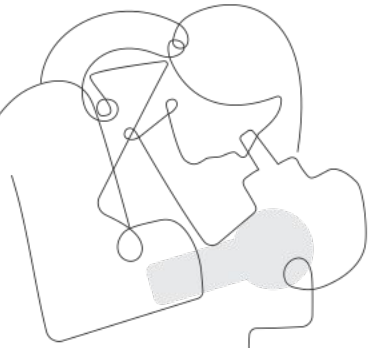
Do Now: *Use the link in the chat to add your best remote learning tips and tricks for teaching Amplify Science to the Jamboard.*

Amplify Science

Unit Internalization & Guided Planning

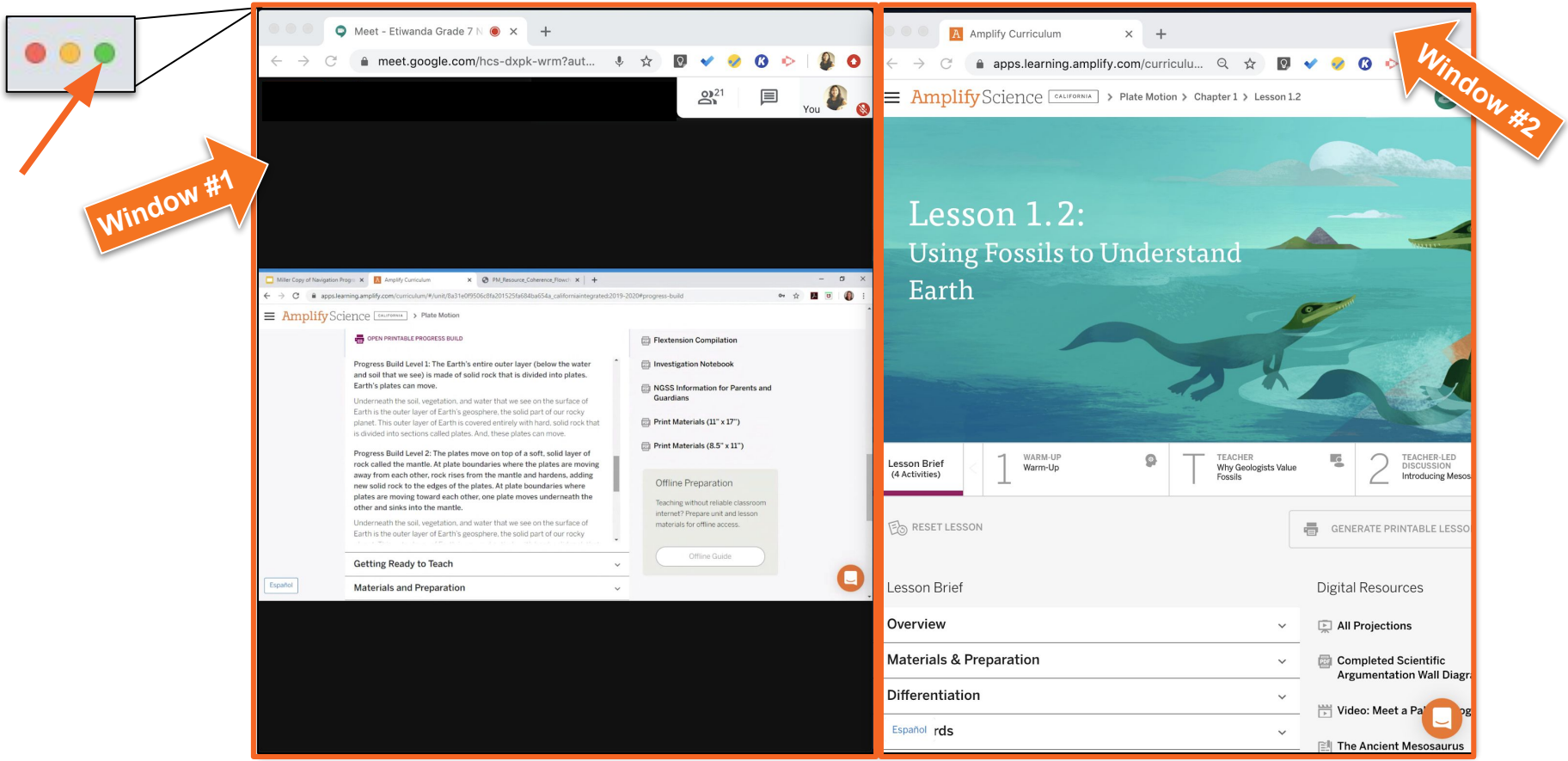
Deep-dive and strengthening workshop
Grade 6, Traits and Reproduction



LAUSD
12/12/2020
Presented by Your Name

In a new tab, please log in to your Amplify Science account through Schoology.

Use two windows for today's webinar



Norms: Establishing a Culture of Learners

- Please keep your camera on, if possible.
- Take some time to orient yourself to the platform
  - *“where’s the chat box? what are these squares at the top of my screen?, where’s the mute button?”*

- Mute your microphone to reduce background noise unless sharing with the group

- The chat box is available for posting questions or responses to during the training

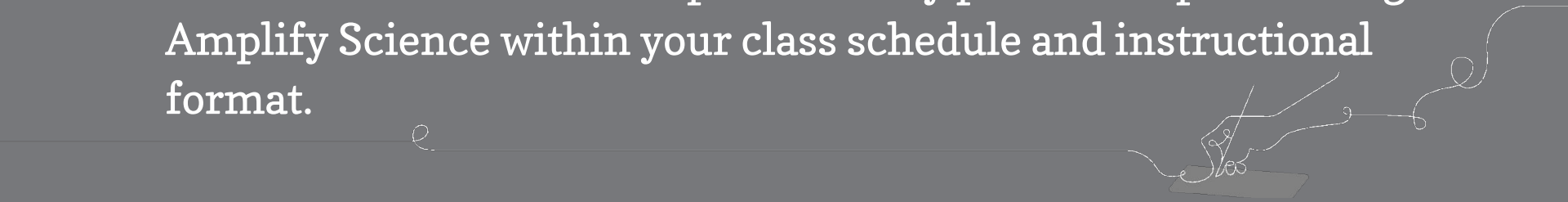
- Make sure you have a note-catcher present

- Be an active participant - chat, ask questions, discuss, share!

Workshop goals

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

- Internalize your upcoming unit.
- Plan for collecting **evidence of student learning** in order to make instructional decisions to **support diverse learner needs**.
- Gather resources to develop a multi-day plan for implementing Amplify Science within your class schedule and instructional format.



Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- Unit Internalization
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing

