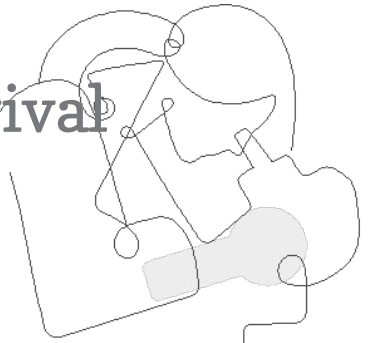
Amplify Science

Writing in Science

Grade 3, Unit 3: Environments and Survival

Part 3

Strengthen workshop



School/District Name
Date
Presented by Your Name

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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

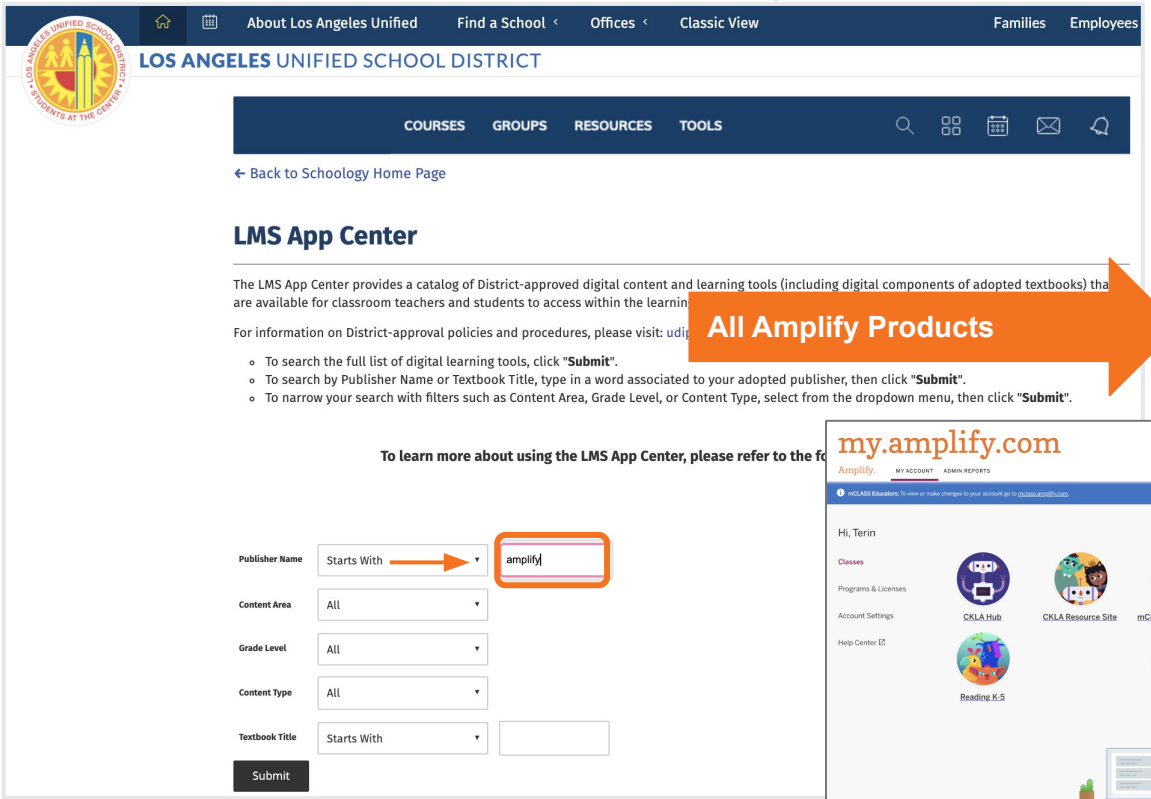
Why do scientists write?

Amplify.

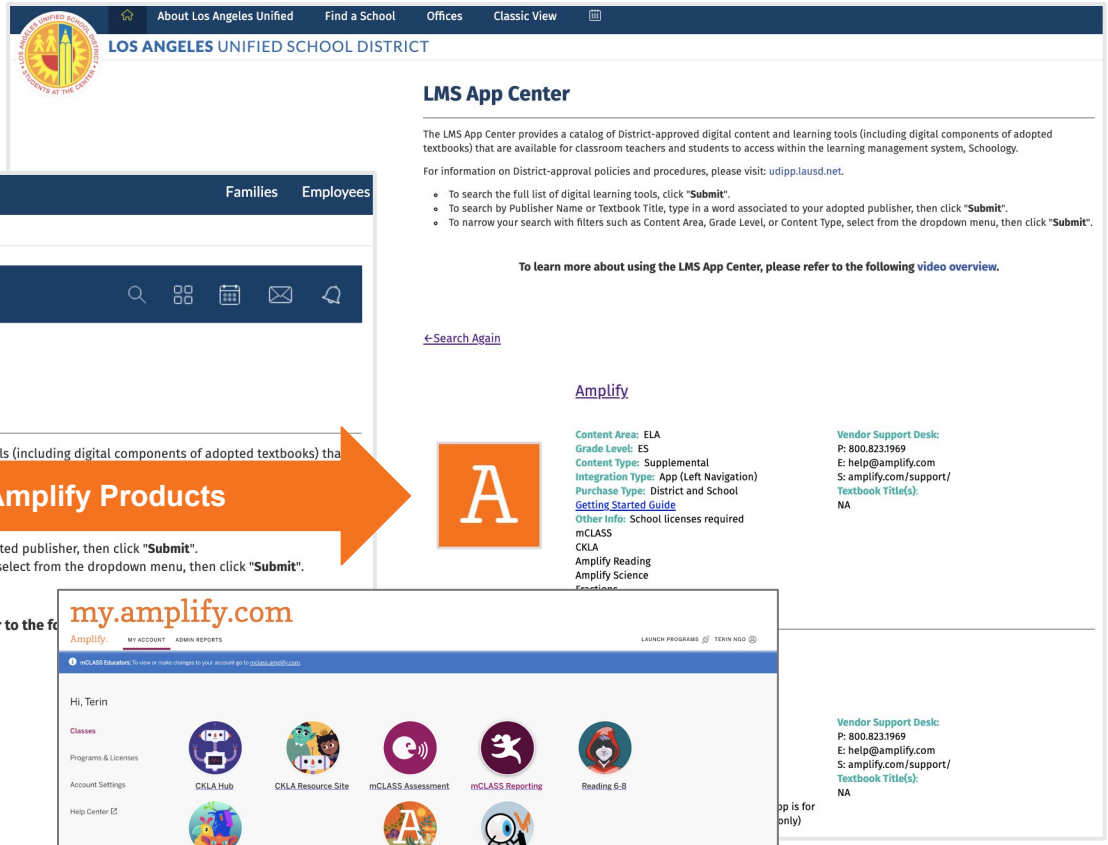
Norms: Establishing a culture of learners

- **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



All Amplify Products



Schoology

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

Navigation Temperature Check

Rate yourself on your comfort level accessing Amplify Science materials and navigating a digital curriculum.

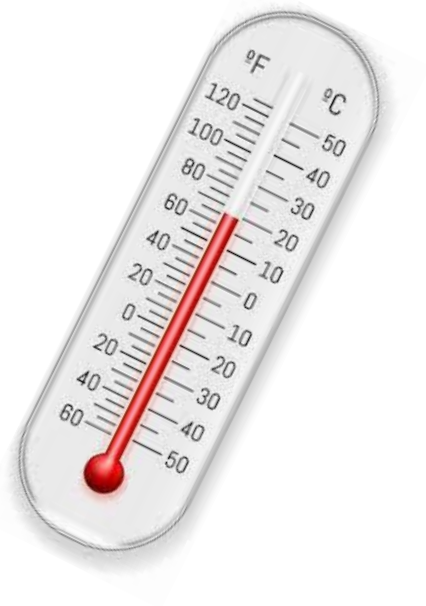
1 = Extremely Uncomfortable

2 = Uncomfortable

3 = Mild

4 = Comfortable

5 = Extremely Comfortable



Overarching goals

- ❑ Identify specific characteristics and genres unique to science writing
- ❑ Describe how the Amplify Science writing approach supports students to engage in science practices, make sense of science ideas, and develop as writers
- ❑ Be ready to teach specific writing activities in an Amplify Science unit

Plan for the day

- Introduction and framing
- Writing in Amplify Science
  - Writing as part of a multimodal experience
  - Supporting students with writing
  - Writing a culminating explanation or argument
  - Additional supports
- Model Lesson
- Planning
- Closing

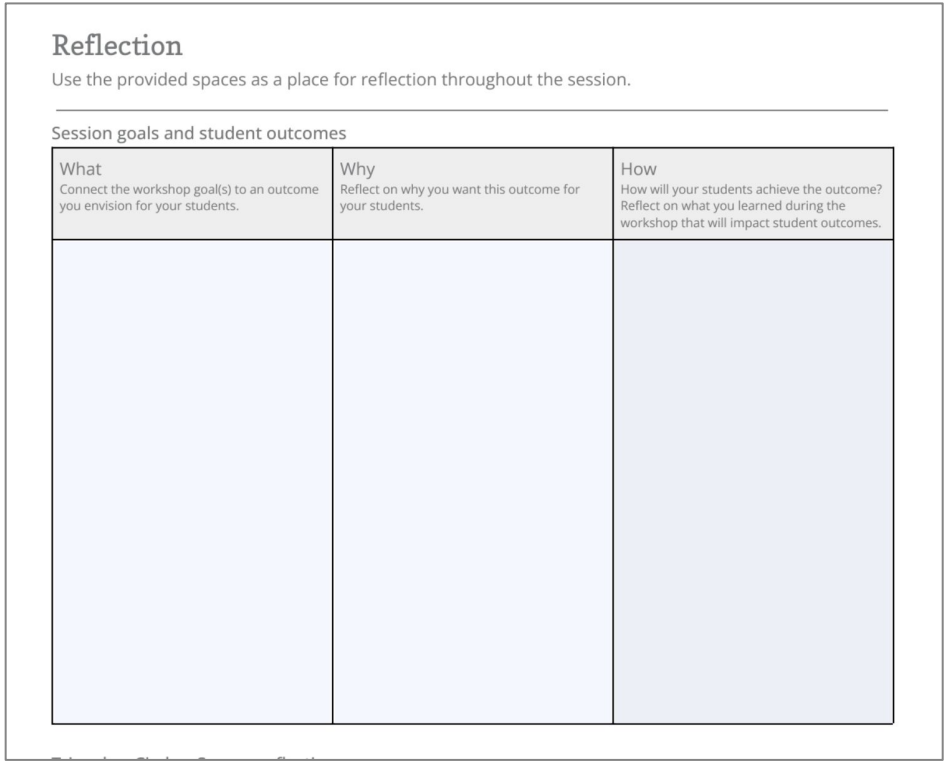
Opening Reflection

Pg. 2

What are your goals
for student outcomes?

Participant Notebook

https://bit.ly/3JliYhU



Reflection

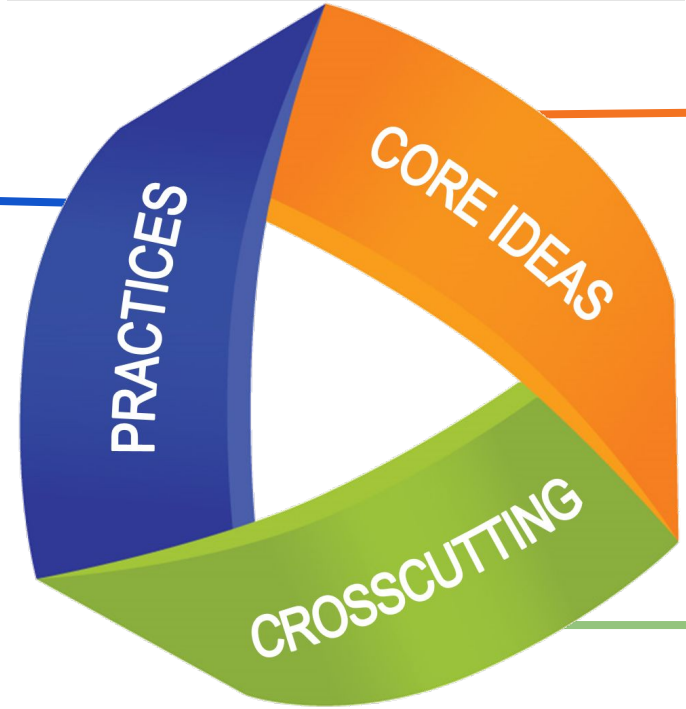
Use the provided spaces as a place for reflection throughout the session.

Session goals and student outcomes

What Connect the workshop goal(s) to an outcome you envision for your students.	Why Reflect on why you want this outcome for your students.	How How will your students achieve the outcome? Reflect on what you learned during the workshop that will impact student outcomes.

Figuring out phenomena

Using 3-D teaching and learning



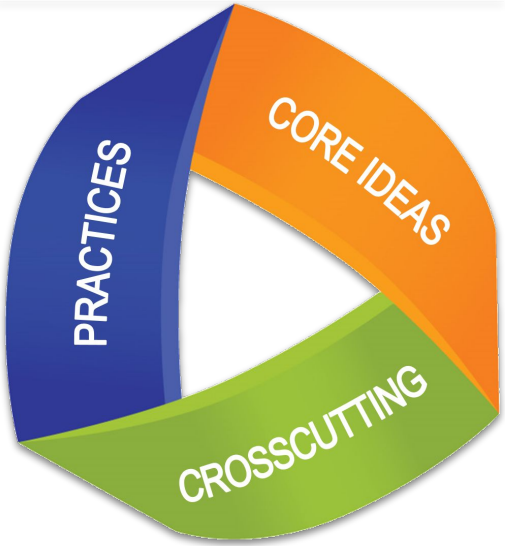
What scientists do
Science and Engineering Practices

What scientists want to know
Disciplinary Core Ideas

How scientists think
Crosscutting Concepts

Next Generation Science Standards

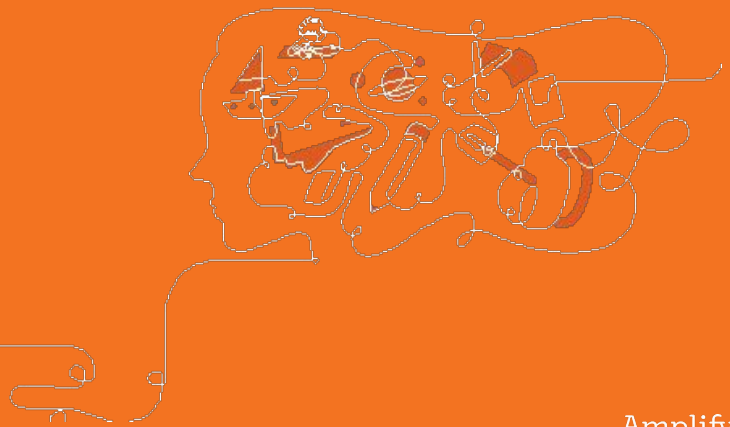
Science and Engineering Practices



1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

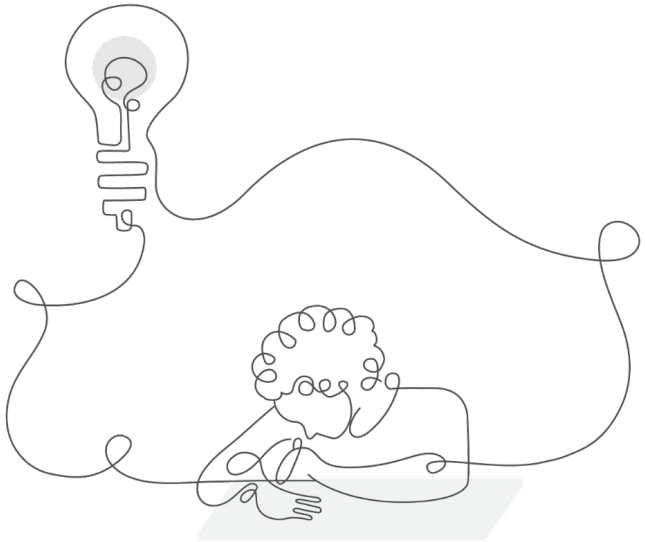
Writing in Amplify Science

Purposeful communicative writing is an integral part of the Amplify Science curriculum



Why do students write in Amplify Science?

- To activate background knowledge
- To reflect on understanding
- To engage in sense-making
- To record data / observations
- To organize ideas
- To communicate ideas
  - To explain
  - To persuade



Instructional approach

Introduce a **phenomenon** and a related problem

Collect **evidence** from multiple sources

Build increasingly complex **explanations**

Apply knowledge to a different context

Phenomena-based Instruction

Inquire like a scientist.

Think like a scientist.

Quantify like a scientist.

Read like a scientist.

Talk like a scientist.

✓ **Write** like a scientist.

Critique like a scientist.

Argue like a scientist.

Figuring out phenomena like a scientist.

Why do students write in Amplify Science?

- To activate background knowledge
- To reflect on understanding
- To engage in sense-making
- To record data / observations
- To organize ideas
- To communicate ideas
    - Explain
    - Persuade

Instructional approach

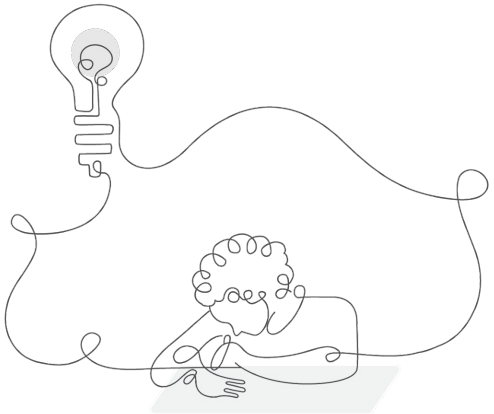
Plan for the day

- Introduction and framing
- **Writing in Amplify Science**
  - **Writing as part of a multimodal experience**
  - Supporting students with writing
  - Writing a culminating explanation or argument
  - Additional supports
- Model Lesson
- Planning
- Closing

Reviewing the unit phenomenon

Amplify Science units are designed around complex phenomena that drives student learning through the unit.

Pay attention to the phenomenon, or observable event, students will figure out in your unit.

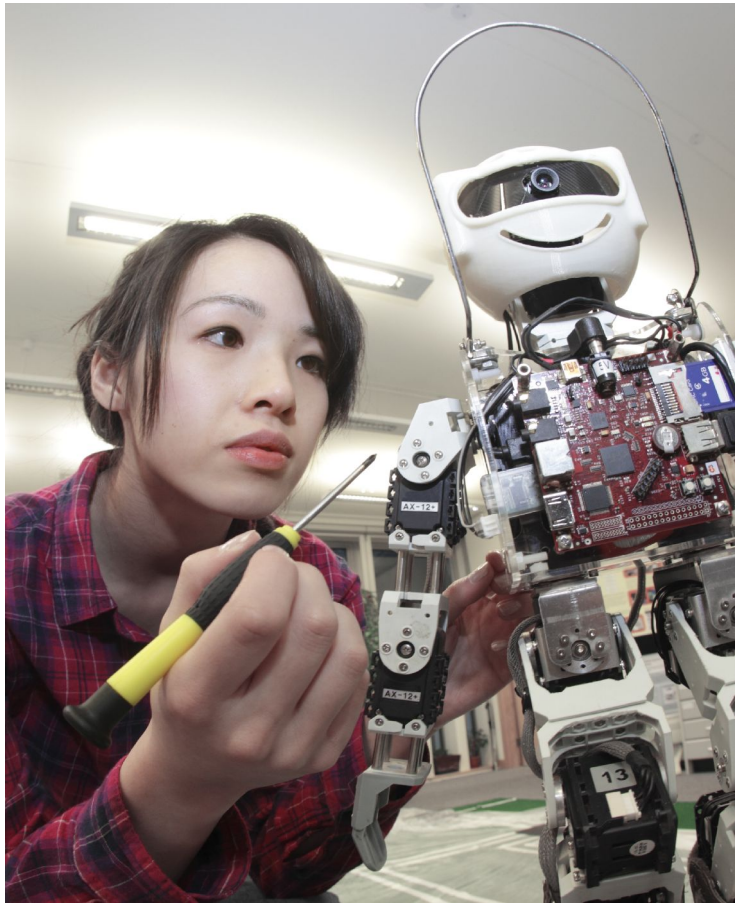


Environments and Survival

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

Role: Biomimicry Engineers

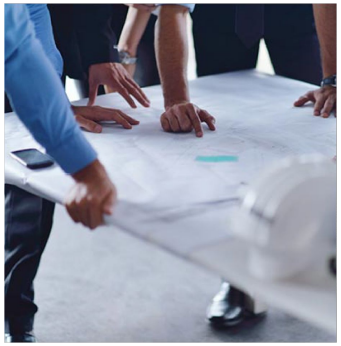
Students figure out how the traits of grove snails affect their survival in different environments.



We’re beginning a new science unit about **living things** and how they stay alive.

We will take on the role of **engineers.**

Engineers



All the people in these photographs are engineers.

What do you **notice?**

Based on these photographs, what do you think **engineers** do?

Vocabulary

engineer

a person who uses science knowledge to design something in order to solve a problem

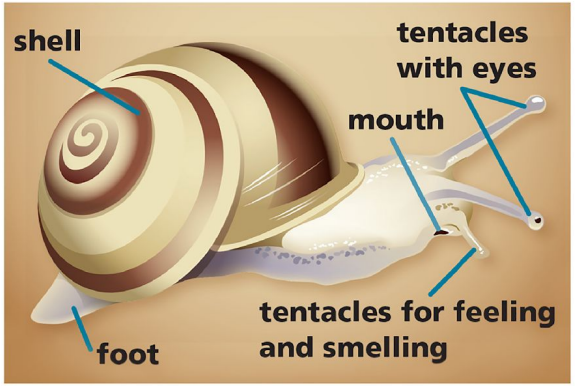
In this unit, we will take on the role of **engineers** working for an engineering firm, or company.

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!

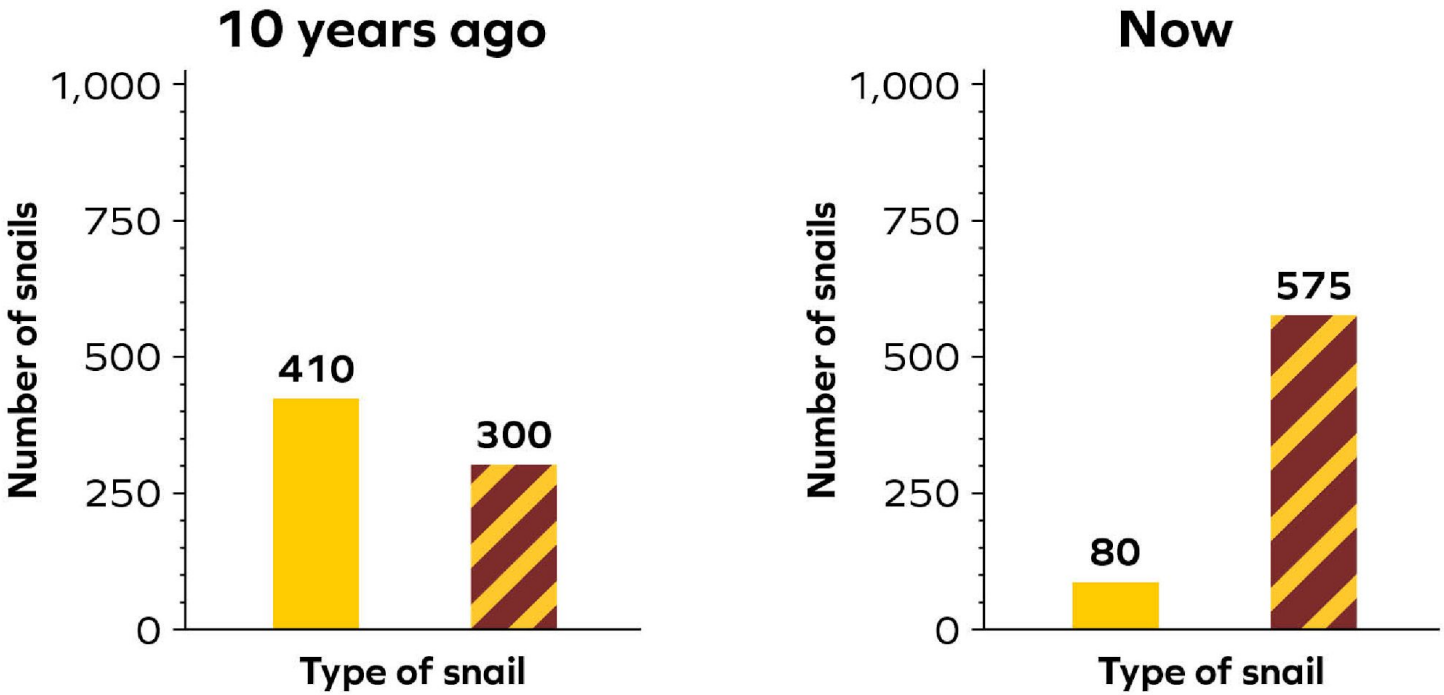
We will be studying a **group of grove snails** living in a specific area.

