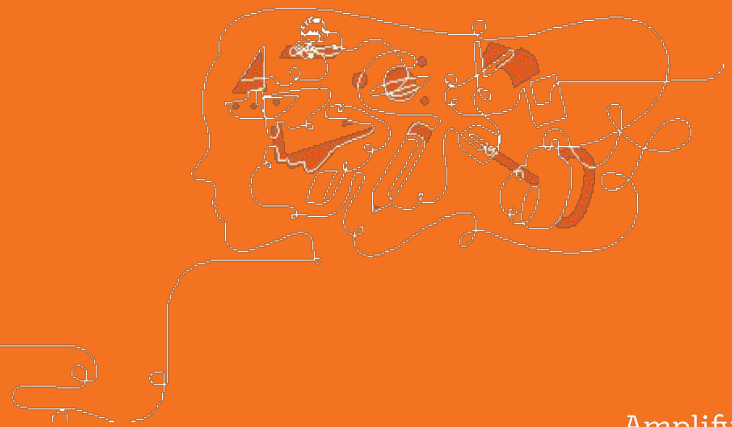
January 31, 2022

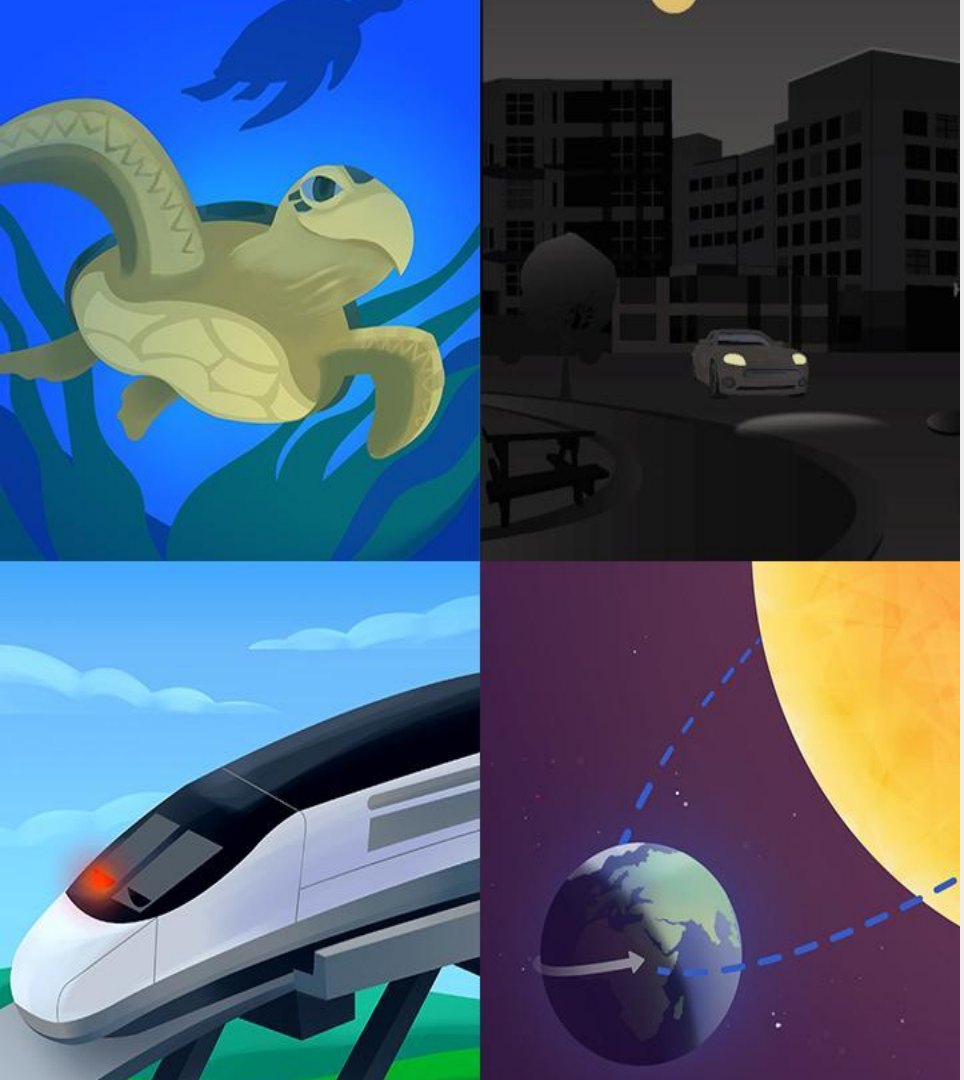
- Monday, (4-5pm)



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

Part 1





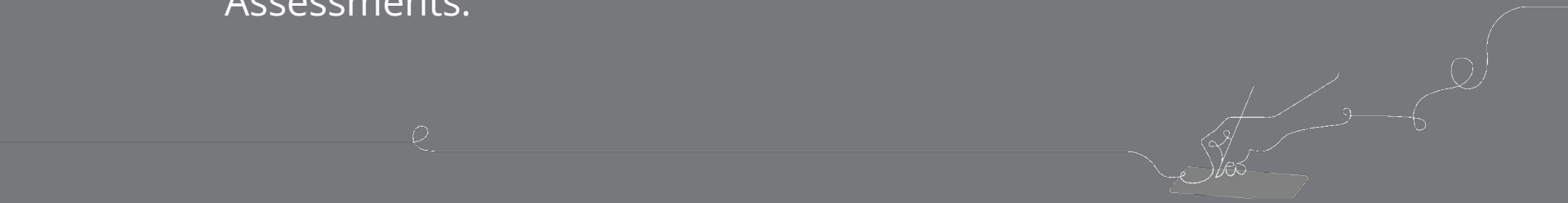
Plan for the day: Part 1

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

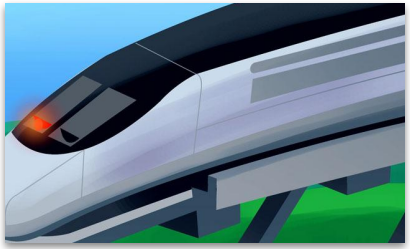
Overarching goals

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 3



Balancing Forces

Domain: Physical Science

Unit type: Modeling

Student role: Engineers

Inheritance and Traits

Domain: Life Science

Unit type: Investigation

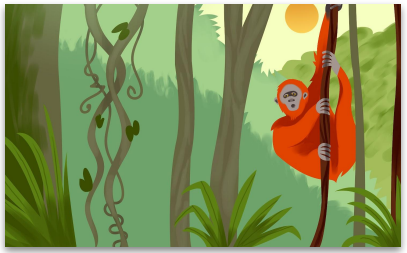
Student role: Wildlife biologists

Environments and Survival

Domain: Life Science

Unit type: Engineering Design

Student role: Biomimicry engineers



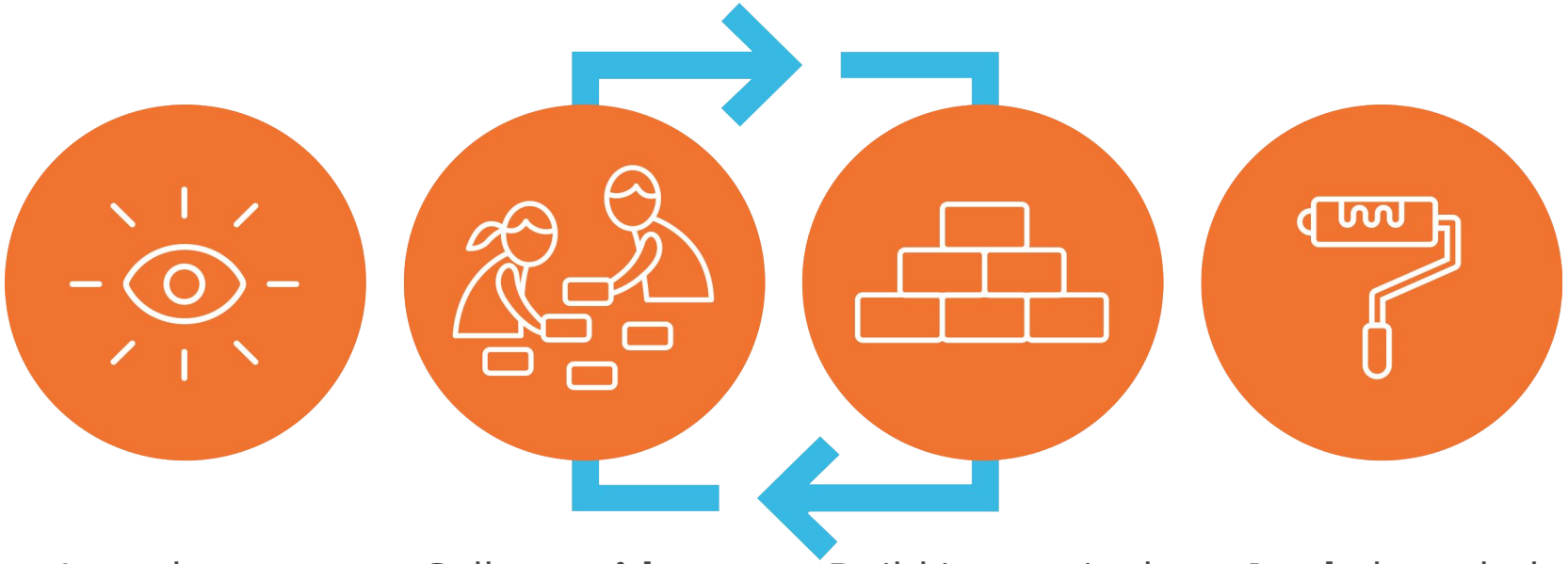
Weather and Climate

Domain: Earth and Space Science

Unit type: Argumentation

Student role: Meteorologists

Amplify Science Approach

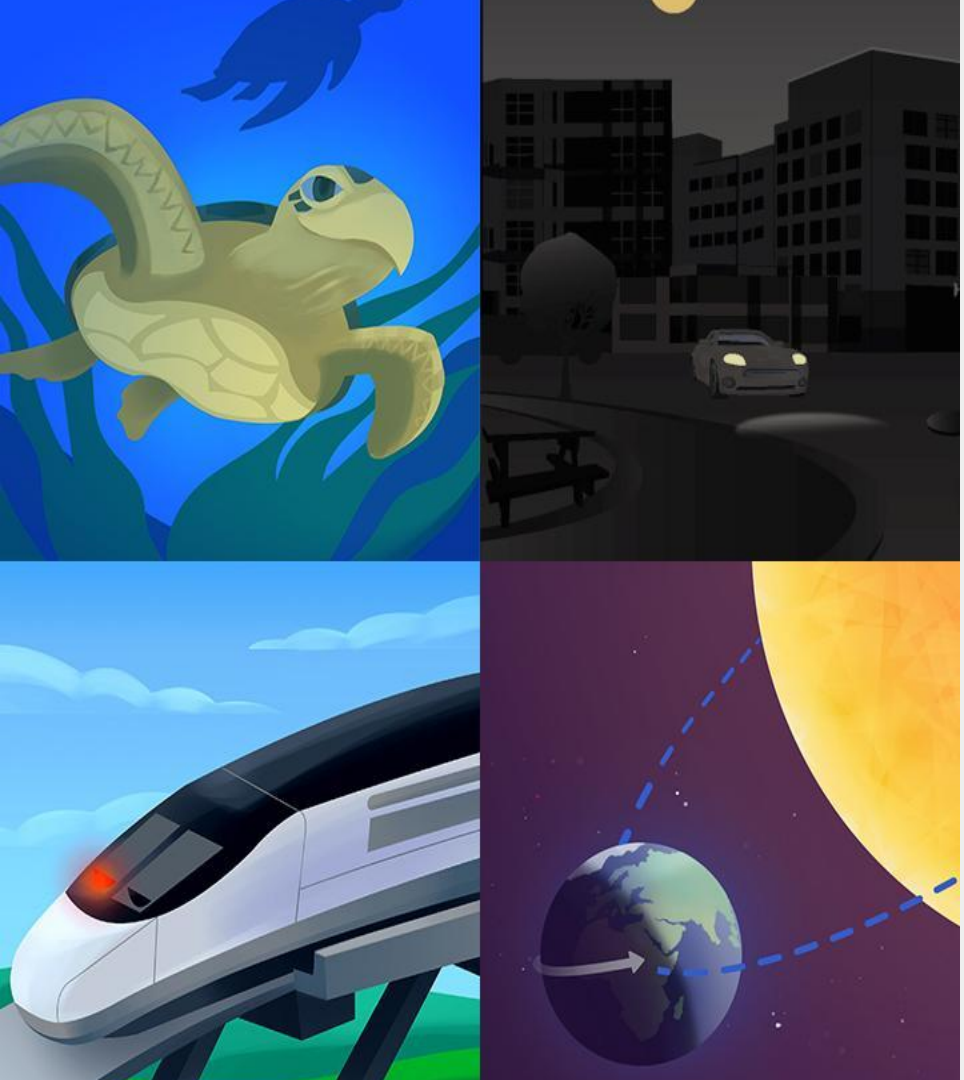


Introduce a **phenomenon** and a related problem

Collect **evidence** from multiple sources

Build increasingly complex **explanations**

Apply knowledge to solve a different problem



Plan for the day: Part 1

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

Environments and Survival

Why are different organisms more likely or less likely to survive in an environment?

Environments and Survival

Problem:How can learning about how grove snails survive help engineers design effective solutions to problems

Role: Biomimicry Engineers

Students figure out how the traits of grove snails affect their survival in different environments.

Environments and Survival

Coherent Storylines

Chapter 1: Why are the snails with yellow shells not surviving well?

5 Lessons

Chapter 2: Why are the snails with banded shells more likely to survive th...

8 Lessons

Chapter 3: Why were snails with yellow shells more likely to survive in their...

4 Lessons

Chapter 4: How can engineers use what they learn from organisms' traits t...

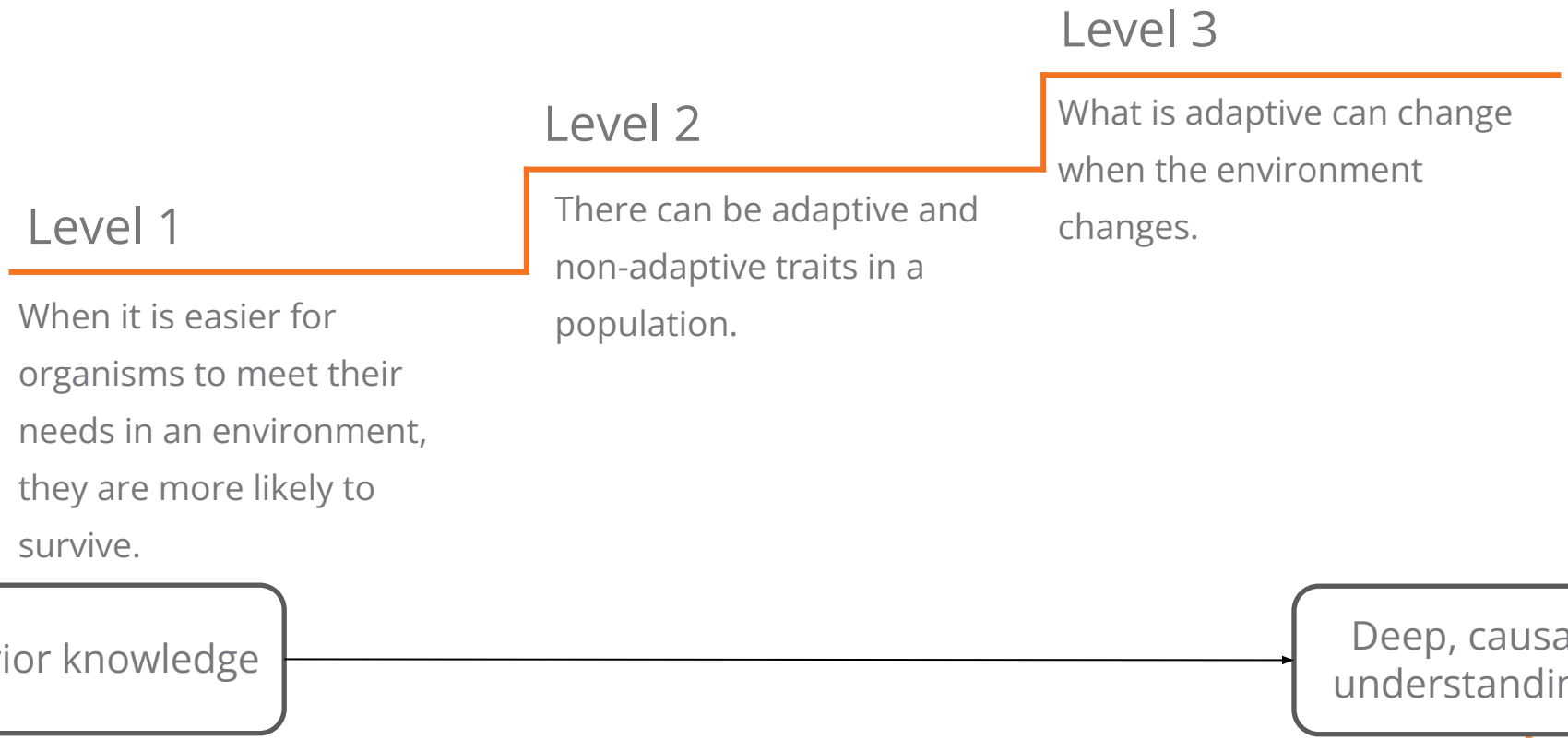
5 Lessons

Explaining the phenomenon: Science Concepts

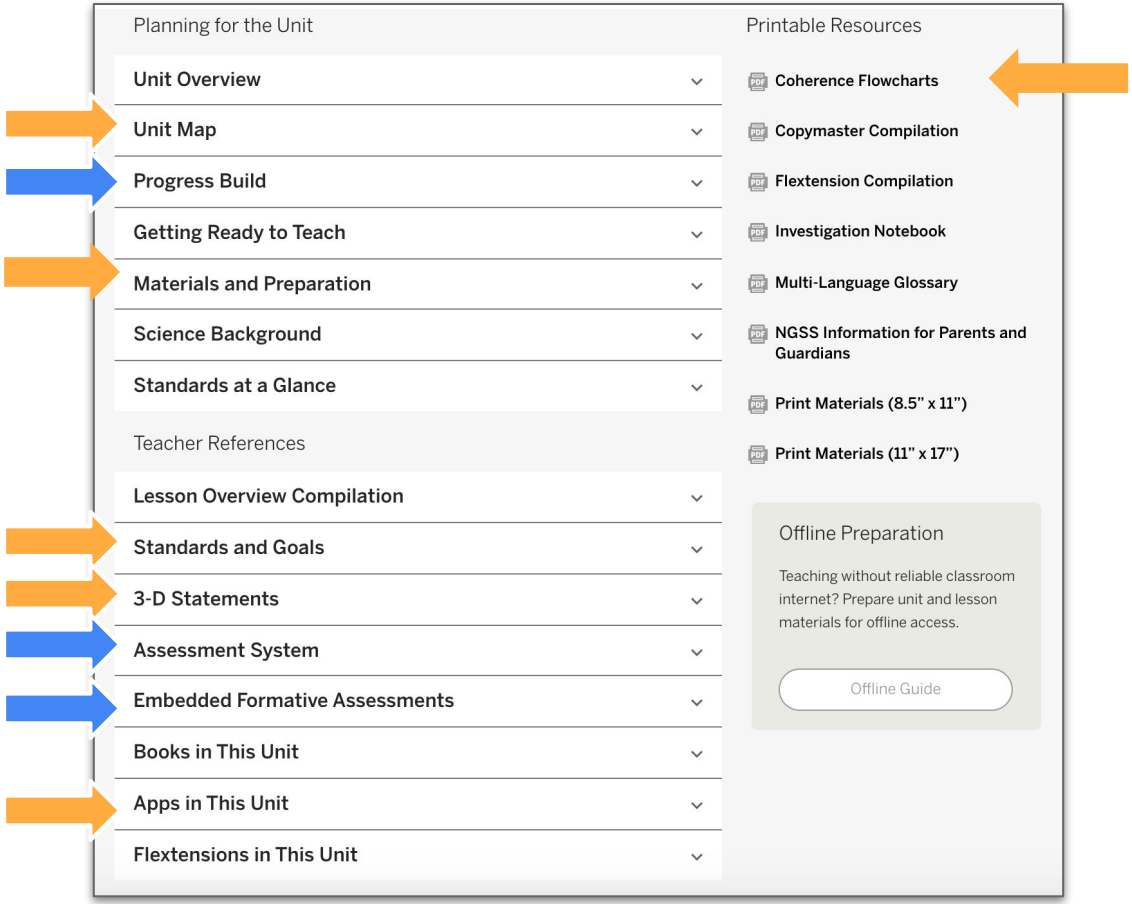
What **science concepts** do you think students need to understand in order to **explain the phenomenon?**

Environments and Survival Progress Build

Assumed prior knowledge (preconceptions): Students are expected to have had previous opportunities to think about the needs of different organisms and the relationship between meeting needs and survival.



Key Unit Guide Documents for Planning



Core Unit Planning & Internalization

Unit Title:	Environments and Survival

Overview

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

What is the phenomenon/real-world problem students are investigating in your unit?	Student Role:
How can learning about how grove snails survive help engineers design effective solutions to problems?	Biomimicry Engineers
Unit Question:	**Relationship between the Unit Phenomenon and Unit Question:**
Why are different organisms more likely or less likely to survive in an environment?	Students' figuring out why some grove snails are more likely to survive than others provides a captivating phenomenon that motivates students to investigate the survival of organisms in a changing environment.

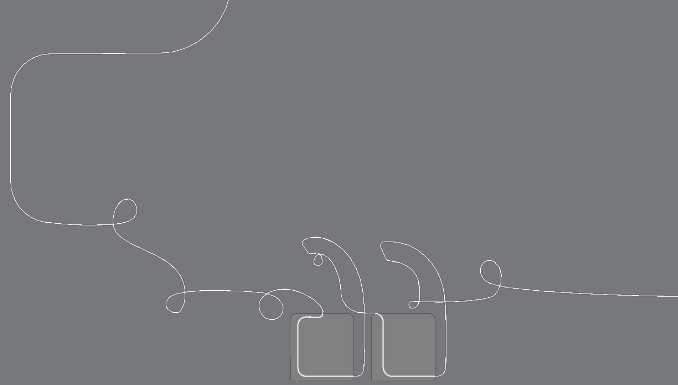
By the end of the unit, students figure out...