Plan for the day

- **Framing the day**
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  - **Instructional Materials**
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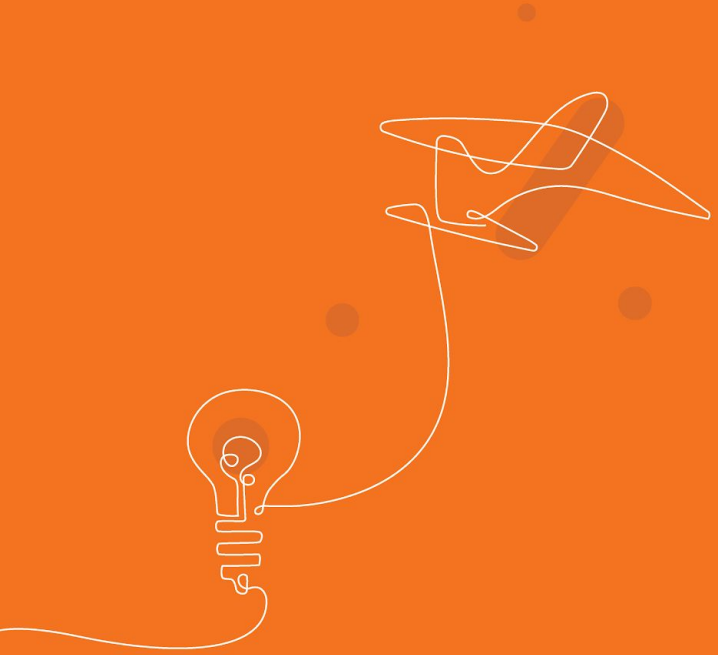
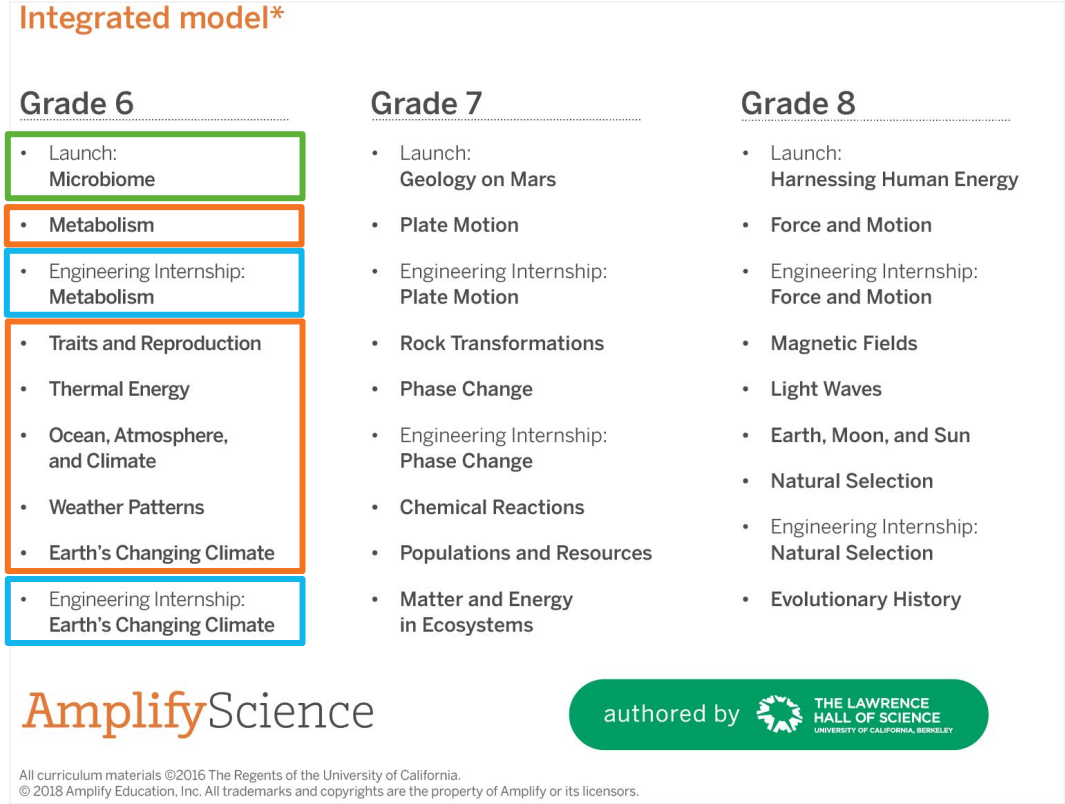


Instructional Materials

Amplify.

Middle school course curriculum structure



Launch units

- First unit
- 11 lessons

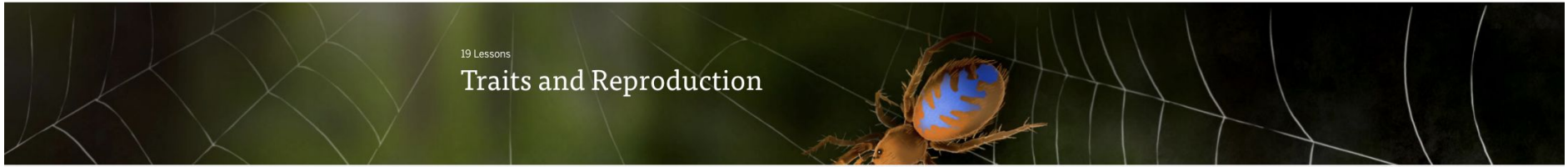
Core units

- Majority of units
- 19 lessons

Engineering Internships

- Two per year
- 10 lessons

Standard Amplify Science Curriculum

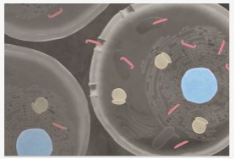


Standard Amplify Science Curriculum

The Traits and Reproduction unit has **19 lessons** across 4 chapters. Each lesson is written to be **45 minutes** long.

JUMP DOWN TO UNIT GUIDE

GENERATE PRINTABLE TEACHER'S GUIDE



Chapter 1: Exploring Variation in Spider Silk

5 Lessons

Chapter 2: Examining Spider Genes

4 Lessons

Chapter 3: Investigating Spider Inheritance

6 Lessons

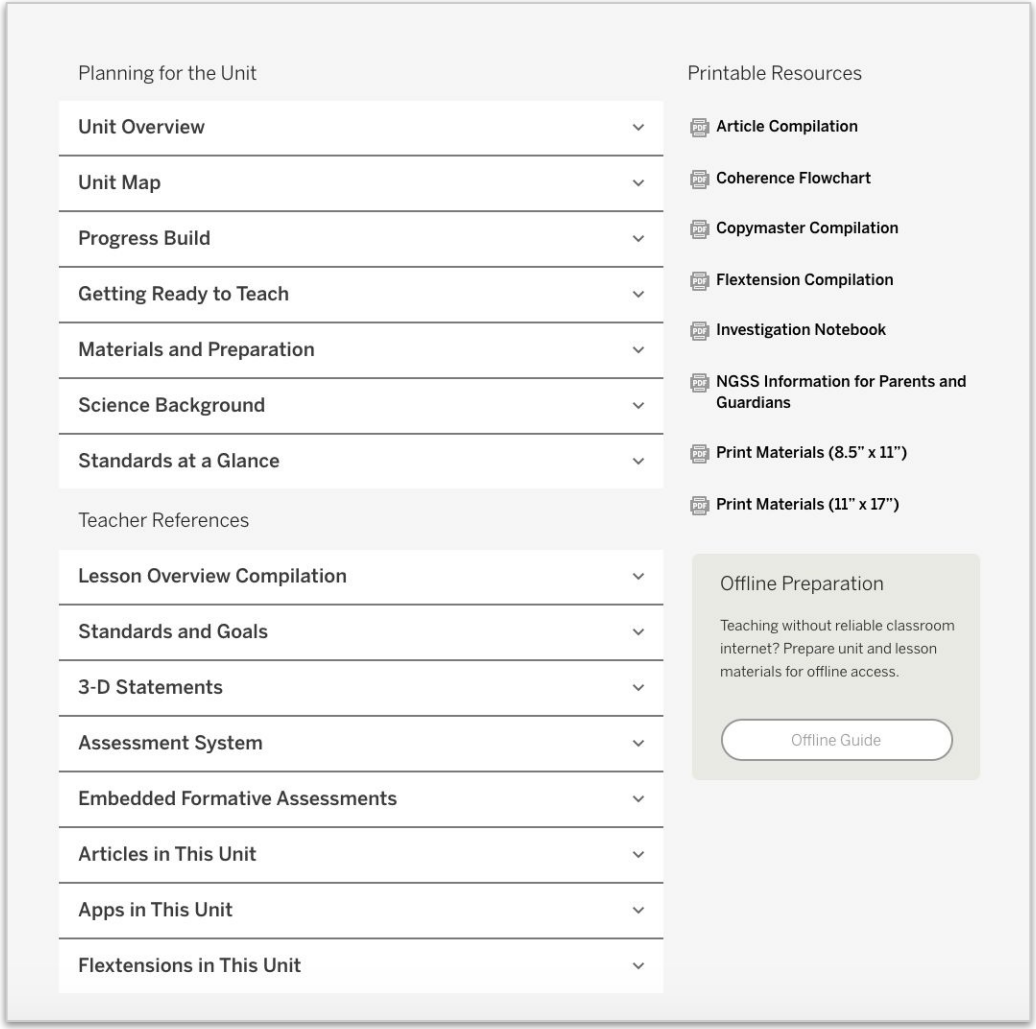
Chapter 4: Explaining Variation in Running Ability

4 Lessons

Standard Amplify Science Curriculum

On the standard Amplify Science platform you will find all of your key documents for planning for the unit.