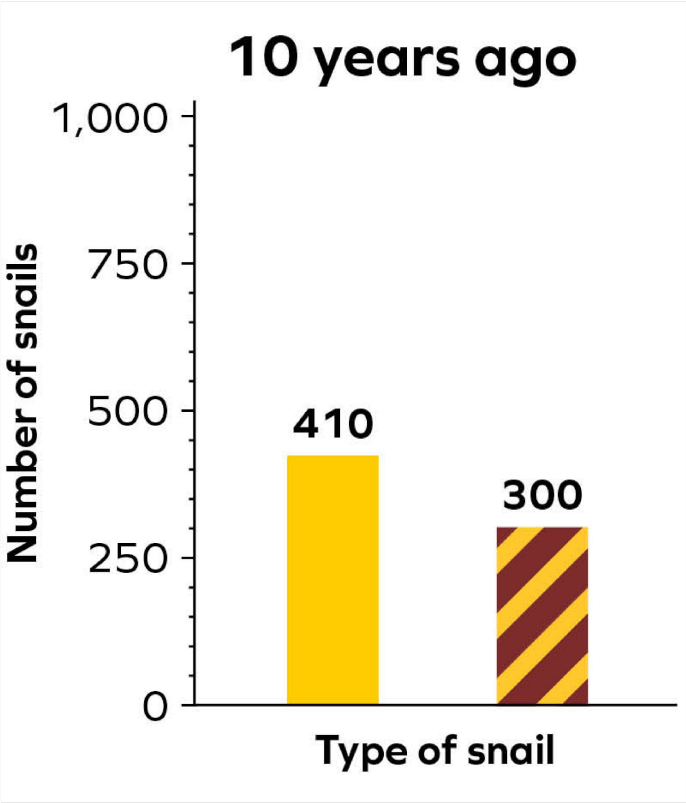
A group of one kind of living thing is called a **population.**

The engineering firm also sent **bar graphs** that show the two types of snails in the **population over time.**

I will show you the bar graphs, and we can discuss what we notice.

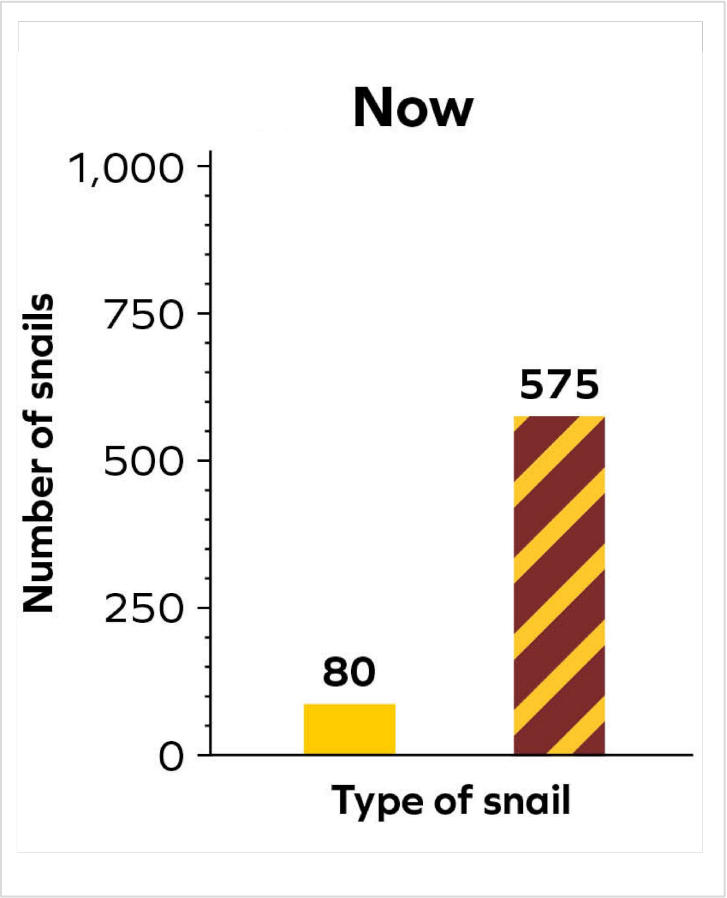
Grove Snail Population Data





Ten years ago, there were 410 grove snails with yellow shells and 300 with banded shells.

If we add them up, the total number of snails in the population was 710.



Now, there are only 80 grove snails with yellow shells and 575 grove snails with banded shells. That adds up to 655 snails in the population now.

To: Biomimicry Engineers
From: Dr. Jasmine Neel, Lead Engineer
Subject: Grove Snail Biomimicry Project, Part 2

Hello biomimicry engineers,

We have been studying a population of grove snails to learn more about them. We've noticed that some of the snails in the population are surviving well, but not all of them. Over the past 10 years, the number of snails with yellow shells in the population has gotten smaller, which means they are not surviving well. Can you help us figure out why?

Thank you!

Environments and Survival

Coherent Storylines

Why are the snails with yellow shells not surviving well?

Why are the snails with banded shells more likely to survive than the snails with yellow shells?

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

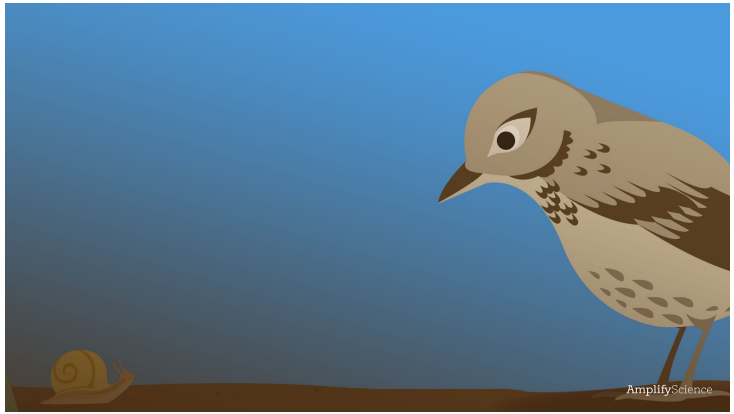
How can engineers sue what they learn from organisms' traits to design solutions?

Sample instructional sequence

Grade 3 Environments and Survival

During the sample sequence, we'll experience some **small writes**.

Small writes are **short writing opportunities**. They're distinct from more formal end-of-chapter explanations or arguments (which we'll talk about later).



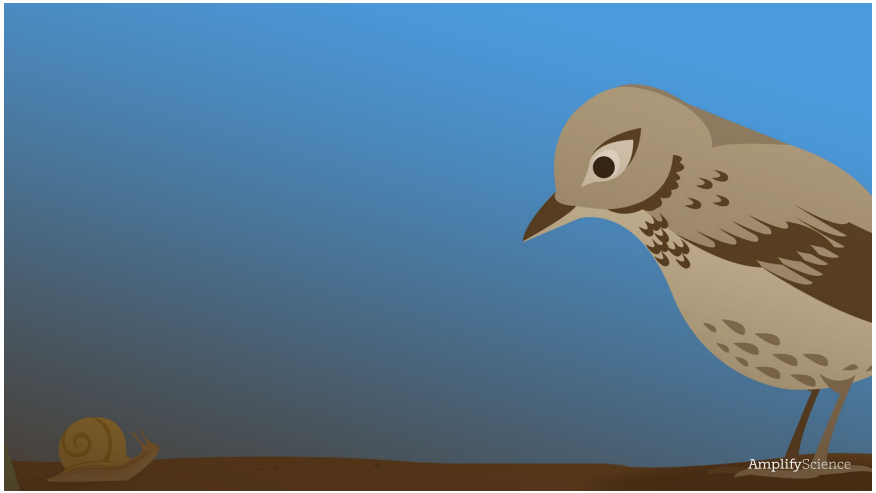
Sample instructional sequence

Grade 3 Environments and Survival

As you experience the small writes in the sequence, consider the **role** of each writing opportunity.

It may help to consider:

- Why are students writing?
- How is it useful to them in figuring out the phenomenon?

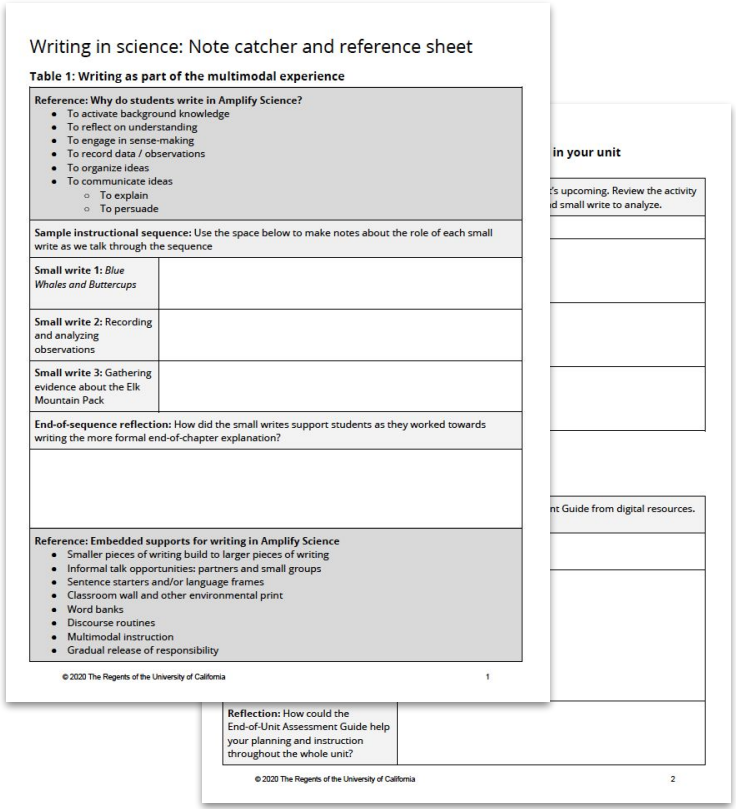


Pgs. 5-6

Sample instructional sequence

Note catcher

Use **Table 1** to keep track of your thinking during the instructional sequence.



Writing in science: Note catcher and reference sheet

Table 1: Writing as part of the multimodal experience

Reference: Why do students write in Amplify Science?
• To activate background knowledge
• To reflect on understanding
• To engage in sense-making
• To record data / observations
• To organize ideas
• To communicate ideas
  ○ To explain
  ○ To persuade	

Sample instructional sequence: Use the space below to make notes about the role of each small write as we talk through the sequence	
Small write 1: *Blue Whales and Buttercups*	
Small write 2: Recording and analyzing observations	
Small write 3: Gathering evidence about the Elk Mountain Pack	
End-of-sequence reflection: How did the small writes support students as they worked towards writing the more formal end-of-chapter explanation?	
Reference: Embedded supports for writing in Amplify Science • Smaller pieces of writing build to larger pieces of writing • Informal talk opportunities: partners and small groups • Sentence starters and/or language frames • Classroom wall and other environmental print • Word banks • Discourse routines • Multimodal instruction • Gradual release of responsibility	

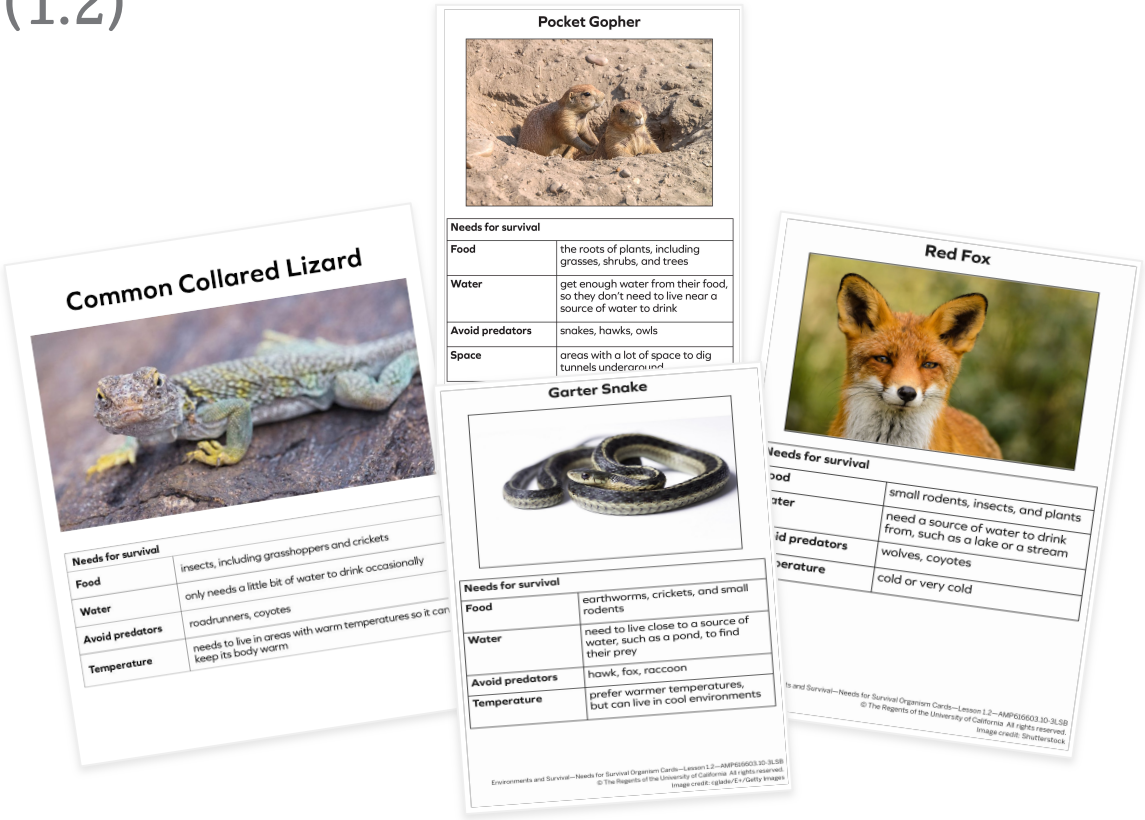
in your unit

's upcoming. Review the activity
d small write to analyze.

nt Guide from digital resources.

Reflection: How could the End-of-Unit Assessment Guide help your planning and instruction throughout the whole unit?	

Small write 1: Investigating and making inferences about survival (1.2)



Common Collared Lizard

Needs for survival	
Food	insects, including grasshoppers and crickets
Water	only needs a little bit of water to drink occasionally
Avoid predators	roadrunners, coyotes
Temperature	needs to live in areas with warm temperatures so it can keep its body warm

Pocket Gopher

Needs for survival	
Food	the roots of plants, including grasses, shrubs, and trees
Water	get enough water from their food, so they don't need to live near a source of water to drink
Avoid predators	snakes, hawks, owls
Space	areas with a lot of space to dig tunnels underground

Garter Snake

Needs for survival	
Food	earthworms, crickets, and small rodents
Water	need to live close to a source of water, such as a pond, to find their prey
Avoid predators	hawk, fox, raccoon
Temperature	prefer warmer temperatures, but can live in cool environments

Environments and Survival—Needs for Survival Organism Cards—Lesson 1.2—AMPG16503.10-3LSB
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Image credit: cglade/E+/Getty Images

Red Fox

Needs for survival	
ood	small rodents, insects, and plants
ater	need a source of water to drink from, such as a lake or a stream
id predators	wolves, coyotes
erature	cold or very cold

ts and Survival—Needs for Survival Organism Cards—Lesson 1.2—AMPG16503.10-3LSB
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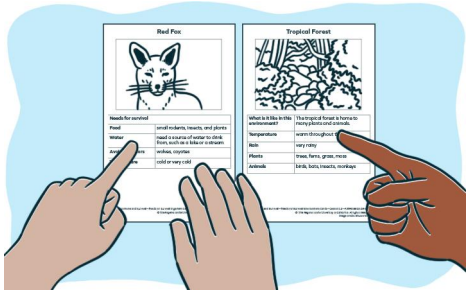
Investigating Needs for Survival

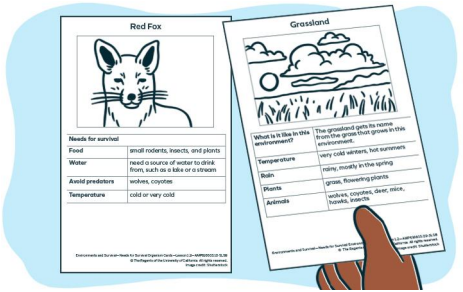


Choose Cards

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?

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.

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.

Record an inference about whether your organism is likely to survive in each environment.

ON-THE-FLY

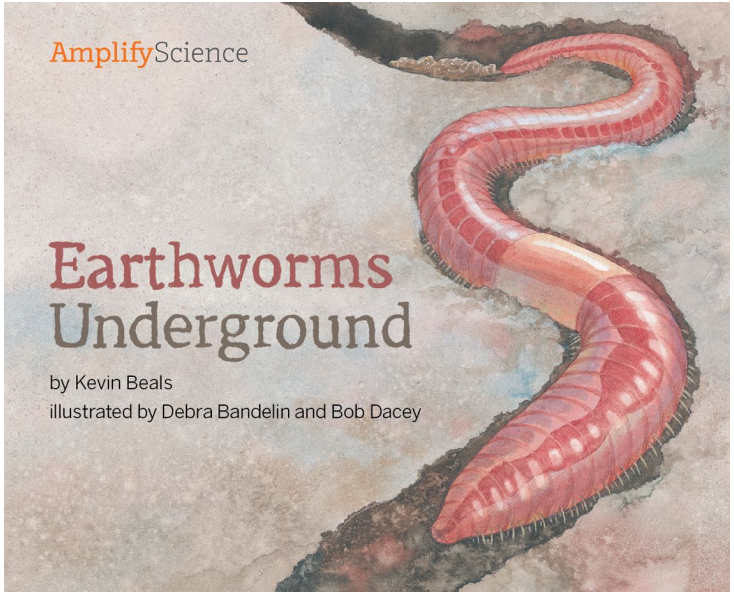
Remember that we are investigating this question:

What makes organisms in a population more likely to survive or less likely to survive?

Small write 2: Making inferences while reading *Earthworms Underground (1.3)*

Questioning guidelines:

- What do I need to know to make an inference?
- What information in the book helps me make an inference?



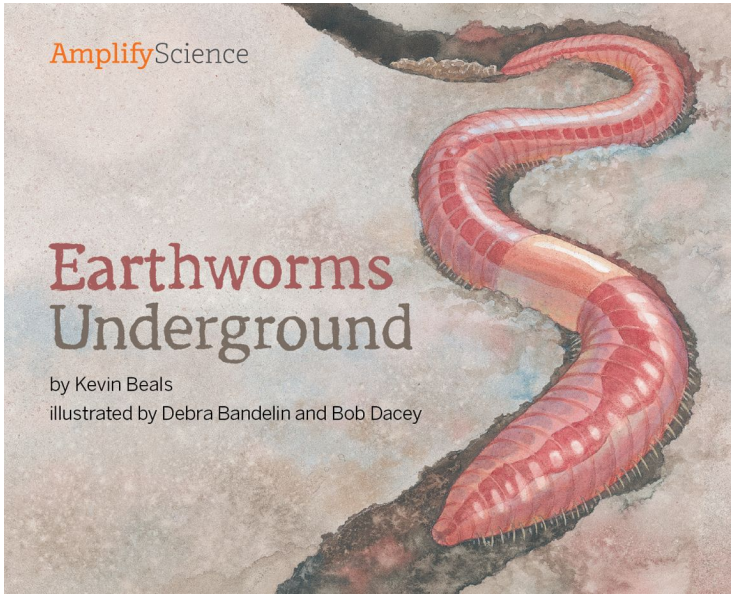
10 MIN

Activity 1

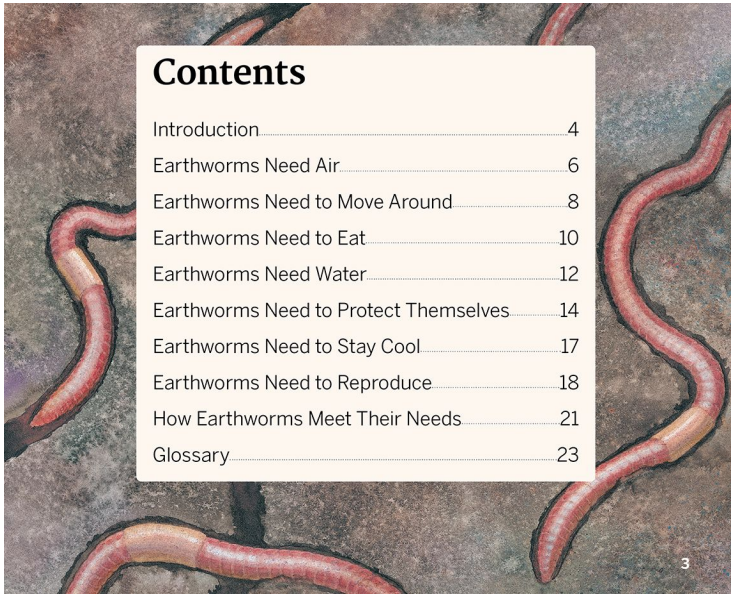
Introducing Earthworms Underground

Remember that we are investigating this question:

What makes organisms in a population more likely to survive or less likely to survive?

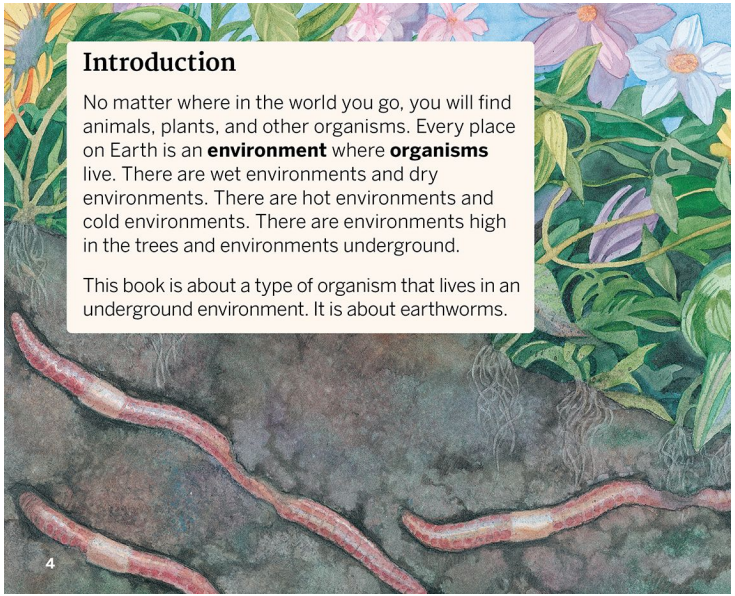


We'll keep thinking about what makes organisms **more likely** or **less likely to survive.** We'll read about how earthworms survive underground.