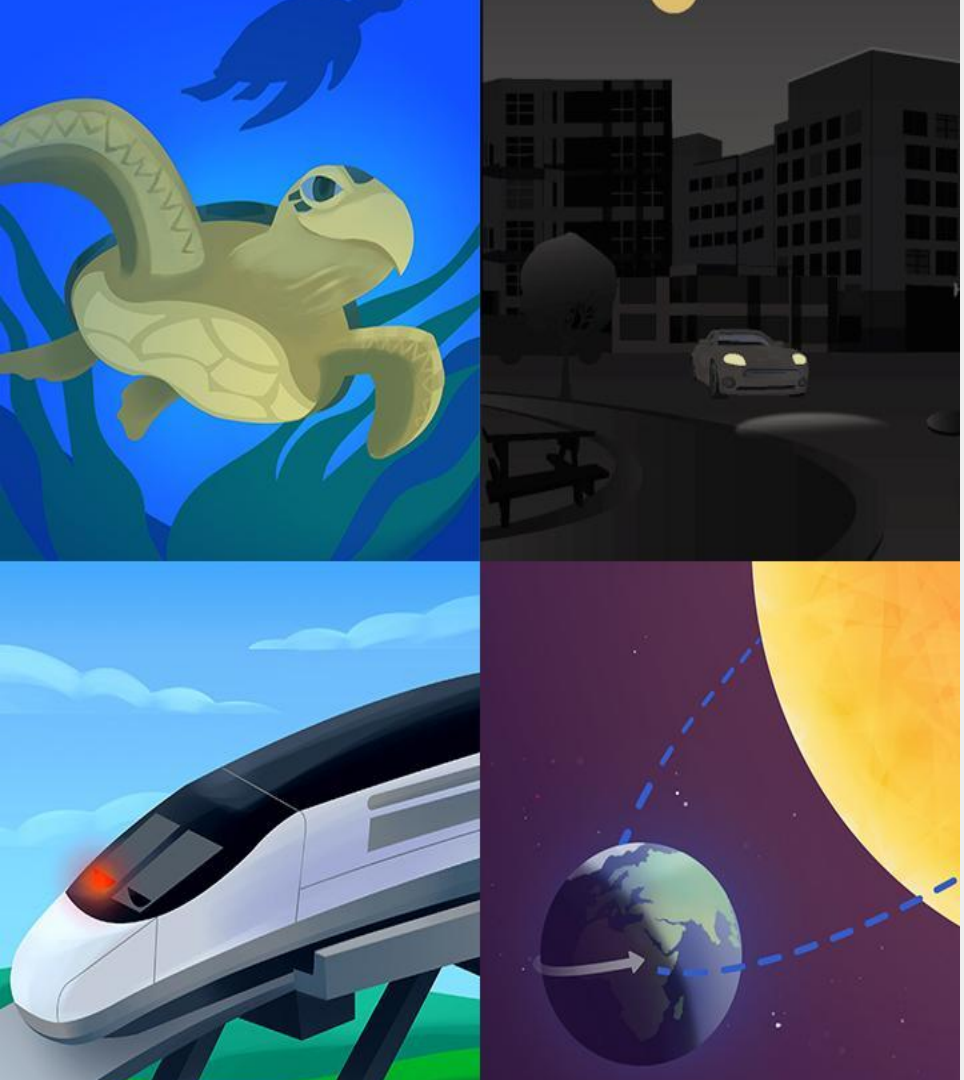
Snails with yellow shells were more likely to survive in the past because their yellow color was an adaptive trait in their former environment. That area used to be sandy, so the snails with yellow shells blended in against the yellow sand. When the environment changed from sandy to brown grass, the yellow color became a non-adaptive trait; it is easier for birds to see the yellow snails against the brown grass.

How do students engage with three-dimensional learning to figure out the phenomenon/real-world problem in your unit?

Students use physical models, read informational texts, analyze data, and engage in student-to-student discussions to figure out why some snails are more likely to survive than others (structure and function, systems and system models). Students write scientific explanations about their findings and use their newfound understanding of how the traits of organisms affect the organisms' survival (structure and function) in order to help an engineering firm design a robot that aims to mitigate the effect of an environmental change (systems and system models).

Questions?





Plan for the day: Part 1

- Introduction and Framing
- Unit Overview
- Assessment System
- Closing

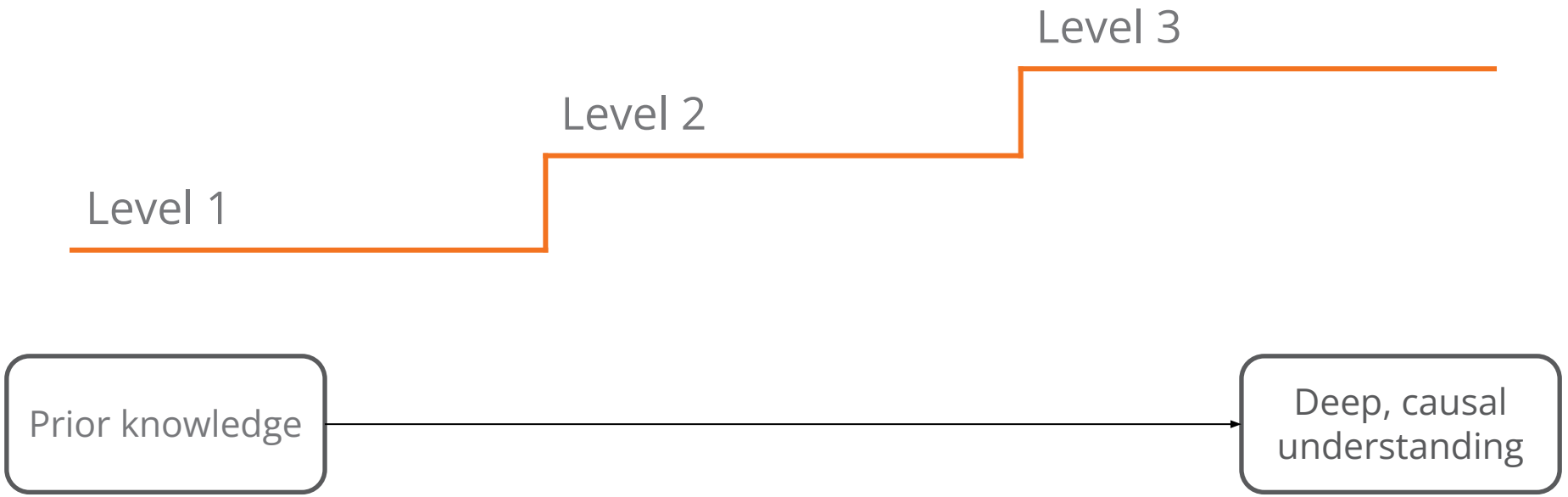
Why do we assess our students?

Why do we assess our students?

K-5 Assessment System

Progress Build

A unit-specific learning progression



Environments and Survival Progress Build

Assumed prior knowledge (preconceptions): Students are expected to have had previous opportunities to think about the needs of different organisms and the relationship between meeting needs and survival.

What new ideas are added at Level 2?

What new ideas are added at Level 3?

Level 1

When it is easier for organisms to meet their needs in an environment, they are more likely to survive.

Level 2

There can be adaptive and non-adaptive traits in a population.

Level 3

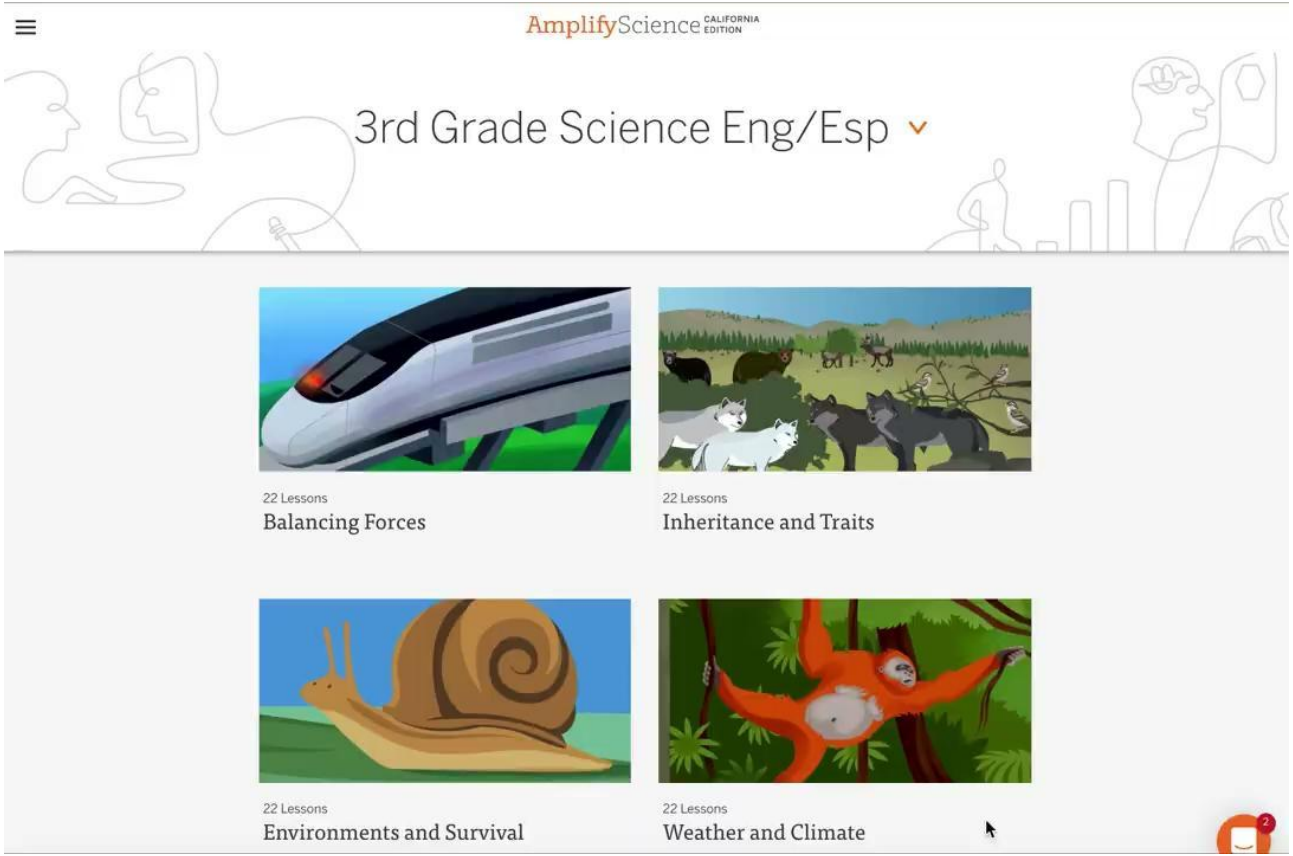
What is adaptive can change when the environment changes.

Prior knowledge → Deep, causal understanding

Progress Build analysis

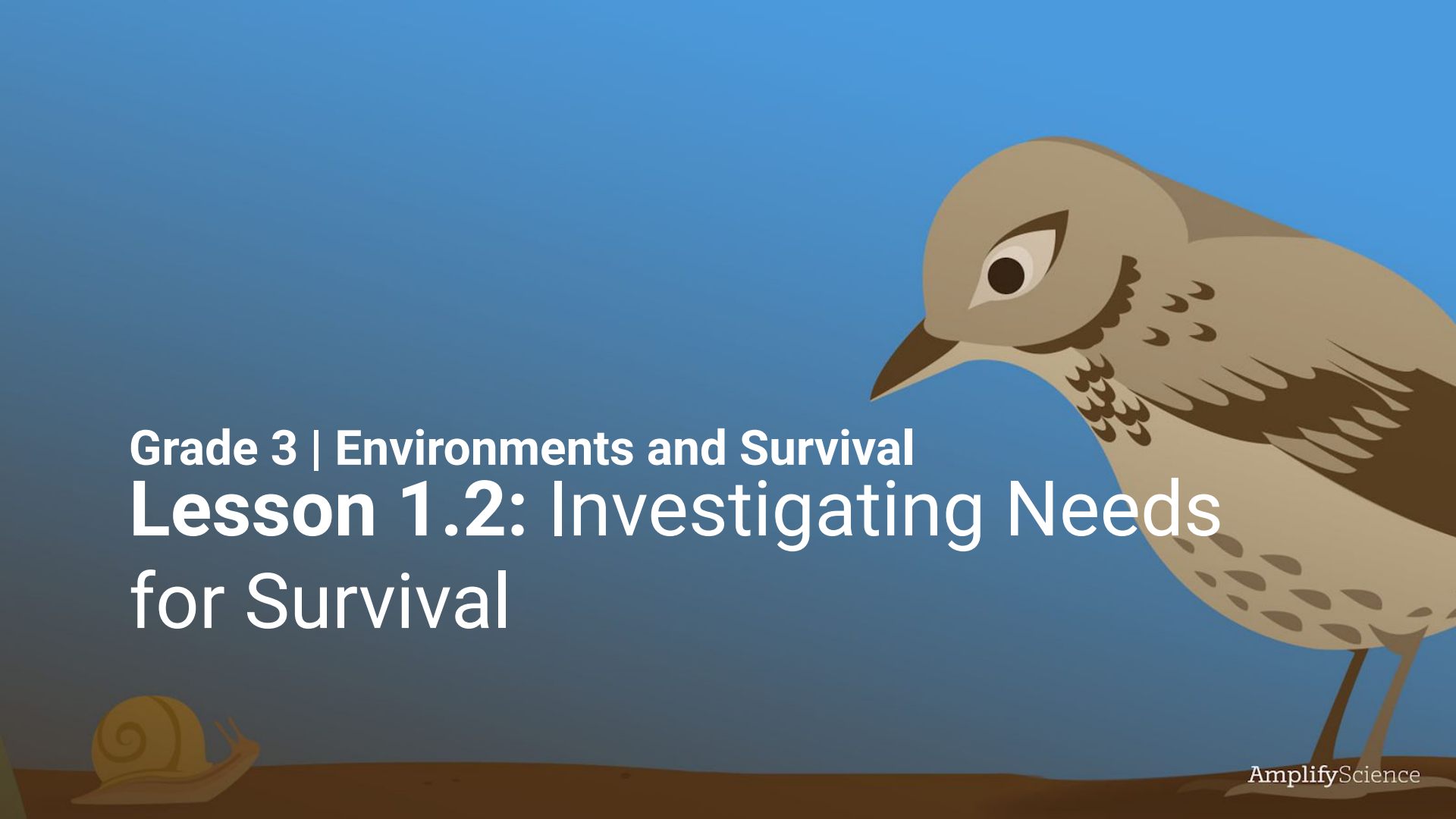
Work time

Read and analyze your unit's Progress Build.



On-the-Fly Assessments

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



Grade 3 | Environments and Survival

Lesson 1.2: Investigating Needs for Survival

AmplifyScience

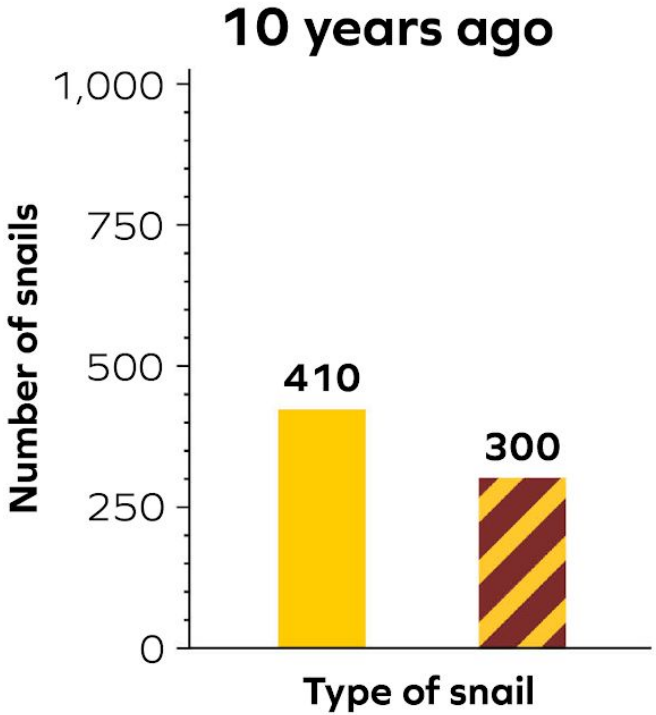
10 MIN

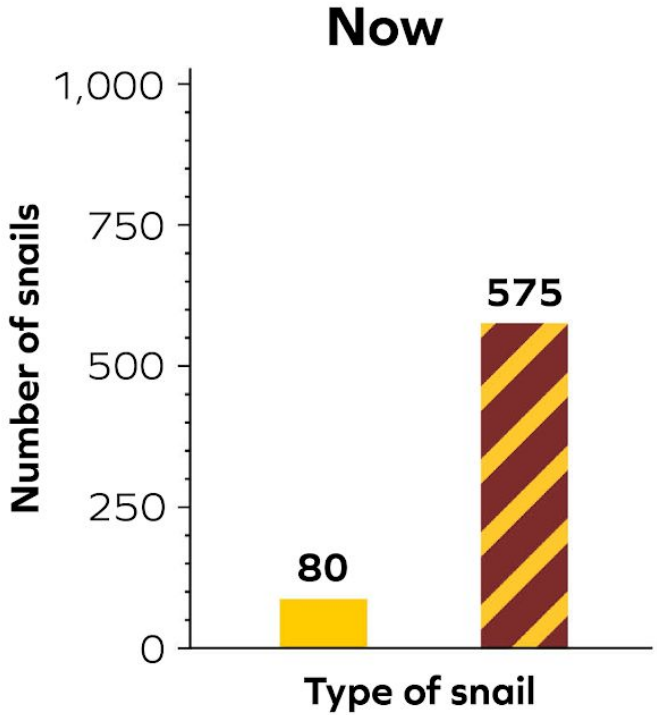
Activity 1

Introducing Needs for Survival

Let's look at the **grove snail data** again and discuss what the bar graphs show us about the number of snails with yellow shells **this year versus 10 years ago.**

Grove Snail Population Data



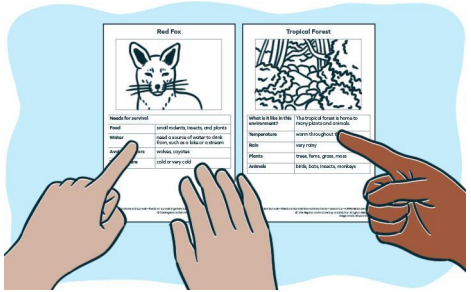


30 MIN

Activity 2

Investigating Needs for Survival

Investigating Needs for Survival

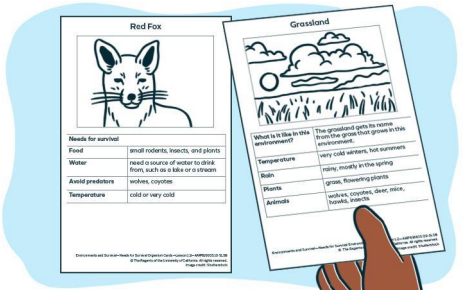


Choose Cards

Each pair chooses **one organism card**. Place the other organism cards to the side. Also choose **one environment card** to start with.

Complete Table

Use the information on the cards to decide if the organism can meet its needs in that environment. **Complete the table** in your notebook.



Repeat

Once finished, keep the same organism card and **choose a new environment card.** Repeat the process for all four environments.

20 MIN

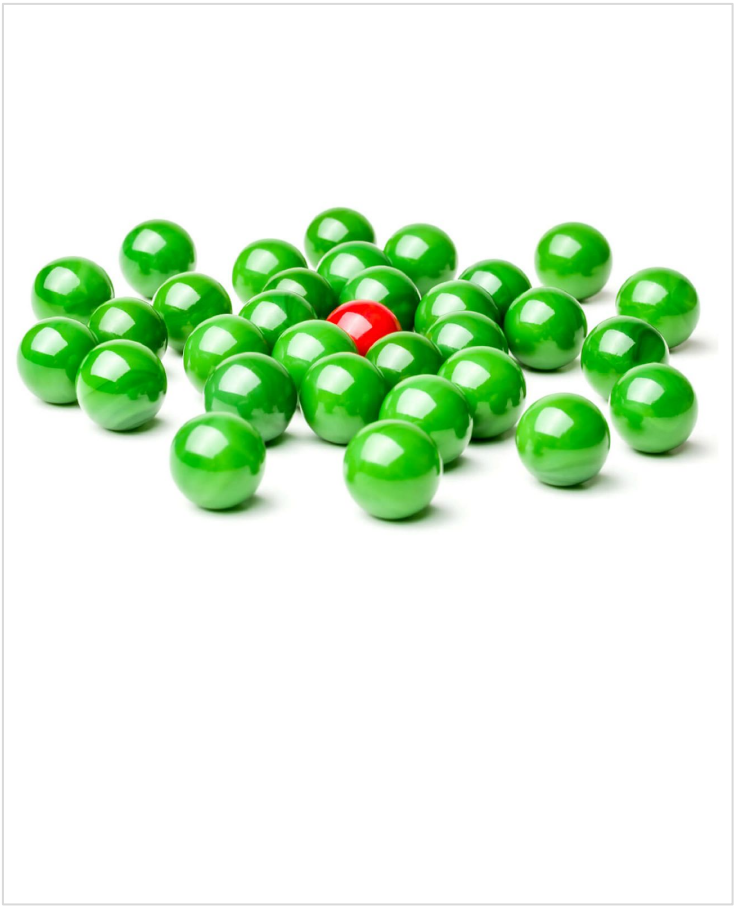
Activity 3

Making Inferences About Survival

How likely do you think it is that your **organism** would **survive** in each environment?

Let's think about what it means for something to be likely to happen.

Do you think it is likely to rain in this place? Why or why not?



Imagine you are picking one of these marbles with your eyes closed. Are you **likely** to pick a **red marble?** Why or why not?

Is this **fish likely to survive** in this environment? Why or why not?

Vocabulary

inference

something you figure out based on observations and what you already know

Name: _____ Date: _____

Needs for Survival (continued)

Environment	Needs	Can this organism meet this need in this environment?
Tropical Forest	Food	Yes No Maybe
	Water	Yes No Maybe
	Avoid predators	Yes No Maybe
		Yes No Maybe

Environment	Needs	Can this organism meet this need in this environment?
Grassland	Food	Yes No Maybe
	Water	Yes No Maybe
	Avoid predators	Yes No Maybe
		Yes No Maybe

How well do you think your organism could meet its needs in each environment? Circle whether it is likely or not likely to survive.

Organism: _____

is likely / not likely to survive in a desert environment.

is likely / not likely to survive in an alpine tundra environment.

is likely / not likely to survive in a tropical forest environment.

is likely / not likely to survive in a grassland environment.

Environments and Survival—Lesson 1.2 5

Turn to page 5 in your notebooks.

You'll make an **inference** about whether your organism is **likely to survive** in each of the environments.

We can make an **inference** about the common collared **lizard surviving** in the **desert.**

Environment	**Needs**	**Can the organism meet this need in this environment?**		
Desert	Food	Yes	No	Maybe
	Water	Yes	No	Maybe
	Avoid predators	Yes	No	Maybe
	Temperature	Yes	No	Maybe

Organism: common collared lizard

is likely / not likely to survive in a desert 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.