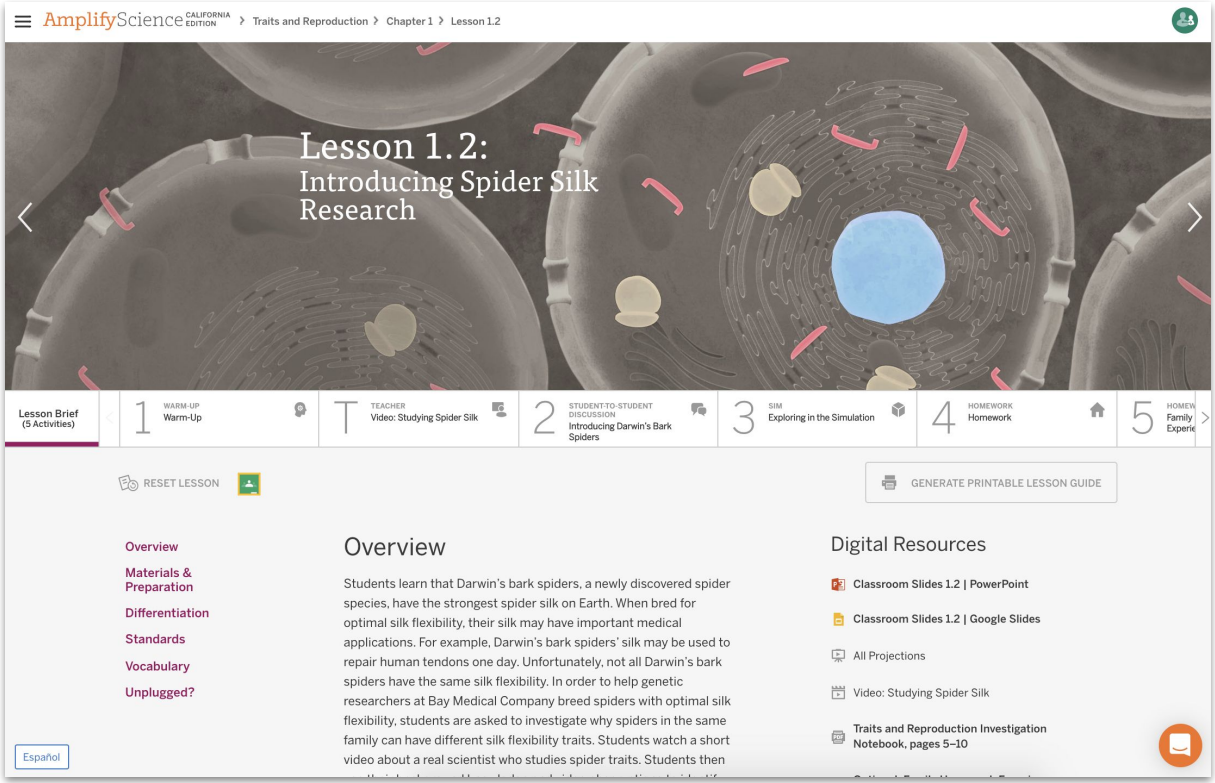
We will be using many of these in today's workshop.



Standard Amplify Science Curriculum

On the standard Amplify Science platform you will find key lesson level information.

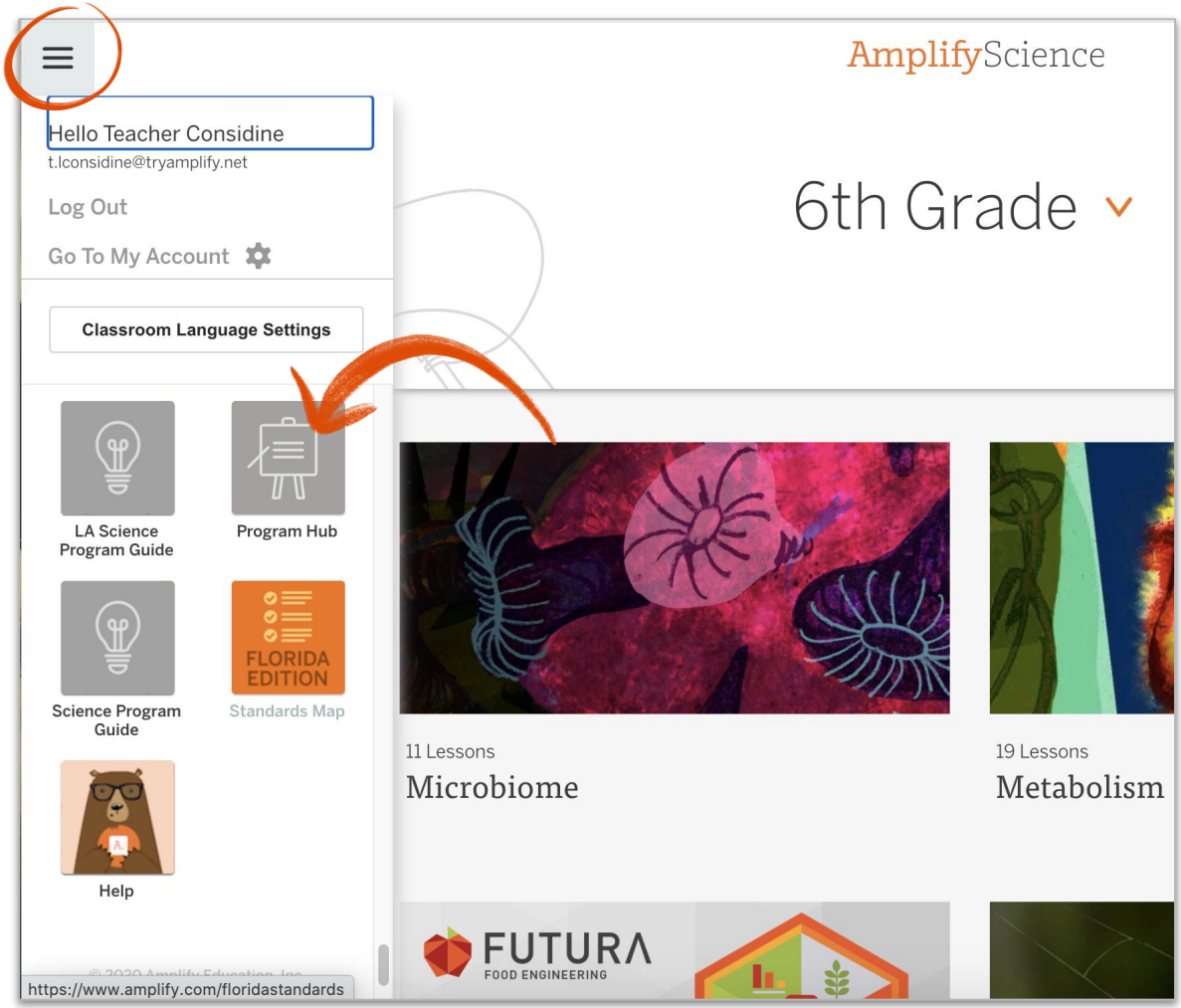
We will be navigating to lessons during today's workshop in order to better plan for collecting evidence of student learning in order to plan to meet the needs of diverse learners.



Amplify Science @Home Curriculum

Amplify Science @Home Curriculum

In addition to the standard Amplify Science curriculum, you also have access to Amplify Science @Home Curriculum on the Science Program Hub.



AmplifyScience@Home

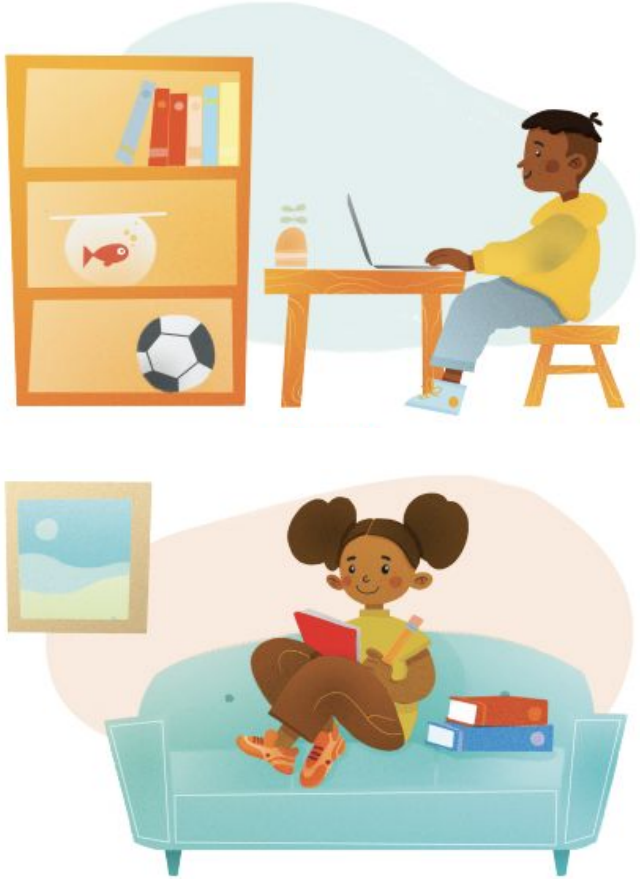
Two different options:

@Home Units

- Digital or print-based versions of Amplify Science units condensed by about 50%