Turn to page 3, Contents.

In the Contents, we see that **earthworms** have a lot of needs.



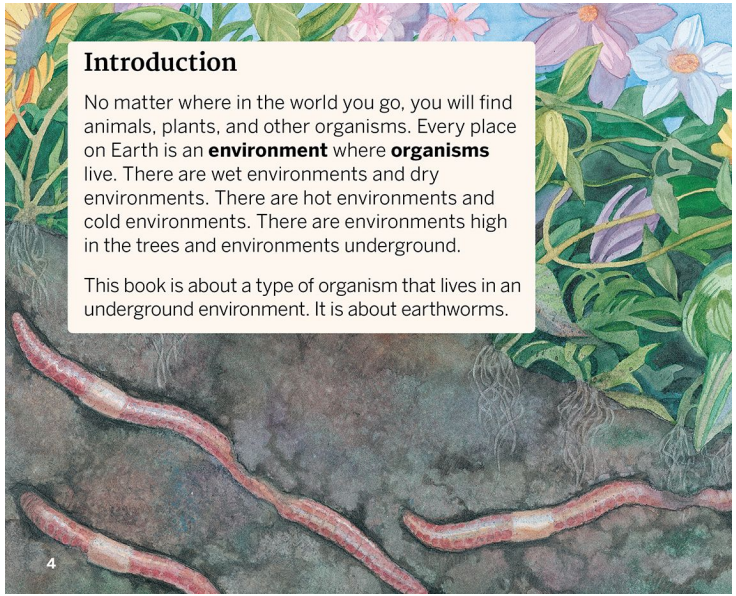
Turn to page 4.

Let's look at this page together. **Follow along** as I read out loud. Then, we'll talk about the word **environment.**

Vocabulary

environment

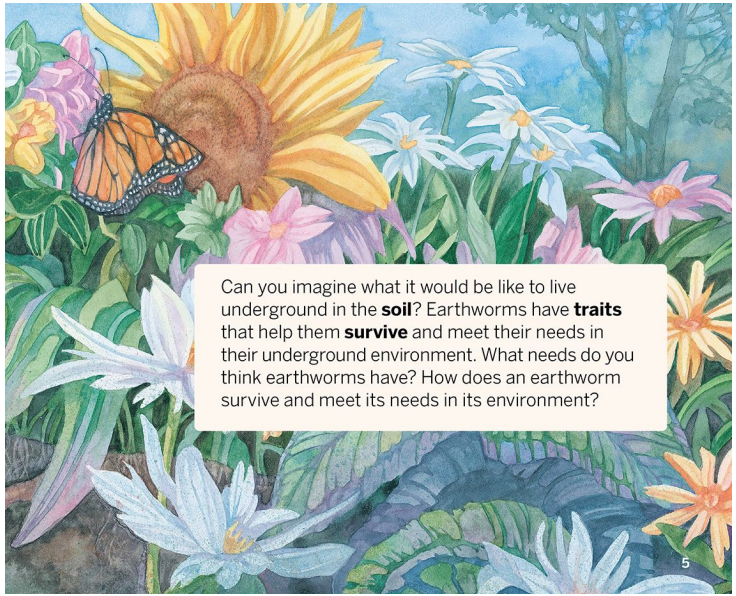
all the living and nonliving things in an area



What are some of the **living and nonliving things** you see in the earthworms' underground environment?

In order to help you understand what you read, you will make some **inferences** as you read.

In reading, an inference is **something you figure out** based on what you read and what you already know.



Turn to page 5.

Follow along as I read this page out loud.

Name: _____ Date: _____

Making Inferences When Reading: *Earthworms Underground*

Directions:
1. Make inferences as you read *Earthworms Underground* to help you understand the book.
2. In the table below, record the page number and what you read.
3. Then, record the inference you made.

Page number	**I read that . . .**	**My inference is . . .**
Page: 7	If an earthworm dries out, it is not likely to survive.	
Page:		
Page:		

Turn to page 8 in your notebooks.

You will record **inferences** as you read.

The first row has already been started.

Name: _____ Date: _____

Making Inferences When Reading: *Earthworms Underground*

Directions:

1. Make inferences as you read *Earthworms Underground* to help you understand the book.
2. In the table below, record the page number and what you read.
3. Then, record the inference you made.

Page number	**I read that . . .**	**My inference is . . .**
Page: 7	If an earthworm dries out, it is not likely to survive.	If an earthworm goes above ground, it will dry out and not be able to survive.
Page:		
Page:		

Based on what we read on page 7, we can make an inference.

Record this inference in your notebooks.

25 MIN

Activity 2

Partner Reading

Name: _____ Date: _____

Making Inferences When Reading: *Earthworms Underground*

Directions:

1. Make inferences as you read *Earthworms Underground* to help you understand the book.
2. In the table below, record the page number and what you read.
3. Then, record the inference you made.

Page number	I read that . . .	My inference is . . .
Page: 7	If an earthworm dries out, it is not likely to survive.	If an earthworm goes above ground, it will dry out and not be able to survive.
Page:		
Page:		

Read the rest of the book.

Record two more inferences.

ON-THE-FLY

Discussing Inferences

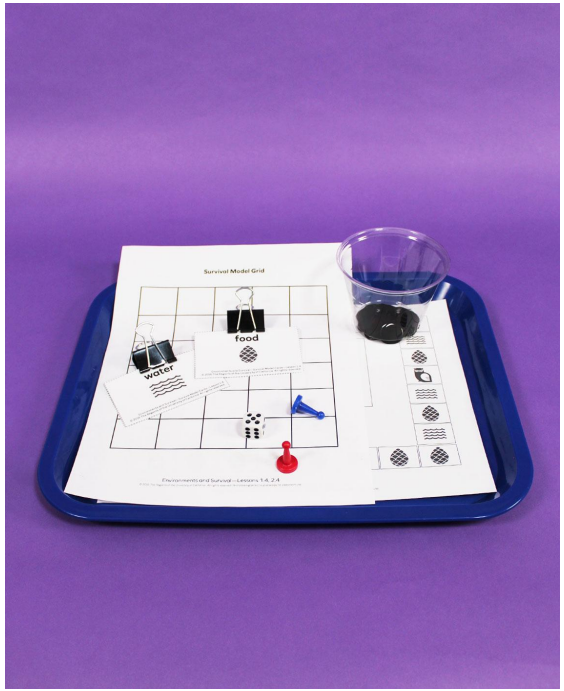
I read that _____ .

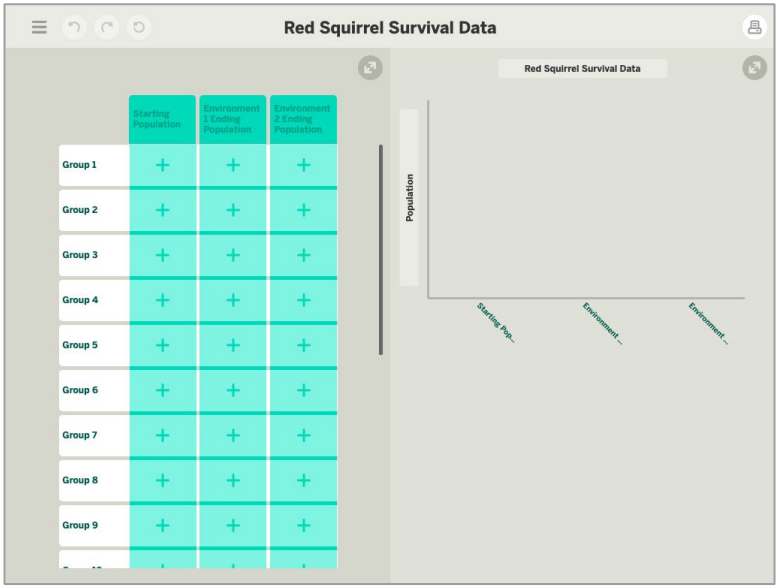
I already know that _____ .

So, my inference is _____ .

Use these sentence starters and what you wrote in your notebook to **discuss one inference** you made.

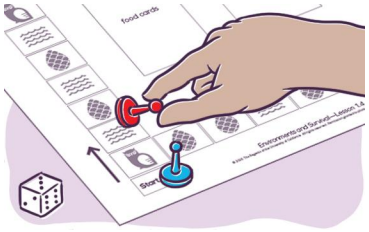
Small Write 3: Collecting and analyzing data about the red squirrels (1.4)





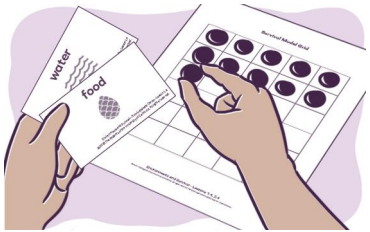
We are going to use a model—the **Survival Model**—in which we will **investigate a population** of red squirrels in their environment.

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

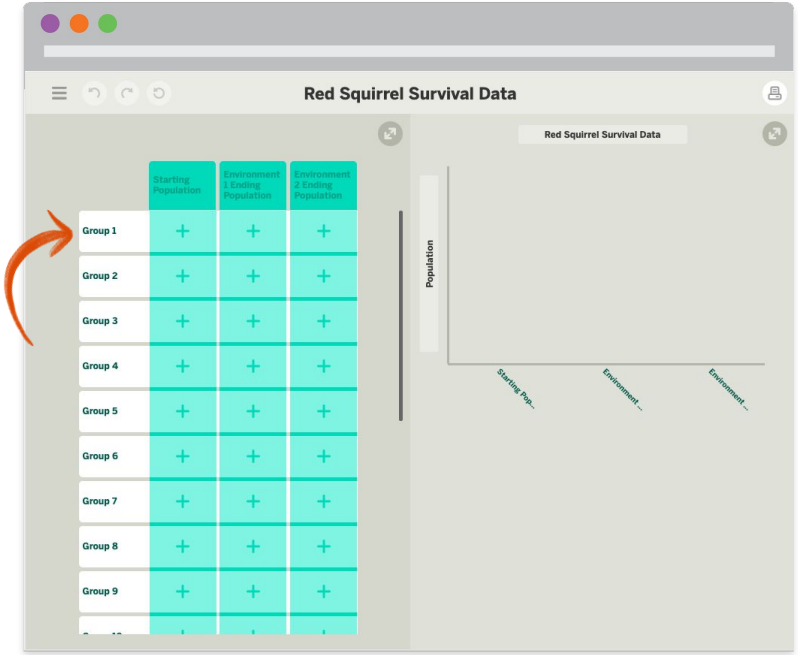
If you have **1 food card** and **1 water card, trade them in for 1 squirrel token.** Put the token on the grid.

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.**



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.

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.

Name: _____ Date: _____

Think-Write-Pair-Share: What Makes Red Squirrels More Likely or Less Likely to Survive?

Directions:
1. Think about the question below.
2. Record your ideas.
3. Share your ideas with your partner.

Why were the red squirrels more likely to survive in Environment 1 and less likely to survive in Environment 2?

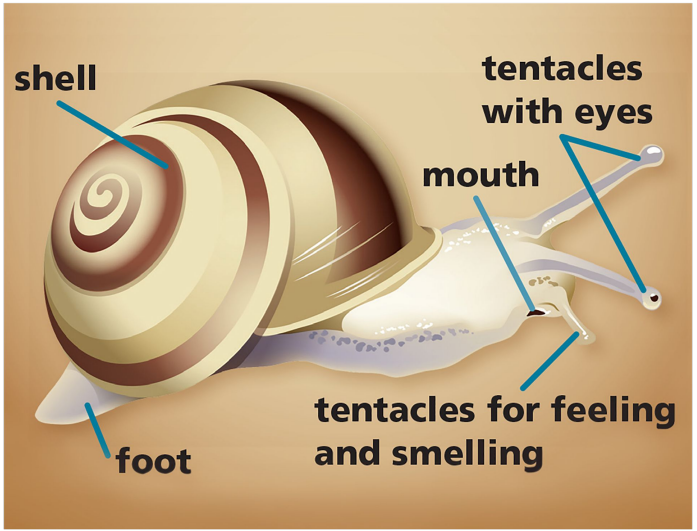
Turn to page 12 in your notebooks.

Why were the red squirrels **more likely** to survive in Environment 1 and **less likely** to survive in Environment 2?

Small Write 4: Analyzing collected data and making inferences about the grove snails. (1.5)

Chapter 1 Question

Why are the snails with yellow shells not surviving well?



Name: _____ Date: _____

Making Inferences About Grove Snails

Directions:

1. Read the Food Data card. In the second column of the table, circle your inference about food.
2. Read the Water Data card. Circle your inference about water.
3. Read and discuss the Predator Data card and the Shell Data card. Circle your inference about avoiding predators.
4. Answer the question at the bottom of the page.

Needs of grove snail	**Inference: How easy do you think it is for snails with yellow shells to meet this need in their environment?**		
Food	easy	hard	not sure
Water	easy	hard	not sure
Avoid predators	easy	hard	not sure

What ideas do you have about why the snails with yellow shells aren't surviving well in their environment?

_____

_____

_____

Turn to page 14 in your notebooks.

Let's **review** the directions.

Right now you will only use the **Food Data card** and the **Water Data card.**

Name: _____ Date: _____

Making Inferences About Grove Snails

Directions:

1. Read the Food Data card. In the second column of the table, circle your inference about food.
2. Read the Water Data card. Circle your inference about water.
3. Read and discuss the Predator Data card and the Shell Data card. Circle your inference about avoiding predators.
4. Answer the question at the bottom of the page.

Needs of grove snail	**Inference: How easy do you think it is for snails with yellow shells to meet this need in their environment?**		
Food	easy	hard	not sure
Water	easy	hard	not sure
Avoid predators	easy	hard	not sure

What ideas do you have about why the snails with yellow shells aren't surviving well in their environment?

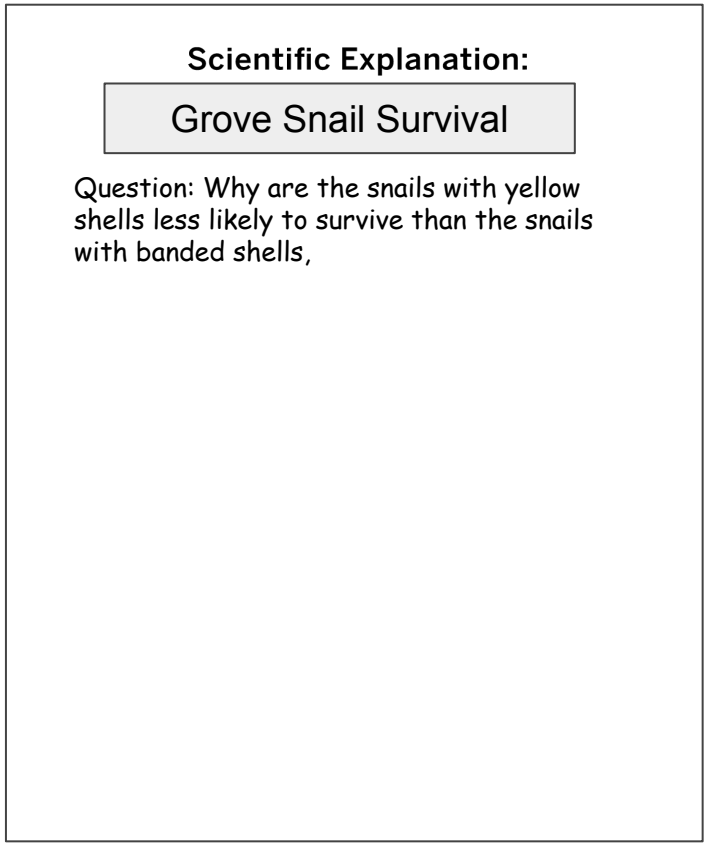
_____

_____

_____

Use the Food Data card and Water Data card to **make inferences** about if the snails can meet these needs easily.

Shared writing: End of chapter explanation



We want to **explain why the snails** with yellow shells **are less likely to survive** than the snails with banded shells. So, let’s begin our response to the engineering firm like this.

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.

Sample Shared Write: End of chapter explanation

Question: Why are the snails with yellow shells less likely to survive than the snails with banded shells?

The snails with yellow shells are less likely to survive because it's hard for them to avoid their predator, the song thrush birds. One need that organisms have is to avoid being eaten by predators. When it's hard for organisms to meet their needs in their environment, they are not likely to survive. The snails with yellow shells aren't meeting their needs as well as the snails with banded shells, so they are less likely to survive.

Reflecting on the small writes

How did the short writing opportunities in this chapter support students as they worked towards writing the more formal end-of-chapter explanation?

Small Writes
Investigating and making inferences about organisms needs for survival
Making inferences while reading *Earthworms Underground*
Collecting data about the red squirrels
Collecting and analyzing data, and making inferences about the grove snails

What were the different types of writing in Chapter 1?

Small Writes
Investigating and making inferences about organisms needs for survival
Making inferences while reading *Earthworms Underground*
Collecting data about the red squirrels
Collecting and analyzing data, and making inferences about the grove snails

Writing across a chapter: *Environment and Survival* Chapter 1

Lesson 1.1	Lesson 1.2	Lesson 1.3	Color Codes
Pre-unit assessment: Explain why the snails with yellow shells aren't surviving well	Investigating the needs of organisms in order to survive	Recording inferences when reading Earthworms Underground	Record data / observations
	Recording inferences of whether an organism will survive in certain environments	Reading reflection	Activate prior knowledge and reflect on understanding
	Daily written reflection	Concept Mapping (Word Relationships)	Organize and keep track of ideas
		Daily written reflection	Explain or persuade
			Sense making

Writing across a chapter: *Environment and Survival* Chapter 1

Lesson 1.4	Lesson 1.5	
Collecting and Analyzing Data Red Squirrel Model	Making Inferences about Grove Snails	
Think-Write-Pair-Share:What makes Red Squirrels more or less likely to survive?	Write a scientific explanation about what is happening with the grove snails.	
Daily written reflection	Check for Understanding	
	Daily written reflection	

Record data / observations

Reflect on understanding

Organize or keep track of ideas

Explain or Persuade

Sense making

Writing across a chapter: *Environment and Survival* Chapter 1

Lesson 1.1	Lesson 1.2	Lesson 1.3
Pre-unit assessment: Explain	Investigating the needs of organisms in order to survive	Recording inferences when reading *Earthworms Underground*
	Recording inferences of whether an organism will survive in certain environments	Reading Reflection
	Daily written reflection	Concept Mapping (Word Relationships)
		Daily Reflection

- Record data / observations
- Activate prior knowledge and reflect on understanding
- Organize or keep track of ideas
- Explain or Persuade
- Sense making

Writing across a chapter: *Environment and Survival* Chapter 1

Lesson 1.4	Lesson 1.5	
Collecting and Analyzing Data Red Squirrel Model	Making Inferences about Grove Snails	
Think-Write-Pair-Share:What makes Red Squirrels more or less likely to survive?	Write a scientific explanation about what is happening with the grove snails.	
Daily written reflection	Check for Understanding	
	Daily written reflection	

Record data / observations

Activate prior knowledge and reflect on understanding

Organize or keep track of ideas

Explain or Persuade

Sense making

Instructional supports

Sense-making strategies: How are students reading?

- Setting a purpose
- Visualizing
- Making predictions
- Asking questions
- Making inferences
- Synthesizing

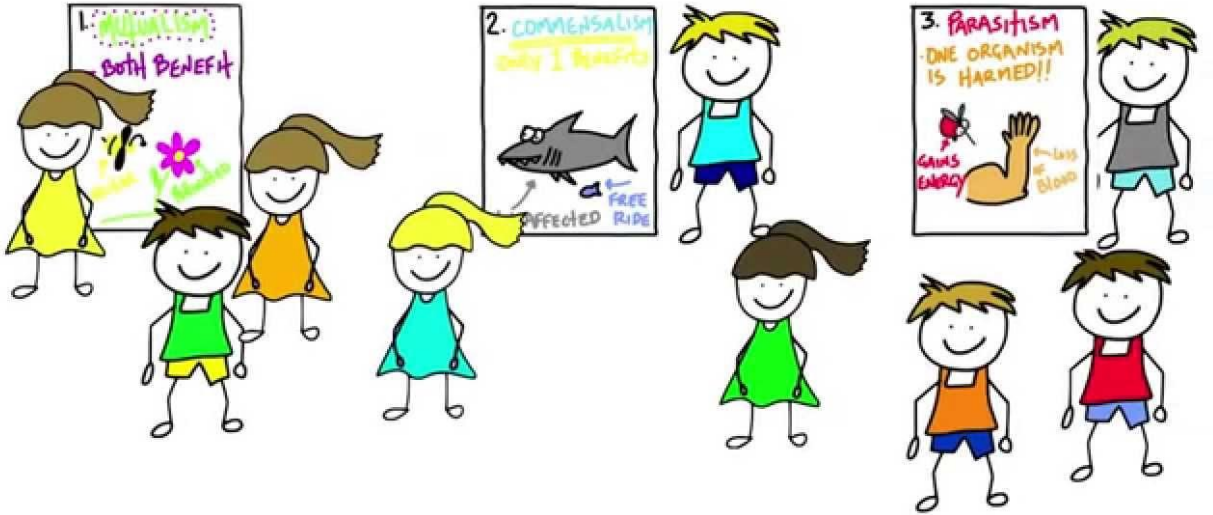
Group Work

Small write sequences in Chapters 2,3, and 4

- With your group or partner pick a chapter in this unit.
- Chart the small writes within the lessons of the chapter
- Identify what purpose each small write has

Small Writes in a chapter

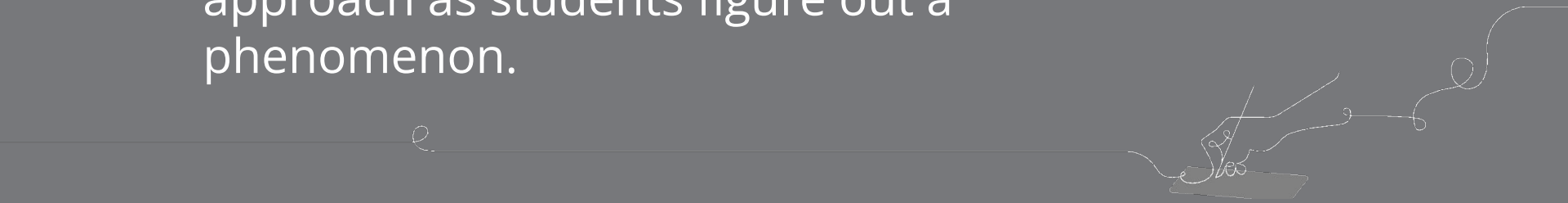
Gallery Walk



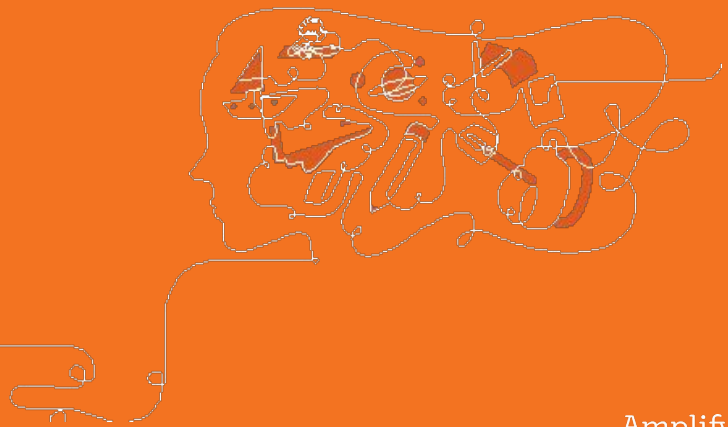
Key takeaway

As they gather evidence, students engage in writing and discussion. They make sense of evidence they gather through small writes.