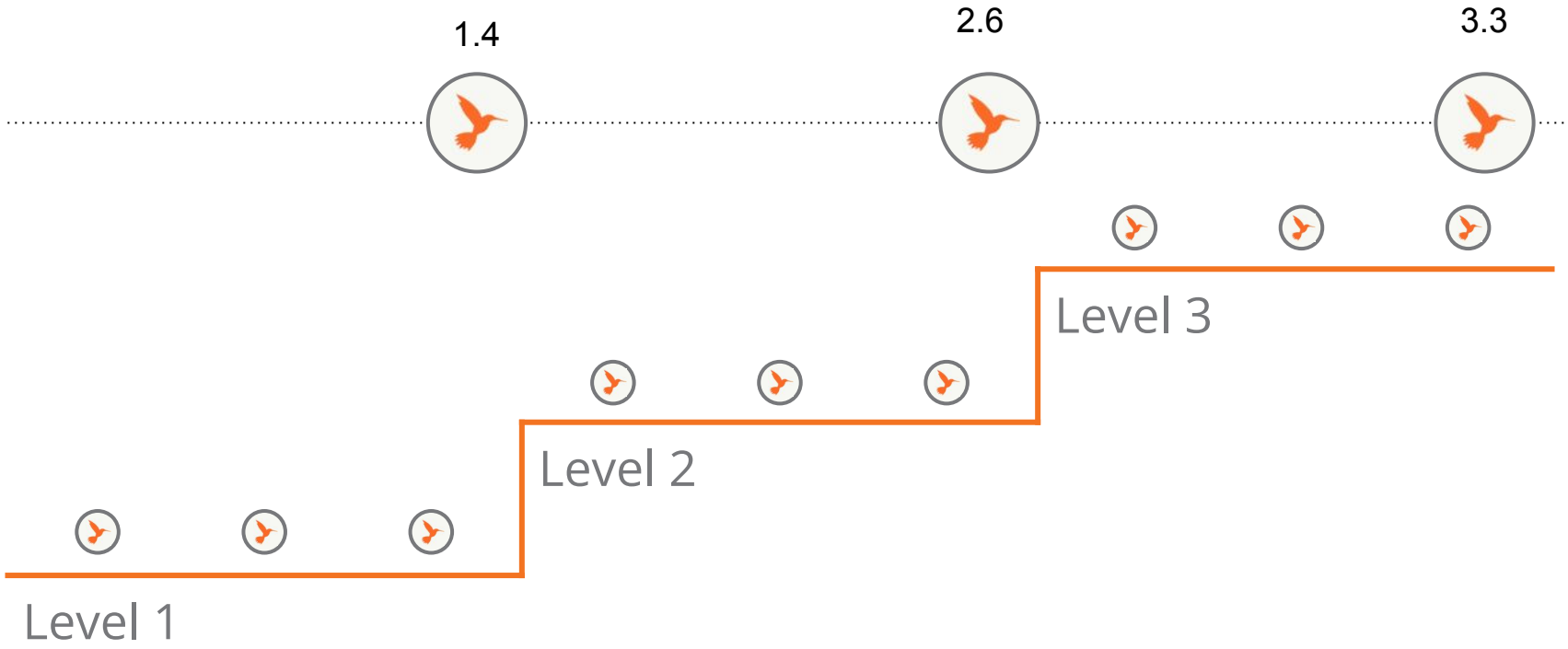
Additional formative assessment information

On-the-Fly Assessments

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

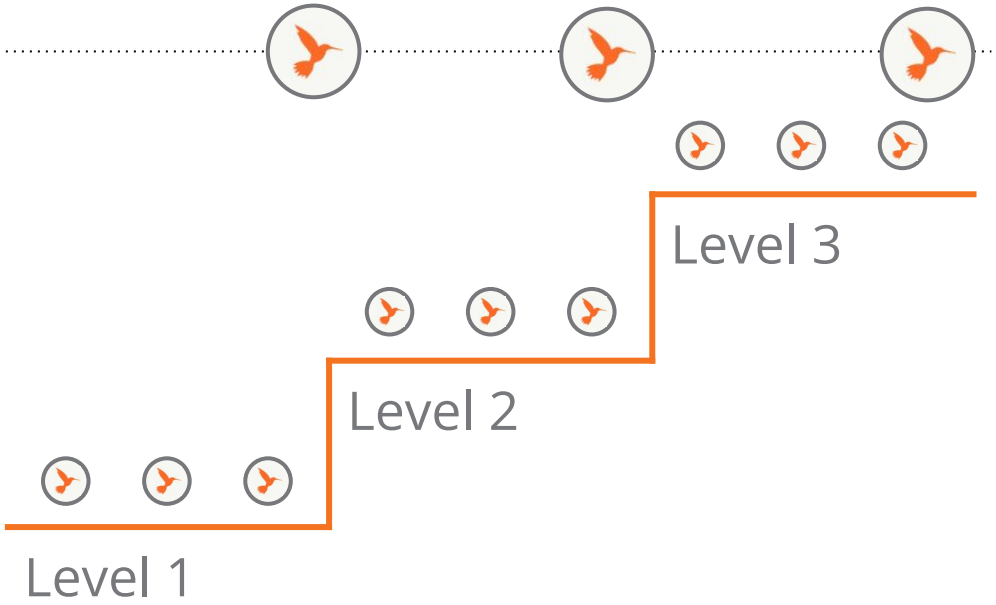
- Science and Engineering Practices
- Crosscutting Concepts
- Literacy skills
- Student collaboration

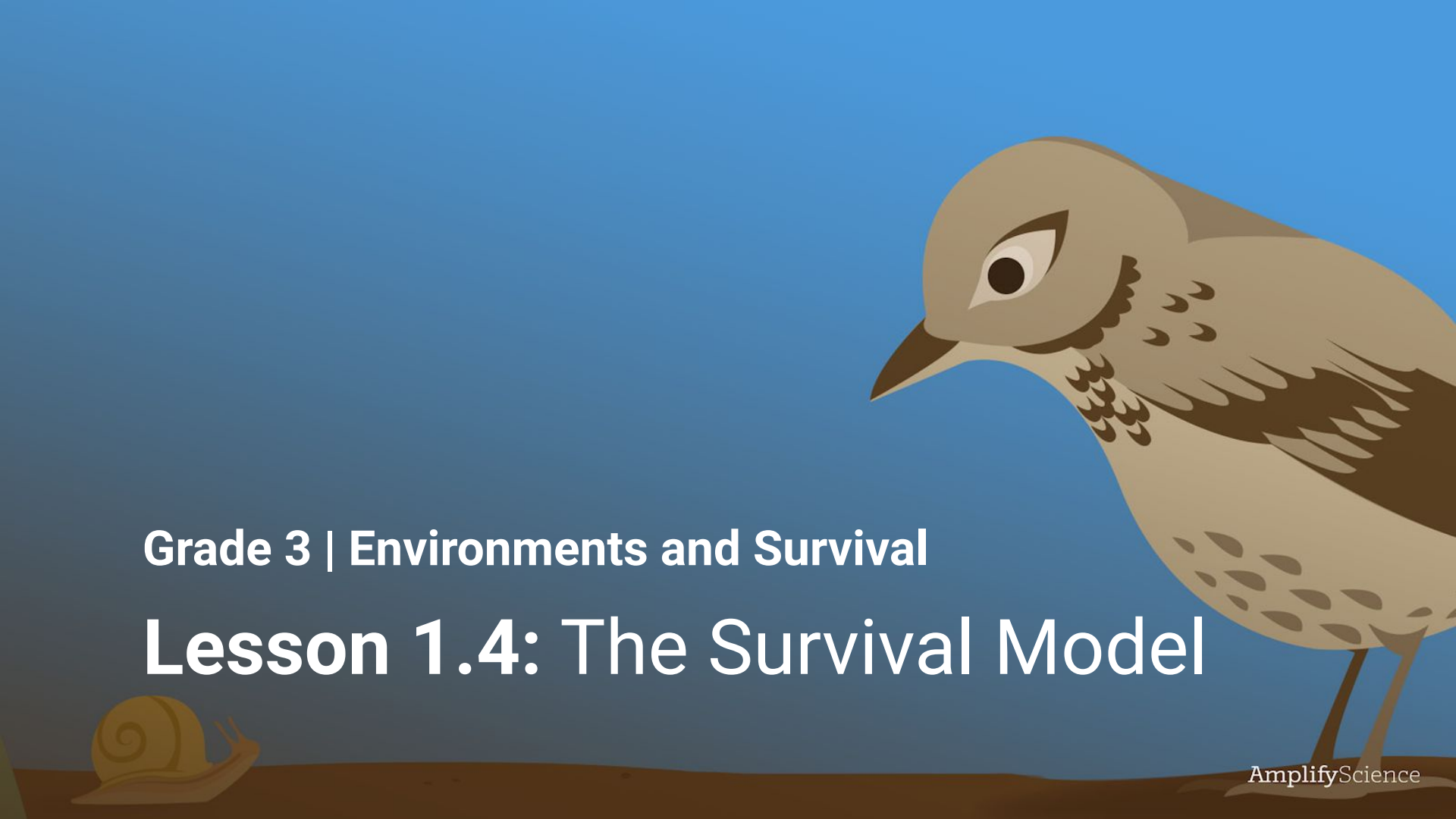
Critical Juncture Assessments



Critical Juncture Assessments

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





Grade 3 | Environments and Survival

Lesson 1.4: The Survival Model

AmplifyScience

10 MIN

Activity 1

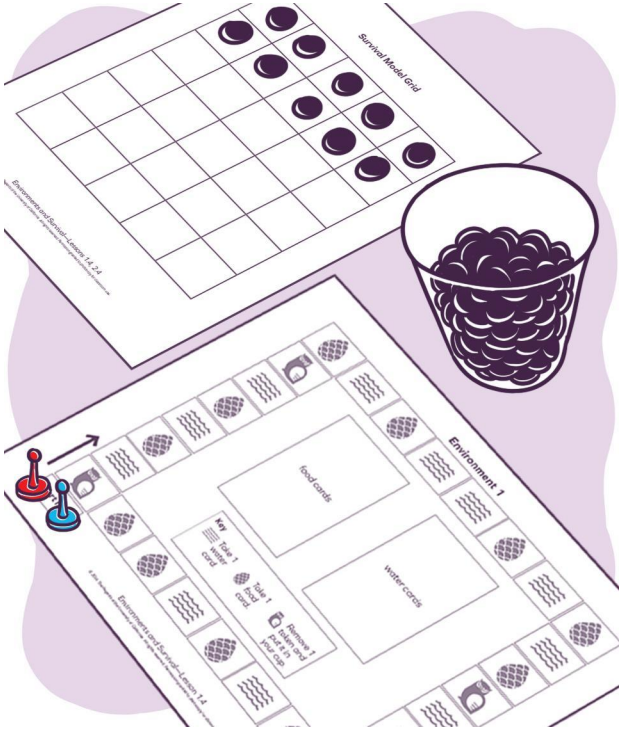
Introducing the Survival Model

Red Squirrel Survival Model: Set Up Overview

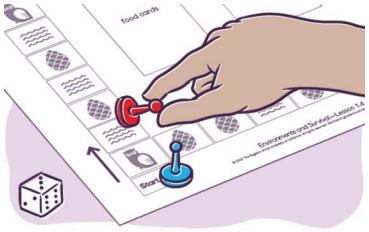
Step 1
You will **place your model pieces on the "Start here" box** in the Environment.

Step 2
You will **take 10 squirrel tokens** out of the cup. **Place 1 squirrel token in each of 10 squares** on the Survival Model Grid. Keep the remaining 20 squirrel tokens in the cup.

Step 3
Then, you'll decide **who will go first.**

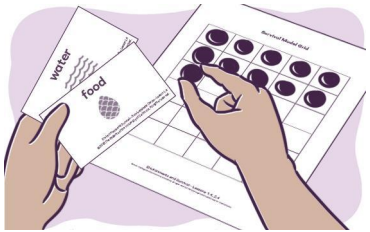


Red Squirrel Survival Model: Overview



Step 4

You will **roll the cube and move your piece.** Follow the directions on the box where you land.



Step 5

If you have **1 food card** and **1 water card, trade them in for 1 squirrel token.** Put the token on the grid.

Step 6

After **going around the Environment 5 times,** count the squirrel tokens on your grid. Record the number.

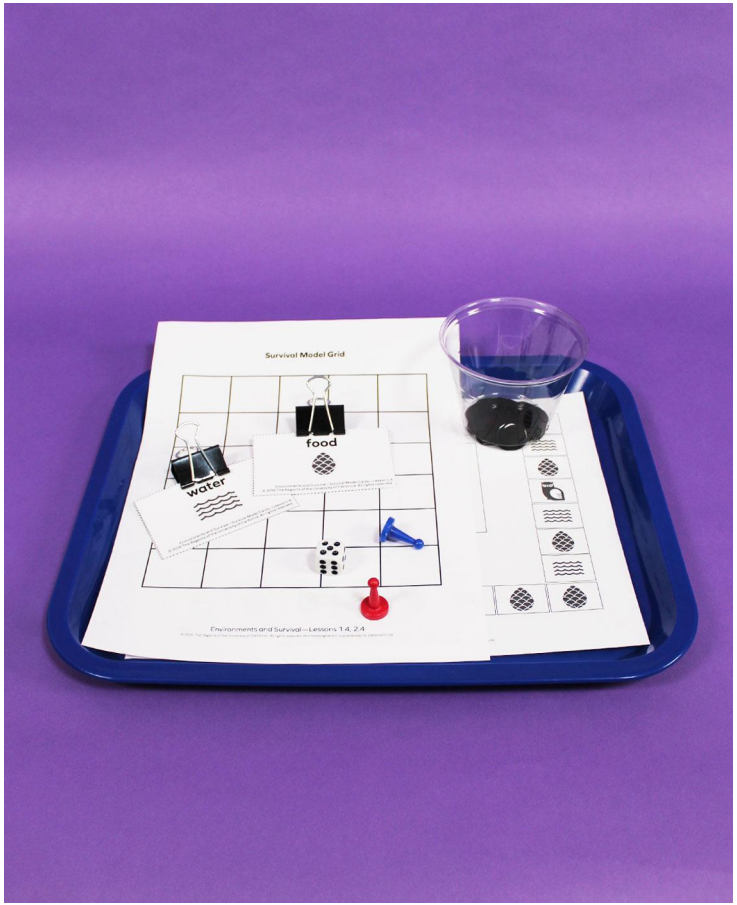
Step 7

Raise your hand to **trade Environment 1 for Environment 2.** Set up and **run the model again.**

20 MIN

Activity 2

Engaging with the Survival Model



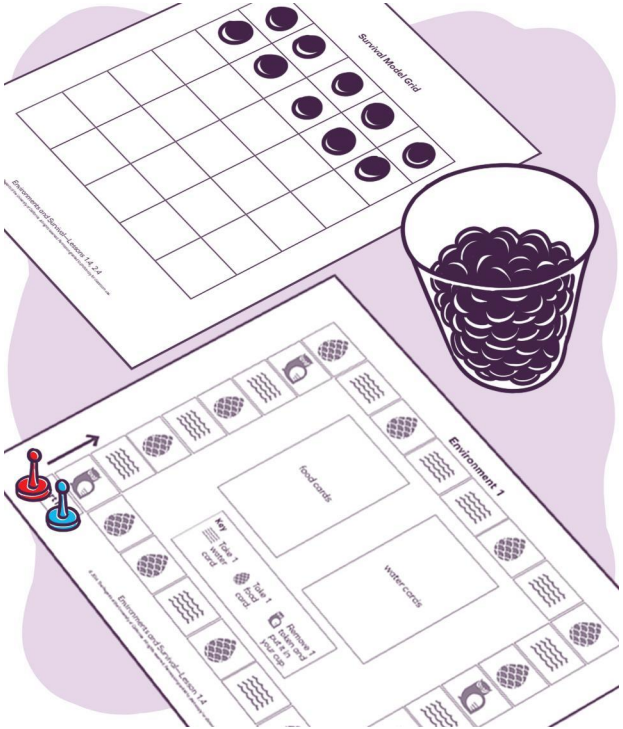
These are the **materials** for the Survival Model.

Red Squirrel Survival Model: Set Up

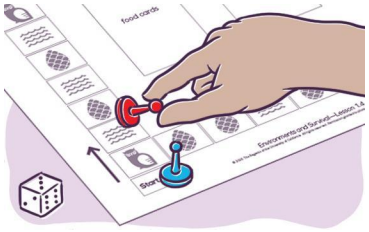
Step 1
Place your model pieces on the "Start here" box in the Environment.

Step 2
Take 10 squirrel tokens out of the cup. **Place 1 squirrel token in each of 10 squares** on the Survival Model Grid. Keep the remaining 20 squirrel tokens in the cup.

Step 3
Decide **who will go first.**

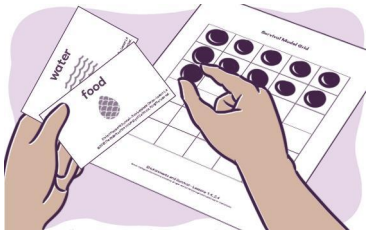


Red Squirrel Survival Model: Run



Step 4

Roll the cube and move your piece. Follow the directions on the box where you land.



Step 5

If you have **1 food card** and **1 water card, trade them in for 1 squirrel token.** Put the token on the grid.

Step 6

After **going around the Environment 5 times,** count the squirrel tokens on your grid. Record the number.

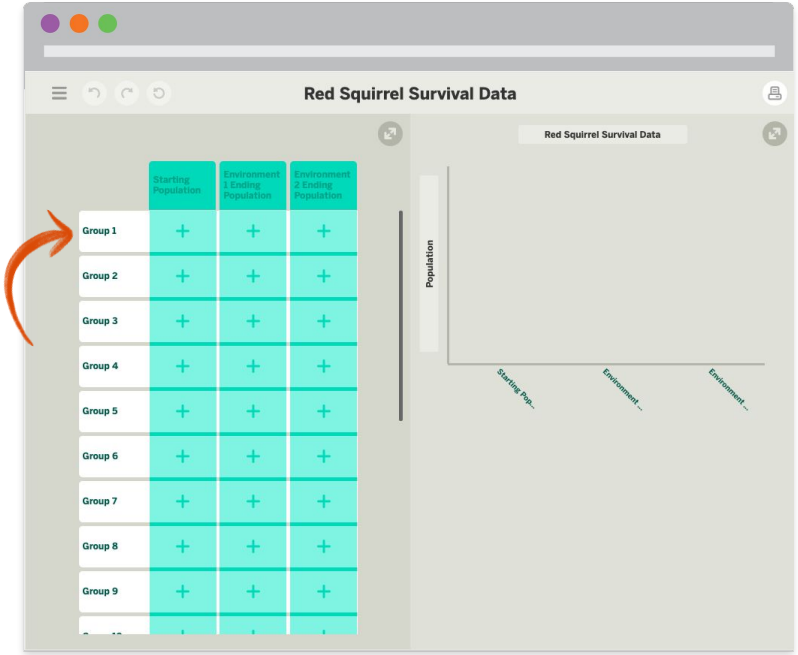
Step 7

Raise your hand to **trade Environment 1 for Environment 2.** Set up and **run the model again.**

15 MIN

Activity 3

Analyzing Survival Model Data



We will use a **digital tool** to **graph the data** so we can analyze it.

Each row in the table is for the data from one pair of students.

15 MIN

Activity 4

Critical Juncture: Think-Write-Pair-Share

Think-Write-Pair-Share Routine

Think

Think silently about the question.

Write

Write your ideas about the question in your notebook.

Pair

Turn and talk to a partner about the question.

Share

Share your ideas about the question with the class.

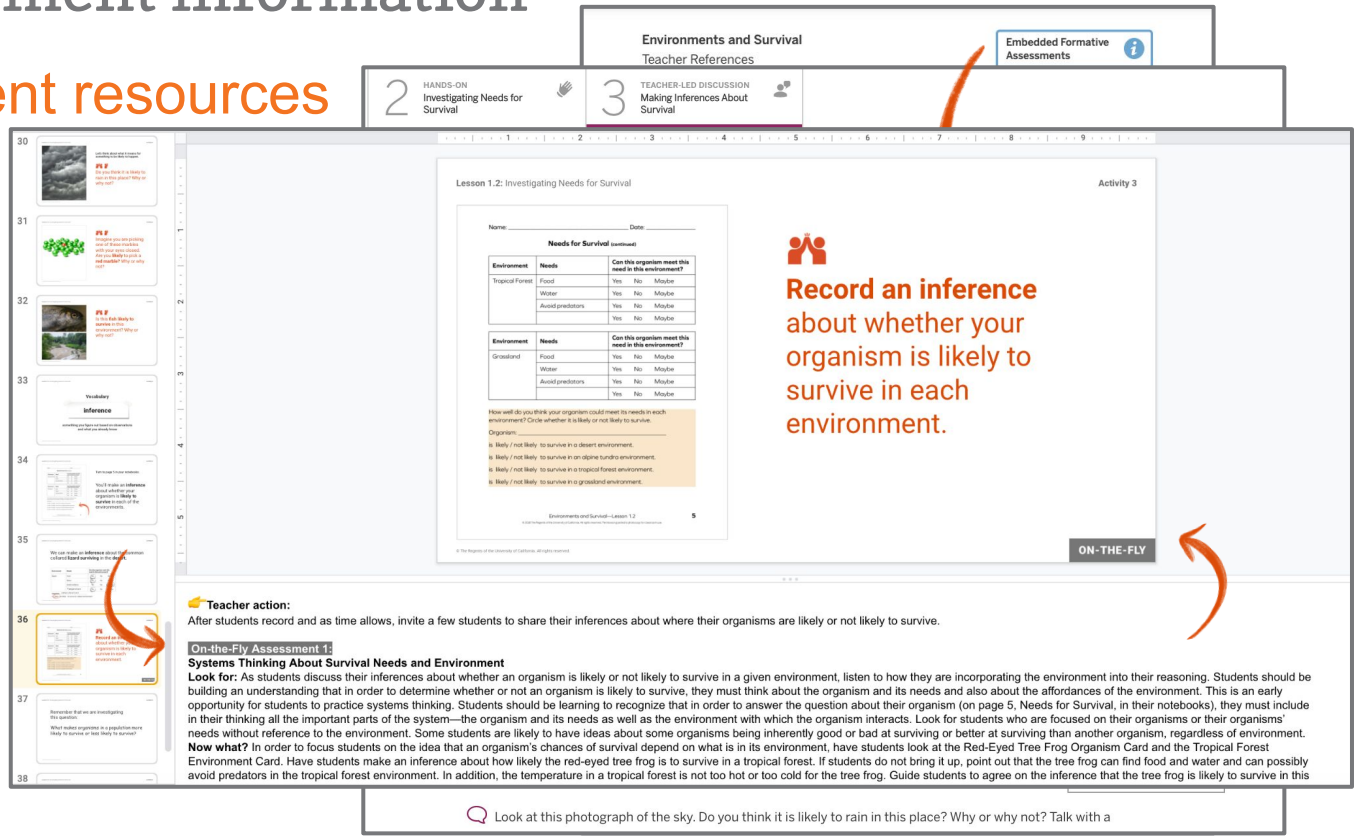
Tailor instruction: If students are not understanding how the ability of an organism to meet its needs in an environment affects the organism's chances of survival, **have students return to the book *Earthworms Underground***. Ask students if an earthworm is more likely to survive in an environment with damp soil or in an environment that is very dry, such as a desert. Encourage students to use the information in the book to support their ideas. If students do not bring up the specific needs that earthworms have and connect those needs to the environment in which those needs can be met most easily, **focus students on the need for water.** Have them read page 12 and then discuss in which environment the earthworm would be more likely to survive (the one with damp soil or a desert). Ask students to explain their ideas. Students should mention that since earthworms take in water through their skin, they need to make sure they don't dry out. This makes the damp soil an environment in which it is easier to meet their need for water. If students do not bring it up, prompt them to consider whether it would be easy or hard to meet the need for water in a dry desert environment. Conclude the discussion **by connecting earthworms' ability to meet their needs to their chances of survival.** Point out that students have determined that it's easier for earthworms to meet their needs in an environment with damp soil than in a desert environment. Then ask, "What does that tell us about the environment in which earthworms are more likely to survive?" **Guide students to connect ease of meeting needs to an increased chance of survival.**

Formative assessment information

Locating assessment resources

Full text of assessment

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



Amplify.