@Home Videos

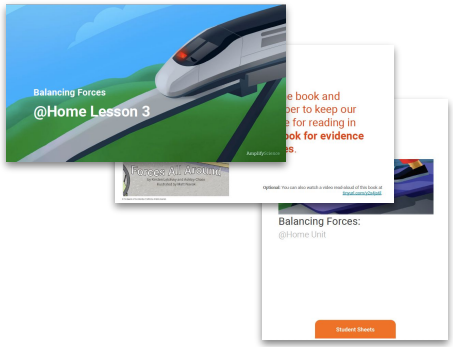
- Video playlists of Amplify Science lessons, taught by real Amplify Science teachers



@Home Units

A shift in approach to respond to user feedback

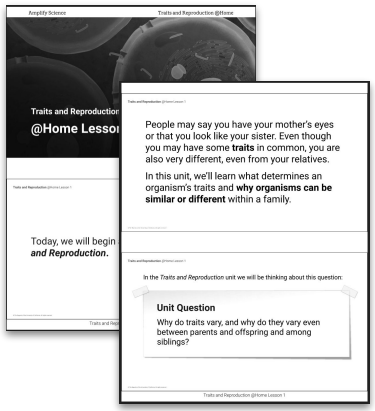
Original approach: two different resources

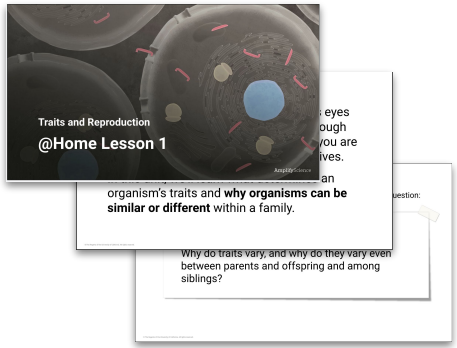


Print-based: @Home packets

Digital: @Home slides and student sheets

Updated approach: one resource, two formats





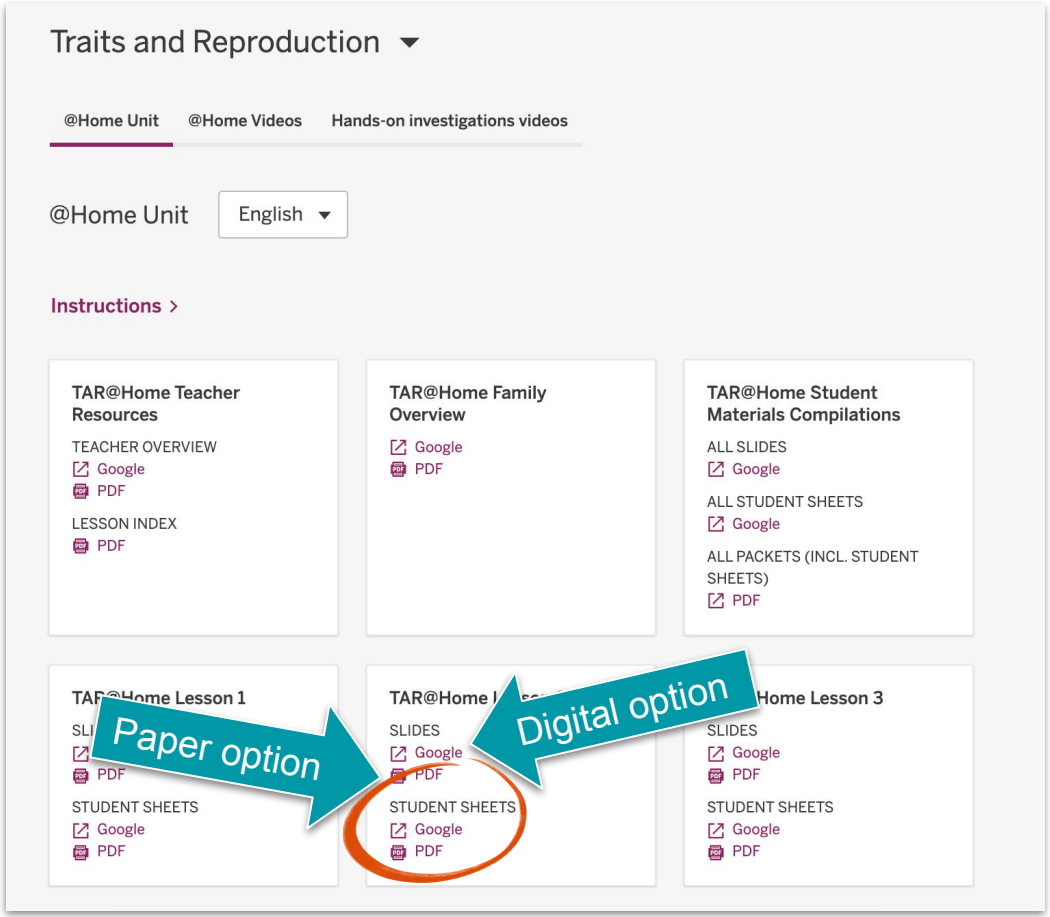
Print-based: PDFs of @Home Slides and student sheets

Digital: Google Slides @Home Slides and Google Doc student sheets

Amplify Science @Home Curriculum

You have access to the Traits and Reproduction @Home Unit.

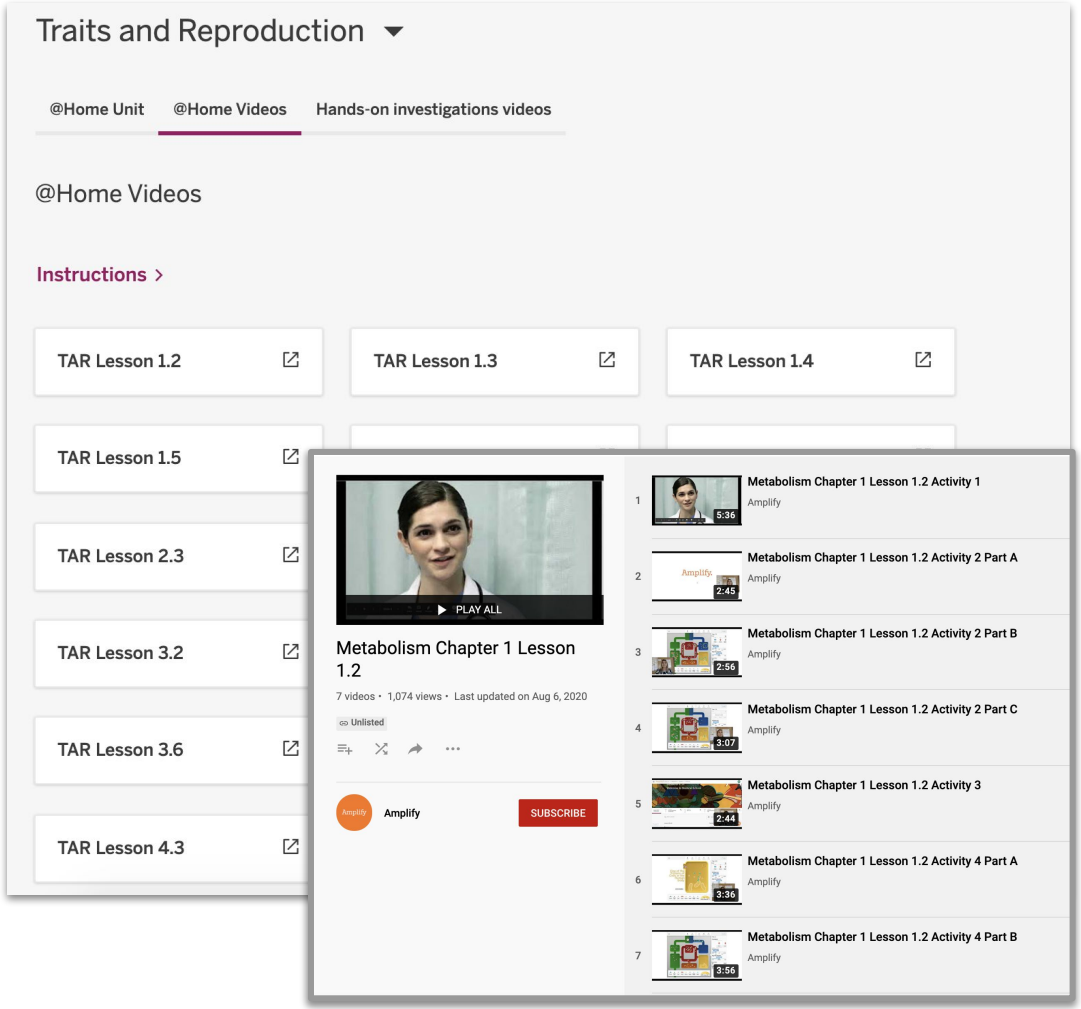
The Traits and Reproduction @Home Unit has **14 lessons.** Each lesson is written to be **30 minutes** long.