Writing is a key part of the multimodal approach as students figure out a phenomenon.



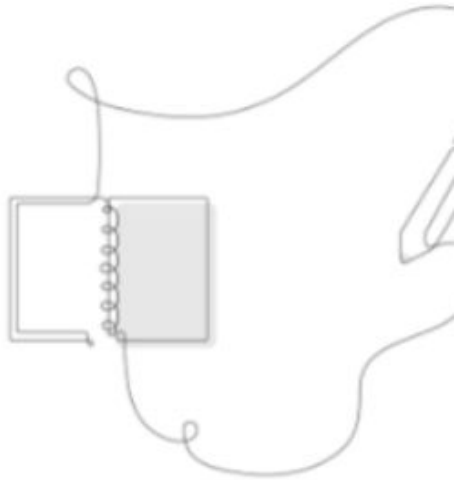
Break



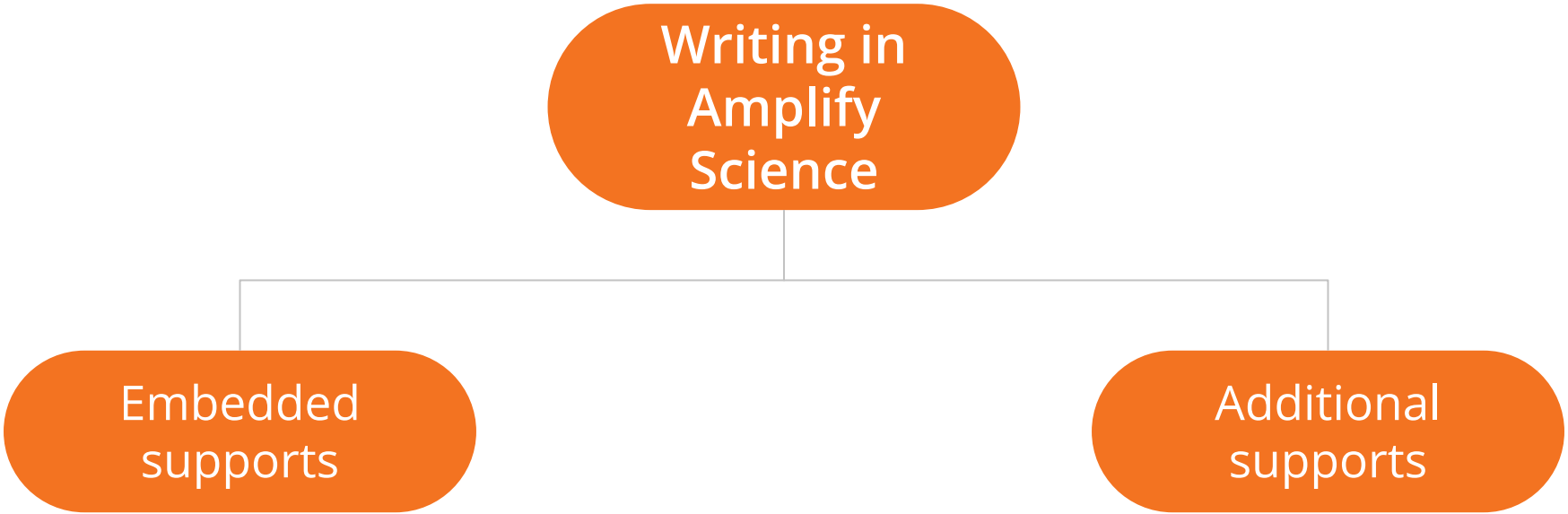
Plan for the day

- Introduction and framing
- **Writing in Amplify Science**
  - Writing as part of a multimodal experience
  - Supporting students with writing
  - Writing a culminating explanation or argument
  - Additional supports
- Model Lesson
- Planning
- Closing

What specific strategies are embedded into the curriculum to support students to write like scientists?



Supporting students with writing

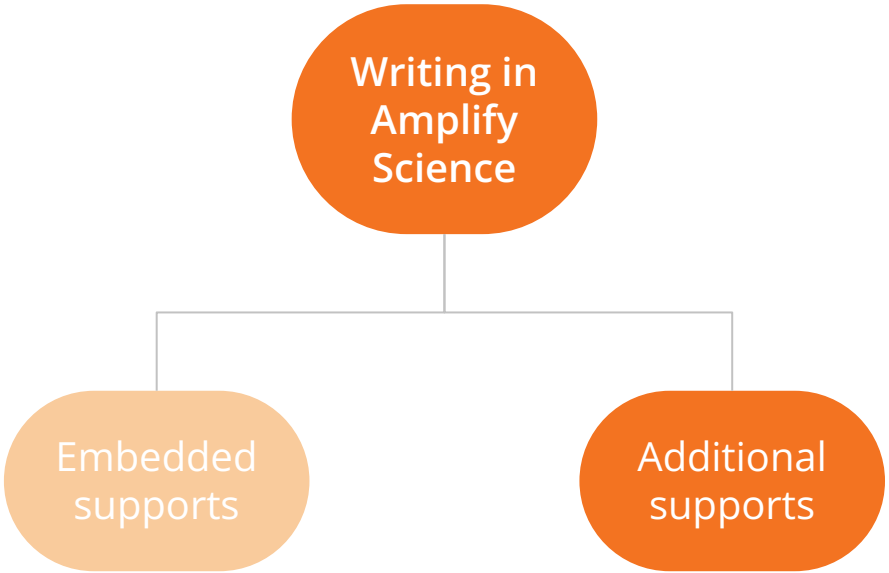


Embedded writing supports

- Smaller pieces of writing build to larger pieces of writing
- Informal talk opportunities: partners and small groups
- Sentence starters and/or language frames
- Classroom wall and other environmental print
- Word banks
- Discourse routines
- Multimodal instruction
- Gradual release of responsibility

Supporting students with writing

What additional strategies could you use to support students with writing in Amplify Science?



Additional supports

- Teacher support notes
- Possible Responses
- Differentiation notes
- Embedded Formative Assessments

Plan for the day

- Introduction and framing
- **Writing in Amplify Science**
  - Writing as part of a multimodal experience
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  - **Writing a culminating explanation or argument**
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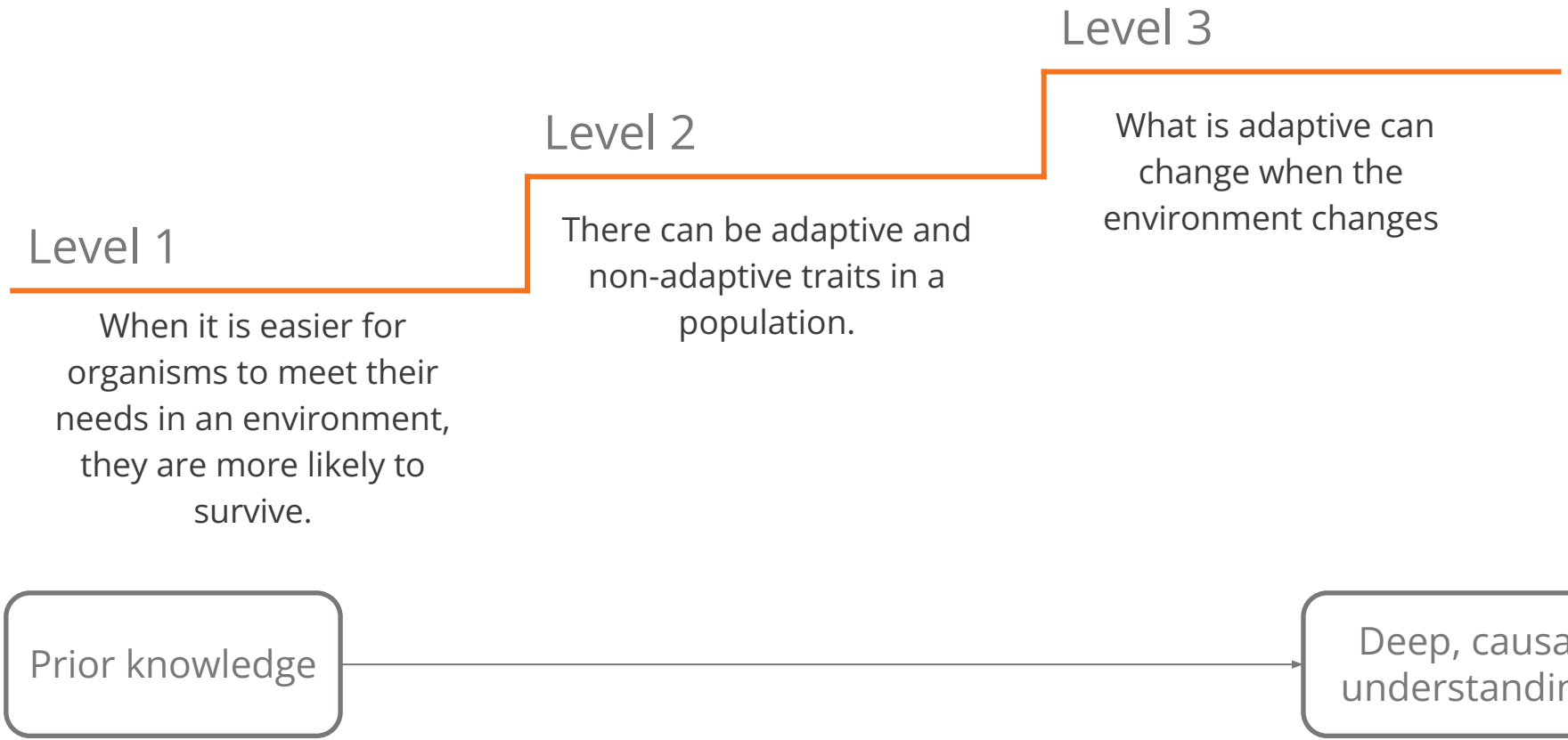
Environments and Survival Progress Build



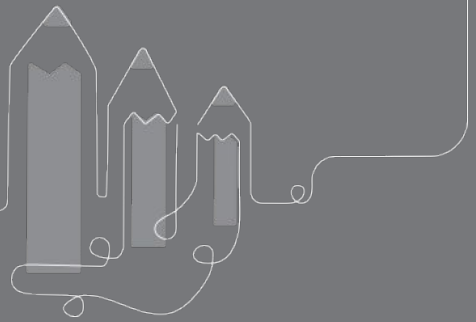
Writing Build in *Environments and Survival*

Ch. 4	Review guidelines	Writing a design argument using their knowledge and experiences from the previous chapters
Ch. 3	Review guidelines	Independent scientific explanation which includes more elements
Ch. 2	Review guidelines; introduce a fifth guideline	Independent writing of scientific explanation about one particular kind of snail than another
Ch. 1	Introduce guidelines	Shared writing of scientific explanation

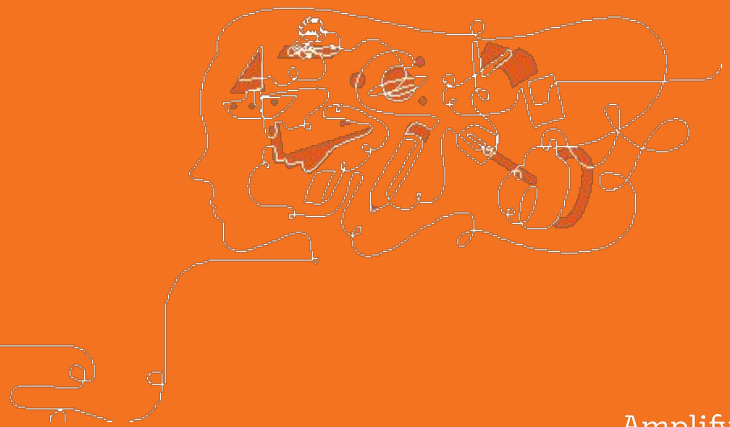
Key takeaway

Units leverage a **gradual release of responsibility model** for the formal writes.

As students work through a unit, their writing becomes more independent and sophisticated while the science content builds in complexity.



Scientific Explanations and Scientific Arguments



Share your ideas!

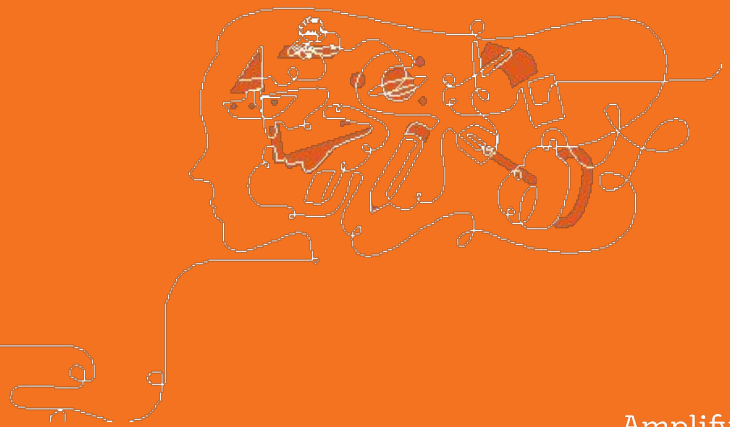
- **Question:** What do you think the difference is between a scientific explanation and a scientific argument?

An explanation describes to an audience **the invisible mechanisms or causes** that led to a phenomena.	An argument is to convince an audience that a **claim** (which is usually about how or why something happens) **is the best claim** given what we know.

Explanations and Arguments

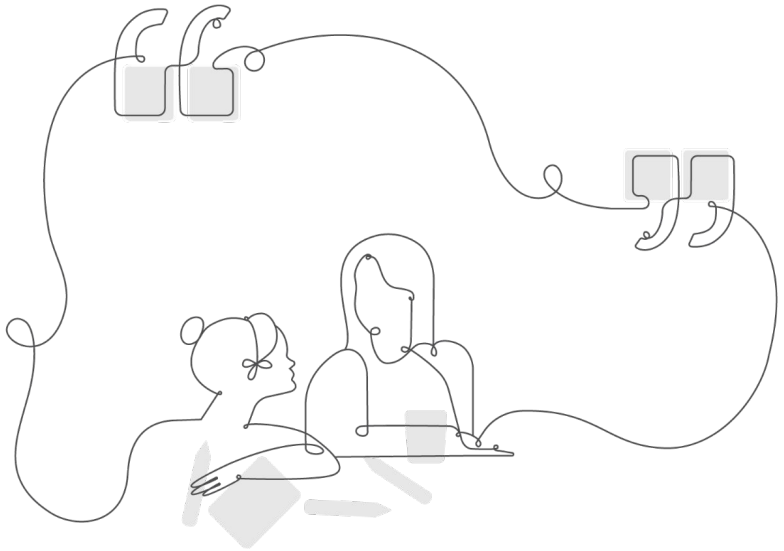
Explanation Guidelines:	**Argument Guidelines:**
1. It answers a question about how or why something happens. 2. It is based on the ideas you have learned from investigations and text. 3. It describes things that are not easy to observe. 4. It uses scientific language. 5. It is written for an audience.	1. It answers a question with a claim about the natural world. 2. It includes evidence to support the claim. Evidence can be data and ideas. 3. It connects the evidence to the claim by linking different pieces of evidence together to show how they support the claim. 4. It uses scientific language. 5. It is written for an audience.

End-of-Unit Writing: Explanations or Arguments



Quick poll

Have you explored the End-of-Unit Assessment Guide for any Amplify Science units?



Rubrics for Assessing Students' Final Written Arguments

Three-dimensional

- Rubric 1: Assessing Students' Understanding of Science Concepts (DCIs) — summative
- Rubric 2: Assessing Students' Understanding of the Crosscutting Concept of Cause and Effect — formative (K-1) summative (2-5)
- Rubric 3: Assessing Students' Performance of the Practice of Constructing Scientific Arguments — formative

Work time: End of unit Assessment Guide

Become familiar with your EOU Assessment Guide

- What is the prompt for students? (check in the Assessment Guide and in the lesson activity itself)
- What does each rubric assess?

Reflection prompt:

- How could the EOU Assessment Guide help your planning and instruction throughout the unit?

Key takeaway

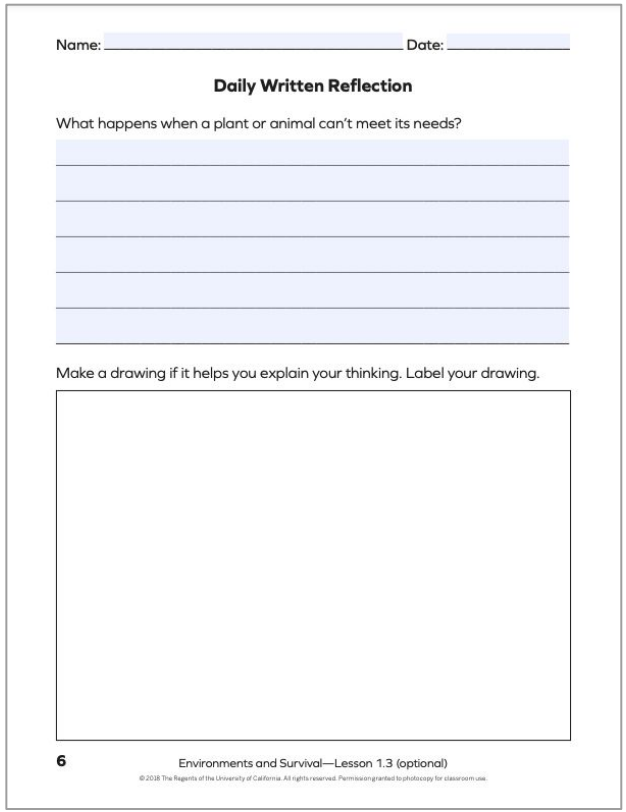
Different writing activities play different roles within the curriculum.

Providing support for writing will look different depending on the activity.

Plan for the day

- Introduction and framing
- Writing in Amplify Science
  - Writing as part of a multimodal experience
  - Supporting students with writing
  - Writing a culminating explanation or argument
  - Additional supports
- Model Lesson
- Planning
- Closing

Supplemental Investigation Notebook Pages



Name: _____ Date: _____

Daily Written Reflection

What happens when a plant or animal can't meet its needs?

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

6

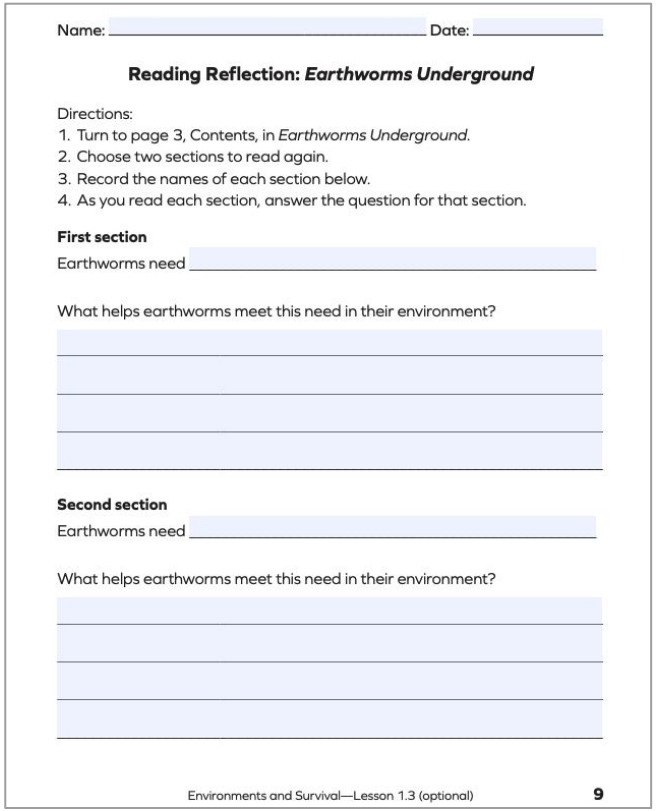
Environments and Survival—Lesson 1.3 (optional)

Daily Written Reflections

Example questions:

- What happens when a plant or animal can't meet its needs?
- Why might an organism be less likely to survive in an environment?

Supplemental Investigation Notebook Pages



Name: _____ Date: _____

Reading Reflection: *Earthworms Underground*

Directions:
1. Turn to page 3, Contents, in *Earthworms Underground*.
2. Choose two sections to read again.
3. Record the names of each section below.
4. As you read each section, answer the question for that section.

First section

Earthworms need _____

What helps earthworms meet this need in their environment?

_____

_____

_____

_____

Second section

Earthworms need _____

What helps earthworms meet this need in their environment?

_____

_____

_____

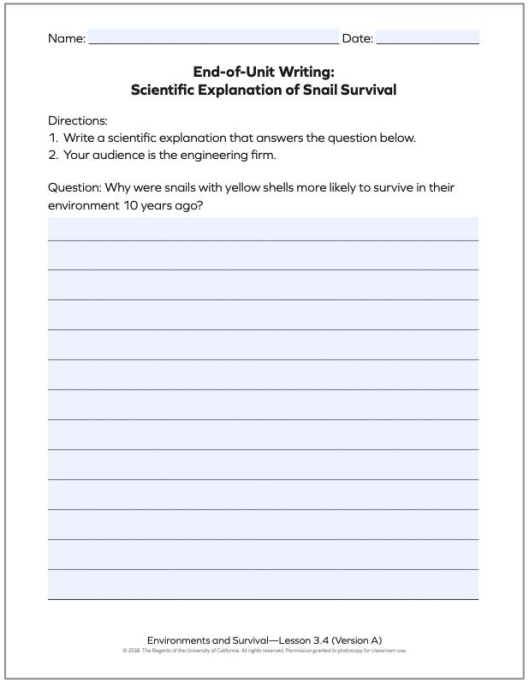
_____

Environments and Survival—Lesson 1.3 (optional) 9

Reading Reflections

- Earthworms need _____.
- What helps the earthworm meets this need in their environment?

Optional scaffolding writing copymasters



Name: _____ Date: _____

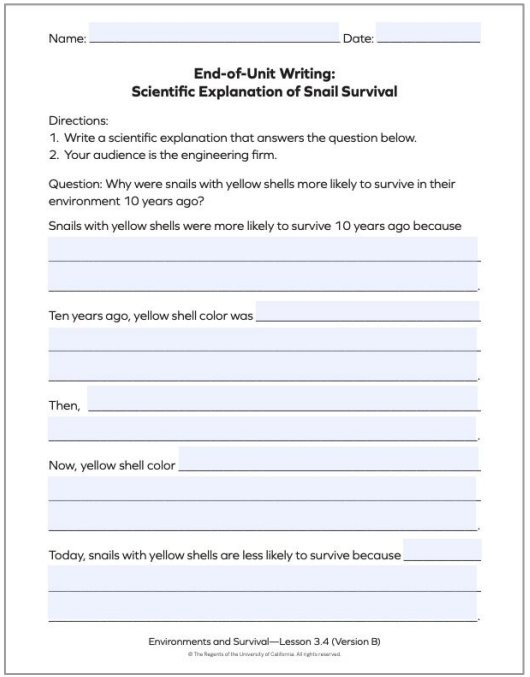
End-of-Unit Writing:
Scientific Explanation of Snail Survival

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 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?