Additional formative assessment information

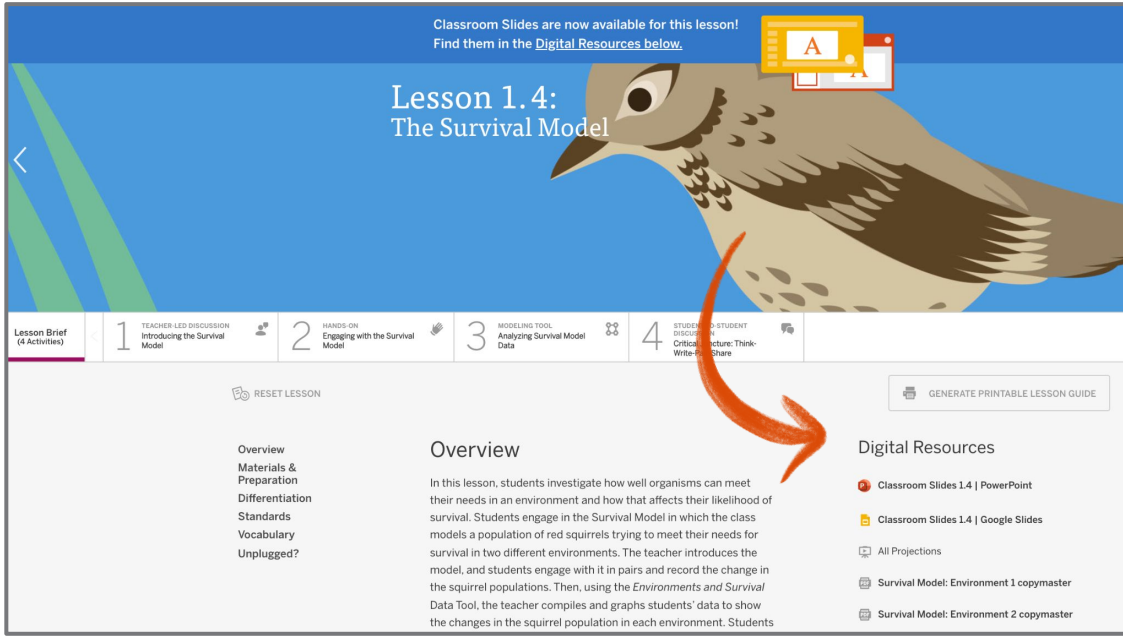
Locating assessment resources

Full text of assessment

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

Additional resources

- Lesson Brief: Digital Resources

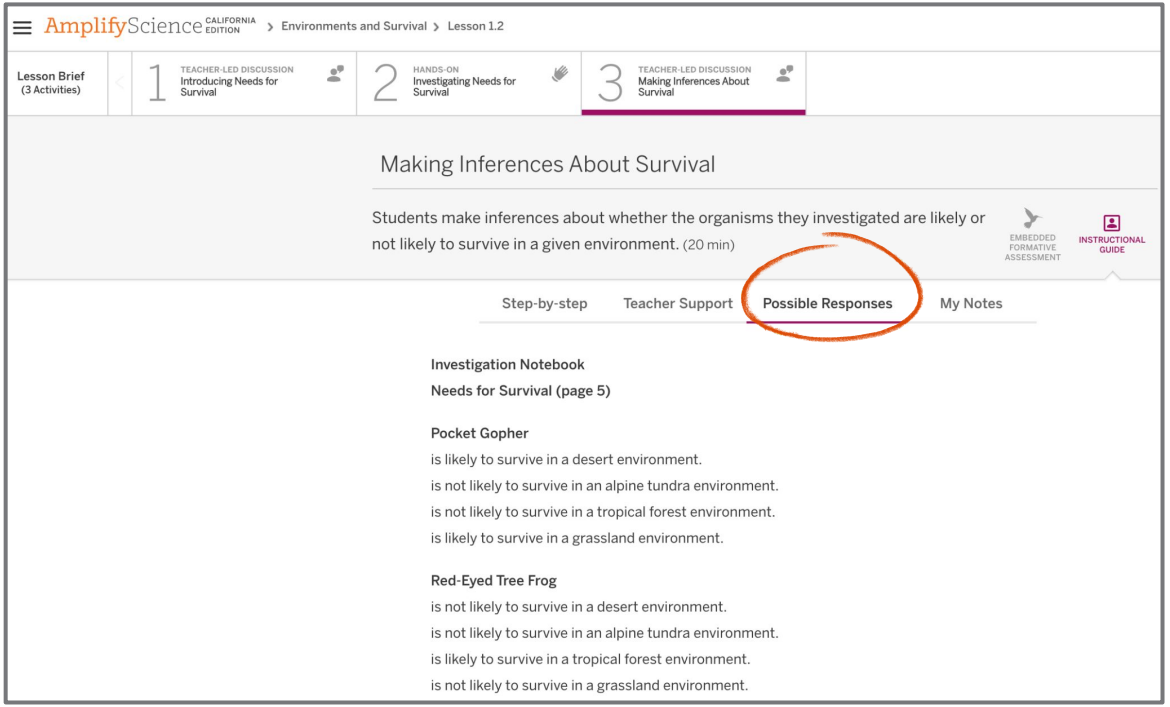


Amplify.

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



Amplify.

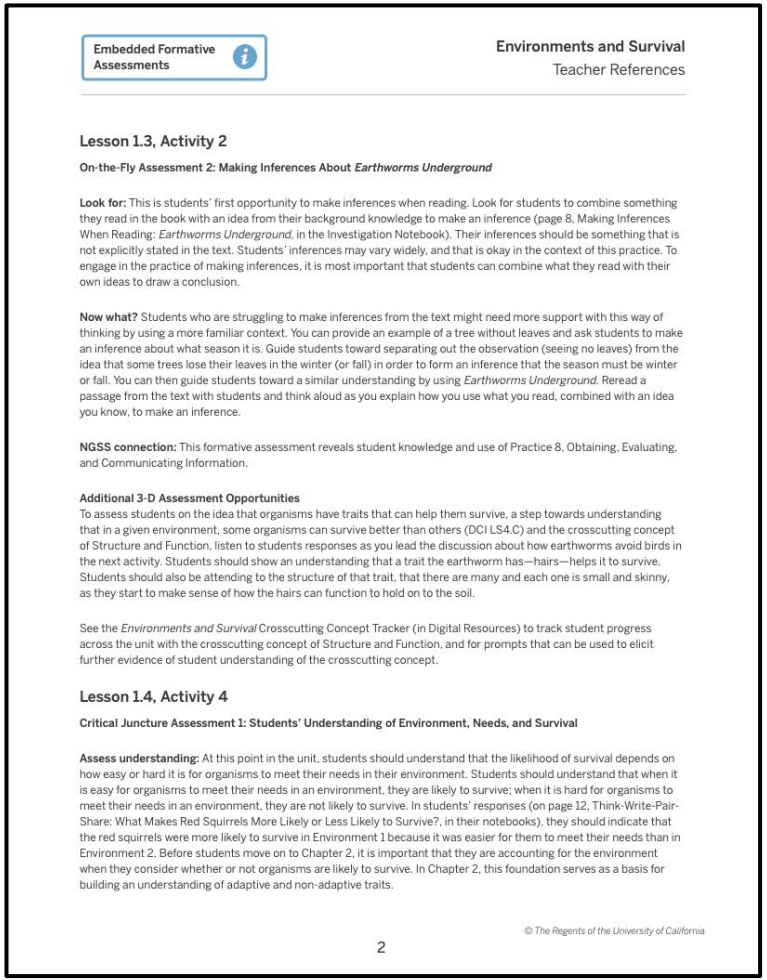
Embedded formative assessments

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

Environments and Survival
Teacher References

Lesson 1.3, Activity 2

On-the-Fly Assessment 2: Making Inferences About *Earthworms Underground*

Look for: This is students' first opportunity to make inferences when reading. Look for students to combine something they read in the book with an idea from their background knowledge to make an inference (page 8, Making Inferences When Reading: *Earthworms Underground*, in the Investigation Notebook). Their inferences should be something that is not explicitly stated in the text. Students' inferences may vary widely, and that is okay in the context of this practice. To engage in the practice of making inferences, it is most important that students can combine what they read with their own ideas to draw a conclusion.

Now what? Students who are struggling to make inferences from the text might need more support with this way of thinking by using a more familiar context. You can provide an example of a tree without leaves and ask students to make an inference about what season it is. Guide students toward separating out the observation (seeing no leaves) from the idea that some trees lose their leaves in the winter (or fall) in order to form an inference that the season must be winter or fall. You can then guide students toward a similar understanding by using *Earthworms Underground*. Reread a passage from the text with students and think aloud as you explain how you use what you read, combined with an idea you know, to make an inference.

NGSS connection: This formative assessment reveals student knowledge and use of Practice 8, Obtaining, Evaluating, and Communicating Information.

Additional 3-D Assessment Opportunities
To assess students on the idea that organisms have traits that can help them survive, a step towards understanding that in a given environment, some organisms can survive better than others (DCI LS4.C) and the crosscutting concept of Structure and Function, listen to students responses as you lead the discussion about how earthworms avoid birds in the next activity. Students should show an understanding that a trait the earthworm has—hairs—helps it to survive. Students should also be attending to the structure of that trait, that there are many and each one is small and skinny, as they start to make sense of how the hairs can function to hold on to the soil.

See the *Environments and Survival* Crosscutting Concept Tracker (in Digital Resources) to track student progress across the unit with the crosscutting concept of Structure and Function, and for prompts that can be used to elicit further evidence of student understanding of the crosscutting concept.

Lesson 1.4, Activity 4

Critical Juncture Assessment 1: Students' Understanding of Environment, Needs, and Survival

Assess understanding: At this point in the unit, students should understand that the likelihood of survival depends on how easy or hard it is for organisms to meet their needs in their environment. Students should understand that when it is easy for organisms to meet their needs in an environment, they are likely to survive; when it is hard for organisms to meet their needs in an environment, they are not likely to survive. In students' responses (on page 12, Think-Write-Pair-Share: What Makes Red Squirrels More Likely or Less Likely to Survive?, in their notebooks), they should indicate that the red squirrels were more likely to survive in Environment 1 because it was easier for them to meet their needs than in Environment 2. Before students move on to Chapter 2, it is important that they are accounting for the environment when they consider whether or not organisms are likely to survive. In Chapter 2, this foundation serves as a basis for building an understanding of adaptive and non-adaptive traits.

Amplify.

Additional formative assessment infor

Student Self-Assessments

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

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 investigate in order to explain how or why something happens. Am I getting closer to figuring out why some snails are more likely to survive than others?

I understand why some snails in the study area are less likely to survive. ____ Yes ____ Not yet

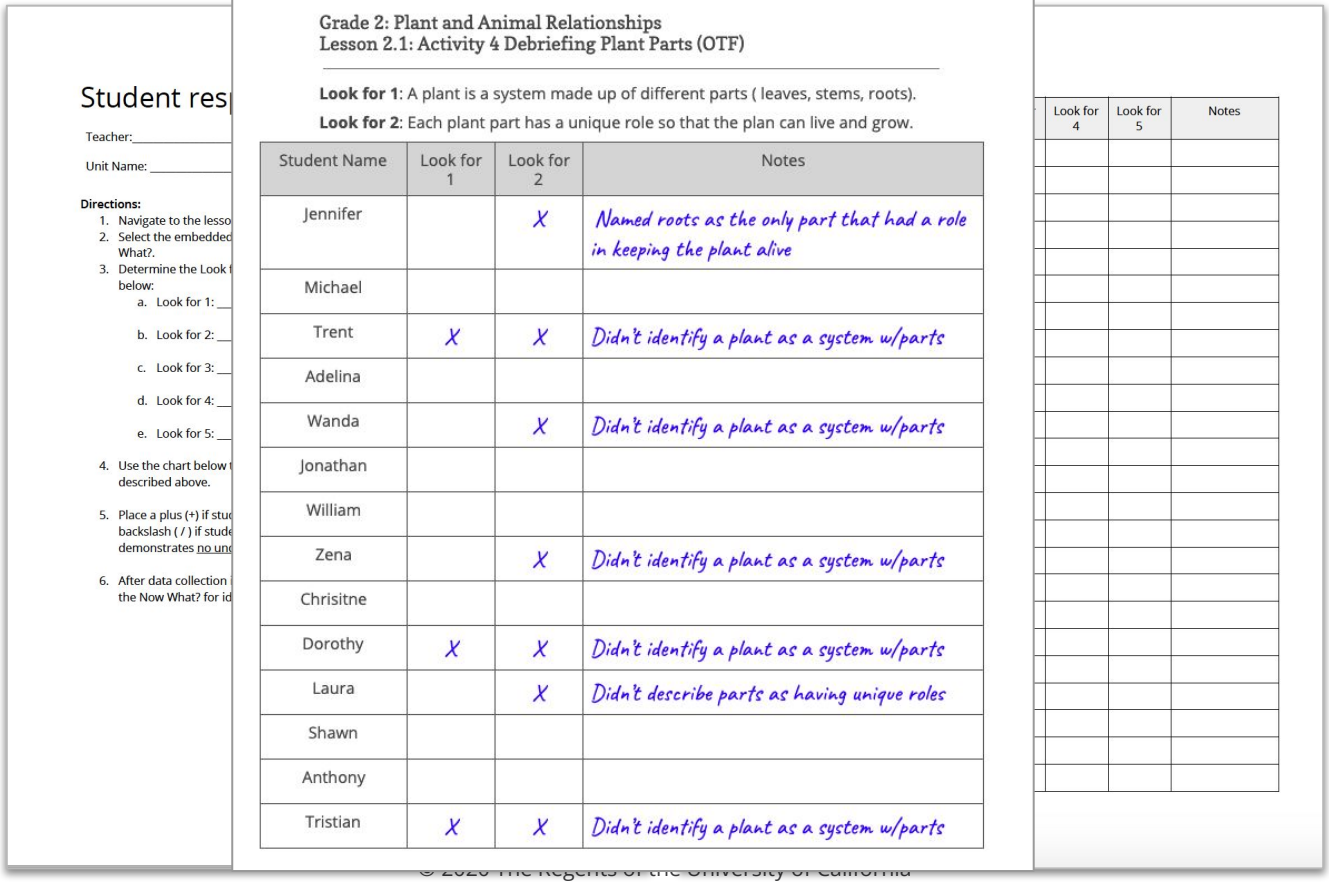
I understand why it is easier for some snails to meet their needs than it is for other snails. ____ Yes ____ Not yet

I understand why snails that are more likely to survive at one time might be less likely to survive at another time. ____ Yes ____ Not yet

I understand that we need evidence to support our answers to science questions. ____ Yes ____ Not yet

What are you still wondering about traits, survival, and environments?

Data Collection Tool



Student resp

Teacher:_____

Unit Name: _____

Directions:

1. Navigate to the lesso
2. Select the embedded What?.
3. Determine the Look f 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 t described above.
5. Place a plus (+) if stu backslash (/) if stude demonstrates no und
6. After data collection 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 plan can live and grow.

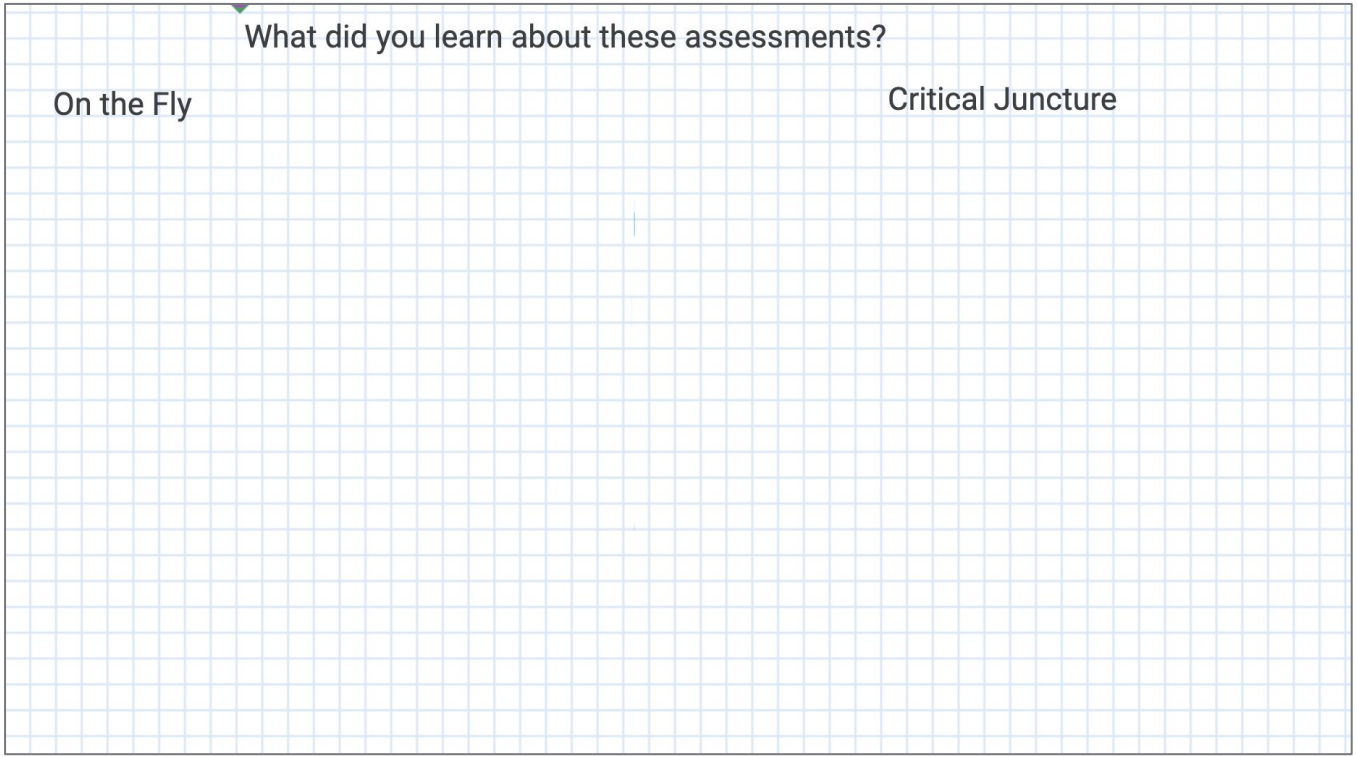
Student Name	Look for 1	Look for 2	Notes
Jennifer		X	Named roots as the only part that had a role in keeping the plant alive
Michael			
Trent	X	X	Didn't identify a plant as a system w/parts
Adelina			
Wanda		X	Didn't identify a plant as a system w/parts
Jonathan			
William			
Zena		X	Didn't identify a plant as a system w/parts
Chrisitne			
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

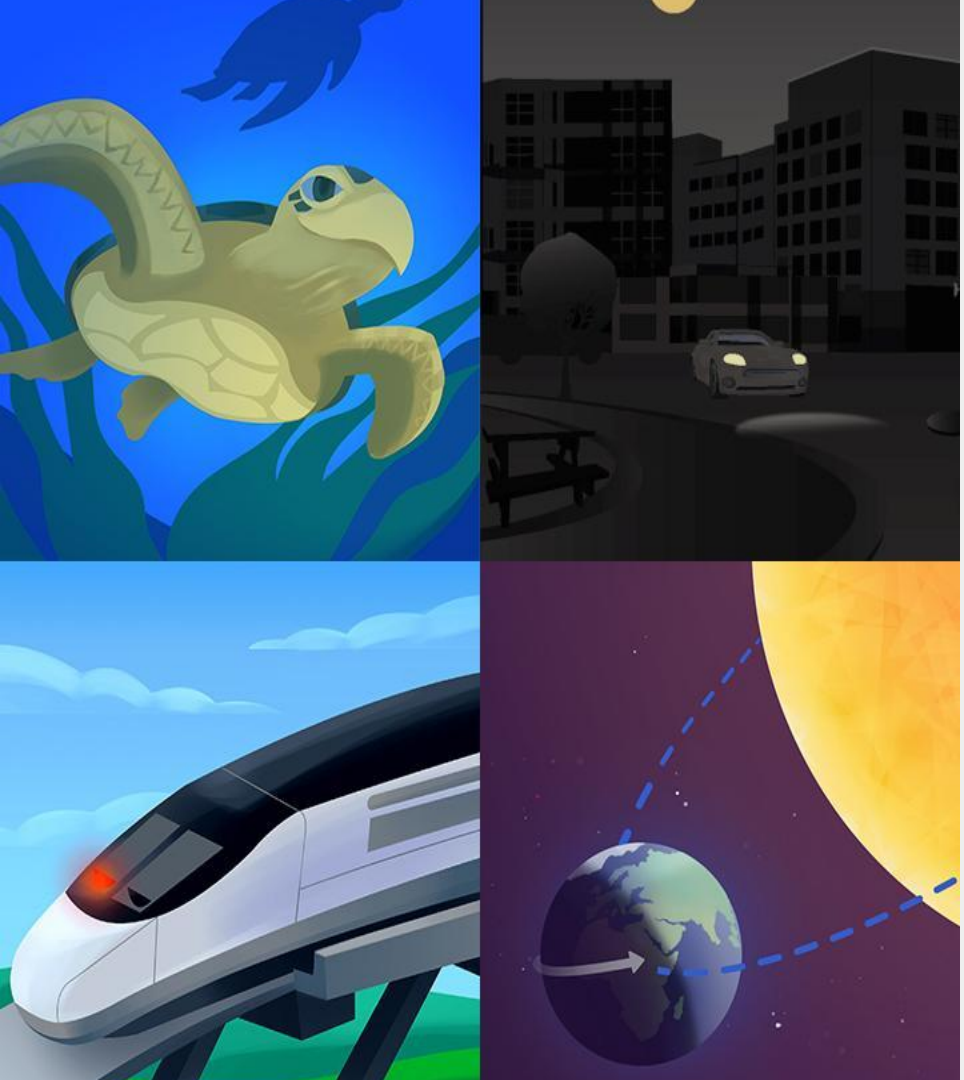
Look for 4	Look for 5	Notes

Share Out

Jamboard

Go to the link in the chat and share your thoughts.





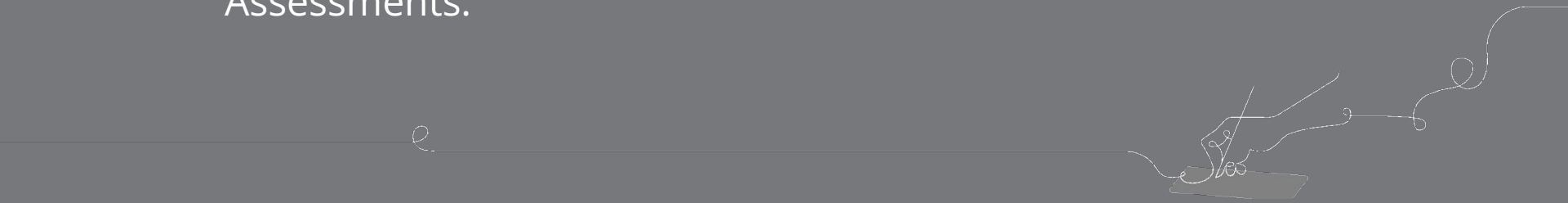
Plan for the day: Part 1

- Introduction and Framing
- Unit Overivew
- Assessment System
- 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.



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

TOP RATED BY EDREPORTS

Grades 6-8

[Caregivers]

Amplify.

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!

ify.