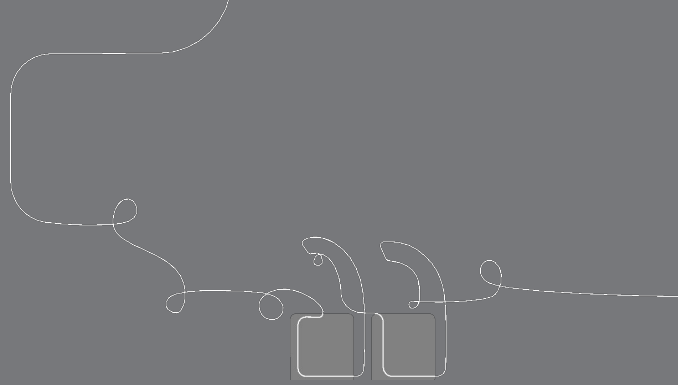


Amplify Science @Home Curriculum

You have access to the Traits and Reproduction @Home Videos.

There are 16 @Home Videos for the Traits and Reproduction unit. This covers all lessons expect for the assessment lessons (1.1, 2.5, and 4.4). The video playlists on YouTube teach the standard Amplify Science Lessons.



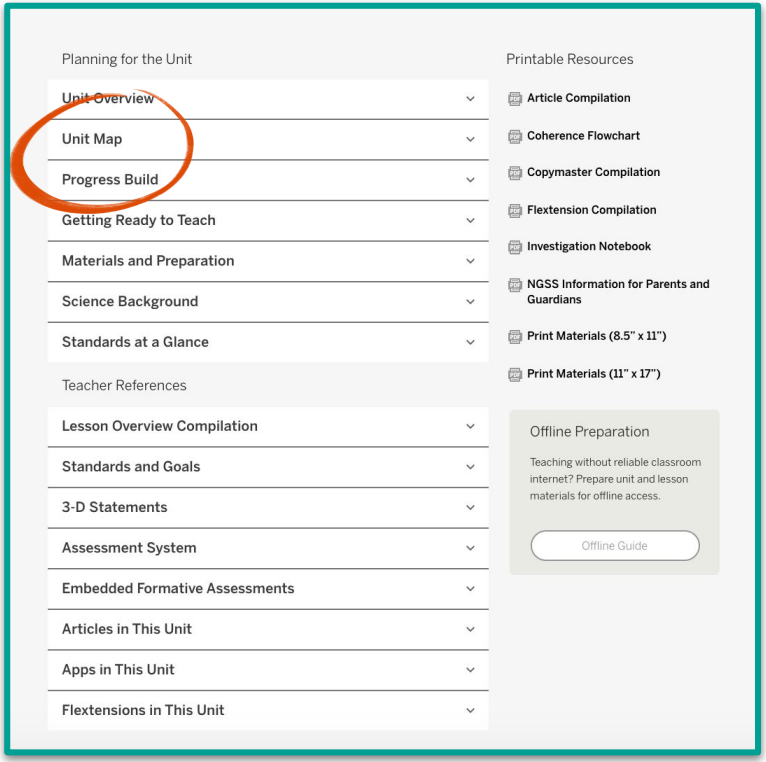


Questions?

Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- **Unit Internalization**
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
- Reflection and closing

Unit Guide Resources



Page 1

Unit Guide resources

Once a unit is selected, select **JUMP DOWN TO UNIT GUIDE** in order to access all unit-level resources in an Amplify Science unit.

Planning for the unit	
Unit Overview	Describes what's in each unit, the rationale, and how students learn across chapters
Unit Map	Provides an overview of what students figure out in each chapter, and how they figure it out
Progress Build	Explains the learning progression of ideas students figure out in the unit
Getting Ready To Teach	Provides tips for effectively preparing to teach and teaching the unit in your classroom
Materials and Preparation	Lists materials included in the unit's kit, items to be provided by the teacher, and briefly outlines preparation requirements for each lesson
Science Background	Adult-level primer on the science content students figure out in the unit
Standards at a Glance	Lists NGSS Standards (Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts), Common Core State Standards for English Language Arts, and Common Core State Standards for Mathematics
Teacher references	
Lesson Overview Compilation	Lesson Overview of each lesson in the unit, including lesson summary, activity purposes, and timing
Standards and Goals	Lists NGSS (Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) and CCSS (English Language Arts and Mathematics) standards in the unit, explains how the standards are reached
3-D Statements	Describes 3-D learning across the unit, chapters, and in individual lessons
Assessment System	Describes components of the Amplify Science assessment system, identifies each 3-D assessment opportunity in the unit
Embedded Formative Assessments	Includes full text of formative assessments in the unit
Articles in This Unit	Summarizes each unit text and explains how the text supports instruction
Apps in This Unit	Outlines functionality of digital tools and how students use them (in grades 6-8)
Flextensions in This Unit	Summarizes information about the Hands-On Flextension lesson(s) in the unit
Printable resources	
Coherence Flowcharts	Visual representation of the storyline of the unit
Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Flextension Compilation	Compilation of all copymasters for Hands-on Flextension lessons throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting
Multi-Language Glossary	Unit vocabulary words in 10 languages
NGSS Information for Parents and Guardians	Information for parents about the NGSS and the shifts for teaching and learning
Print Materials (8.5" x 11")	Digital compilation of printed cards (i.e. vocabulary cards, student card sets) provided in the kit
Print Materials (11" x 17")	Digital compilation of printed Chapter Questions and Key Concepts provided in the kit

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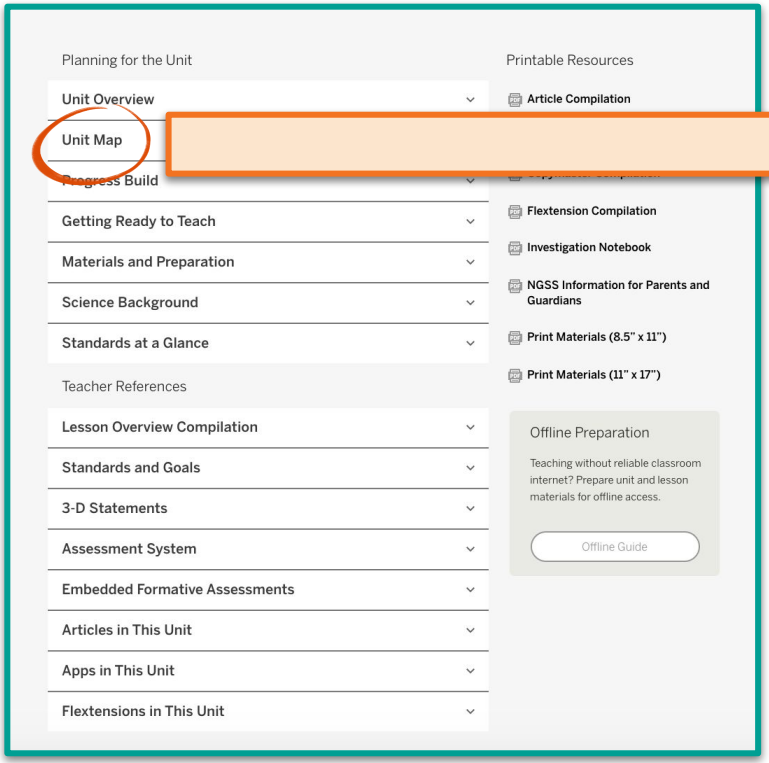
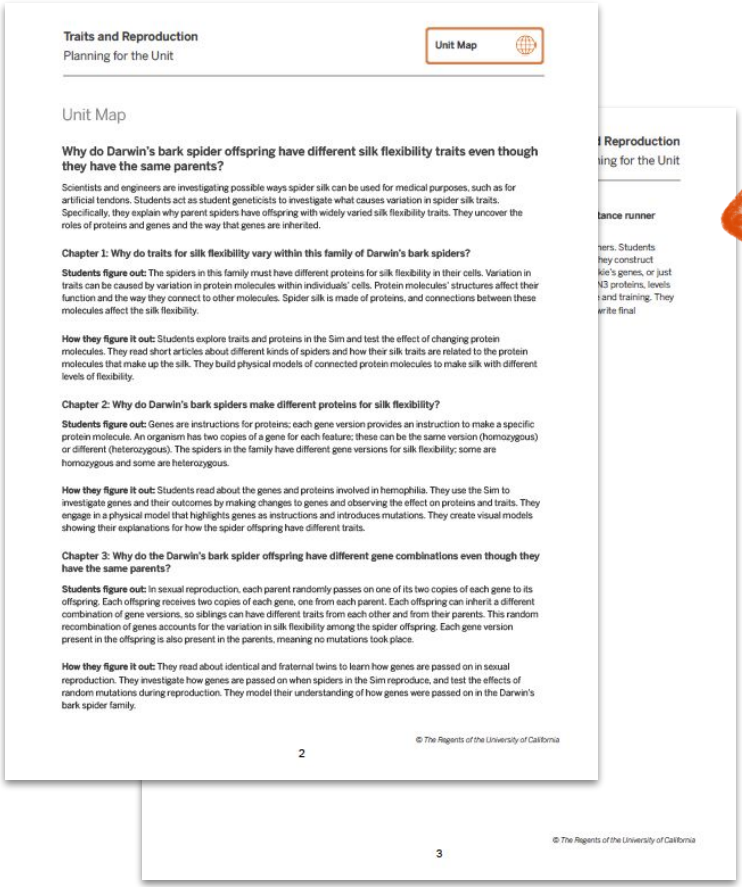
Unit Map

Pages 2-3





Traits and Reproduction
Planning for the Unit
Unit Map

Unit Map

Why do Darwin's bark spider offspring have different silk flexibility traits even though they have the same parents?