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 _____.

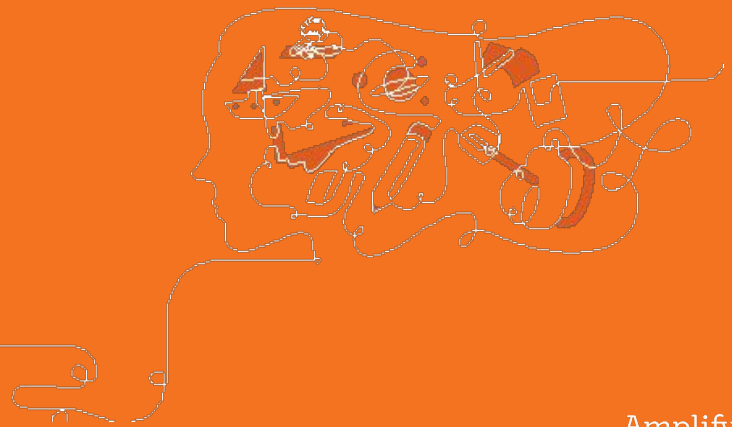
Environments and Survival—Lesson 3.4 (Version B)

Version B

Key takeaway

In addition to the embedded supports for student writing, there are resources throughout the curriculum you can use to provide additional support.

Lunch Break



Grade 3, Unit 3: Part 1 & 2 Resources

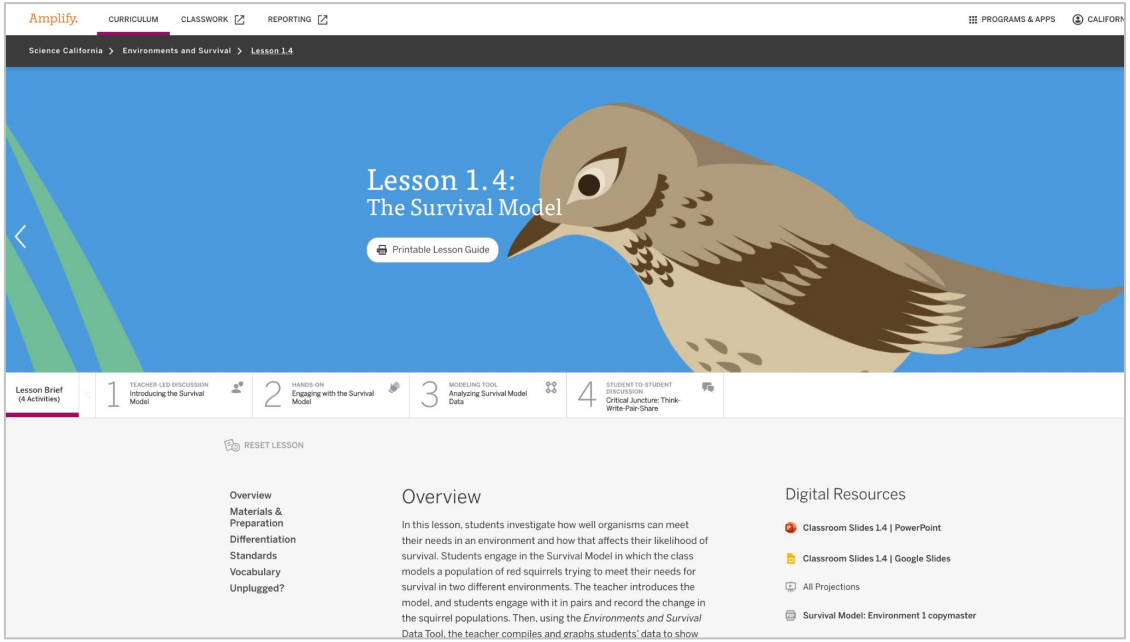
https://bit.ly/3WAYJzO

Plan for the day

- Introduction and framing
- Writing in Amplify Science
  - Writing as part of a multimodal experience
  - Supporting students with writing
  - Writing a culminating explanation or argument
  - Additional supports
- Model Lesson
- Planning
- Closing

Unpacking the lesson

First, let's look at what we need to do before engaging in the lesson.

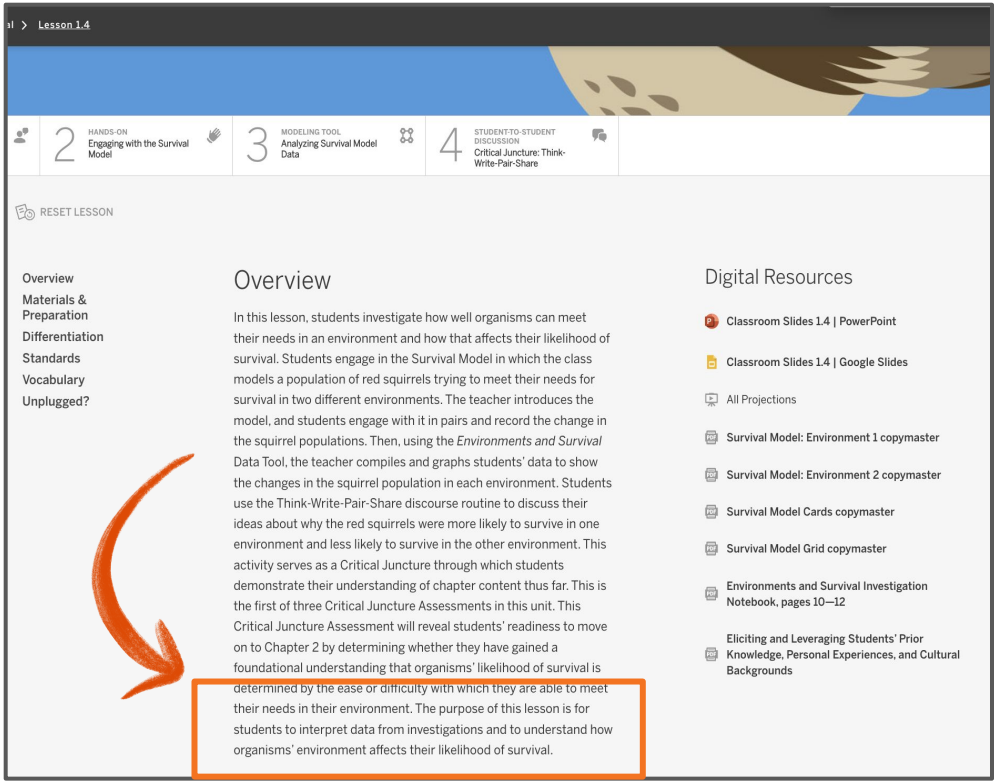


Focusing on lesson's purpose

Teacher tip: Use the Lesson Overview to get a big picture of the lesson and its learning sequence.

Teacher tip: The purpose statement highlights the main reason for the lesson.

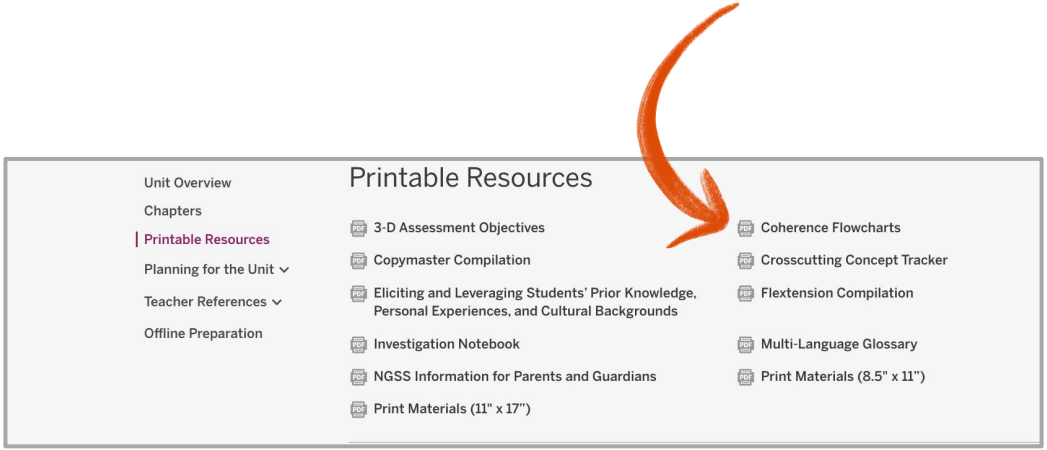
Reflection: How might the lesson purpose statement help you when you're planning?



Printable Resources

Coherence Flowcharts

- Navigate to Printable Resources on the Unit Landing Page
  - Open the Coherence Flowchart



Environments and Survival: Snails, Robots, and Biomimicry

Unit Design Problem

Problem students work to solve

We want to use what we learn about grove snails to design effective solutions to problems.
How can learning about how grove snails survive help engineers design effective solutions to problems?

Chapter-level Anchor Phenomenon
Chapter 1 Question

The number of snails with yellow shells now is smaller than it was 10 years ago.
Why are snails with yellow shells not surviving well?

Investigation Question

What makes organisms in a population more likely to survive or less likely to survive? (1.2—1.4)
(Note: See Lesson Overviews for lesson-level Investigative Phenomena)

Evidence sources and reflection opportunities

- Investigate organisms' survival needs (1.2)
- Make inferences about organisms' likelihood to survive in different environments (1.2)
- Read *Earthworms Underground* (1.3)
- Discuss how traits can help organisms survive (1.3)
- Use Concept Mapping routine to discuss relationships among concepts (1.3)
- Use the Survival Mode to investigate how environment affects an organism's likelihood of survival (1.4)
- Use the Data Tool to graph population change in the Survival Model, then analyze the data (1.4)
- Think-Pair-Share about the Survival Model (1.4)

Key concepts

- When it's easy for organisms to meet their needs in their environment, they are likely to survive. (1.4)
- When it's hard for organisms to meet their needs in their environment, they are not likely to survive. (1.4)

Application of key concepts to the problem

- Use data about grove snails' environment to make inferences about their likelihood of survival (1.5)
- Shared write an explanation to answer the Chapter 1 Question (1.5)

Explanation that students can make to answer the Chapter 1 Question

In a specific snail population, the snails with yellow shells are less likely to survive because it is harder for them to avoid song thrush birds in their environment. Organisms are more likely to survive if they can meet their needs in their environment, and avoiding predators is one of those needs. The snails with yellow shells are less able to avoid being eaten by the birds, so they are less likely to survive.

Amplify.

Environments and Survival: Snails, Robots, and Biomimicry

Unit Design Problem

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- Make inferences about organisms' likelihood to survive in different environments (1.2)
- Read *Earthworms Underground* (1.3)
- Discuss how traits can help organisms survive (1.3)
- Use Concept Mapping routine to discuss relationships among concepts (1.3)
- Use the Survival Mode to investigate how environment affects an organism's likelihood of survival (1.4)
- Use the Data Tool to graph population change in the Survival Model, then analyze the data (1.4)
- Think-Pair-Share about the Survival Model (1.4)

Amplify.

Environments and Survival: Snails, Robots, and Biomimicry

Unit Design Problem

Problem students work to solve

We want to use what we learn about grove snails to design effective solutions to problems.
How can learning about how grove snails survive help engineers design effective solutions to problems?

Chapter-level Anchor Phenomenon
Chapter 1 Question

The number of snails with yellow shells now is smaller than it was 10 years ago.
Why are snails with yellow shells not surviving well?

Investigation Question

What makes organisms in a population more likely to survive or less likely to survive? (1.2—1.4)
(Note: See Lesson Overviews for lesson-level Investigative Phenomena)

Evidence sources and reflection opportunities

- Investigate organisms' survival needs (1.2)
- Make inferences about organisms' likelihood to survive in different environments (1.2)
- Read *Earthworms Underground* (1.3)
- Discuss how traits can help organisms survive (1.3)
- Use Concept Mapping routine to discuss relationships among concepts (1.3)
- Use the Survival Mode to investigate how environment affects an organism's likelihood of survival (1.4)
- Use the Data Tool to graph population change in the Survival Model, then analyze the data (1.4)
- Think-Pair-Share about the Survival Model (1.4)

- When it's easy for organisms to meet their needs in their environment, they are likely to survive. (1.4)
- When it's hard for organisms to meet their needs in their environment, they are not likely to survive. (1.4)

Explanation that students can make to answer the Chapter 1 Question

In a specific snail population, the snails with yellow shells are less likely to survive because it is harder for them to avoid song thrush birds in their environment. Organisms are more likely to survive if they can meet their needs in their environment, and avoiding predators is one of those needs. The snails with yellow shells are less able to avoid being eaten by the birds, so they are less likely to survive.

Amplify.

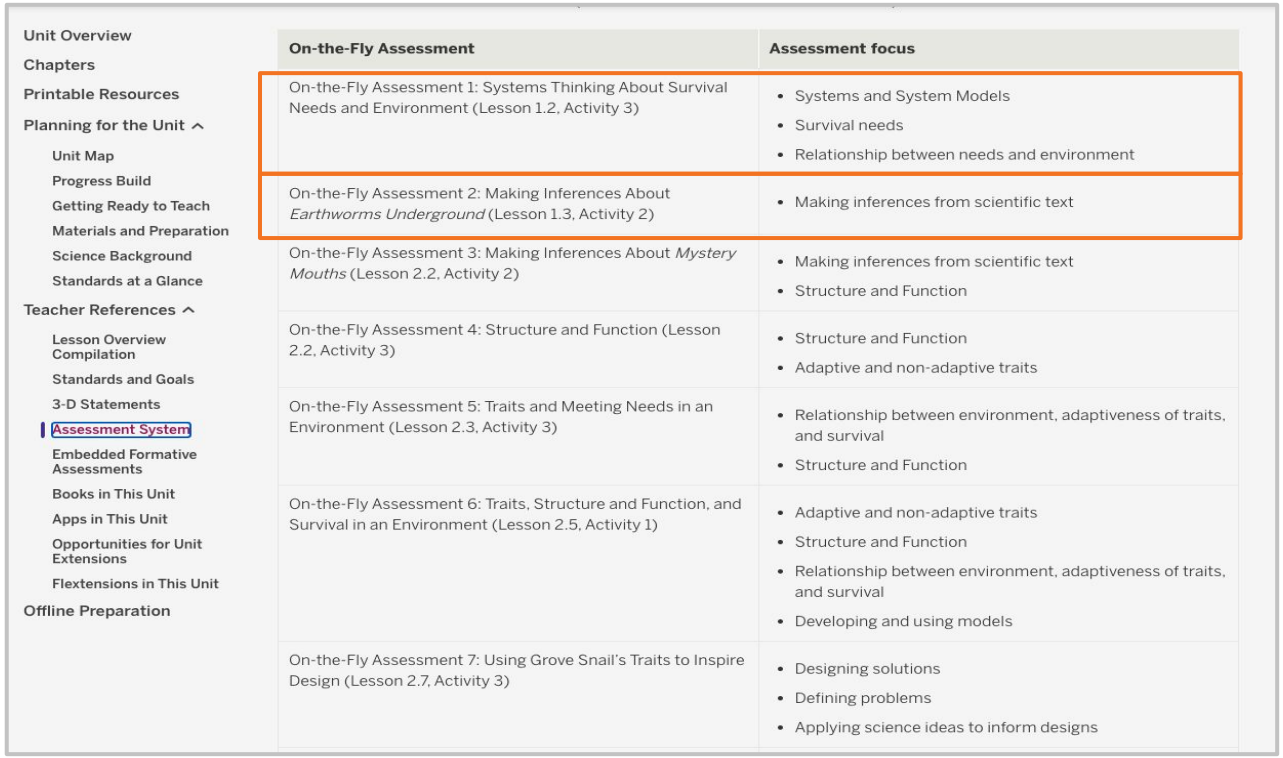
Formative Assessments: Monitoring Students Progress

Preparing Students For Lesson 1.4

On-the-Fly Assessments

Lesson 1.2, Activity 3
- Systems and System Models
- Survival needs
- Makin inferences from scientific text

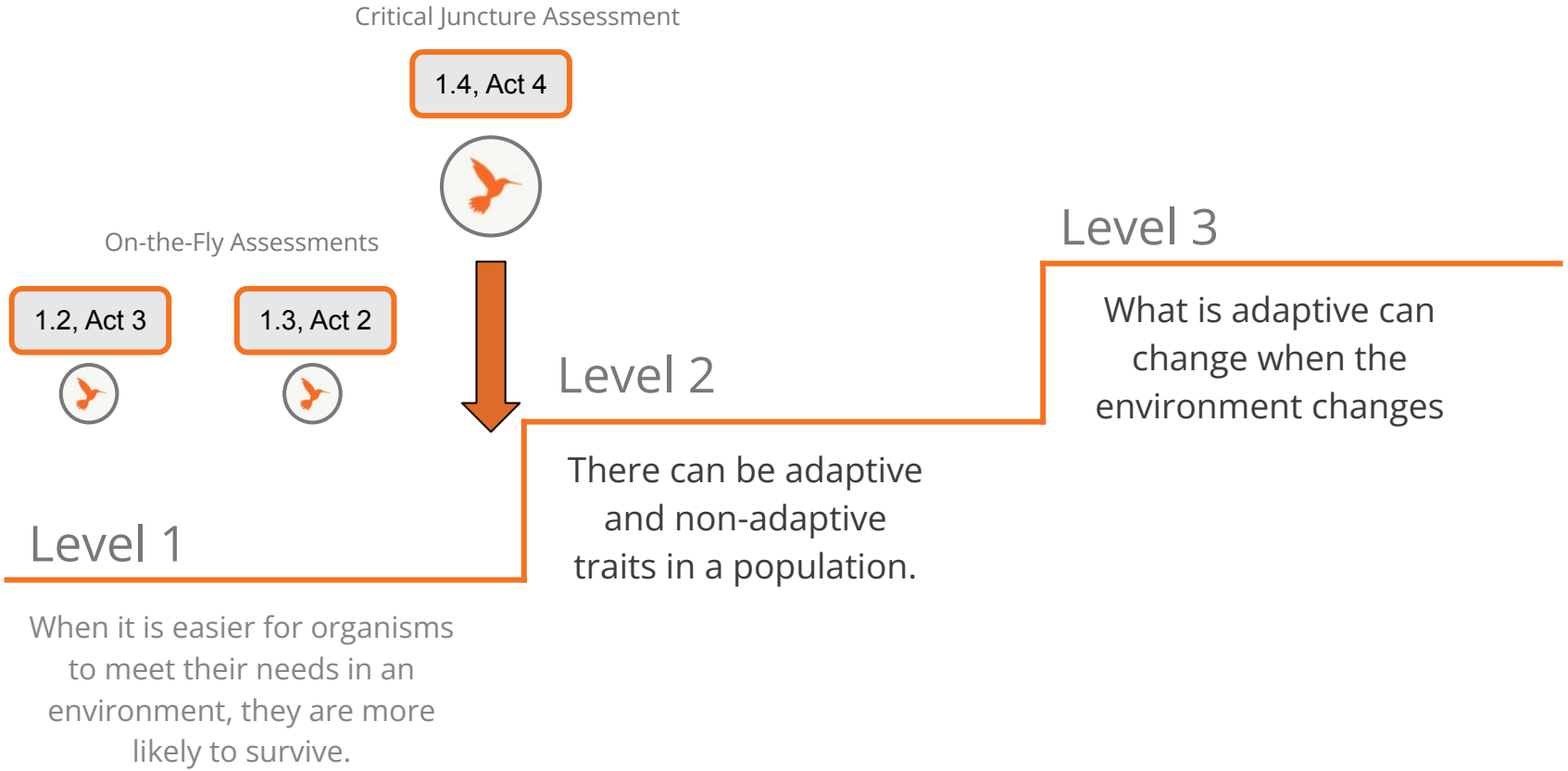
Lesson 1.3, Activity 2
- Making Inferences



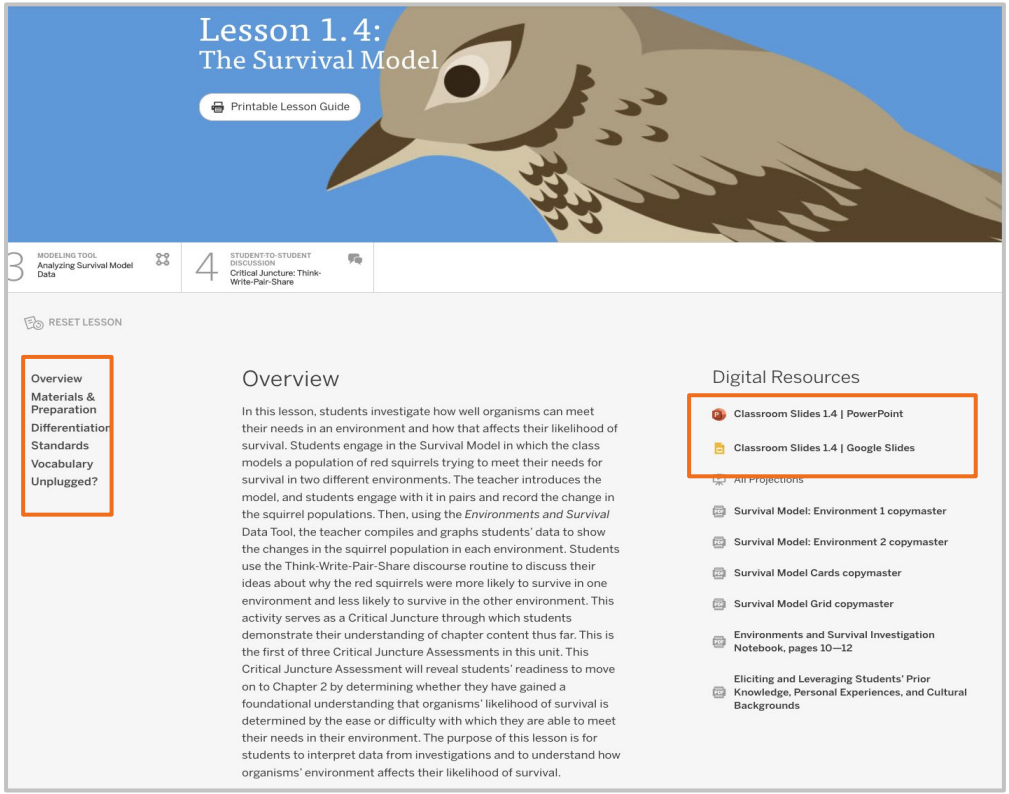
On-the-Fly Assessment	Assessment focus
On-the-Fly Assessment 1: Systems Thinking About Survival Needs and Environment (Lesson 1.2, Activity 3)	• Systems and System Models • Survival needs • Relationship between needs and environment
On-the-Fly Assessment 2: Making Inferences About *Earthworms Underground* (Lesson 1.3, Activity 2)	• Making inferences from scientific text
On-the-Fly Assessment 3: Making Inferences About *Mystery Mouths* (Lesson 2.2, Activity 2)	• Making inferences from scientific text • Structure and Function
On-the-Fly Assessment 4: Structure and Function (Lesson 2.2, Activity 3)	• Structure and Function • Adaptive and non-adaptive traits
On-the-Fly Assessment 5: Traits and Meeting Needs in an Environment (Lesson 2.3, Activity 3)	• Relationship between environment, adaptiveness of traits, and survival • Structure and Function
On-the-Fly Assessment 6: Traits, Structure and Function, and Survival in an Environment (Lesson 2.5, Activity 1)	• Adaptive and non-adaptive traits • Structure and Function • Relationship between environment, adaptiveness of traits, and survival • Developing and using models
On-the-Fly Assessment 7: Using Grove Snail's Traits to Inspire Design (Lesson 2.7, Activity 3)	• Designing solutions • Defining problems • Applying science ideas to inform designs

Amplify.