Additional resources and ongoing support

Customer Care

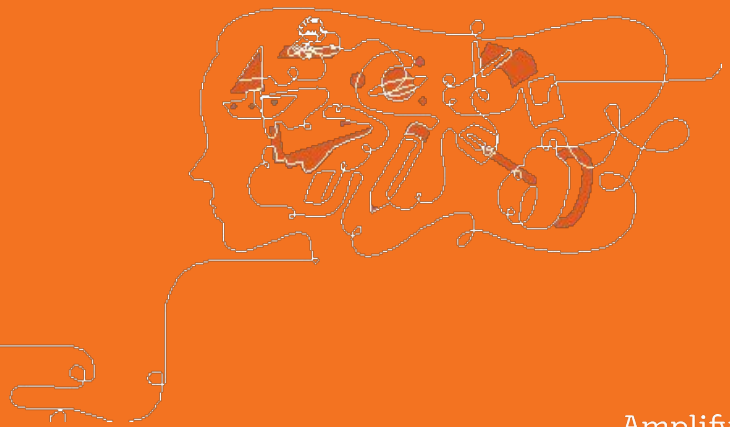
Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-10PM EST and weekends 10AM-6PM EST.

help@amplify.com

800-823-1969

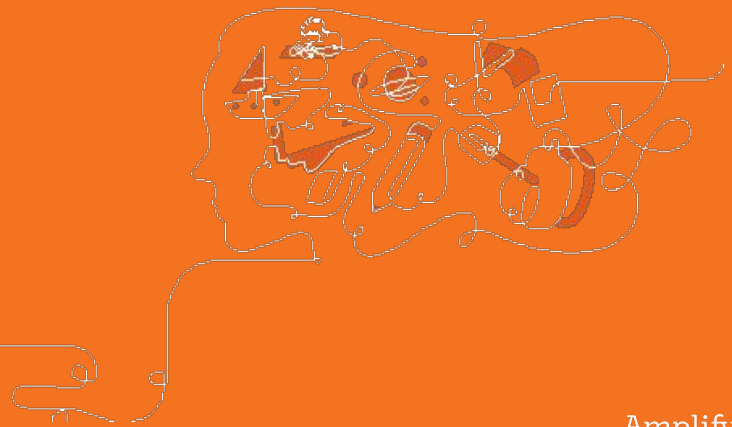
Amplify Chat

End of Part 1



Break

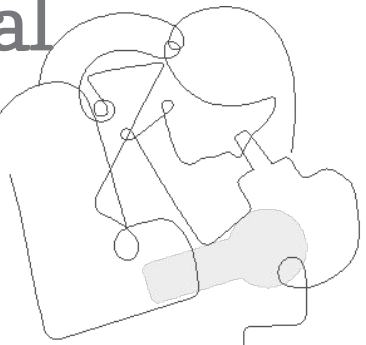
10:00 - 10:30



Amplify Science

Unit 3: Environment and Survival (with an assessment focus)

Grade 3, Part 2

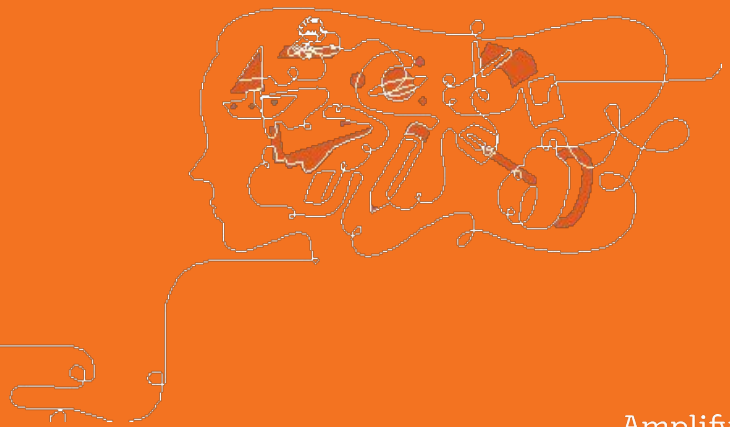


School/District Name: LAUSD
Date:
Presented by:

TOP RATED BY EDREPORTS

PLPG CERTIFIED PROVIDER

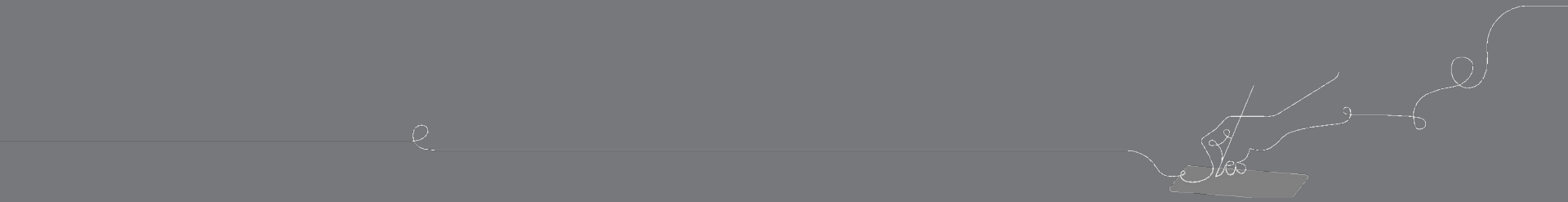
Part 2

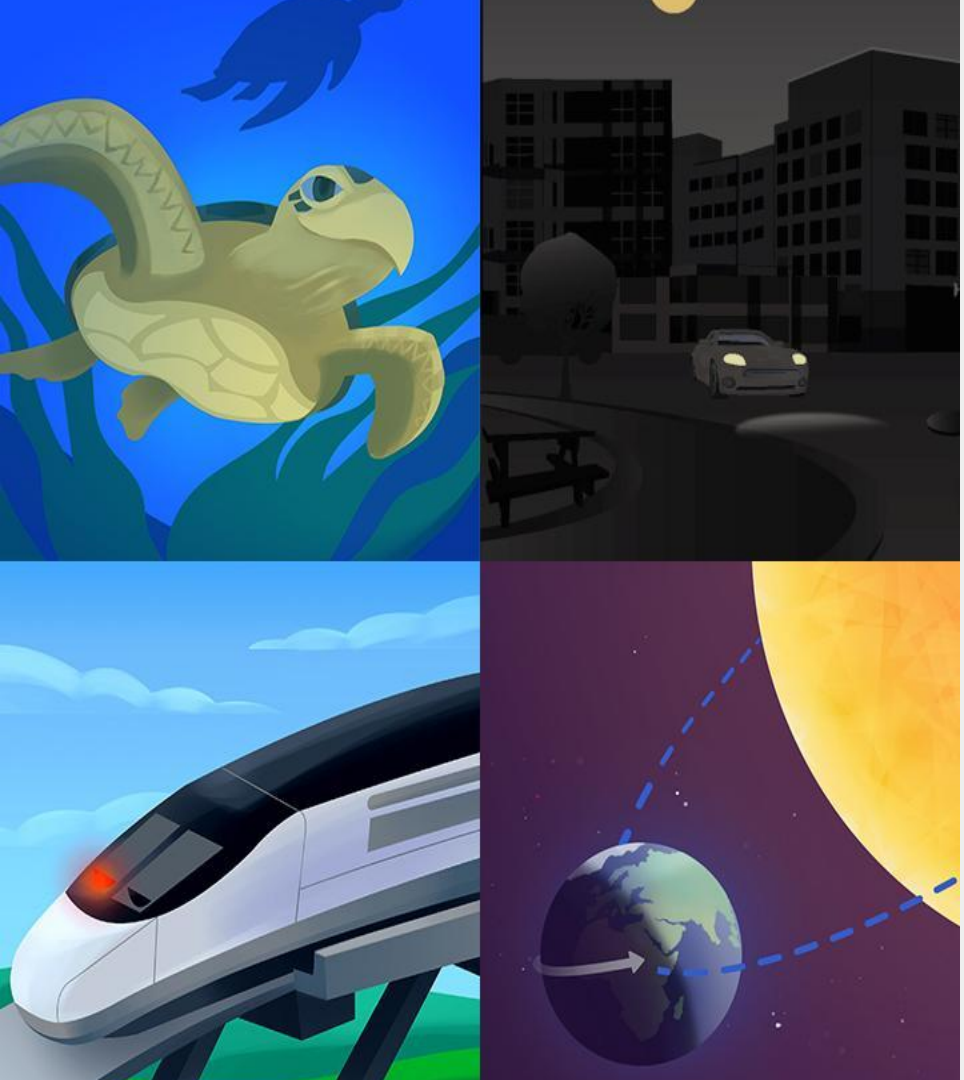


Overarching goals

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

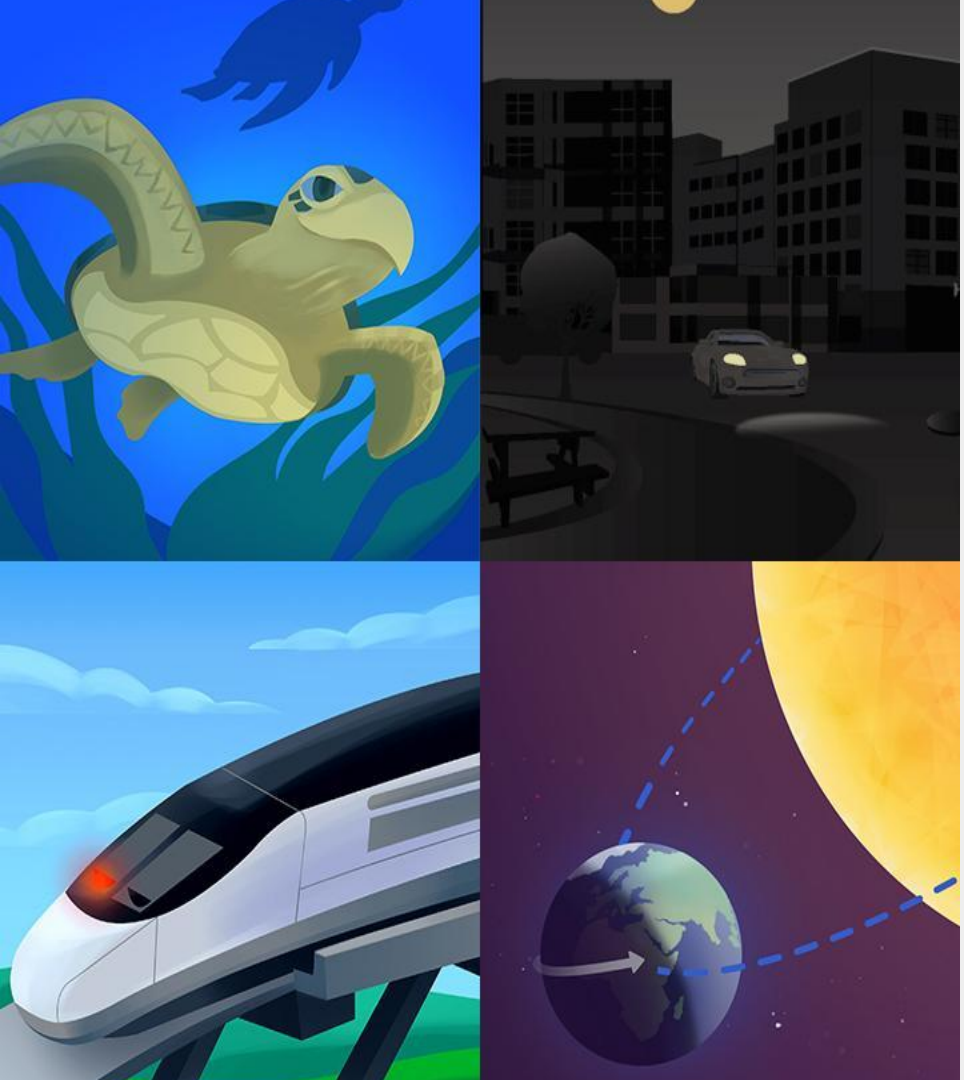
- ❏ Understand the pre and post assessments in this unit.
- ❏ Understand how the formative assessments build to the summative assessment.





Plan for the day: Part 2

- Pre Unit Assessment
- Summative assessment
- Closing

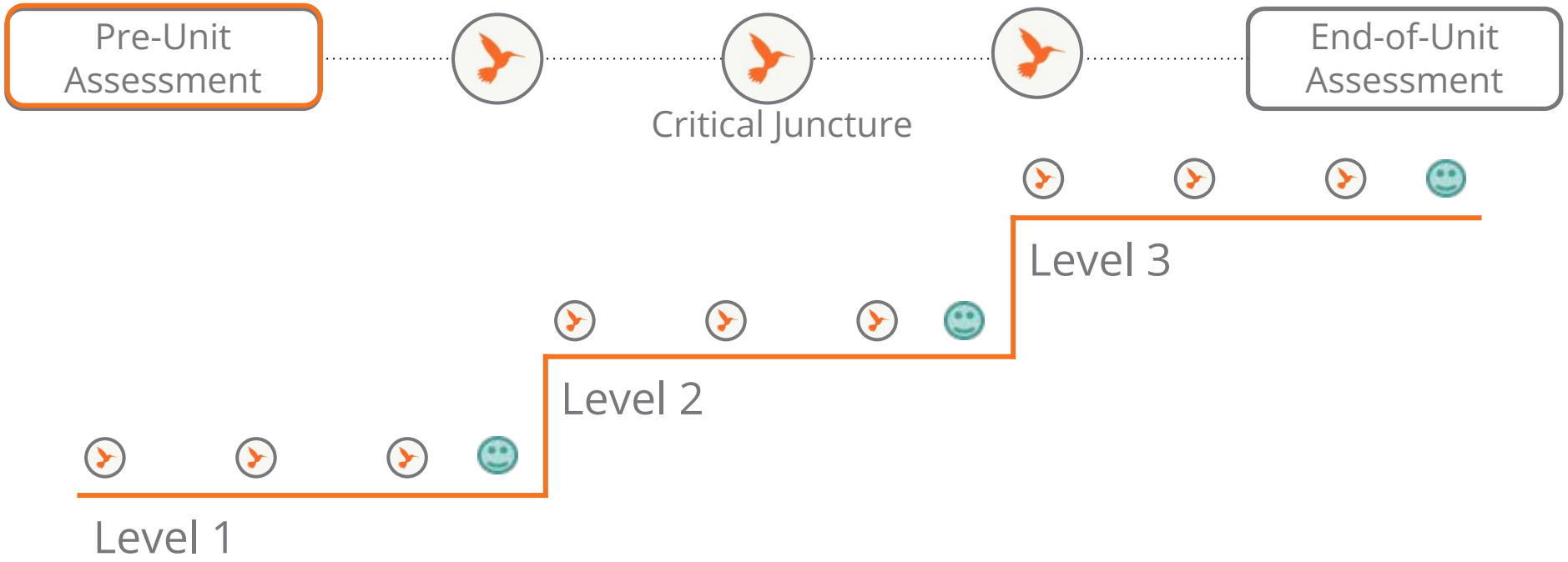


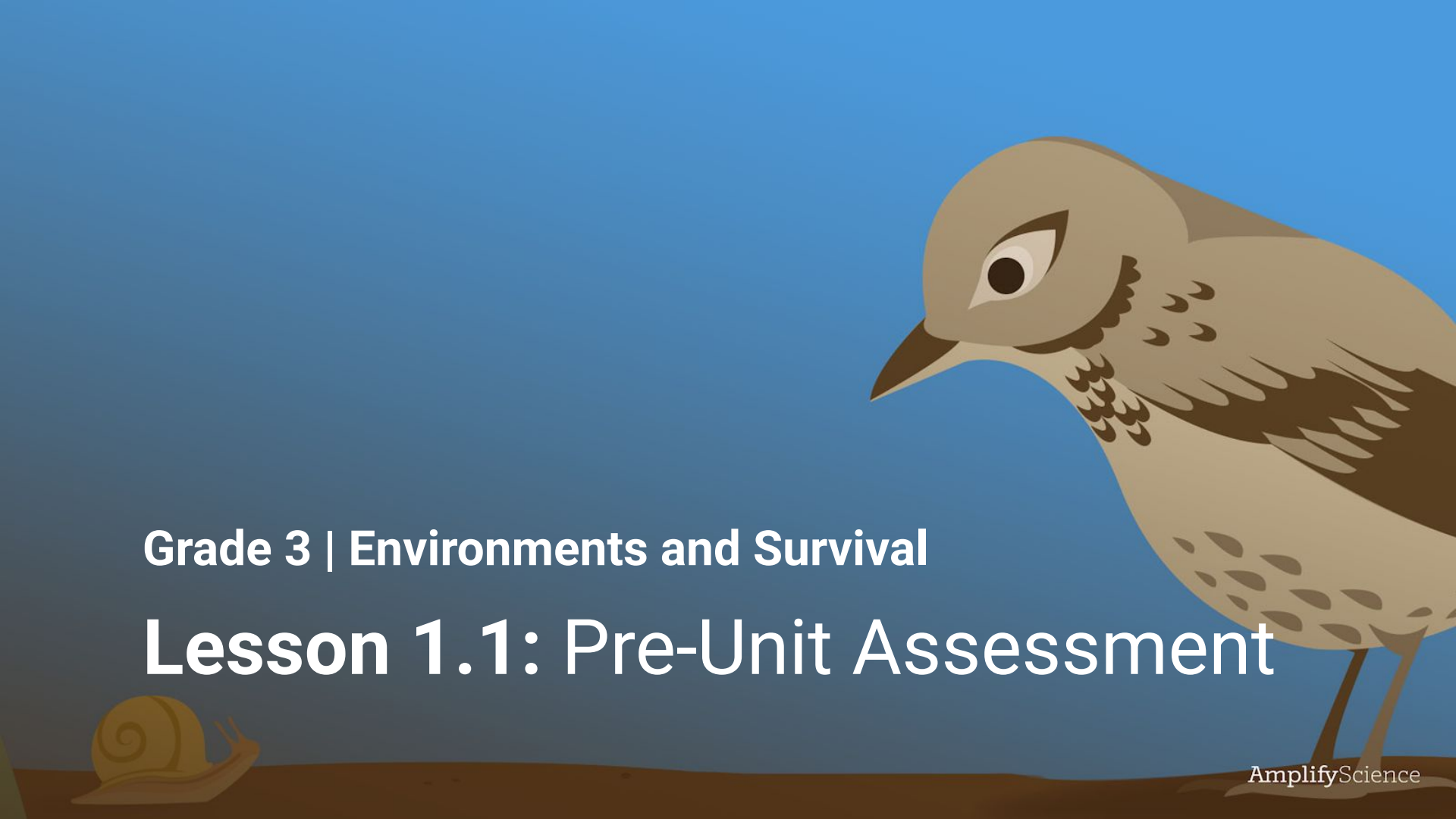
Plan for the day: Part 2

- Pre Unit Assessment
- Summative assessment
- Closing

K-5 Assessment System

K-5 Assessment System





Grade 3 | Environments and Survival

Lesson 1.1: Pre-Unit Assessment

AmplifyScience

20 MIN

Activity 1

Becoming Biomimicry Engineers

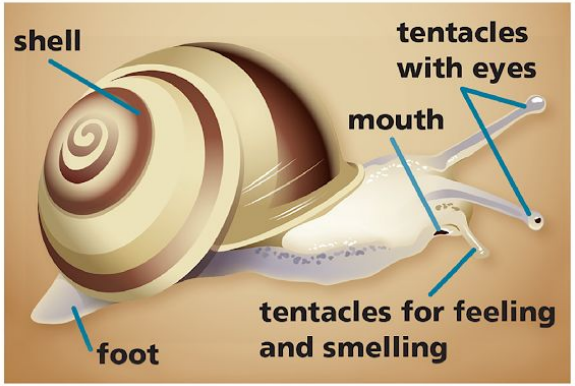
In this unit, we will take on the role of **engineers** working for an engineering firm, or company.

Let's **read our first message** from Dr. Jasmine Neel, the lead engineer at the engineering firm.

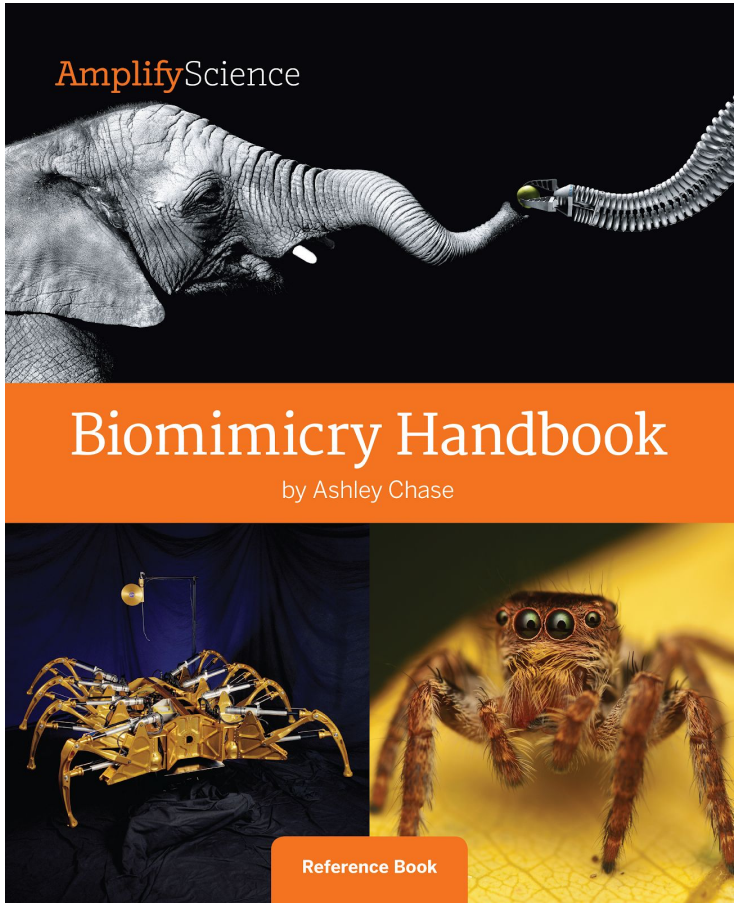
To: Biomimicry Engineers
From: Dr. Jasmine Neel, Lead Engineer
Subject: Grove Snail Biomimicry Project, Part 1

Hello biomimicry engineers,

We are excited that you are working with our engineering firm! We often get ideas for designs from studying organisms. We have been studying grove snails, and we need your help to learn more about them and to get ideas for designs. Here is a diagram that shows some of the parts of the body of a grove snail.



Thank you!



This is a **reference book** that we will use in our work as engineers.

Notice the word **biomimicry.** We will use the book to learn more about what it means.

15 MIN

Activity 2

Introducing the Grove Snail Population

We will be studying a **group of grove snails** living in a specific area.

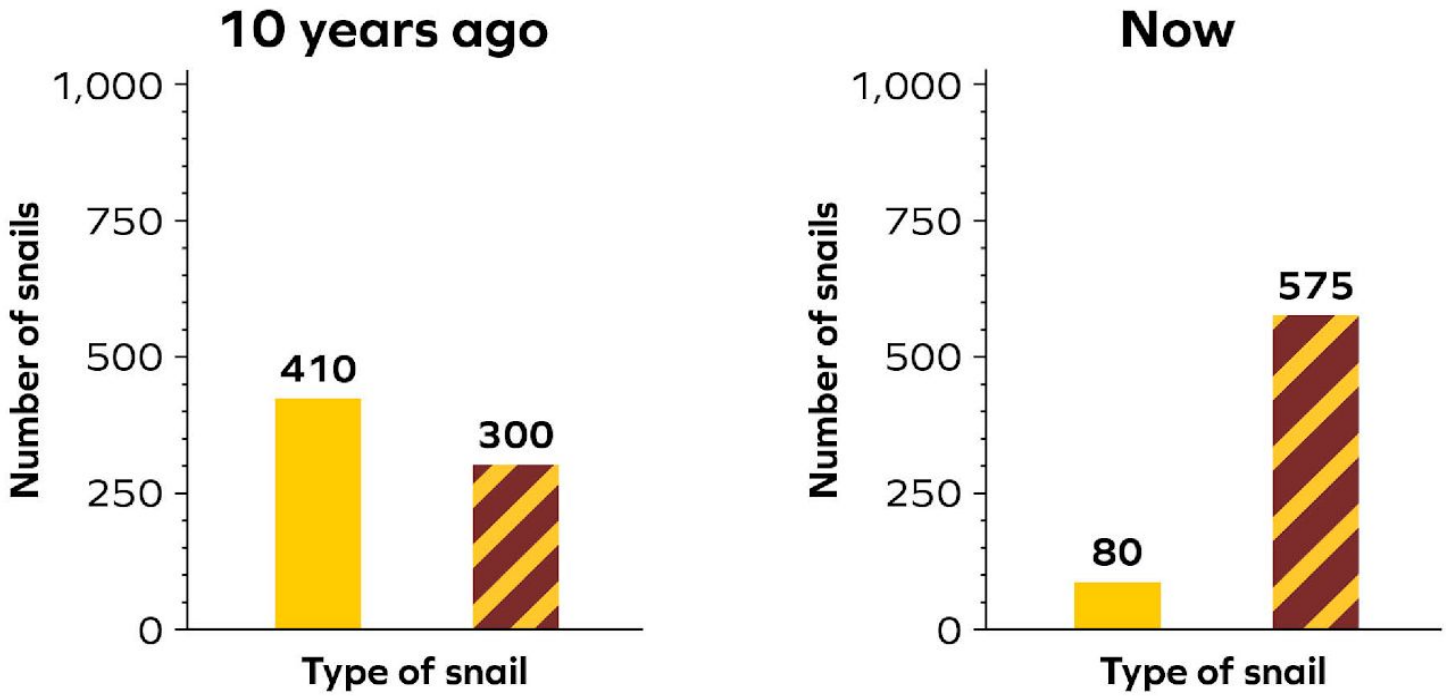
A group of one kind of living thing is called a **population.**

Snail with yellow shell

Snail with banded shell

The engineering firm sent photographs of the **two types of snails** in this population: snails with **yellow shells** and snails with **banded, or striped, shells.**

Grove Snail Population Data



Unit Question

Why are different organisms more likely or less likely to survive in an environment?