Scientists and engineers are investigating possible ways spider silk can be used for medical purposes, such as for artificial tendons. Students act as student geneticists to investigate what causes variation in spider silk traits. Specifically, they explain why parent spiders have offspring with widely varied silk flexibility traits. They uncover the roles of proteins and genes and the way that genes are inherited.

Chapter 1: Why do traits for silk flexibility vary within this family of Darwin's bark spiders?

Students figure out: The spiders in this family must have different proteins for silk flexibility in their cells. Variation in traits can be caused by variation in protein molecules within individuals' cells. Protein molecules' structures affect their function and the way they connect to other molecules. Spider silk is made of proteins, and connections between these molecules affect the silk flexibility.

How they figure it out: Students explore traits and proteins in the Sim and test the effect of changing protein molecules. They read short articles about different kinds of spiders and how their silk traits are related to the protein molecules that make up the silk. They build physical models of connected protein molecules to make silk with different levels of flexibility.

Chapter 2: Why do Darwin's bark spiders make different proteins for silk flexibility?

Students figure out: Genes are instructions for proteins; each gene version provides an instruction to make a specific protein molecule. An organism has two copies of a gene for each feature; these can be the same version (homozygous) or different (heterozygous). The spiders in the family have different gene versions for silk flexibility; some are homozygous and some are heterozygous.

How they figure it out: Students read about the genes and proteins involved in hemophilia. They use the Sim to investigate genes and their outcomes by making changes to genes and observing the effect on proteins and traits. They engage in a physical model that highlights genes as instructions and introduces mutations. They create visual models showing their explanations for how the spider offspring have different traits.

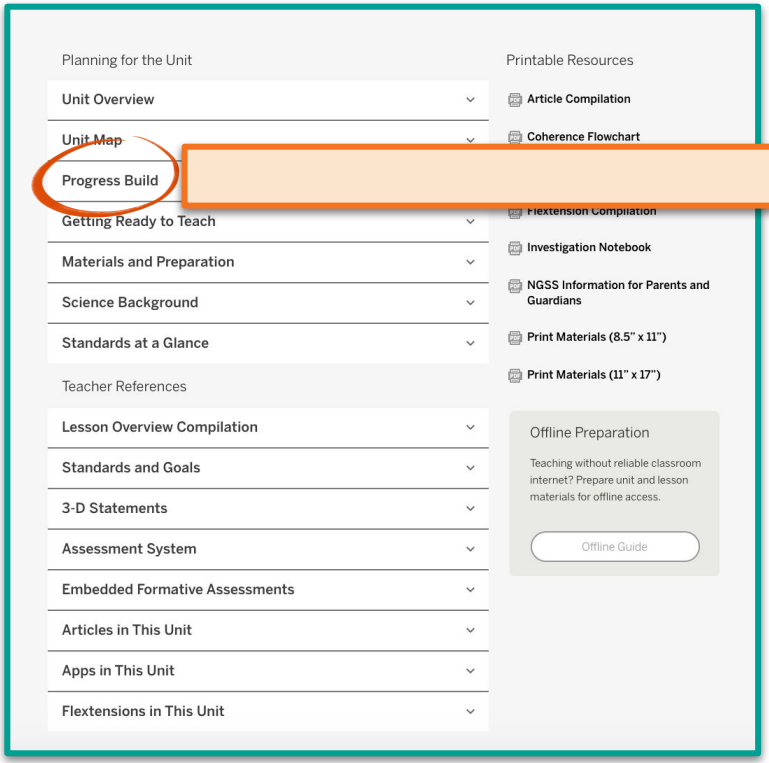
Chapter 3: Why do the Darwin's bark spider offspring have different gene combinations even though they have the same parents?

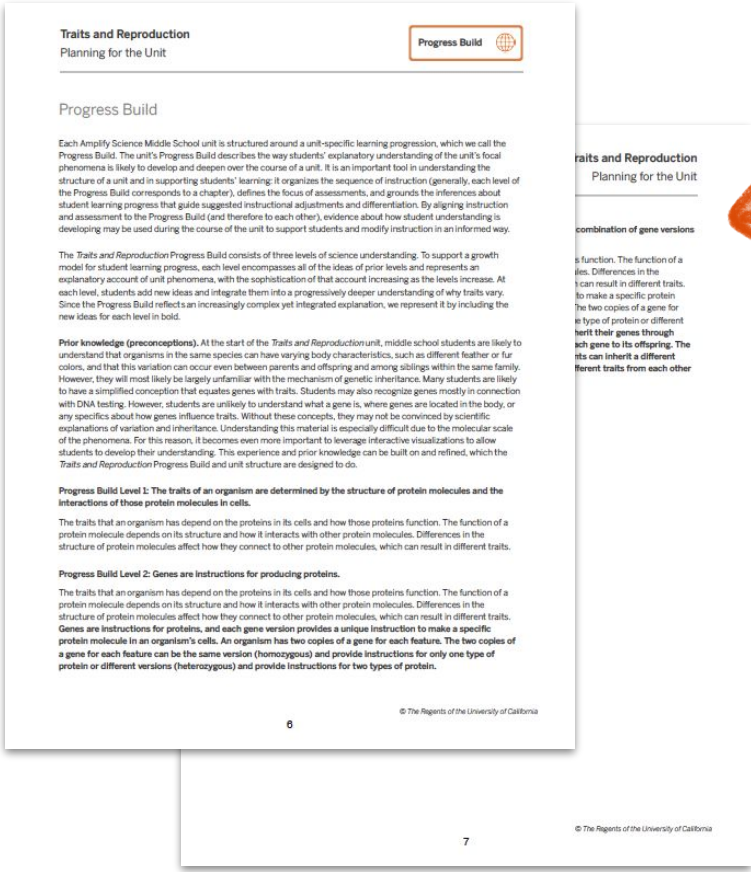
Students figure out: In sexual reproduction, each parent randomly passes on one of its two copies of each gene to its offspring. Each offspring receives two copies of each gene, one from each parent. Each offspring can inherit a different combination of gene versions, so siblings can have different traits from each other and from their parents. This random recombination of genes accounts for the variation in silk flexibility among the spider offspring. Each gene version present in the offspring is also present in the parents, meaning no mutations took place.

How they figure it out: They read about identical and fraternal twins to learn how genes are passed on in sexual reproduction. They investigate how genes are passed on when spiders in the Sim reproduce, and test the effects of random mutations during reproduction. They model their understanding of how genes were passed on in the Darwin's bark spider family.

Progress Build

Pages 4-5





Traits and Reproduction
Planning for the Unit

Progress Build

Progress Build

Each Amplify Science Middle School unit is structured around a unit-specific learning progression, which we call the Progress Build. The unit's Progress Build describes the way students' explanatory understanding of the unit's focal phenomena is likely to develop and deepen over the course of a unit. It is an important tool in understanding the structure of a unit and in supporting students' learning: it organizes the sequence of instruction (generally, each level of the Progress Build corresponds to a chapter), defines the focus of assessments, and grounds the inferences about student learning progress that guide suggested instructional adjustments and differentiation. By aligning instruction and assessment to the Progress Build (and therefore to each other), evidence about how student understanding is developing may be used during the course of the unit to support students and modify instruction in an informed way.