Monitoring Students Progress: On-the-Fly and Critical Juncture



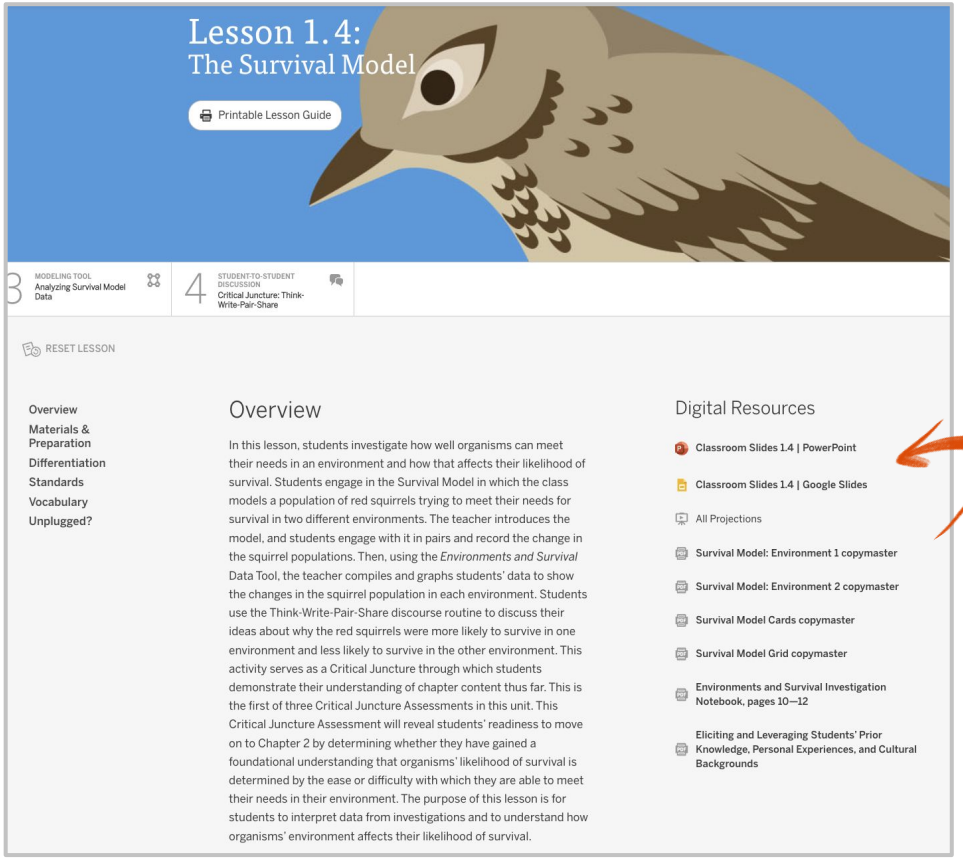
Planning Lesson 1.4



Planning Lesson 1.4

Lesson Brief

Step 1: Download the **Classroom Slides** and review them.



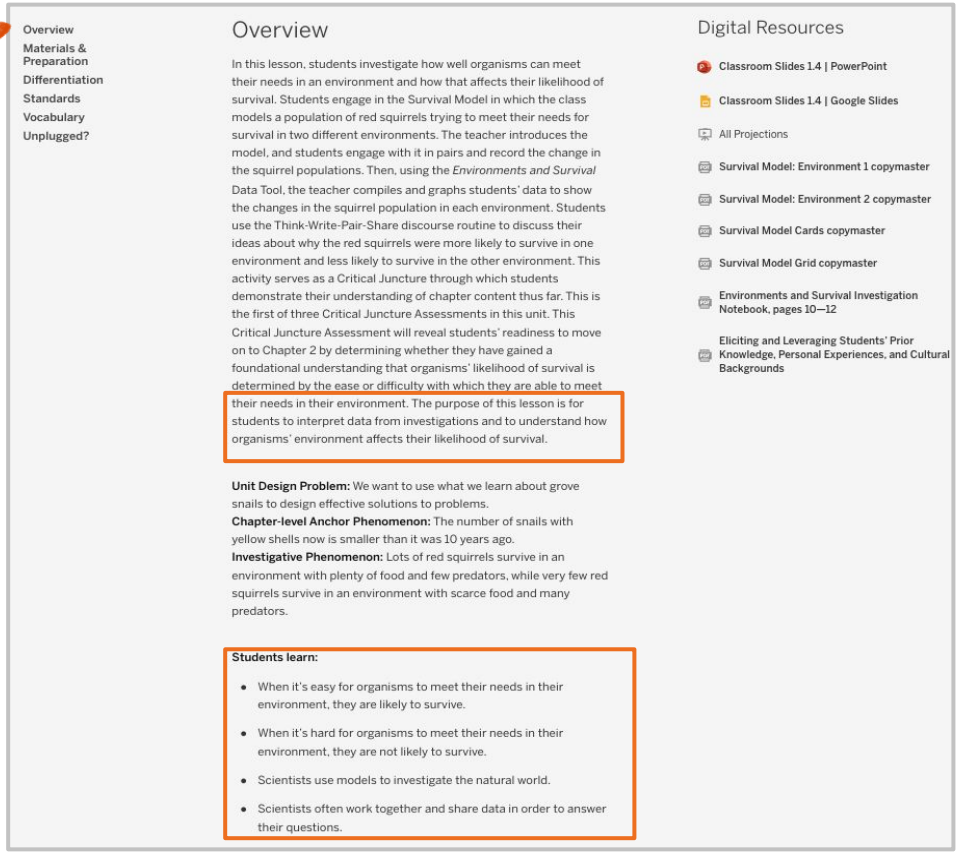
Planning Lesson 1.4

Lesson Brief

Step 2: Read the **Overview.**

The Purpose of this Lesson: To interpret data from investigations and to understand how organisms' environment affects their likelihood of survival.

Learning Objectives



Overview
Materials & Preparation
Differentiation
Standards
Vocabulary
Unplugged?

Overview

In this lesson, students investigate how well organisms can meet their needs in an environment and how that affects their likelihood of survival. Students engage in the Survival Model in which the class models a population of red squirrels trying to meet their needs for survival in two different environments. The teacher introduces the model, and students engage with it in pairs and record the change in the squirrel populations. Then, using the *Environments and Survival* Data Tool, the teacher compiles and graphs students' data to show the changes in the squirrel population in each environment. Students use the Think-Write-Pair-Share discourse routine to discuss their ideas about why the red squirrels were more likely to survive in one environment and less likely to survive in the other environment. This activity serves as a Critical Juncture through which students demonstrate their understanding of chapter content thus far. This is the first of three Critical Juncture Assessments in this unit. This Critical Juncture Assessment will reveal students' readiness to move on to Chapter 2 by determining whether they have gained a foundational understanding that organisms' likelihood of survival is determined by the ease or difficulty with which they are able to meet their needs in their environment. The purpose of this lesson is for students to interpret data from investigations and to understand how organisms' environment affects their likelihood of survival.

Unit Design Problem: We want to use what we learn about grove snails to design effective solutions to problems.
Chapter-level Anchor Phenomenon: The number of snails with yellow shells now is smaller than it was 10 years ago.
Investigative Phenomenon: Lots of red squirrels survive in an environment with plenty of food and few predators, while very few red squirrels survive in an environment with scarce food and many predators.

Students learn:

- When it's easy for organisms to meet their needs in their environment, they are likely to survive.
- When it's hard for organisms to meet their needs in their environment, they are not likely to survive.
- Scientists use models to investigate the natural world.
- Scientists often work together and share data in order to answer their questions.

Digital Resources

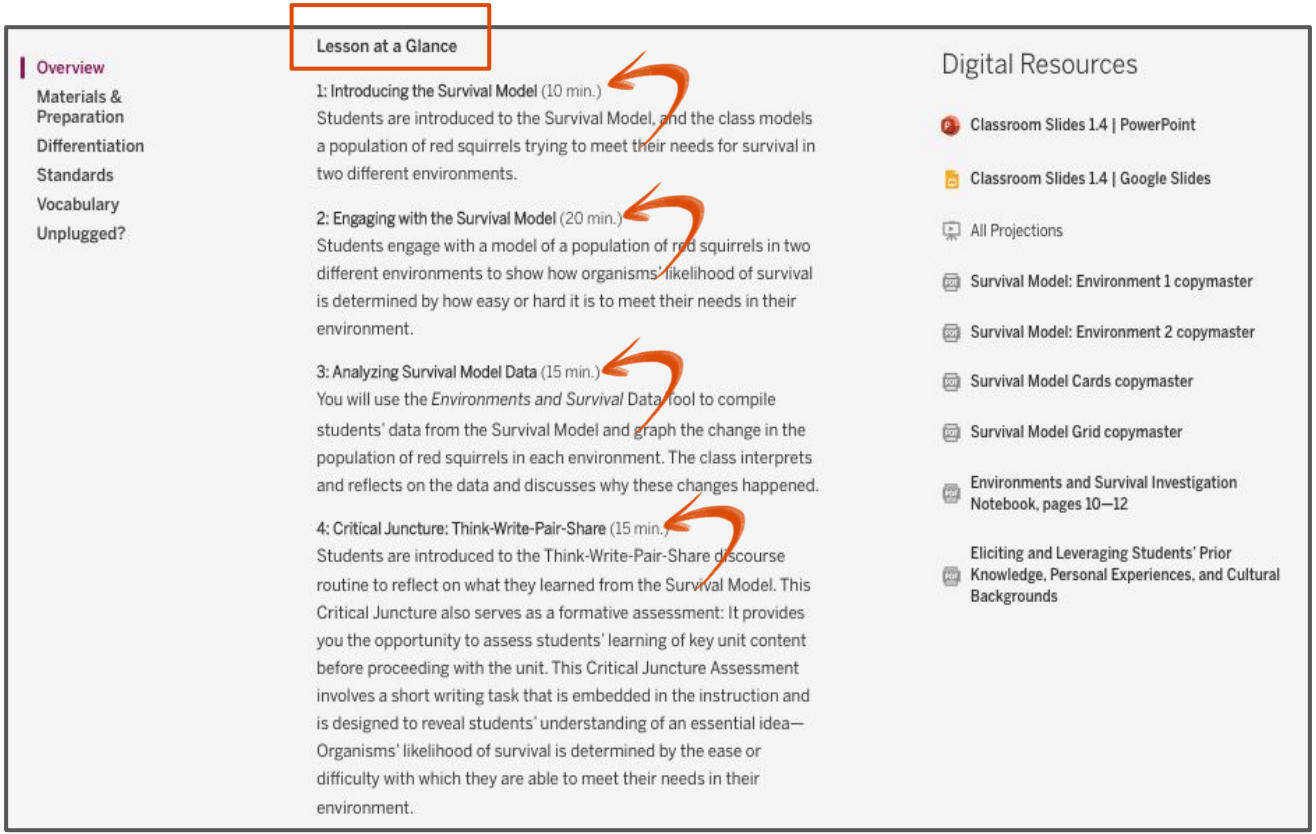
- Classroom Slides 1.4 | PowerPoint
- Classroom Slides 1.4 | Google Slides
- All Projections
- Survival Model: Environment 1 copymaster
- Survival Model: Environment 2 copymaster
- Survival Model Cards copymaster
- Survival Model Grid copymaster
- Environments and Survival Investigation Notebook, pages 10—12
- Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds

Quick check:
Lesson timing and pacing

How much time do you have in your schedule for each science lesson?

Lesson at a Glance: Pacing

- Are there activities that might take slightly more or less time?
- Should you split the lesson over two days?



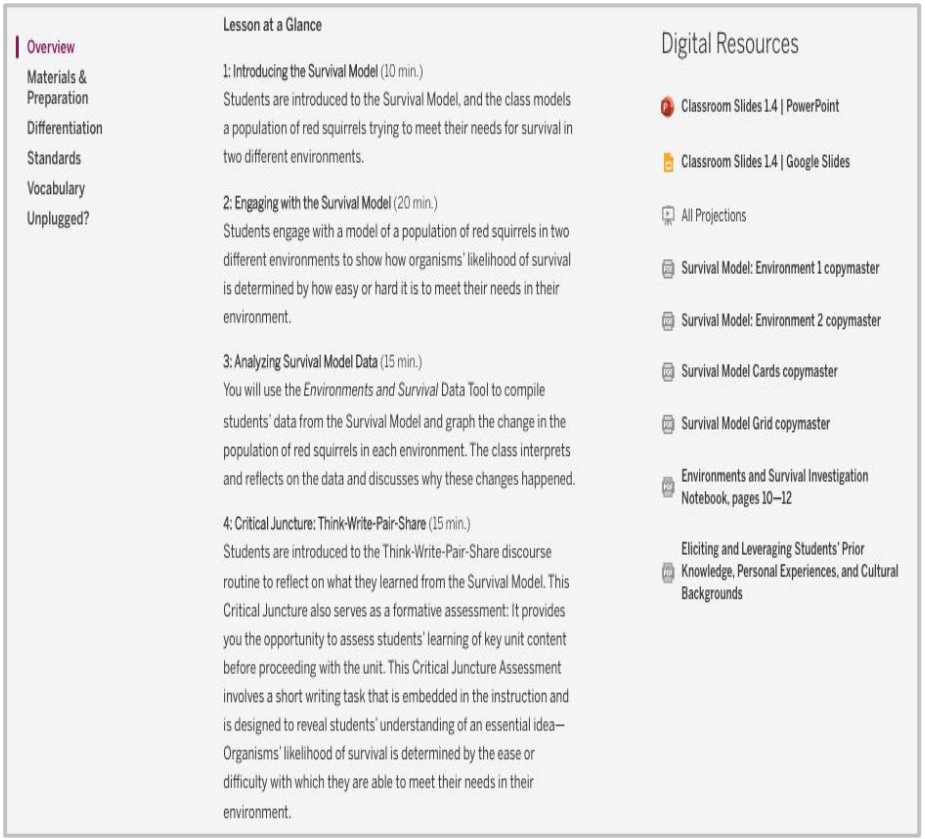
Lesson at a Glance: Pacing

Day 1: (30 minutes)

Act 1: Introducing Survival Model (10 min)
Act 2: Engaging with the Survival Model (20 min)

Day 2: (35 minutes)

Act 3: Analyzing Survival Model Data (15 min)
Act 4: Critical Juncture: Think-Write-Share (15 min)



Overview
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Lesson at a Glance

1: Introducing the Survival Model (10 min.)
Students are introduced to the Survival Model, and the class models a population of red squirrels trying to meet their needs for survival in two different environments.

2: Engaging with the Survival Model (20 min.)
Students engage with a model of a population of red squirrels in two different environments to show how organisms' likelihood of survival is determined by how easy or hard it is to meet their needs in their environment.

3: Analyzing Survival Model Data (15 min.)
You will use the *Environments and Survival* Data Tool to compile students' data from the Survival Model and graph the change in the population of red squirrels in each environment. The class interprets and reflects on the data and discusses why these changes happened.

4: Critical Juncture: Think-Write-Pair-Share (15 min.)
Students are introduced to the Think-Write-Pair-Share discourse routine to reflect on what they learned from the Survival Model. This Critical Juncture also serves as a formative assessment: It provides you the opportunity to assess students' learning of key unit content before proceeding with the unit. This Critical Juncture Assessment involves a short writing task that is embedded in the instruction and is designed to reveal students' understanding of an essential idea—Organisms' likelihood of survival is determined by the ease or difficulty with which they are able to meet their needs in their environment.

Digital Resources

Classroom Slides 1.4 | PowerPoint
Classroom Slides 1.4 | Google Slides
All Projections
Survival Model: Environment 1 copymaster
Survival Model: Environment 2 copymaster
Survival Model Cards copymaster
Survival Model Grid copymaster
Environments and Survival Investigation Notebook, pages 10–12
Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds

Planning for Pacing - Environments and Survival (Example)

Sample time in my Science block.	Day 1 (30 min)	Day 2 (35 min)	Day 3 (35 min)	Day 4 (40 min)	Day 5 (45 min)
	1.4: The Survival Model Activity 1: Introducing the Survival Model (10 min.) Activity 2: Engaging with the Survival Model (20 min)	**1.4 cont.** Activity 3: Analyzing Survival Model Data (15 min.) Activity 4: Critical Juncture: Think-Write-Share (15 min.)	**1.5 Writing an Explanation of Snails Survival** (Teacher Only): Making Inferences from Data (25 min.) Activity 1: Introducing Scientifc Explanations (10 min)	**1.5 cont.** Activity 2: Shared Writing of a Scienctific Explanation (20 min) Activity 3: Reflecting on Biomimicry (5 min) **2.1: The Hummingbird Model** Activity 1: Reviewing Snail Data (5 min) Activity 2: Observing Variation in Populations (10 min)	**2.1: cont.** Activity 3: The Hummingbird Model (30 min) Activity 4: analyzing Data from the Hummingbird Model (15 min)

Week 1 Pacing

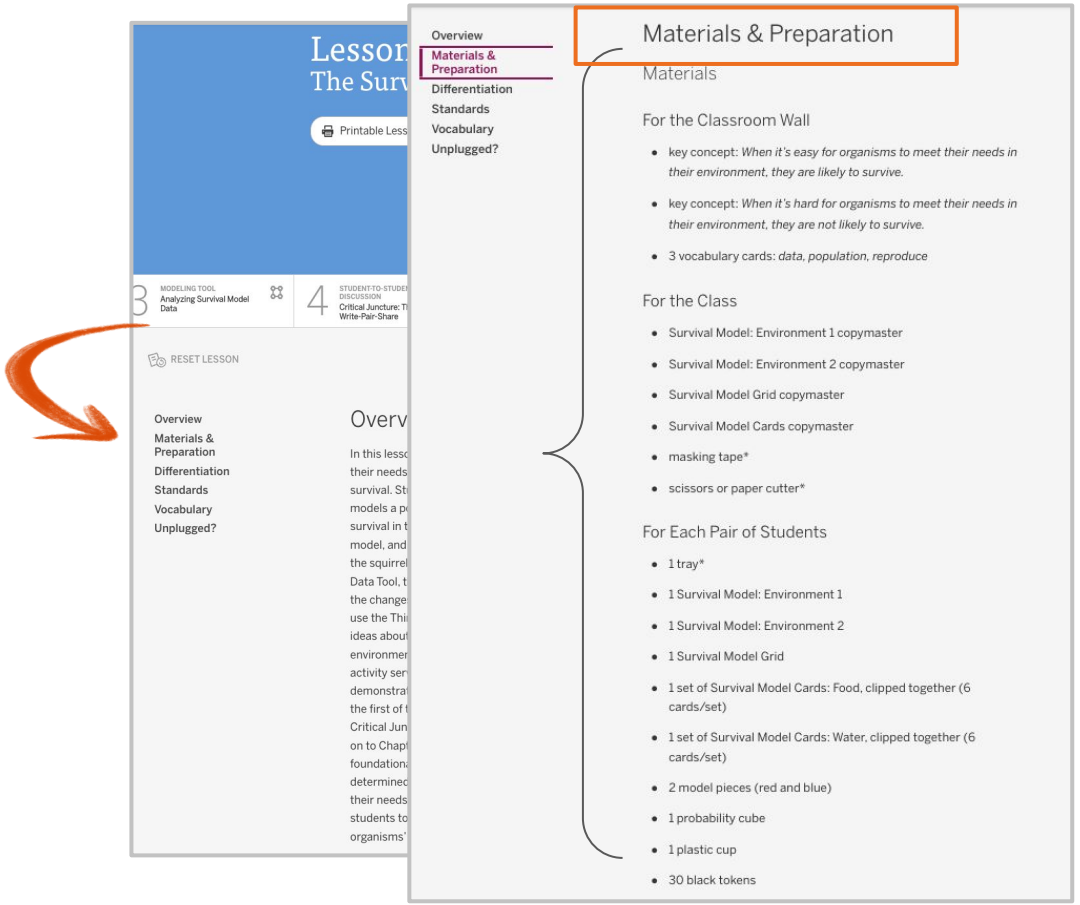
Monday	Tuesday	Wednesday	Thursday	Friday

http://bit.ly/3Xx4S18

Planning Lesson 1.4

Lesson Brief

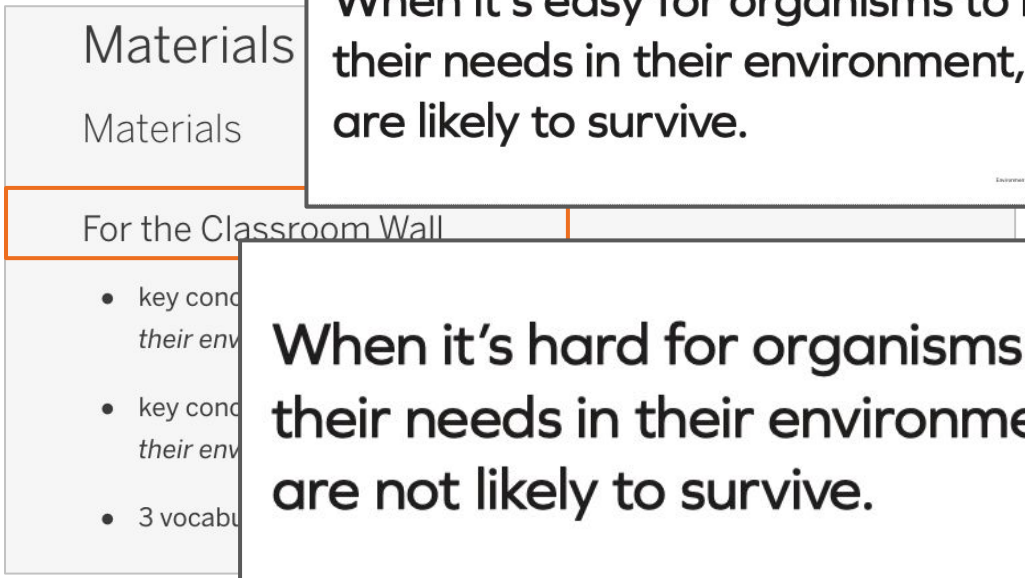
Step 3: Read the **Materials and Preparation** Document



Planning Lesson 1.4

Lesson Brief

Read the **Materials & Preparation**.



When it's easy for organisms to meet their needs in their environment, they are likely to survive.

When it's hard for organisms to meet their needs in their environment, they are not likely to survive.

population

reproduce

data

Planning Lesson 1.4

Lesson Brief

Read the **Materials & Preparation**.

For the Class

- Survival Model: Environment 1 copymaster
- Survival Model: Environment 2 copymaster
- Survival Model Grid copymaster
- Survival Model Cards copymaster
- masking tape*
- scissors or paper cutter*

Teacher Provided*

Planning Lesson 1.4

Lesson Brief

Read the **Materials & Preparation**.