Chapter 1 Question

Why are the snails with yellow shells not surviving well?

25 MIN

Activity 3

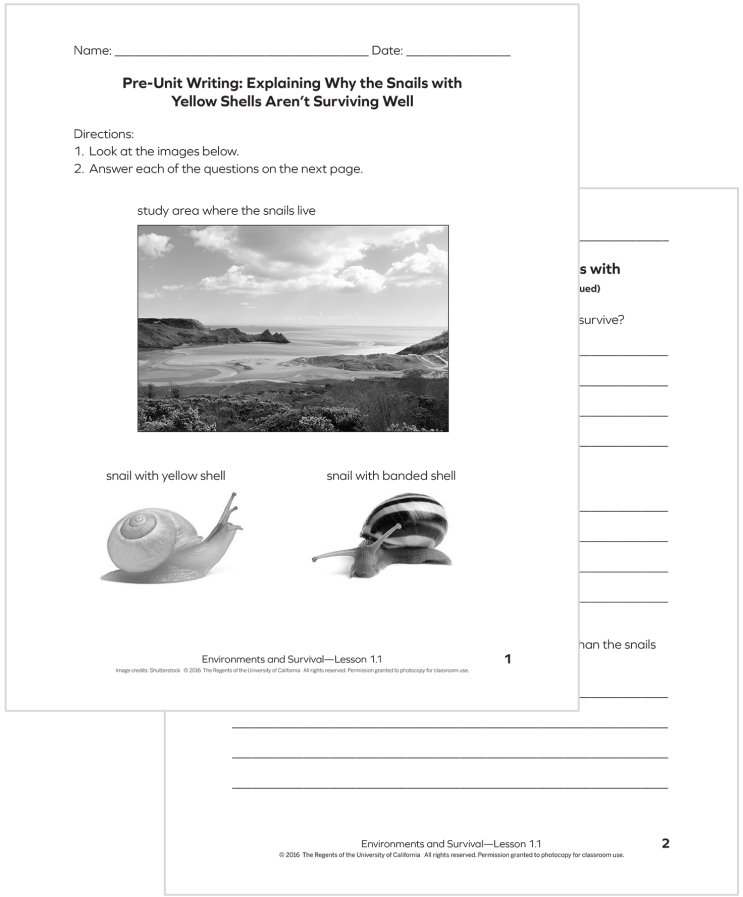
Writing Initial Explanations

Next, we'll think about **why the snails with yellow shells aren't surviving as well** and try to explain why that might be happening.

Snail with yellow shell

Snail with banded shell

This photograph of the **study area where the snails live** may help you think of ideas.



Name: _____ Date: _____

Pre-Unit Writing: Explaining Why the Snails with Yellow Shells Aren't Surviving Well

Directions:
1. Look at the images below.
2. Answer each of the questions on the next page.

study area where the snails live

snail with yellow shell

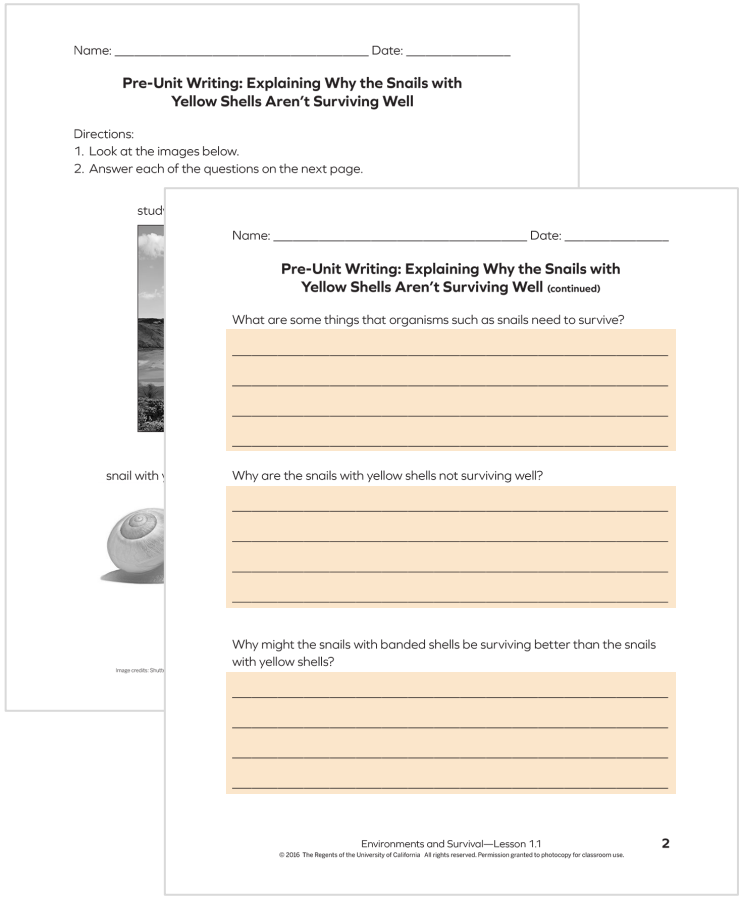
snail with banded shell

Environments and Survival—Lesson 1.1 1

s with
ued)
survive?
han the snails

Environments and Survival—Lesson 1.1 2

Let's review the directions and questions on both pages to make sure everyone understands what to do.



Name: _____ Date: _____

Pre-Unit Writing: Explaining Why the Snails with Yellow Shells Aren't Surviving Well

Directions:
1. Look at the images below.
2. Answer each of the questions on the next page.

stud

snail with

Image credits: Shutt

Name: _____ Date: _____

Pre-Unit Writing: Explaining Why the Snails with Yellow Shells Aren't Surviving Well (continued)

What are some things that organisms such as snails need to survive?

Why are the snails with yellow shells not surviving well?

Why might the snails with banded shells be surviving better than the snails with yellow shells?

Environments and Survival—Lesson 1.1 **2**

Answer the questions to explain your ideas.

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 of Why the Snails with Yellow Shells Aren't Surviving Well

This pre-unit writing assessment is an opportunity for students to articulate their initial ideas about organism needs and likelihood of survival, 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 initial ideas to the concepts they will be learning about in the *Environments and Survival* 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:
- Students' experiences taking care of pets.
- Students' experiences at the zoo or watching nature shows on television.

Building on prior knowledge. Ideas about organism needs and likelihood of survival that students can build on throughout the unit:
- Different organisms live in different environments.
- Organisms can have traits that help them survive.
- Organisms of the same species can have many similar traits, but for each trait there can be variation.

Applying crosscutting concepts. Examples of ways that students could demonstrate facility with the crosscutting concept of Systems and System Models:
- The snails with yellow shells are not surviving well because of an interaction with something in their environment. The snails with banded shells are surviving better because of something in the environment. (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 student facility with the science and engineering practice of Constructing Explanations. Students' writing may be reviewed using the rubric provided in Lesson 3.4. However, because students' work in response to this pre-assessment may be sparse and not fully demonstrate incoming facility with the science and engineering practice, we recommend using students' first independently written explanations, and corresponding assessment guidance in Lesson 2.6 (Assessment Guide: Reviewing Students' Chapter 2 Explanations of Why the Snails with Banded Shells Are More Likely to Survive) as an entry-level assessment of this science and engineering practice. Additional entry-level assessments of science and engineering practices and

Environments and Survival: Snails, Robots, and Biomimicry (Grade 3) 1

und in the following lessons: the science and engineering practice
mmunicating Information in Lesson 1.3 (On-the-Fly Assessment 2,
concepts of Systems and System Models in Lesson 1.2 (On-the-
d Structure and Function in Lesson 2.2 (On-the-Fly Assessment 4,

n needs and likelihood of survival to watch out for:
re the same. Students do not often notice differences within
which they are not very familiar or that have unfamiliar traits. This
that there is no variation in the traits of a population of those

ting or not meeting their needs, regardless of their environment.
e ability of an organism to survive is inherent to that organism, and
the nature of the environment in an organism's ability to meet

more adaptive than others, regardless of environment. Many
its are always better to have (e.g., being bigger or faster, having
an be a barrier to understanding the role of the environment in
a trait is adaptive.
traits to be able to survive in an environment. Many students
nt makes a certain trait non-adaptive, organisms with that trait
ome adaptive in order to better survive.

on provides an opportunity to formatively assess students'
e following standards:

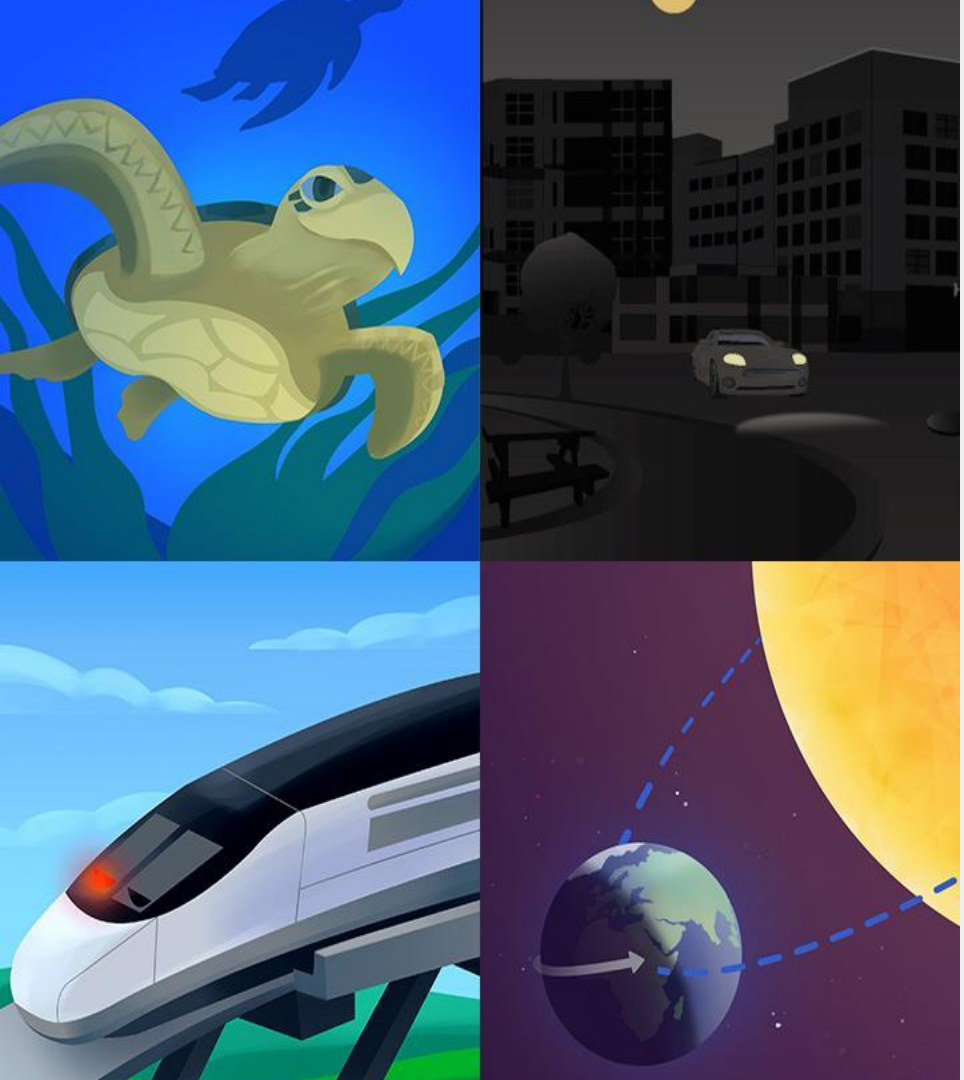
ce
anations and Designing Solutions

in characteristics between individuals of the same species provide
ding mates, and reproducing. (3-LS4-2)

nent, some kinds of organisms survive well, some survive less well,
t all. (3-LS4-3)

nd Survival: Snails, Robots, and Biomimicry (Grade 3) 2

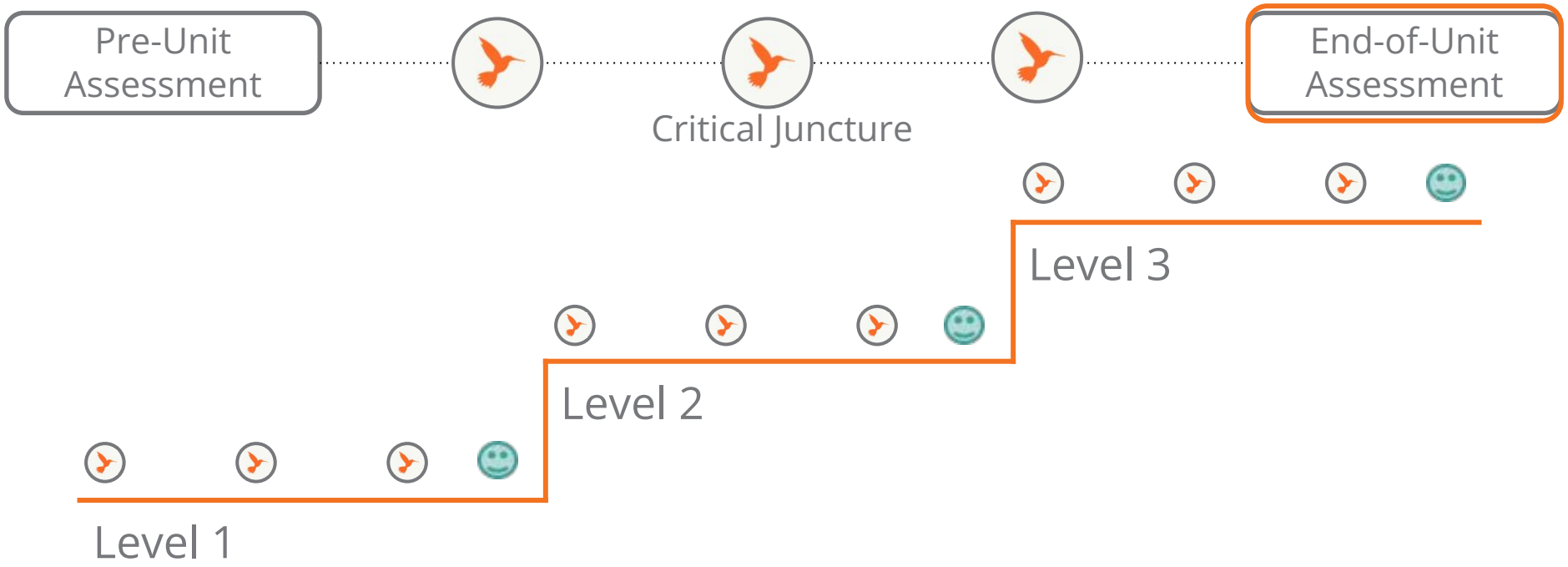
Amplify.



Plan for the day: Part 2

- Pre Unit 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

End of Unit Assessment for Environments and Survival

There are 2 parts to this summative assessment.

Lesson 3.4- Part 1

Name: _____ Date: _____

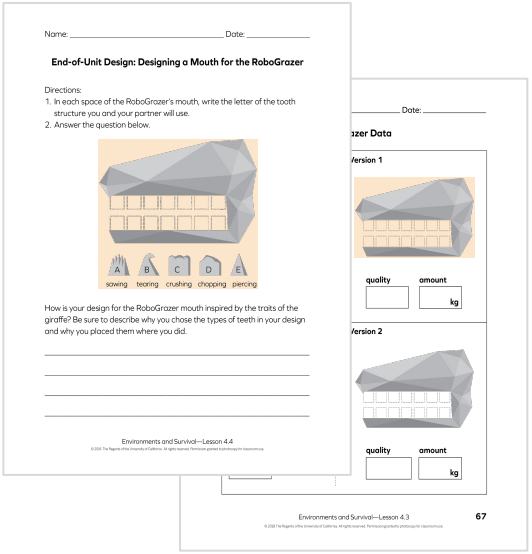
End-of-Unit Writing:
Scientific Explanation of Snail Survival

Directions:
1. Write a scientific explanation that answers the question below.
2. Your audience is the engineering firm.

Question: Why were snails with yellow shells more likely to survive in their environment 10 years ago?

Environments and Survival—Lesson 3.4 (Version A)

Lesson 4.4- Part 2



Name: _____ Date: _____

End-of-Unit Design: Designing a Mouth for the RoboGrazer

Directions:
1. In each space of the RoboGrazer's mouth, write the letter of the tooth structure you and your partner will use.
2. Answer the question below.

How is your design for the RoboGrazer mouth inspired by the traits of the giraffe? Be sure to describe why you chose the types of teeth in your design and why you placed them where you did.

Environments and Survival—Lesson 4.4

Date: _____

…zer Data

…ersion 1

quality amount

kg

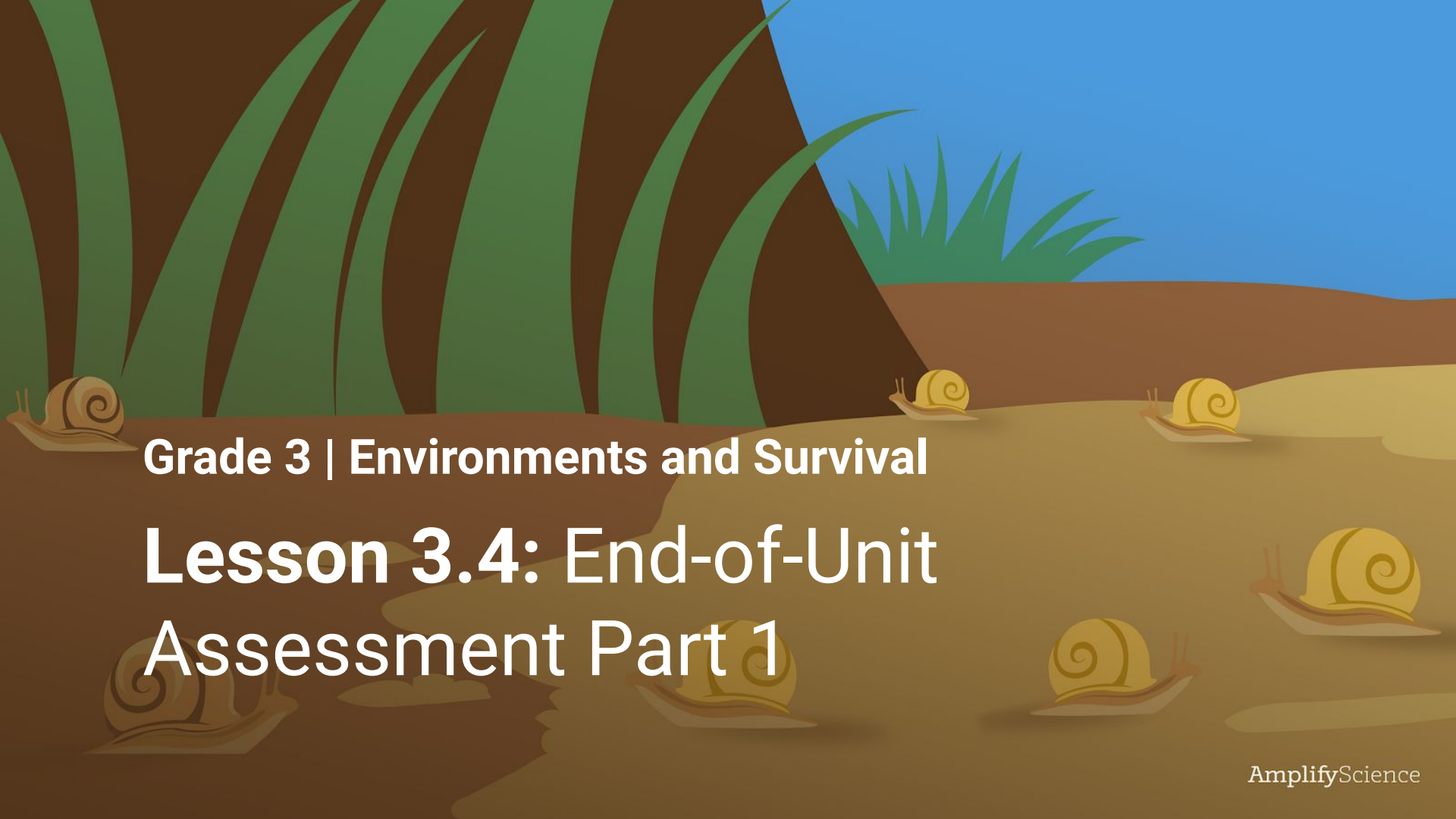
…ersion 2

quality amount

kg

Environments and Survival—Lesson 4.3 67

Amplify.



Grade 3 | Environments and Survival

Lesson 3.4: End-of-Unit Assessment Part 1

AmplifyScience

10 MIN

Activity 1

Reflecting on Key Concepts

Key Concept

When an environment changes, traits that were adaptive might now be non-adaptive.

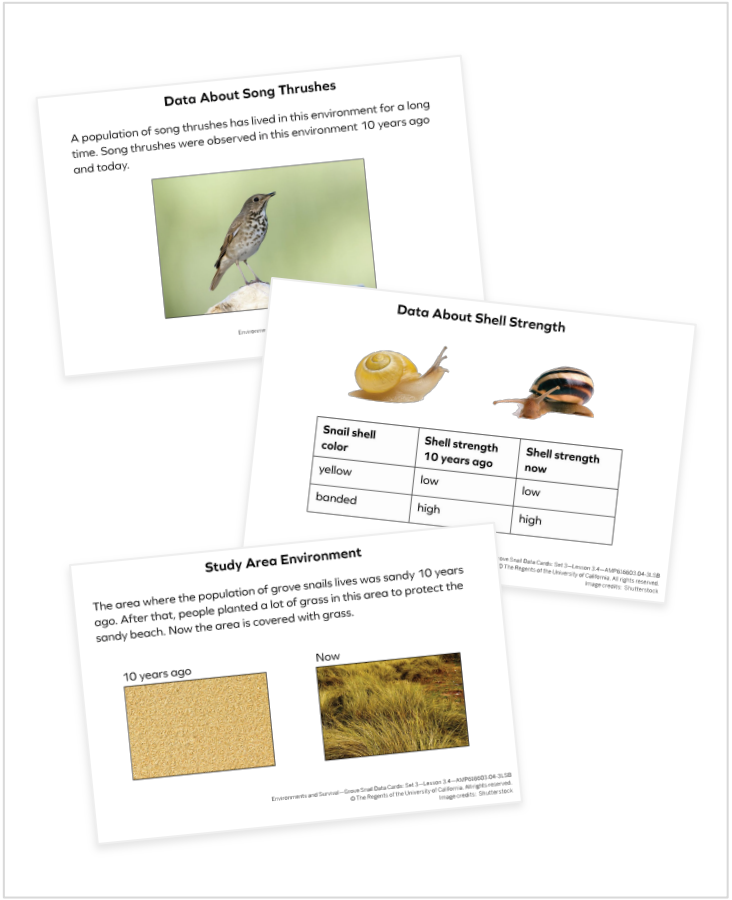
Key Concept

When the environment changes, that doesn’t mean that organisms can decide to change their traits to survive.