The *Traits and Reproduction* Progress Build consists of three levels of science understanding. To support a growth model for student learning progress, each level encompasses all of the ideas of prior levels and represents an explanatory account of unit phenomena, with the sophistication of that account increasing as the levels increase. At each level, students add new ideas and integrate them into a progressively deeper understanding of why traits vary. Since the Progress Build reflects an increasingly complex yet integrated explanation, we represent it by including the new ideas for each level in bold.

Prior knowledge (preconceptions). At the start of the *Traits and Reproduction* unit, middle school students are likely to understand that organisms in the same species can have varying body characteristics, such as different feather or fur colors, and that this variation can occur even between parents and offspring and among siblings within the same family. However, they will most likely be largely unfamiliar with the mechanism of genetic inheritance. Many students are likely to have a simplified conception that equates genes with traits. Students may also recognize genes mostly in connection with DNA testing. However, students are unlikely to understand what a gene is, where genes are located in the body, or any specifics about how genes influence traits. Without these concepts, they may not be convinced by scientific explanations of variation and inheritance. Understanding this material is especially difficult due to the molecular scale of the phenomena. For this reason, it becomes even more important to leverage interactive visualizations to allow students to develop their understanding. This experience and prior knowledge can be built on and refined, which the *Traits and Reproduction* Progress Build and unit structure are designed to do.

Progress Build Level 1: The traits of an organism are determined by the structure of protein molecules and the interactions of those protein molecules in cells.

The traits that an organism has depend on the proteins in its cells and how those proteins function. The function of a protein molecule depends on its structure and how it interacts with other protein molecules. Differences in the structure of protein molecules affect how they connect to other protein molecules, which can result in different traits.

Progress Build Level 2: Genes are instructions for producing proteins.

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raits and Reproduction
Planning for the Unit

combination of gene versions

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Unit Internalization Work Time

Pages 2-5

Guided Unit Internalization

Part 1: Unit-level internalization

Unit title:

What is the phenomenon students are investigating in your unit?

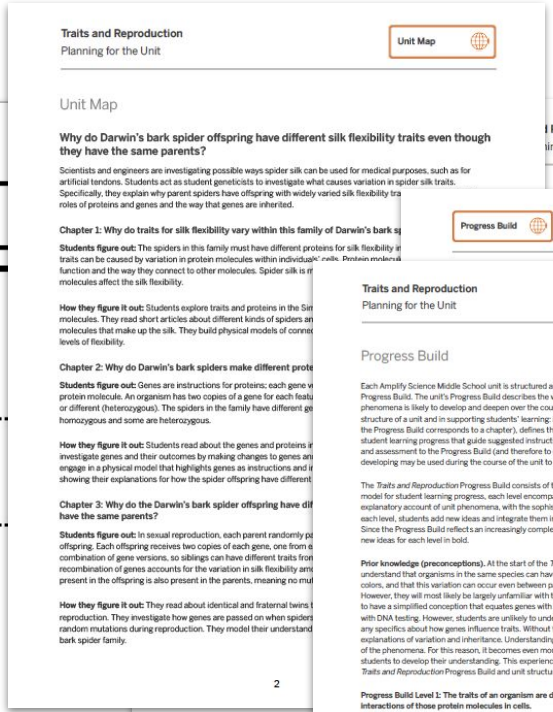
Unit Question:

Student role:

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

What science ideas do students need to figure out in order to explain the phenomenon?

Page 6


Traits and Reproduction
Planning for the Unit
Unit Map
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Reproduction
ing for the Unit
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Traits and Reproduction
Planning for the Unit
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Unit Guide Document

Unit Map

Lesson Overview Compilation

Unit Map

Progress Buld

Guided Unit Internalization

Part 1: Unit-level internalization

Page X

Unit title: Traits and Reproduction

What is the phenomenon students are investigating in your unit?

Darwin's bark spider offspring have widely varied silk flexibility traits, even though they have the same parents.

Unit Question:

Why do traits vary, and why do they vary even between parents and offspring and among siblings?

Student role:

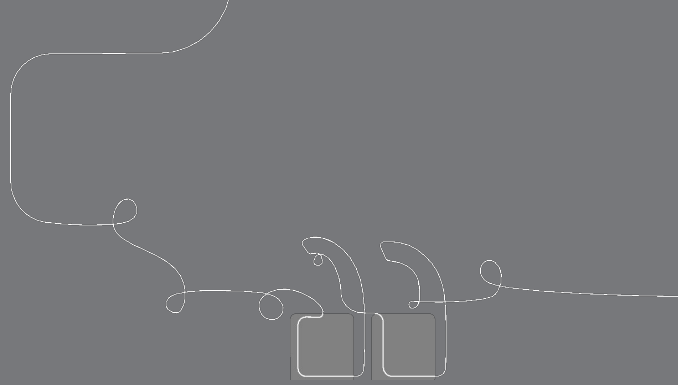
Student geneticists

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

The spider offspring have different proteins for silk flexibility in their cells, because they inherited different sets of genes (which are instructions for proteins) from their parents. Each offspring receives two copies of each gene, one from each parent. Sibling spiders can have different combinations of gene versions, so they get different instructions for silk proteins. This led to varied traits in the sibling spiders.

What science ideas do students need to figure out in order to explain the phenomenon?

The traits of an organism are determined by the structure of protein molecules and the interactions of those protein molecules in cells. Genes are instructions for producing proteins. Through sexual reproduction, an organism inherits a random combination of gene versions from its parents.



Questions?

Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- Unit Internalization
- **Planning to teach**
  - **Collecting evidence of student learning to meet diverse learner needs**
- Reflection and closing

Unit Map

Why do Darwin's bark spider offspring have different silk flexibility traits even though they have the same parents?

Scientists and engineers are investigating possible ways spider silk can be used for medical purposes, such as for artificial tendons. Students act as student geneticists to investigate what causes variation in spider silk traits. Specifically, they explain why parent spiders have offspring with widely varied silk flexibility traits. They uncover the roles of proteins and genes and the way that genes are inherited.

Chapter 1: Why do traits for silk flexibility vary within this family of Darwin's bark spiders?

Students figure out: The spiders in this family must have different proteins for silk flexibility in their cells. Variation in traits can be caused by variation in protein molecules within individuals' cells. Protein molecules' structures affect their function and the way they connect to other molecules. Spider silk is made of proteins, and connections between these molecules affect the silk flexibility.

How they figure it out: Students explore traits and proteins in the Sim and test the effect of changing protein molecules. They read short articles about different kinds of spiders and how their silk traits are related to the protein molecules that make up the silk. They build physical models of connected protein molecules to make silk with different levels of flexibility.

Chapter 1: Exploring Variation in Spider Silk

JUMP DOWN TO CHAPTER OVERVIEW

Lesson 1.1:
Pre-Unit Assessment

SETTINGS

Lesson 1.2:
Introducing Spider Silk Research

Lesson 1.3:
Surprising Spider Silk

Lesson 1.4:
Observing Proteins and Variation

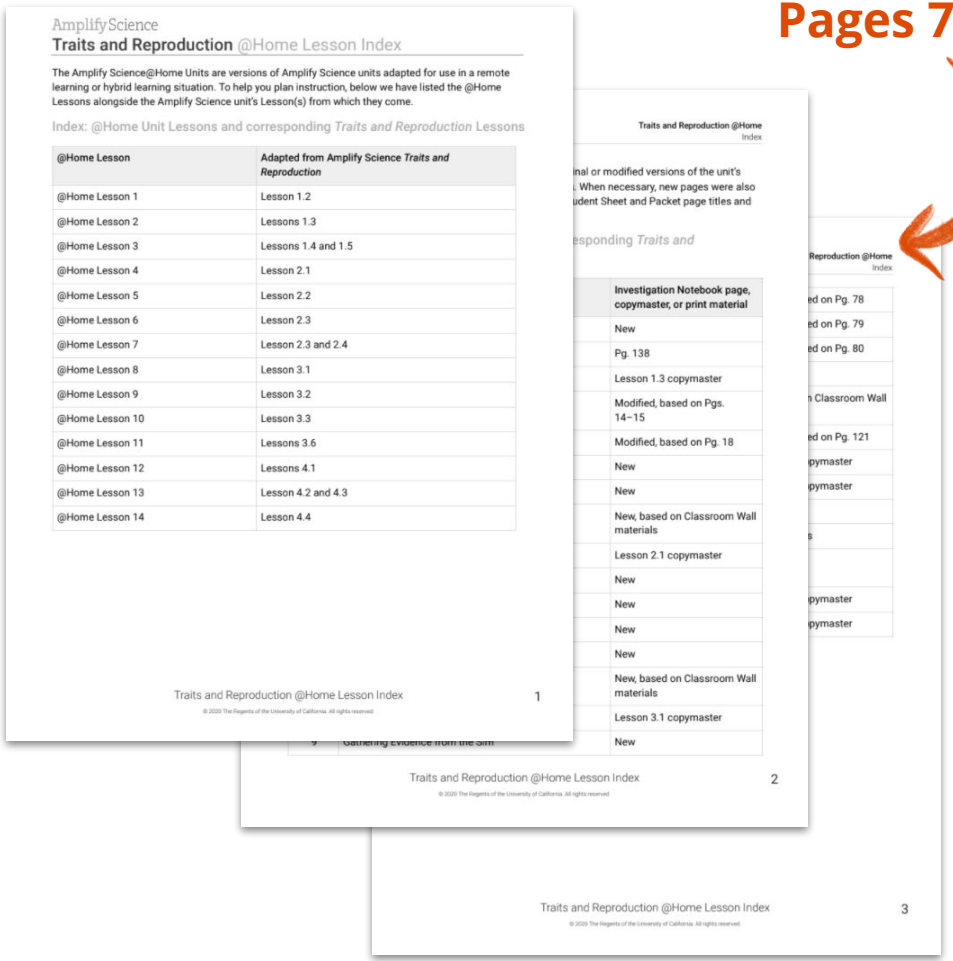
Lesson 1.5:
Investigating Proteins and Traits