For Each Pair of Students

- 1 tray*
- 1 Survival Model: Environment 1
- 1 Survival Model: Environment 2
- 1 Survival Model Grid
- 1 set of Survival Model Cards: Food, clipped together (6 cards/set)
- 1 set of Survival Model Cards: Water, clipped together (6 cards/set)
- 2 model pieces (red and blue)
- 1 probability cube
- 1 plastic cup
- 30 black tokens

For Each Student

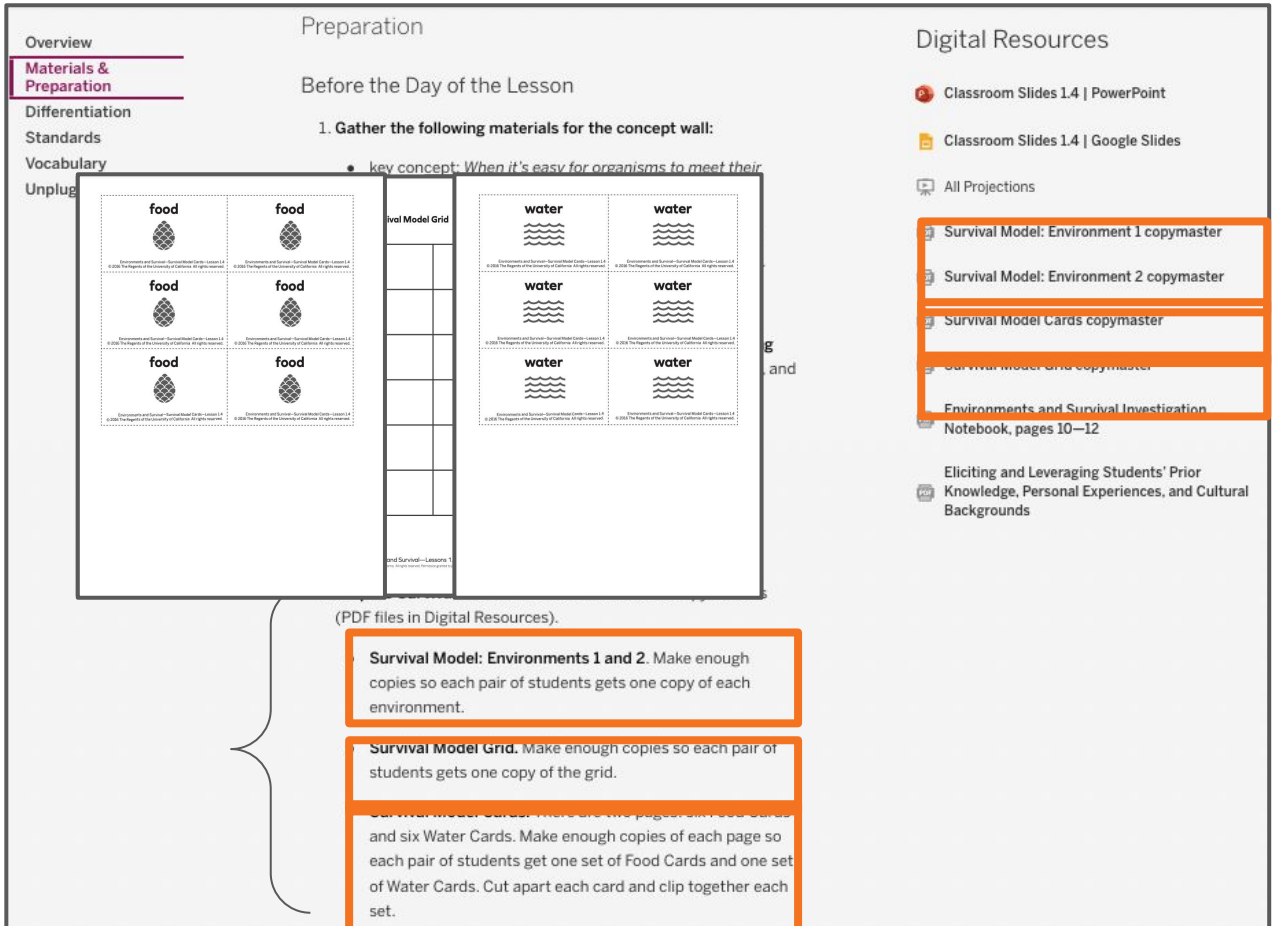
- *Environments and Survival Investigation* Notebook (pages 10–12)

*teacher provided

Planning Lesson 1.4

Lesson Brief

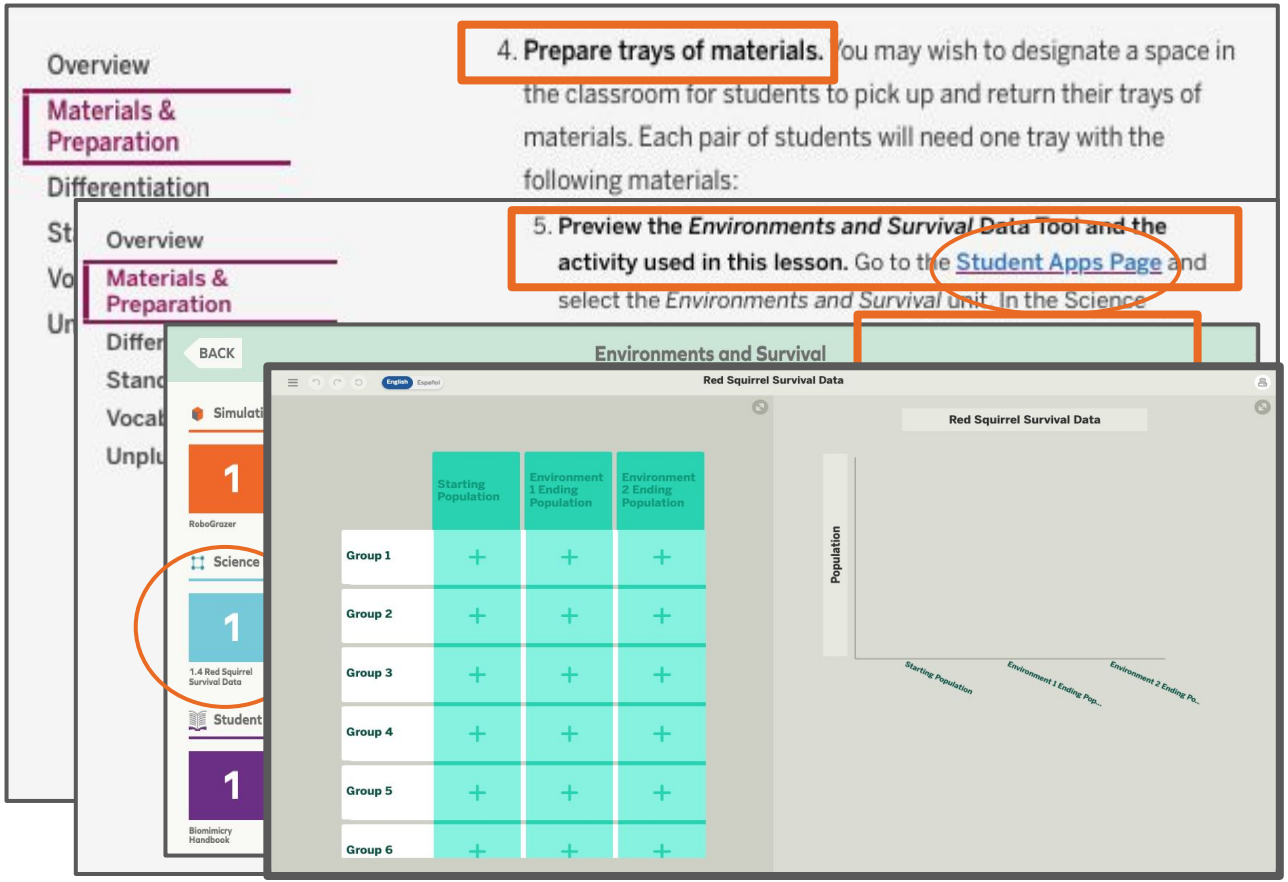
Read the **Materials & Preparation**.



Planning Lesson 1.4

Lesson Brief

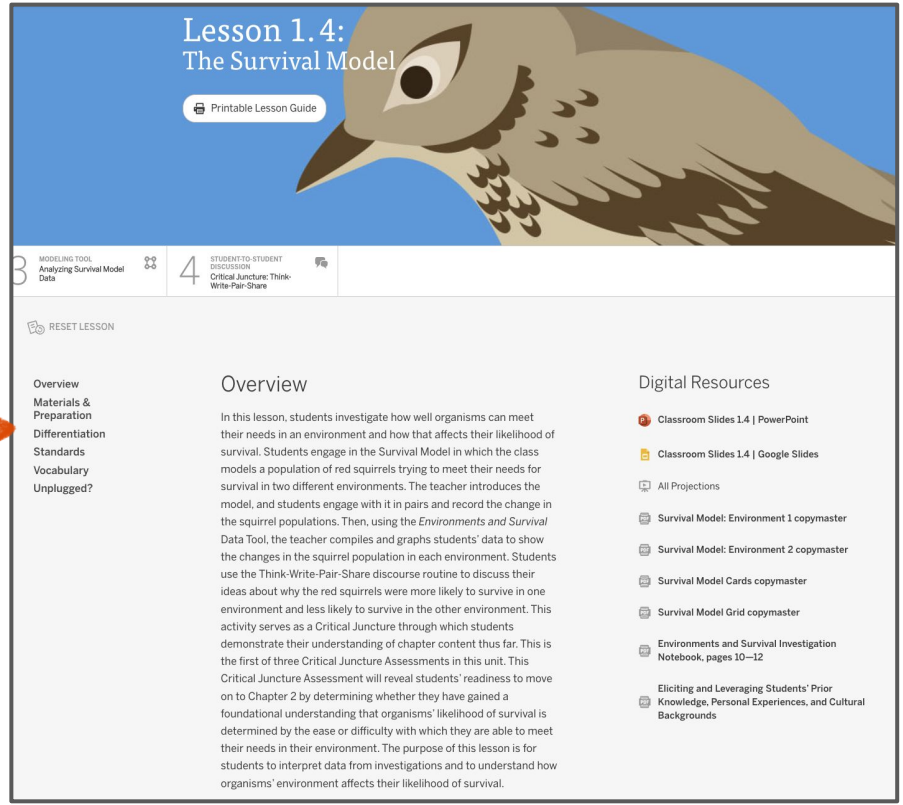
Read the **Materials & Preparation**.



Planning Lesson 1.4

Lesson Brief

Step 3: Read the **Differentiation** document

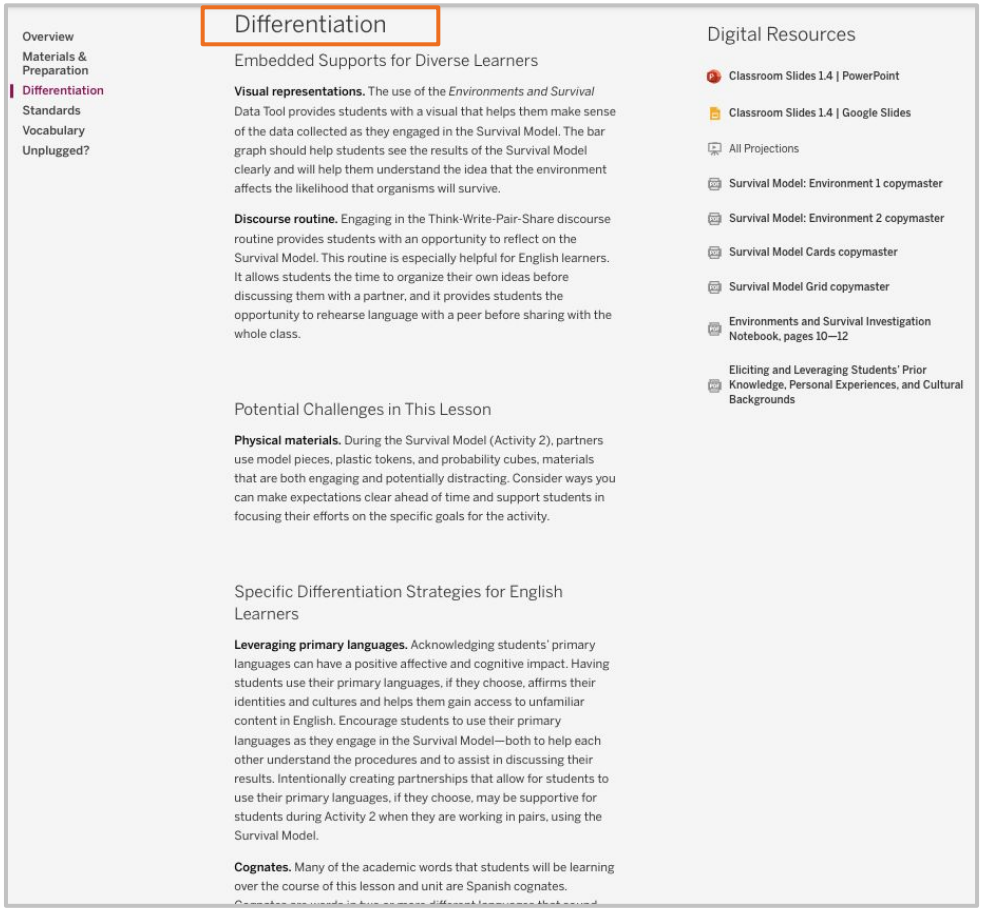


Planning Lesson 1.4

Lesson Brief

Read the **Differentiation**

- Embedded Supports for Diverse Learners
- Potential Challenges in This Lesson
- English Learners
- Students Who Need More Support
- Students Who Need More Challenge



Overview
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Differentiation

Embedded Supports for Diverse Learners

Visual representations. The use of the *Environments and Survival* Data Tool provides students with a visual that helps them make sense of the data collected as they engaged in the Survival Model. The bar graph should help students see the results of the Survival Model clearly and will help them understand the idea that the environment affects the likelihood that organisms will survive.

Discourse routine. Engaging in the Think-Write-Pair-Share discourse routine provides students with an opportunity to reflect on the Survival Model. This routine is especially helpful for English learners. It allows students the time to organize their own ideas before discussing them with a partner, and it provides students the opportunity to rehearse language with a peer before sharing with the whole class.

Potential Challenges in This Lesson

Physical materials. During the Survival Model (Activity 2), partners use model pieces, plastic tokens, and probability cubes, materials that are both engaging and potentially distracting. Consider ways you can make expectations clear ahead of time and support students in focusing their efforts on the specific goals for the activity.

Specific Differentiation Strategies for English Learners

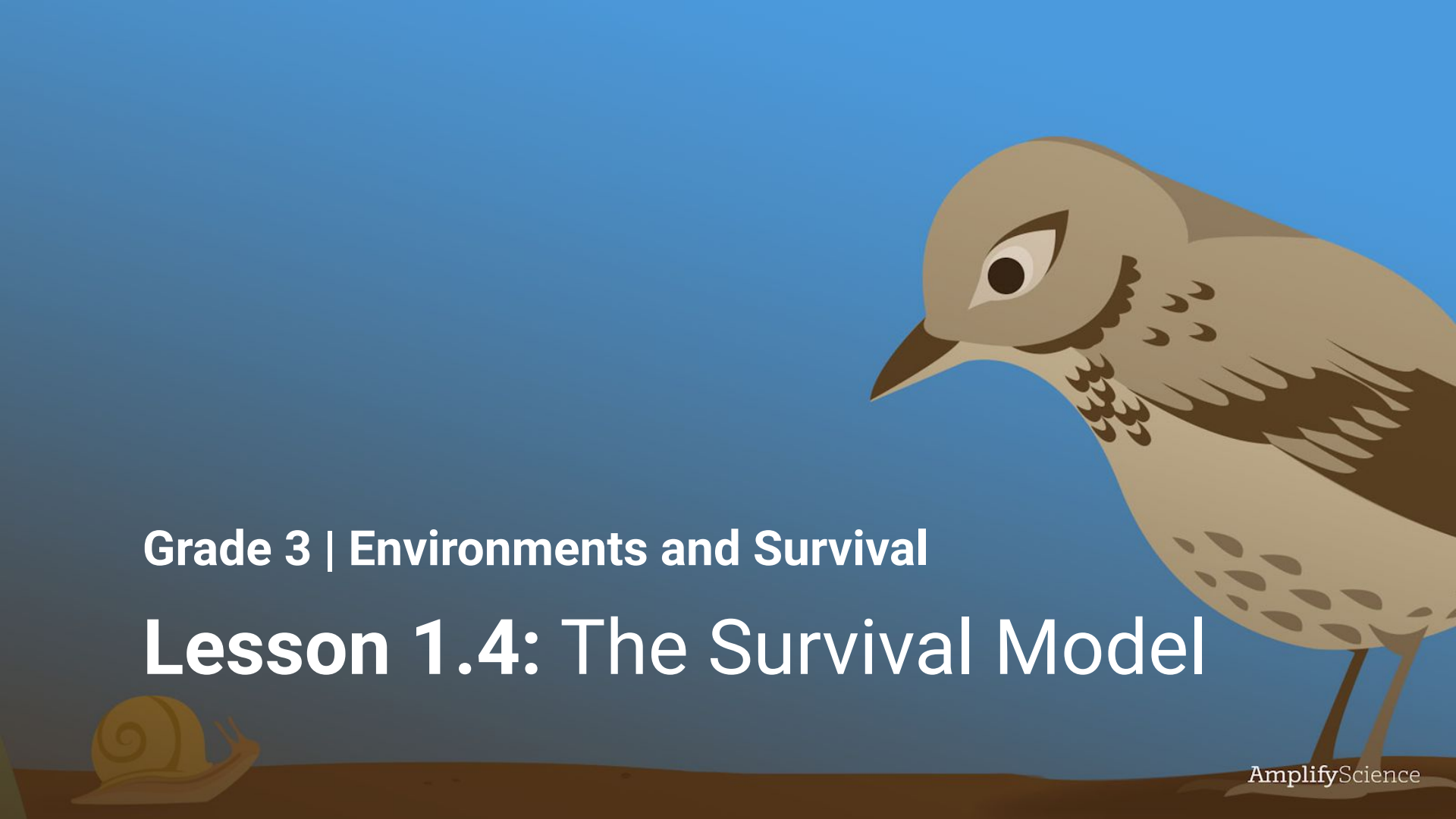
Leveraging primary languages. Acknowledging students' primary languages can have a positive affective and cognitive impact. Having students use their primary languages, if they choose, affirms their identities and cultures and helps them gain access to unfamiliar content in English. Encourage students to use their primary languages as they engage in the Survival Model—both to help each other understand the procedures and to assist in discussing their results. Intentionally creating partnerships that allow for students to use their primary languages, if they choose, may be supportive for students during Activity 2 when they are working in pairs, using the Survival Model.

Cognates. Many of the academic words that students will be learning over the course of this lesson and unit are Spanish cognates.

Digital Resources

- Classroom Slides 1.4 | PowerPoint
- Classroom Slides 1.4 | Google Slides
- All Projections
- Survival Model: Environment 1 copymaster
- Survival Model: Environment 2 copymaster
- Survival Model Cards copymaster
- Survival Model Grid copymaster
- Environments and Survival Investigation Notebook, pages 10—12
- Eliciting and Leveraging Students' Prior Knowledge, Personal Experiences, and Cultural Backgrounds

Now we are ready to teach the lesson.



Grade 3 | Environments and Survival

Lesson 1.4: The Survival Model

AmplifyScience

10 MIN

Activity 1

Introducing the Survival Model

What do you think makes organisms **more likely** or **less likely** to survive in their environment?

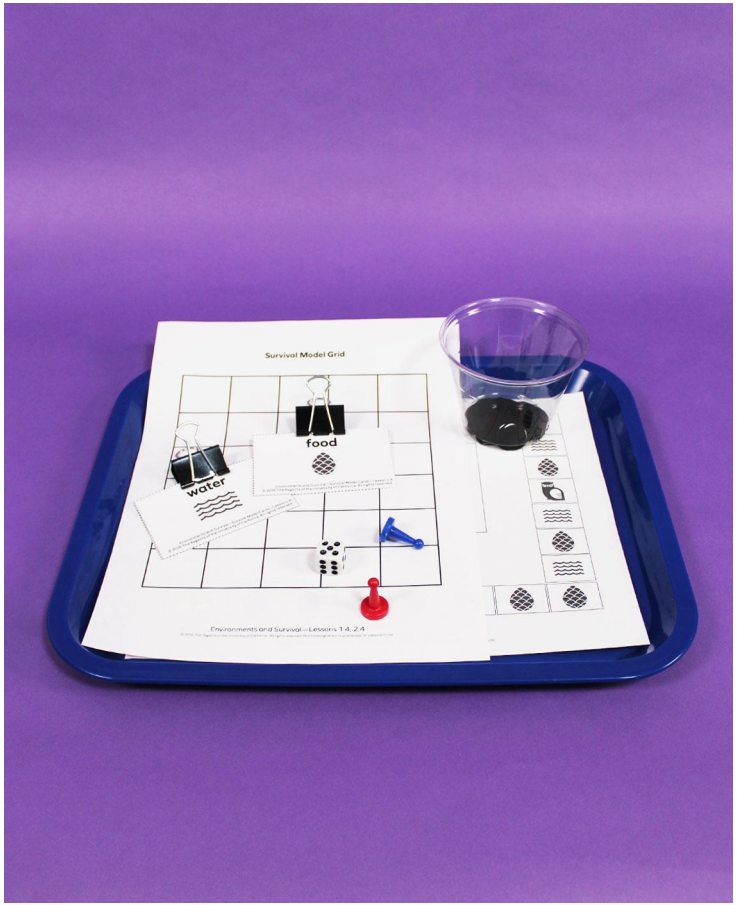
Today, we will investigate how **different environments** can affect how easy or hard it is for organisms to **meet their needs** for survival.

We are going to use a model—the **Survival Model**—in which we will **investigate a population** of red squirrels in their environment.

Vocabulary

population

a group of the same kind of organism living in the same area



In our model, each pair will take 10 black tokens. **Each token represents 1 red squirrel** in the population. If we put all our tokens together, we **create a population** of red squirrels.

If each pair of students in our class has 10 tokens, how many **red squirrels** are in our class **population?**

There will be _____red squirrels in our class populations.

Name: _____ Date: _____

Red Squirrel Survival Model

Directions:

1. Start with Environment 1. Place your model piece on the "Start here" box.
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.
3. Decide who will go first.
4. To take a turn, roll the cube and move your model piece clockwise around the Environment. When you land on a box, follow the directions on the Environment.
5. Each time you have 1 food card and 1 water card, trade them in for 1 squirrel token from the cup. Return the food and water cards to the stacks and place the squirrel token on the Survival Model Grid.
6. When your model piece has moved around the Environment 5 times, count the squirrel tokens on your grid. In the table below, record the number of squirrel tokens.
7. Repeat Steps 1–6, this time using Environment 2.

Red Squirrel Survival Model Data

	Starting population	**Ending population**
Environment 1	10	
Environment 2	10	

Turn to page 11 in your notebooks.