20 MIN

Activity 2

Making Inferences from Data



The engineering firm sent data about the grove snails and their environment.

Read and **discuss** the data cards.

Discussing Inferences

I observed/read that _____.

I also observed/read that _____.

I already know that _____.

So, I can infer that snails with yellow shells were more likely to survive 10 years ago because _____.

Now we'll make inferences based on the data.

Why were snails with yellow shells **more likely** to survive in their environment 10 years ago?

30 MIN

Activity 3

Writing Scientific Explanations

What Is a Scientific Explanation?

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

What Is a Scientific Explanation?

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

What Is a Scientific Explanation?

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

What Is a Scientific Explanation?

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

What Is a Scientific Explanation?

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

Name: _____ Date: _____

End-of-Unit Writing:
Scientific Explanation of Snail Survival

Directions:
1. Write a scientific explanation that answers the question below.
2. Your audience is the engineering firm.

Question: Why were snails with yellow shells more likely to survive in their environment 10 years ago?

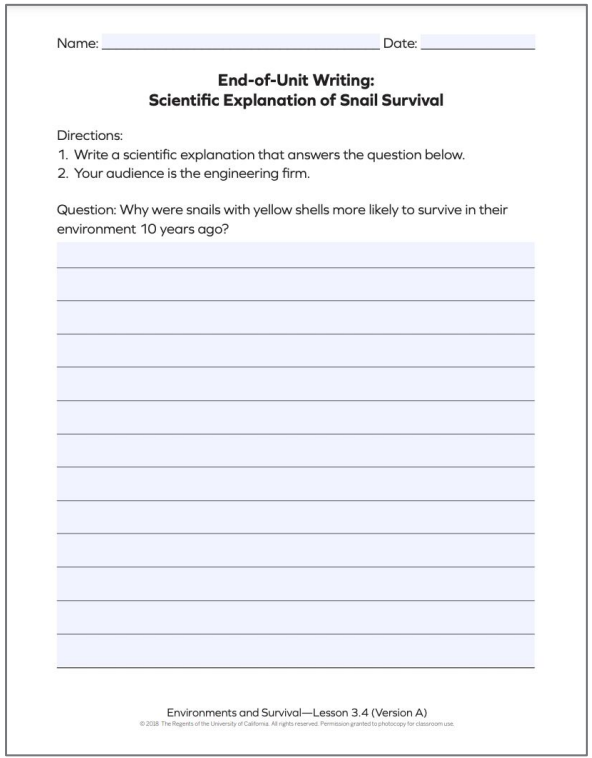
Environments and Survival—Lesson 3.4 (Version A)

Write your scientific explanation.

End of Unit Assessment Part 1

There are 2 versions of the assessment

Version A



Name: _____ Date: _____

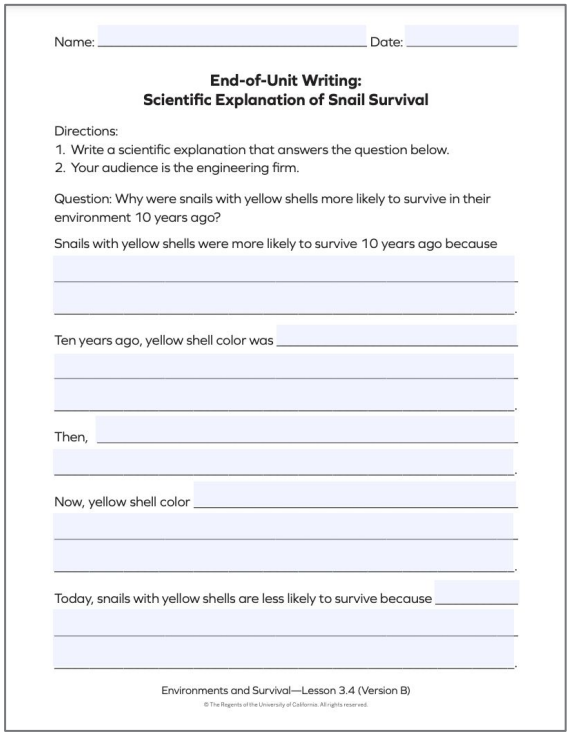
End-of-Unit Writing:
Scientific Explanation of Snail Survival

Directions:
1. Write a scientific explanation that answers the question below.
2. Your audience is the engineering firm.

Question: Why were snails with yellow shells more likely to survive in their environment 10 years ago?

Environments and Survival—Lesson 3.4 (Version A)

Version B



Name: _____ Date: _____

End-of-Unit Writing:
Scientific Explanation of Snail Survival

Directions:
1. Write a scientific explanation that answers the question below.
2. Your audience is the engineering firm.

Question: Why were snails with yellow shells more likely to survive in their environment 10 years ago?

Snails with yellow shells were more likely to survive 10 years ago because _____.

Ten years ago, yellow shell color was _____.

Then, _____.

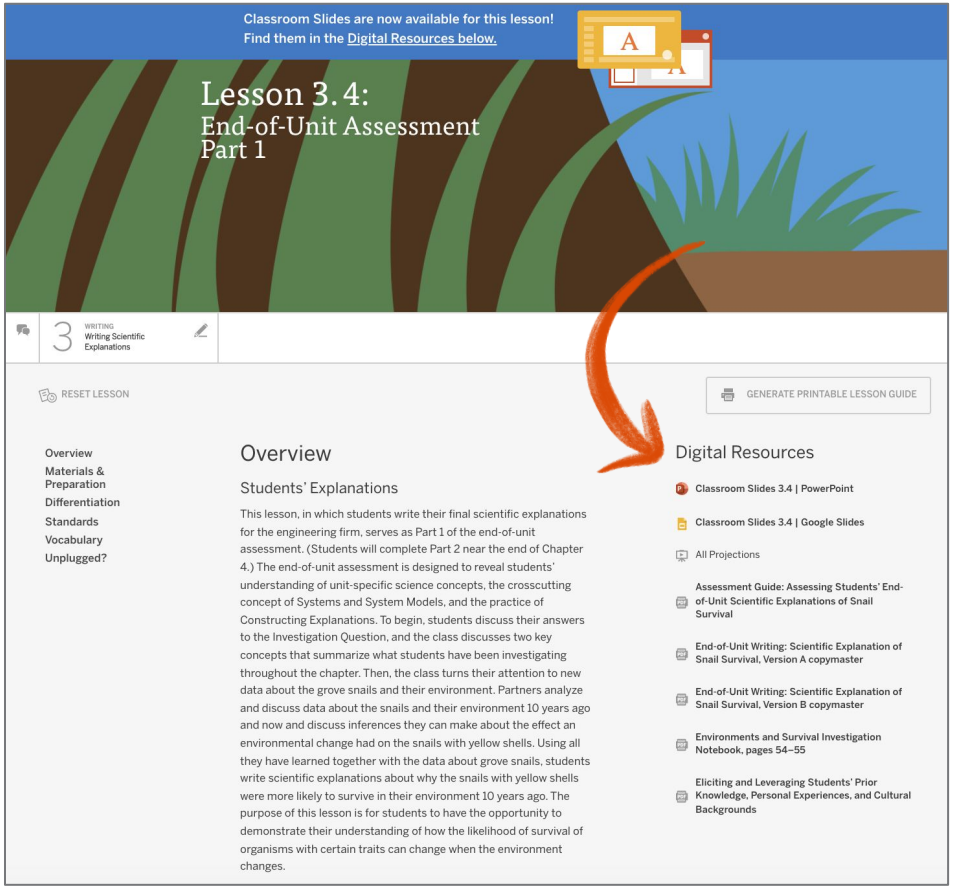
Now, yellow shell color _____.

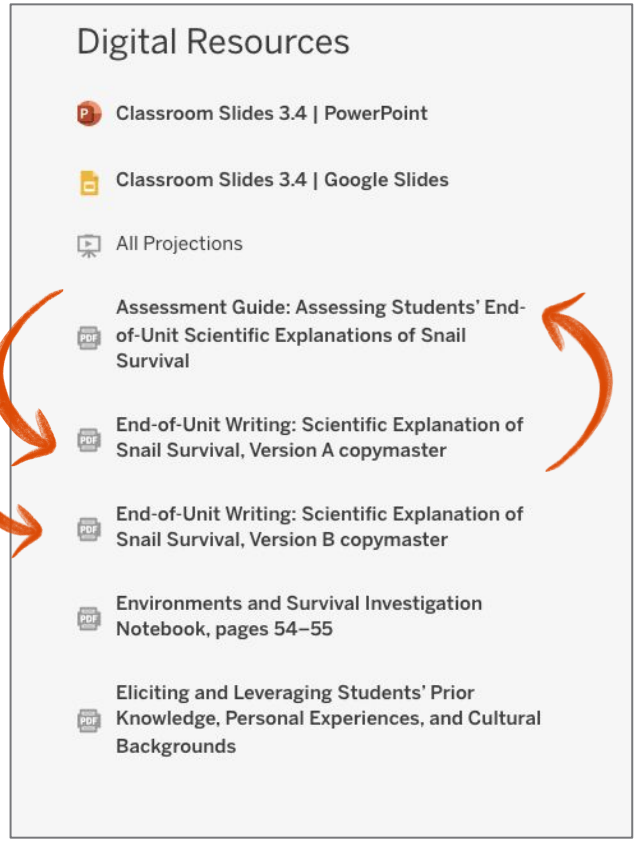
Today, snails with yellow shells are less likely to survive because _____.

Environments and Survival—Lesson 3.4 (Version B)

Amplify.

Locate End of Unit Assessment

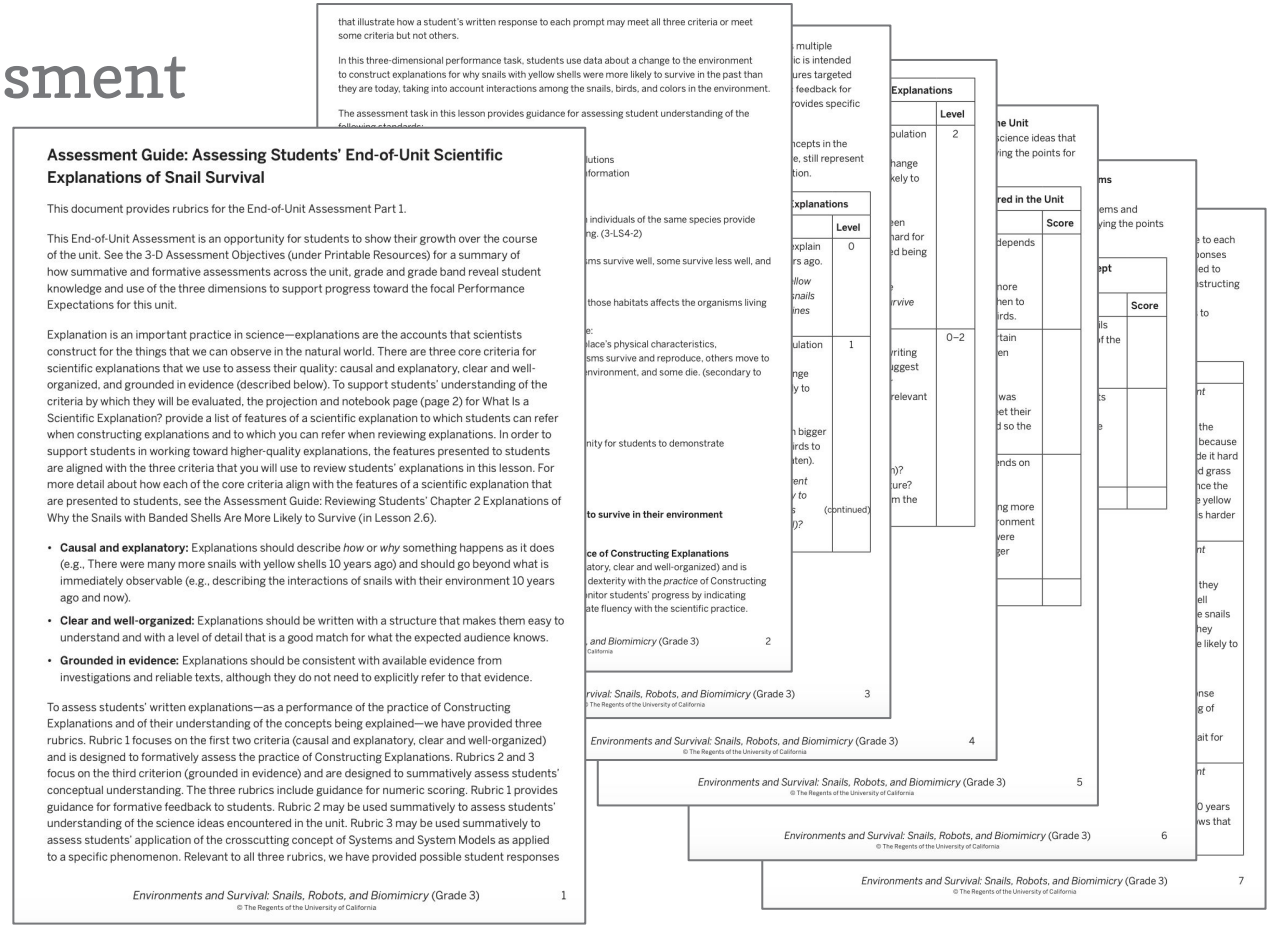




End-of-Unit Assessment

Work time

Open and skim your End-of-Unit Assessment Guide for lesson 3.4



Assessment Guide: Assessing Students' End-of-Unit Scientific Explanations of Snail Survival

This document provides rubrics for the End-of-Unit Assessment Part 1.

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.

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 the Assessment Guide: Reviewing Students' Chapter 2 Explanations of Why the Snails with Banded Shells Are More Likely to Survive (in Lesson 2.6).

- **Causal and explanatory:** Explanations should describe *how* or *why* something happens as it does (e.g., There were many more snails with yellow shells 10 years ago) and should go beyond what is immediately observable (e.g., describing the interactions of snails with their environment 10 years ago and now).
- **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 assess students' understanding of the science ideas encountered in the unit. Rubric 3 may be used summatively to assess students' application of the crosscutting concept of Systems and System Models as applied to a specific phenomenon. Relevant to all three rubrics, we have provided possible student responses

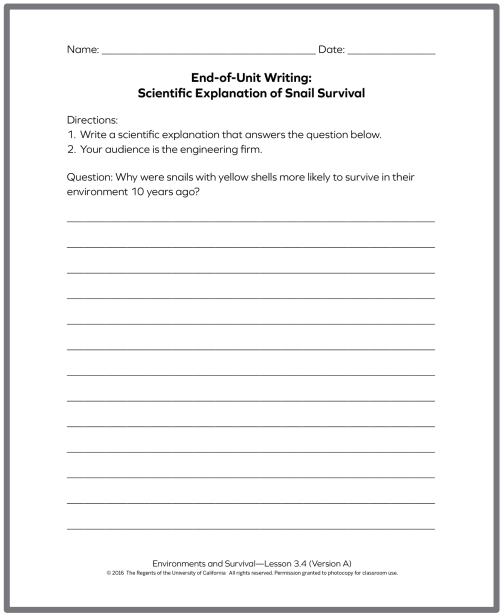
Environments and Survival: Snails, Robots, and Biomimicry (Grade 3) 1

Amplify.

End of Unit Assessment for Environments and Survival

Part 2 of this summative assessment.

Lesson 3.4- Part 1



Name: _____ Date: _____

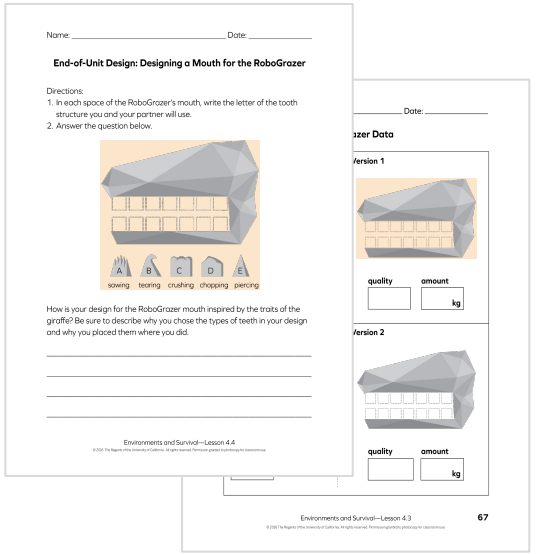
End-of-Unit Writing:
Scientific Explanation of Snail Survival

Directions:
1. Write a scientific explanation that answers the question below.
2. Your audience is the engineering firm.

Question: Why were snails with yellow shells more likely to survive in their environment 10 years ago?

Environments and Survival—Lesson 3.4 (Version A)

Lesson 4.4- Part 2



Name: _____ Date: _____

End-of-Unit Design: Designing a Mouth for the RoboGrazer

Directions:
1. In each space of the RoboGrazer's mouth, write the letter of the tooth structure you and your partner will use.
2. Answer the question below.

A sawing B tearing C crushing D chopping E piercing

How is your design for the RoboGrazer mouth inspired by the traits of the giraffe? Be sure to describe why you chose the types of teeth in your design and why you placed them where you did.

Environments and Survival—Lesson 4.4

Date: _____

zer Data

Version 1

quality amount

kg

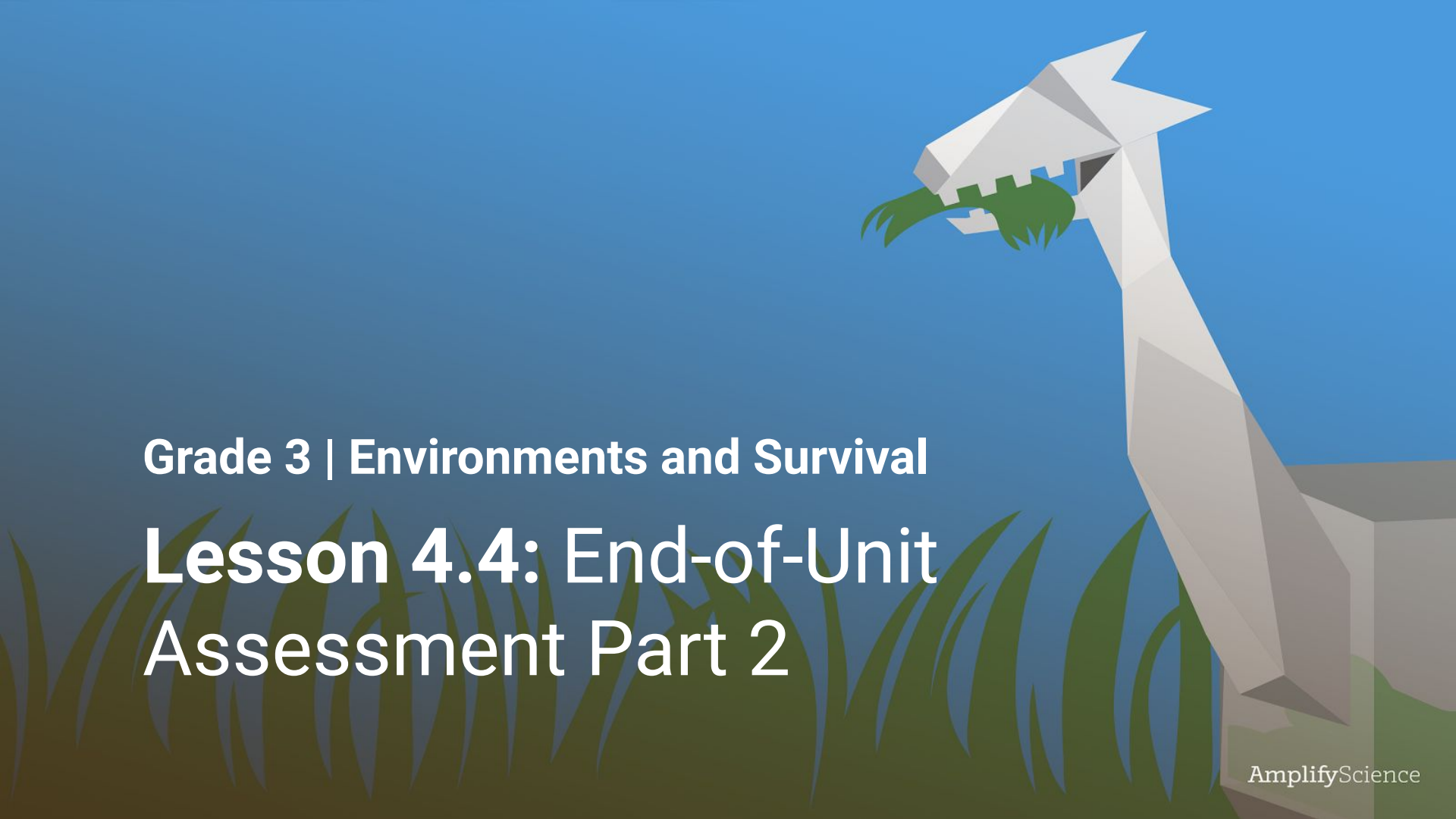
Version 2

quality amount

kg

Environments and Survival—Lesson 4.3 67

Amplify.



Grade 3 | Environments and Survival

Lesson 4.4: End-of-Unit Assessment Part 2

AmplifyScience

10 MIN

Activity 1

Reading About Tooth Structure

Today we will focus on designs for the **mouth** of the **RoboGrazer**.

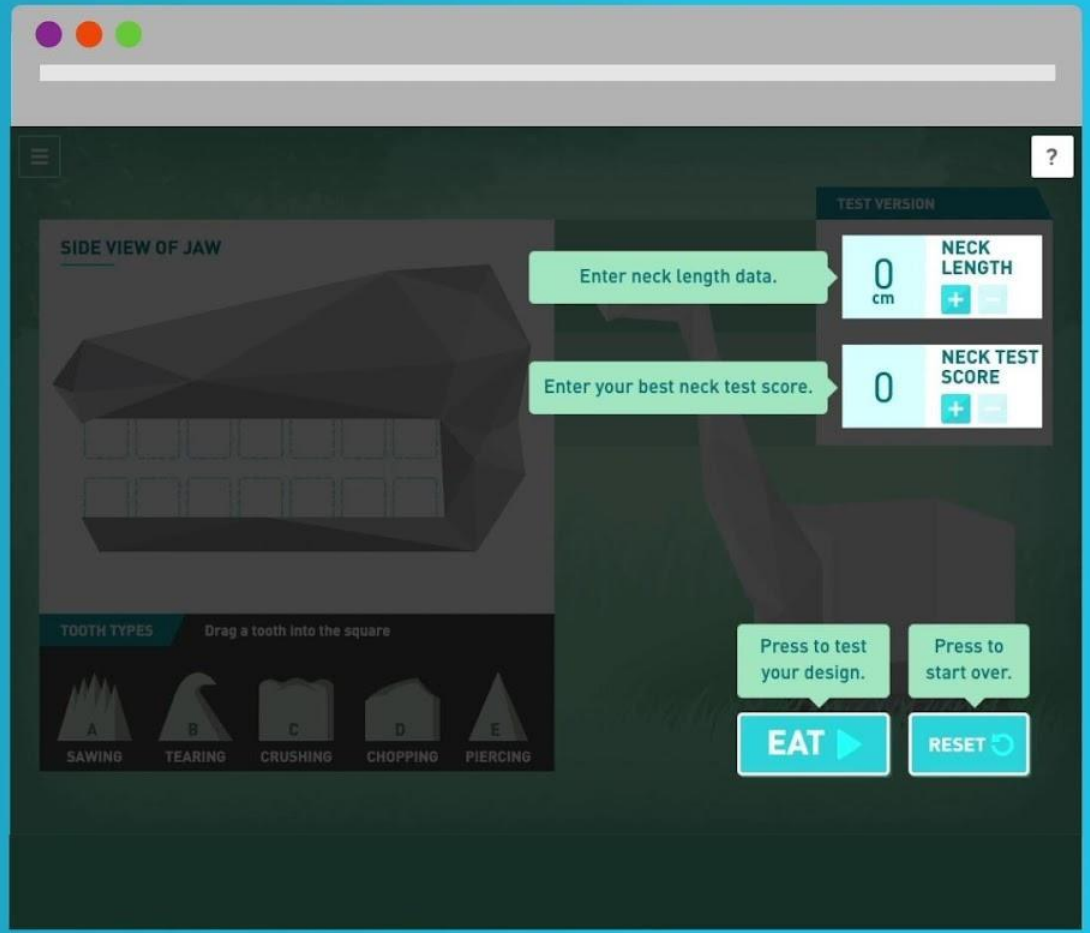
First, we will learn about the giraffe traits and structures that will inspire our designs.

10 MIN

Activity 2

Exploring the RoboGrazer Simulation

Click the **question mark** button in the top right at any time to review how to use the app.



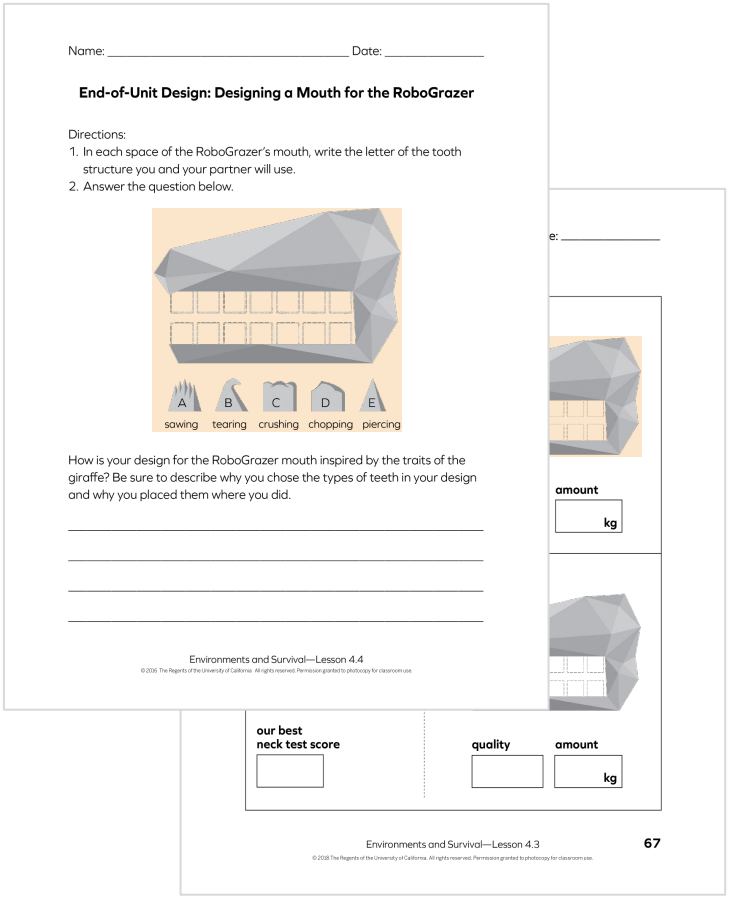
15 MIN

Activity 3

Planning Robot Teeth

Criteria

- The robot neck helps the robot reach plants that are high up and plants that are down on the ground.
- The robot neck helps the robot reach a lot of plants quickly.
- The robot teeth can grab plants and break them down into very small pieces.



Name: _____ Date: _____

End-of-Unit Design: Designing a Mouth for the RoboGrazer

Directions:
1. In each space of the RoboGrazer's mouth, write the letter of the tooth structure you and your partner will use.
2. Answer the question below.

A sawing B tearing C crushing D chopping E piercing

How is your design for the RoboGrazer mouth inspired by the traits of the giraffe? Be sure to describe why you chose the types of teeth in your design and why you placed them where you did.

_____

_____

_____

_____

Environments and Survival—Lesson 4.4

e: _____

amount

kg

our best neck test score

quality

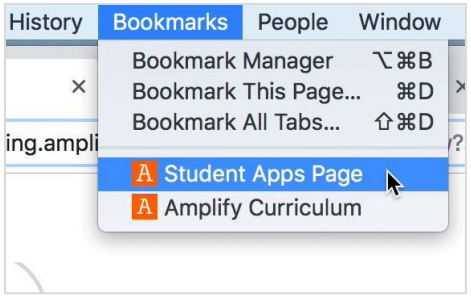
amount

kg

Environments and Survival—Lesson 4.3 67

Transfer the letters showing the types of teeth from your End-of-Unit Design planning sheet to your notebook page.

Open the RoboGrazer Simulation



Step 1

Click on the **Student Apps Page** in your bookmarks.

Step 2

Scroll down and click on the ***Environments and Survival*** **unit.**

Step 3

Click on the **orange box with a 1** to access the Simulation and test your Version 2 design.

Name: _____ Date: _____

RoboGrazer Data

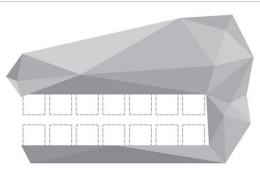
Test Version 1

neck length
cm

first neck test score

second neck test score

our best neck test score



quality

amount
kg

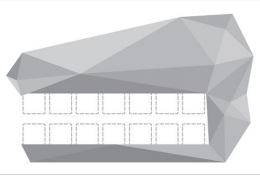
Test Version 2

neck length
cm

first neck test score

second neck test score

our best neck test score



quality

amount
kg

Turn back to page 67 in your notebooks.

Record the data from your test in the Sim—the quality and amount of the plant material—in your notebook.

Name: _____ Date: _____

Sharing RoboGrazer Designs and Test Results

Directions:

1. With your partner, share your design with another pair. One pair will share, while the other pair listens. Then, you will switch roles.
2. Record your ideas for how to improve your design.

Sharing Pair

- Partner A: Show your design for the mouth from your End-of-Unit Design: Designing a Mouth for the RoboGrazer planning sheet and explain how you used ideas from giraffe traits in your design.
- Partner B: Share your Test Version 2 data from page 67, RoboGrazer Data.
- Both: Answer questions from the other pair.

Listening Pair

Take turns asking the following questions:

- Which criteria do you think your design meets well? Why?
- Which criteria do you think your design does not meet as well? Why?
- What parts of your design will you change to better meet the criteria?

Ideas for improving our design:

_____

_____

_____

_____

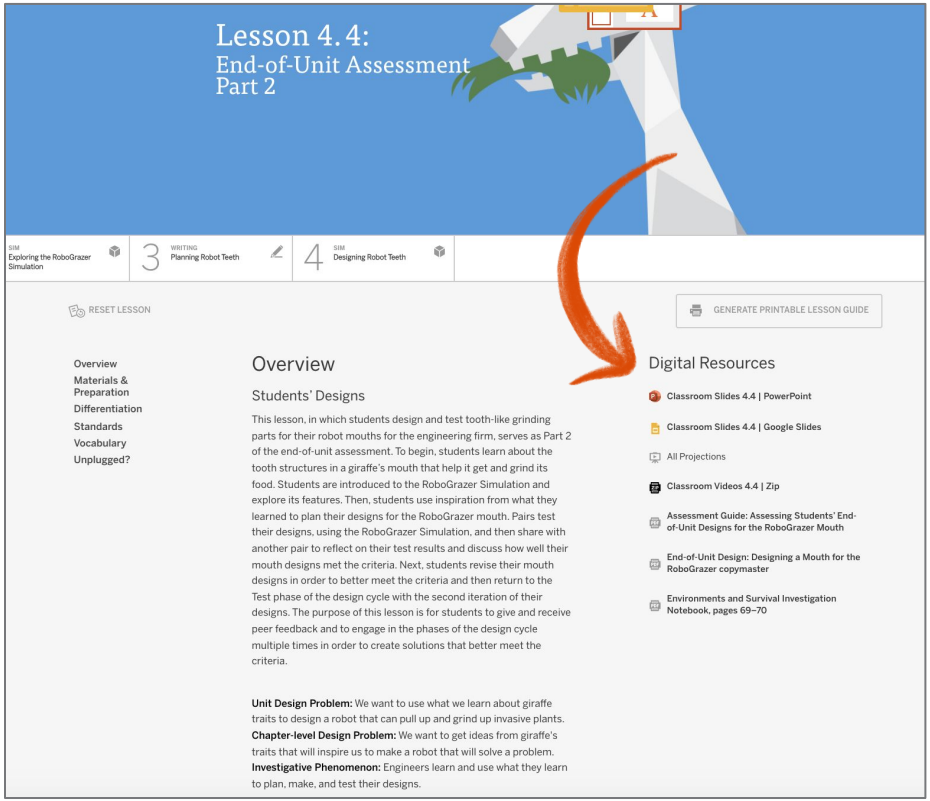
_____

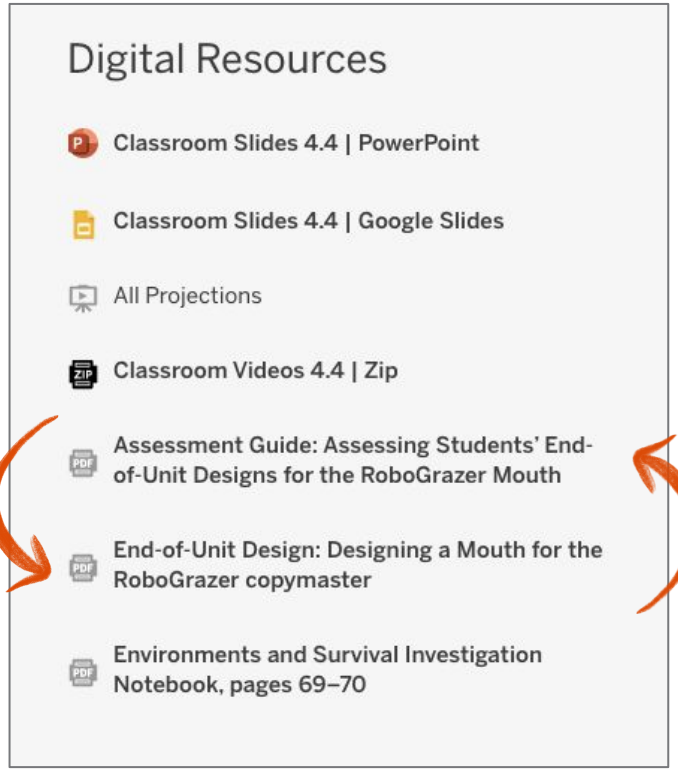
_____

Turn to page 70 in your notebooks.

Take turns **sharing** about your designs. Then, **record** new ideas for improving your design.

Locate End of Unit Assessment

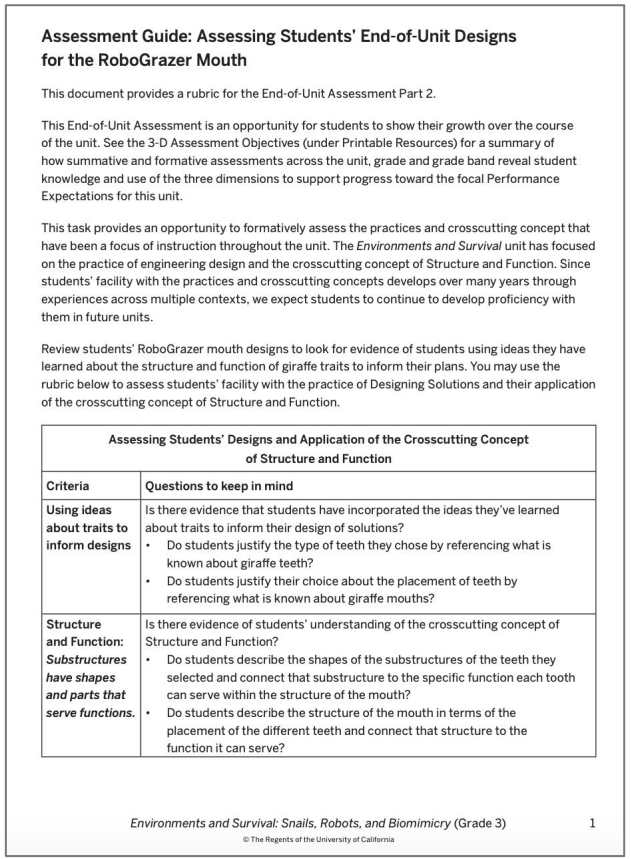




End-of-Unit Assessment

Work time

Open and read your End-of-Unit Assessment Guide for lesson 4.4



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

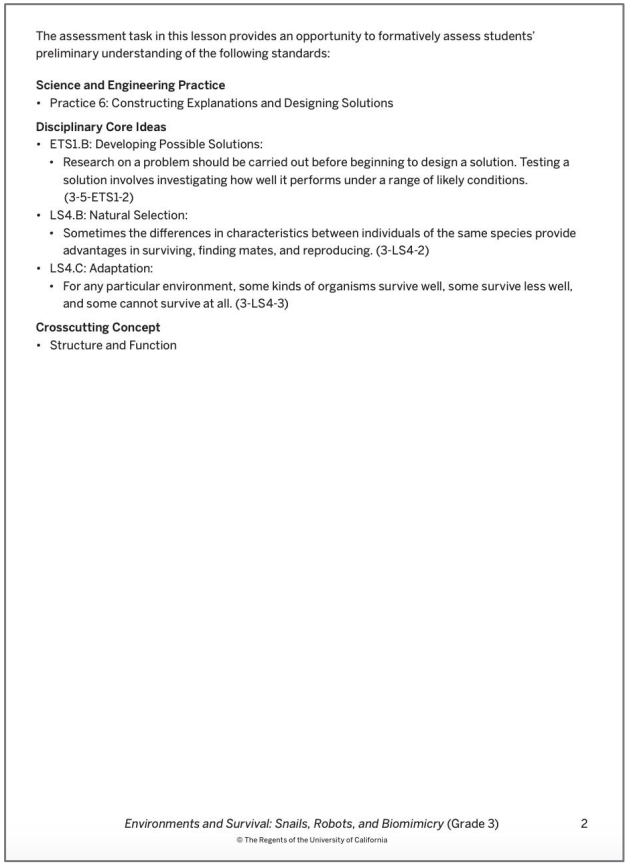
This document provides a rubric for the End-of-Unit Assessment Part 2.

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	Is there evidence that students have incorporated the ideas they've learned about traits to inform their design of solutions? • 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.*	Is there evidence of students' understanding of the crosscutting concept of Structure and Function? • 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?



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

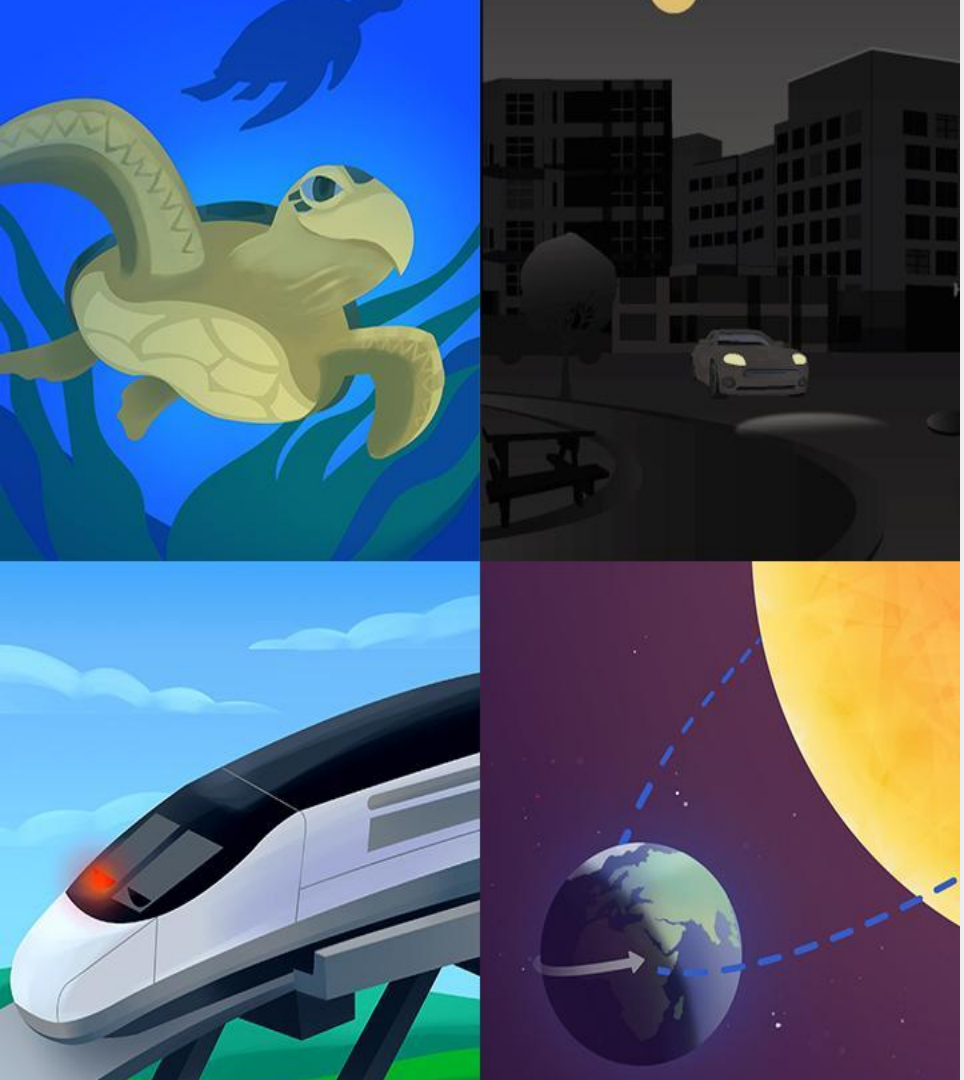
Science and Engineering Practice
- Practice 6: Constructing Explanations and Designing Solutions

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

Amplify.

Questions?



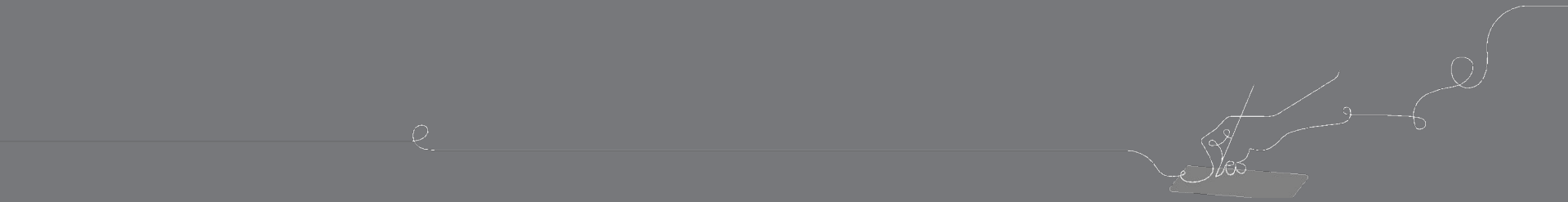
Plan for the day: Part 2

- Pre Unit Assessment
- Summative assessment
- Closing

Overarching goals

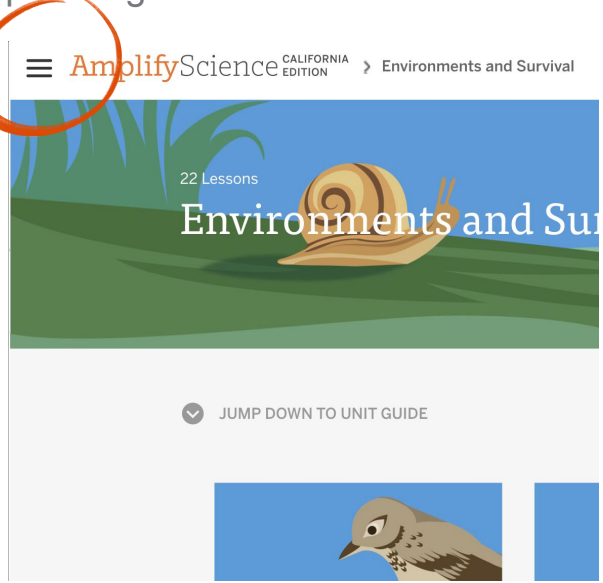
By the end of this workshop, you will be able to:

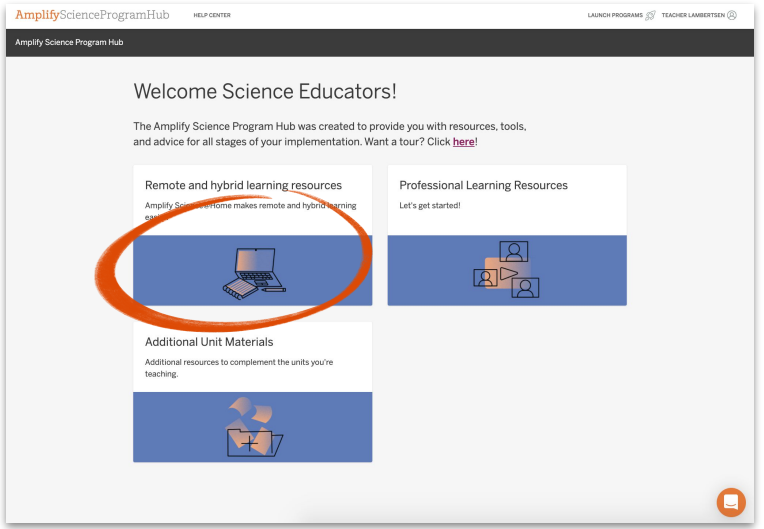
- ❏ Understand the pre and post assessments in this unit.
- ❏ Understand how the formative assessments build to the summative assessment.

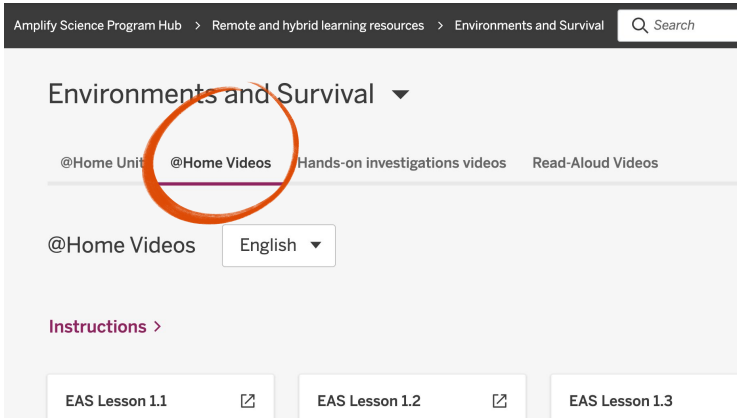


Program Hub

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







Amplify.

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!

ify.

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 2