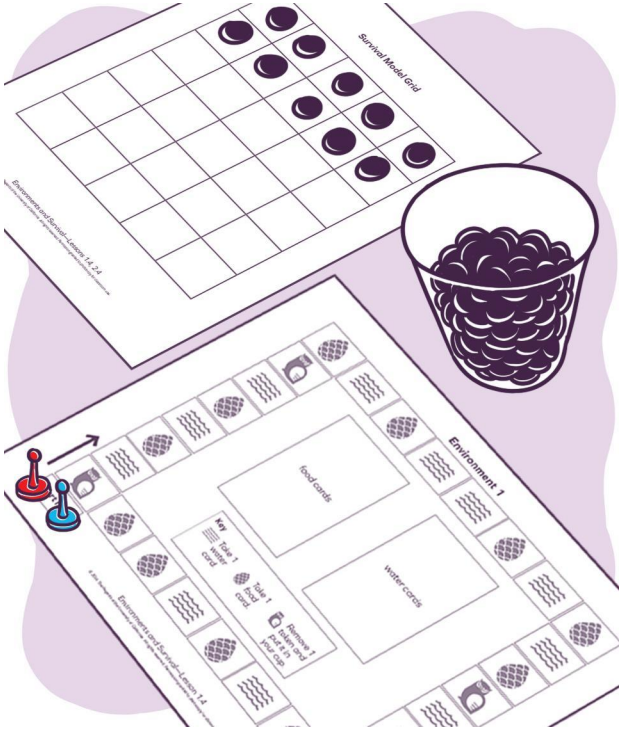
Let’s go over the directions, and I will show you how to **set up your models.**

Red Squirrel Survival Model: Set Up Overview

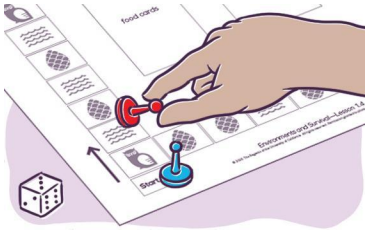
Step 1
You will **place your model pieces on the "Start here" box** in the Environment.

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.**

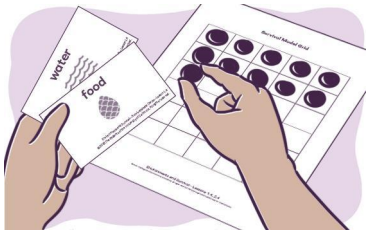


Red Squirrel Survival Model: Overview



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.**

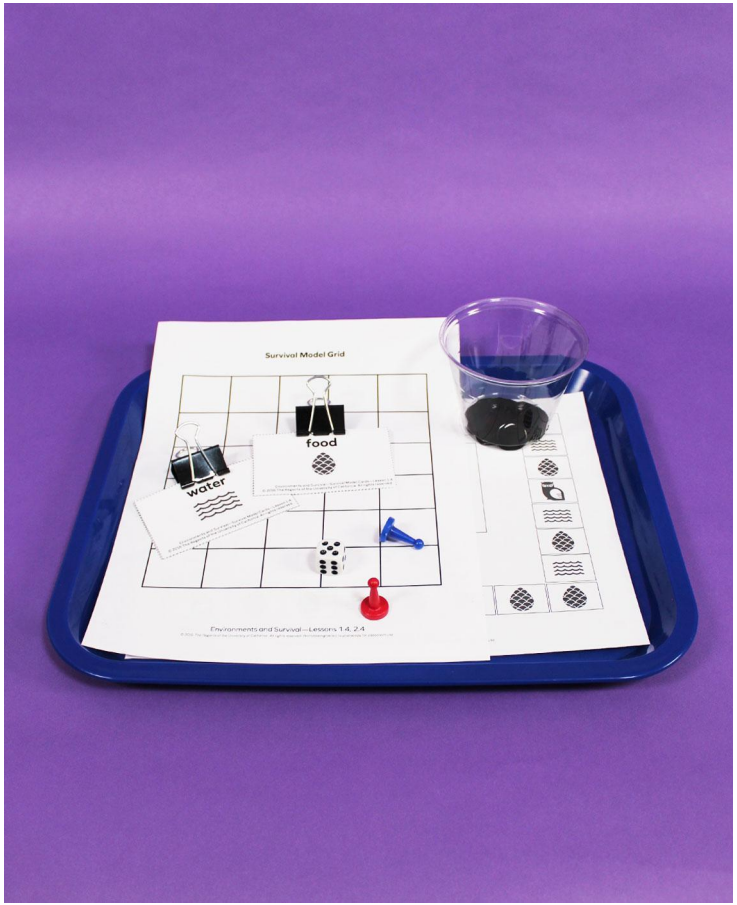
Remember that we are investigating this question:

What makes organisms in a population more likely to survive or less likely to survive?

20 MIN

Activity 2

Engaging with the Survival Model



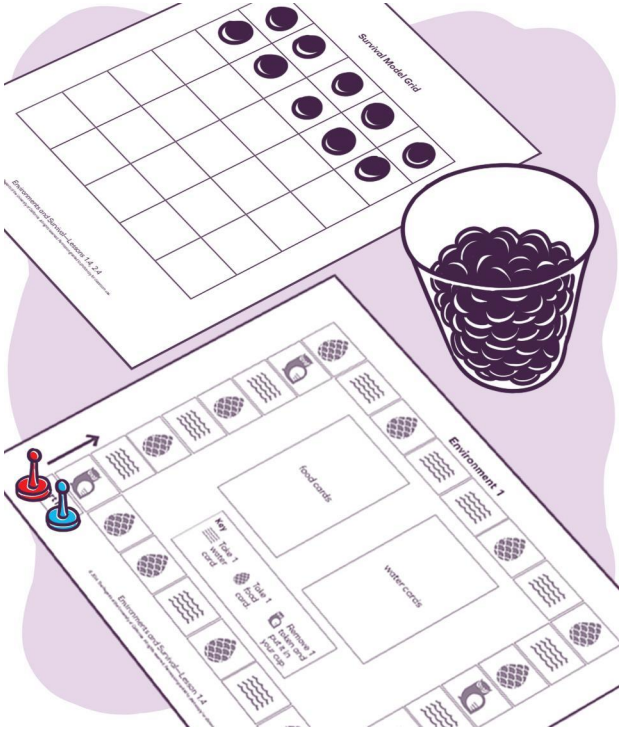
These are the **materials** for the Survival Model.

Red Squirrel Survival Model: Set Up

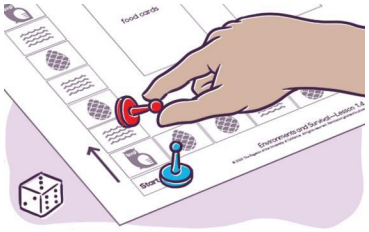
Step 1
Place your model pieces on the "Start here" box in the Environment.

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.**

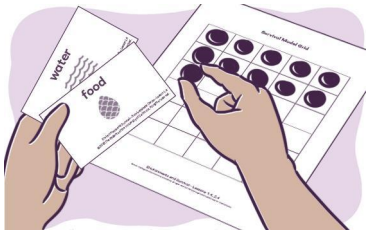


Red Squirrel Survival Model: Run



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

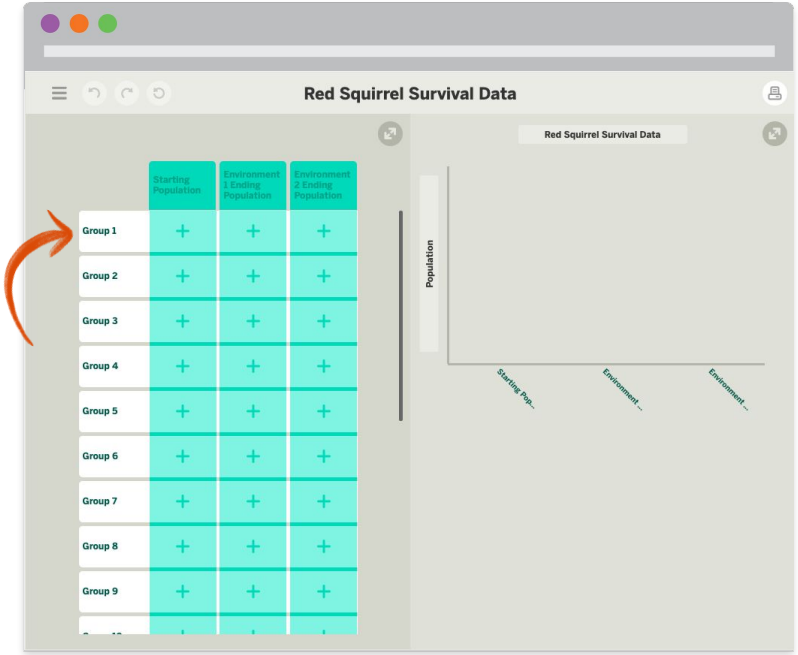
Activity 3

Analyzing Survival Model Data

Vocabulary

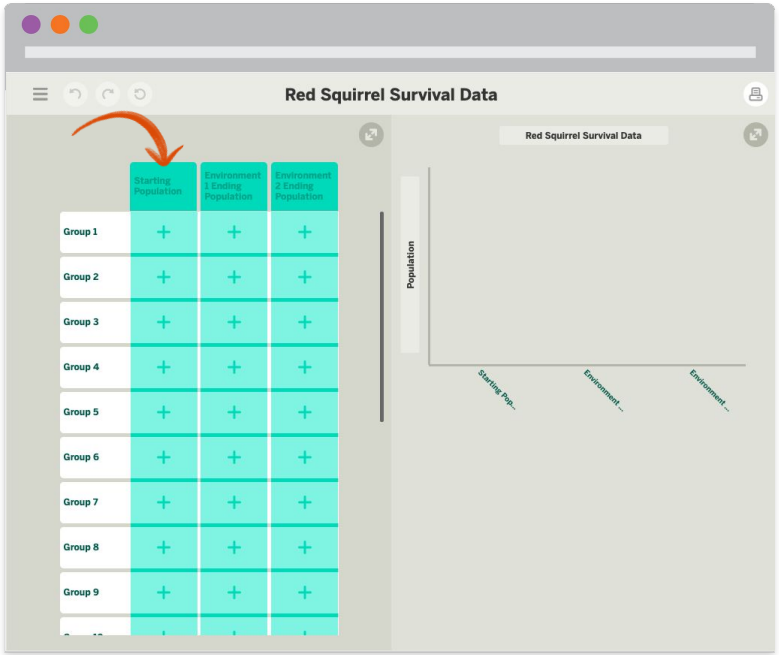
data

observations or measurements recorded in an investigation

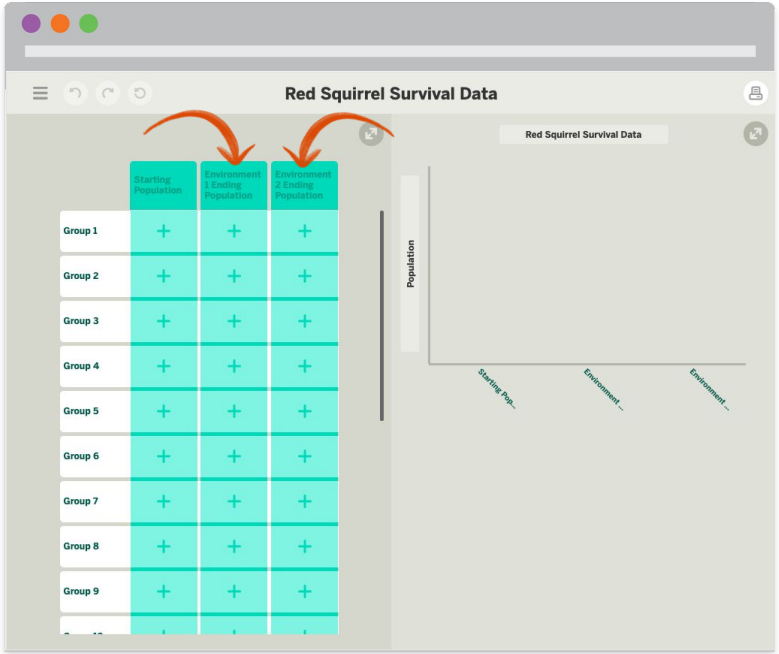


We will use a **digital tool** to **graph the data** so we can analyze it.

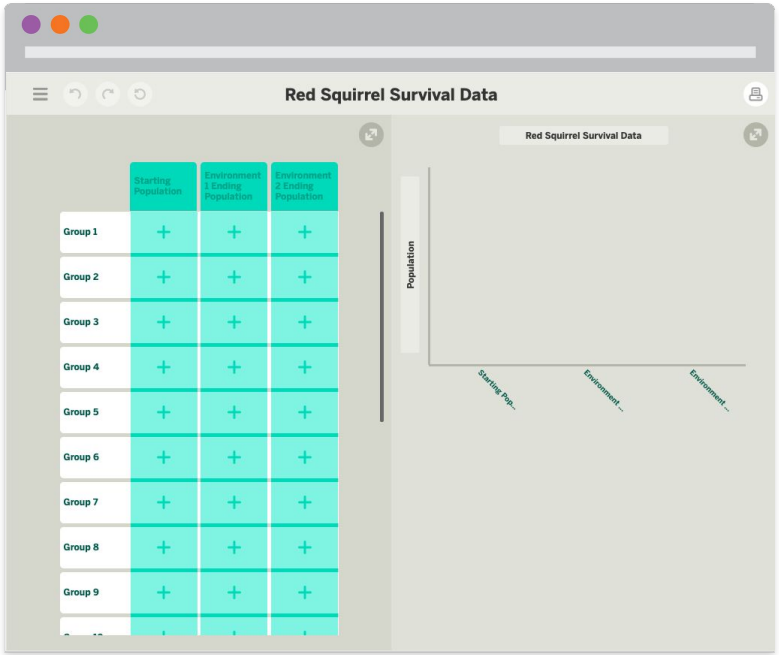
Each row in the table is for the data from one pair of students.



The **first column** is the number of squirrels that each pair had to start with: 10 squirrels.



The **second column** shows the number of squirrels after 5 times around Environment 1. The **third column** shows the number of squirrels after 5 times around Environment 2.

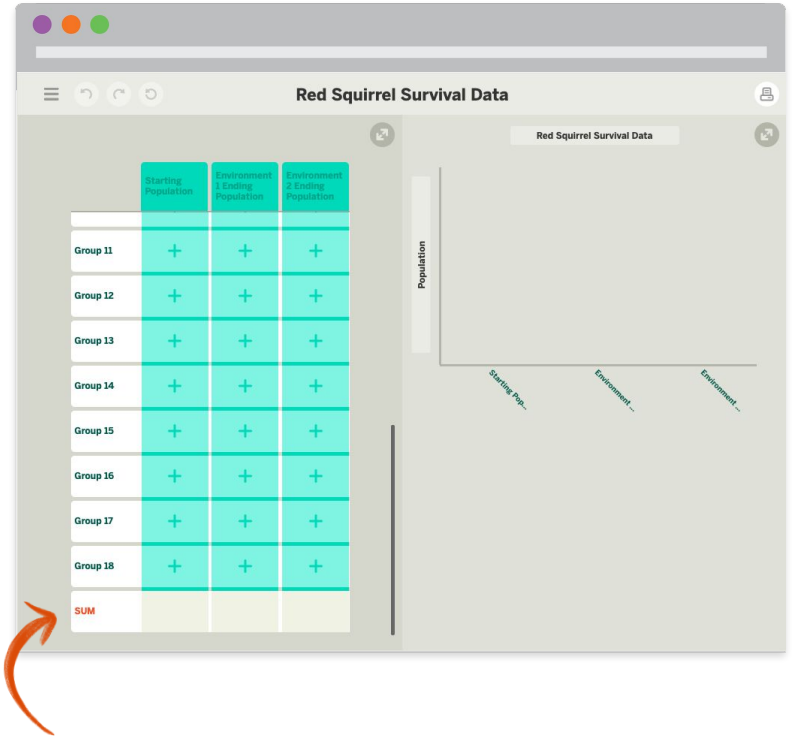


I will enter the data for each pair into the Data Tool.

What was your data for the **ending populations** in Environment 1 and Environment 2?

My data for the ending populations in Environment ____

was _____.



The **sum** at the bottom of each column shows all the numbers in that column added together.

The Data Tool uses those sums to **create a graph** on the right.

Let’s talk about what you notice in our **bar graphs.**

What do you notice about the number of **red squirrels** in our class population at the end of using **Environment 1?**

I notice that the number of red squirrels in our class population at the end of using

Environment 1 was _____.

What **inference** can we make about whether or not the squirrels were likely to survive and reproduce?

I infer that _____.

What do you notice about the number of **red squirrels** in our class population at the end of using **Environment 2?**

I notice that the number of red squirrels in our class population at the end of using Environment 2 was _____.

What **inference** can we make about whether or not the squirrels were likely to survive and reproduce?

I infer that _____.

Vocabulary

reproduce

to make offspring

Were the squirrels more likely to **survive** in **Environment 1** or in **Environment 2?**

The squirrels were more likely to survive in _____ because _____.

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.

Name: _____ Date: _____

Think-Write-Pair-Share: What Makes Red Squirrels More Likely or Less Likely to Survive?

Directions:
1. Think about the question below.
2. Record your ideas.
3. Share your ideas with your partner.

Why were the red squirrels more likely to survive in Environment 1 and less likely to survive in Environment 2?

Turn to page 12 in your notebooks.

Why were the red squirrels **more likely** to survive in Environment 1 and **less likely** to survive in Environment 2?

The **red squirrels** and the **things in their environment** that affect whether or not the squirrels can meet their needs are all part of a **system.**

What are the **parts of the system** you've been thinking about as you've used the **Survival Model?**

The parts of the system I was thinking about was _____.

Let's share our ideas about the question we've been investigating.

What makes organisms in a population **more likely to survive** or **less likely to survive?**

I think what makes organisms in a population to _____

is _____.

Key Concept

When it’s easy for organisms to meet their needs in their environment, they are likely to survive.

Key Concept

When it’s hard for organisms to meet their needs in their environment, they are not likely to survive.

End of Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

Amplify.

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Plan for the day

- Introduction and framing
- Writing in Amplify Science
  - Writing as part of a multimodal experience
  - Supporting students with writing
  - Writing a culminating explanation or argument
  - Additional supports
- Model Lesson
- Planning
- Closing

Planning for activities

Personalize Classroom Slides

What slides do not need to be visible to students? How will these reflect the timing decision you made? Additions? Personalized language?

Digital Tools

How will students navigate? What might be challenging? What is the key take-away? Do you need to “check-out” devices? Review “Apps in this Unit.”

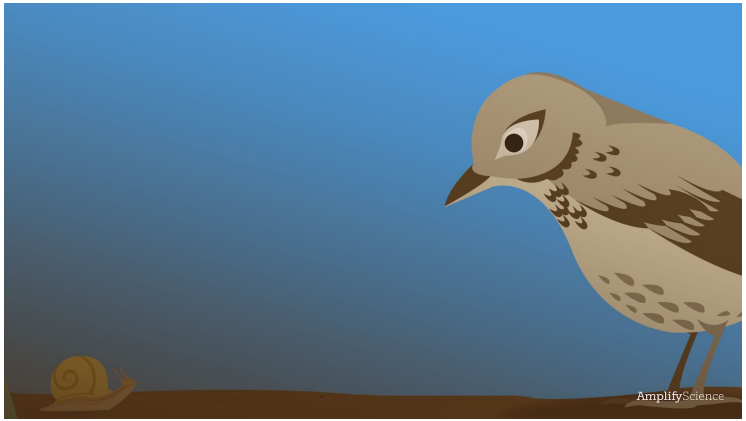
Hands-on materials

What will you need from the kit? How many will you use? What needs to be set-up in advance? Right before? After?

Work time: Planning

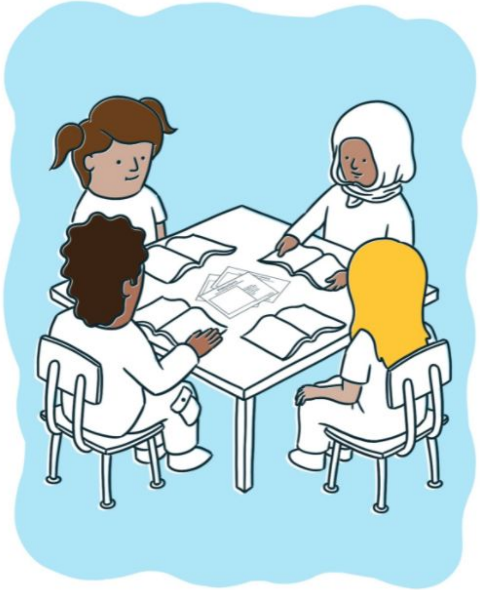
Navigate to a lesson that you'll be teaching in the upcoming weeks

- **Identify the small writes in the lesson**
  - Analyze their purpose
  - What writing supports are embedded in the activity ?
  - Are there any additional supports you might provide?
- **Download the End-of-Unit Assessment**
  - What does each rubric assess?
  - How could the End-of-Unit help you unit planning and instruction throughout the whole unit

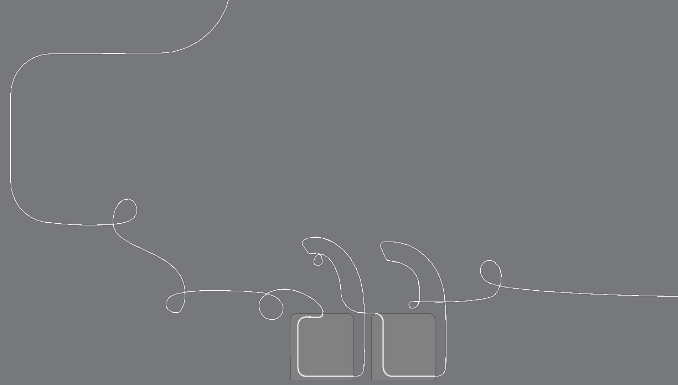


Share out

- Identify the small writes in the lesson
  - Analyze their purpose
  - What writing supports are embedded in the activity ?
  - Are there any additional supports you might provide?



Questions?



Plan for the day

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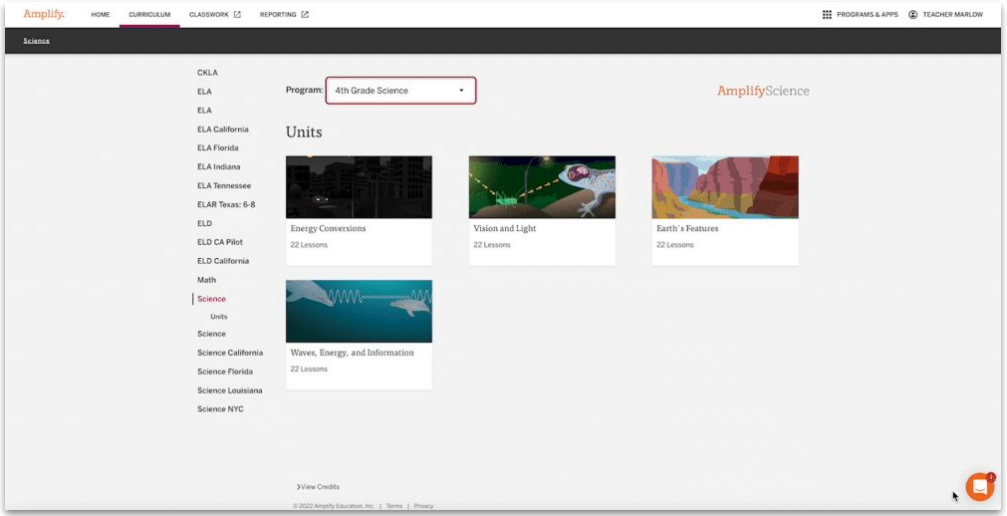
Overarching goals

- ☑ Identify specific characteristics and genres unique to science writing
- ☑ Describe how the Amplify Science writing approach supports students to engage in science practices, make sense of science ideas, and develop as writers
- ☑ Be ready to teach specific writing activities in an Amplify Science unit

Additional resources and ongoing support

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support.

Amplify Chat



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

Closing reflection

Based on our work today in Part 2, share:

Head: something you'll keep in mind

Heart: something you're feeling

Feet: something you're planning to do