@Home Unit Lesson Index

This resource correlates lessons from the Standard Curriculum with @Home Unit Lessons.

It also lists the @Home Unit Student Sheets with information about where they came from (i.e. Student Investigation Notebook, copymaster, or new for the @Home Unit)

Pages 7-9



AmplifyScience
Traits and Reproduction @Home Lesson Index

The Amplify Science@Home Units are versions of Amplify Science units adapted for use in a remote learning or hybrid learning situation. To help you plan instruction, below we have listed the @Home Lessons alongside the Amplify Science unit's Lesson(s) from which they come.

Index: @Home Unit Lessons and corresponding *Traits and Reproduction* Lessons

@Home Lesson	Adapted from Amplify Science *Traits and Reproduction*
@Home Lesson 1	Lesson 1.2
@Home Lesson 2	Lessons 1.3
@Home Lesson 3	Lessons 1.4 and 1.5
@Home Lesson 4	Lesson 2.1
@Home Lesson 5	Lesson 2.2
@Home Lesson 6	Lesson 2.3
@Home Lesson 7	Lesson 2.3 and 2.4
@Home Lesson 8	Lesson 3.1
@Home Lesson 9	Lesson 3.2
@Home Lesson 10	Lesson 3.3
@Home Lesson 11	Lessons 3.6
@Home Lesson 12	Lessons 4.1
@Home Lesson 13	Lesson 4.2 and 4.3
@Home Lesson 14	Lesson 4.4

Traits and Reproduction @Home Lesson Index 1

Traits and Reproduction @Home Index

Investigation Notebook page, copymaster, or print material

New
Pg. 138
Lesson 1.3 copymaster
Modified, based on Pgs. 14–15
Modified, based on Pg. 18
New
New
New, based on Classroom Wall materials
Lesson 2.1 copymaster
New
New
New
New
New, based on Classroom Wall materials
Lesson 3.1 copymaster
New

Traits and Reproduction @Home Lesson Index 2

Traits and Reproduction @Home Lesson Index 3

Amplify.

Key Activities

- **Introducing Spider Silk Research:** Students are introduced to the unit problem and their role as student researchers.
- **Talk:** Students are introduced to the Darwin's Bark spider family tree and discuss with a partner their observations about the differences in silk flexibility traits among the spider family.
- **Observe:** Students are introduced to the *Traits and Reproduction* Simulation and make observations of spiders.

Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video and read the message from Bay Medical Company. While meeting, introduce the spider family and the vocabulary words *feature* and *trait*. Have students share their initial ideas about the Chapter 1 Question. You can either have students complete the Sim investigation individually, then share observations as a class, or have students observe and record their observations as you show the Sim. If you are meeting in person with students who don't have digital access at home, take the opportunity to have them complete the Sim investigation in class (as in *Traits and Reproduction*, Lesson 1.2, Activity 3).

Traits and Reproduction

@Home Lesson 1

AmplifyScience

Today, we will begin a new unit called ***Traits and Reproduction*.**

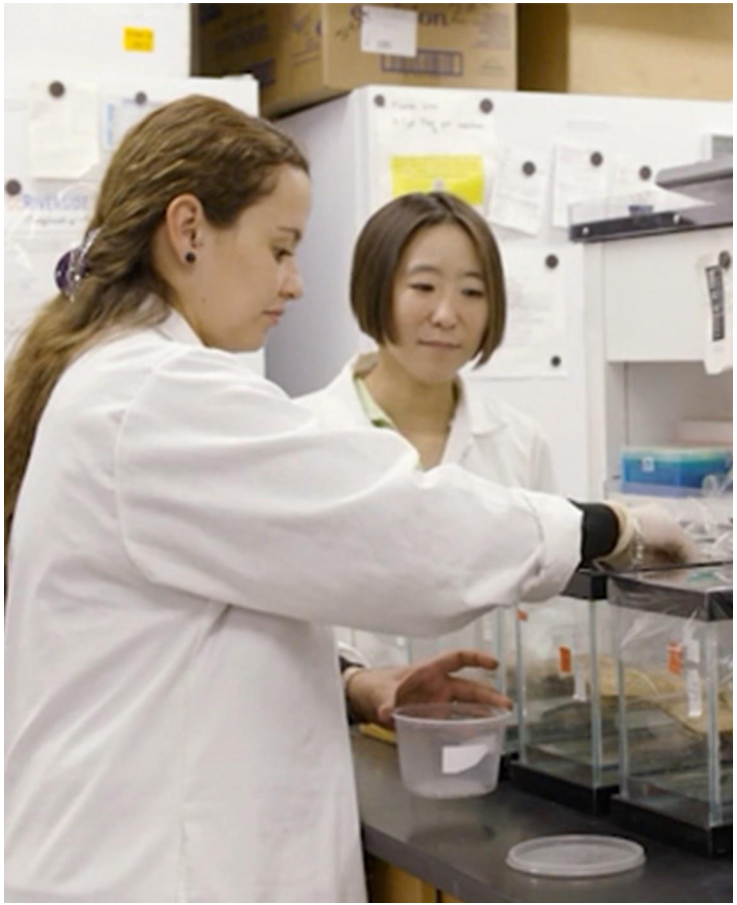
People may say you have your mother's eyes or that you look like your sister. Even though you may have some **traits** in common, you are also very different, even from your relatives.

In this unit, we'll learn what determines an organism's traits and **why organisms can be similar or different** within a family.

In the *Traits and Reproduction* unit we will be thinking about this question:

Unit Question

Why do traits vary, and why do they vary even between parents and offspring and among siblings?



You will now watch a video about a scientist who is researching **traits in spiders.** She is interested in the different kinds of spider silk. We will focus on these traits throughout the unit.

Note: all videos in this @Home Unit can be viewed on a smartphone, or any other connected device.

As you watch the video, think about this question.

Why are scientists interested in spider silk?

Using the print version? Watch the video here: tinyurl.com/AMPTR-01

In this unit, we will do work that is like the scientists in the video. You will take on the role of **student genetic researchers** at Bay Medical Company, researching spider silk in Darwin's bark spiders.

Next, you will read a memo that describes what you will be investigating about spiders.

To: Student Researchers
From: Dr. Ada Sattari, Lead Scientist at Bay Medical Company
Subject: Spider Silk Research

BAY MEDICAL COMPANY

I lead the Spider Silk Research Team, a group of genetic researchers. We are working on medical treatments that use silk from the Darwin's bark spider, a newly discovered spider species. These spiders produce very strong silk. We want to see if their silk can be used to make tendons and stitches for humans. For this to work, the silk must be both strong and flexible. A medium level of flexibility is optimum.

Unfortunately, we have discovered that not all Darwin's bark spiders are the same. Some spiders, even those in the same family, make more flexible silk than others. As student researchers, you will work to explain why traits such as silk flexibility can vary within a family of Darwin's bark spiders.

Darwin’s bark spiders are a real, recently discovered species.

Dr. Sattari and Bay Medical Research are not real but our work in this unit will be similar to the research actual scientists are doing with spider silk.

Key Activities

- **Introducing Spider Silk Research:** Students are introduced to the unit problem and their role as student researchers.
- **Talk:** Students are introduced to the Darwin's Bark spider family tree and discuss with a partner their observations about the differences in silk flexibility traits among the spider family.
- **Observe:** Students are introduced to the *Traits and Reproduction* Simulation and make observations of spiders.

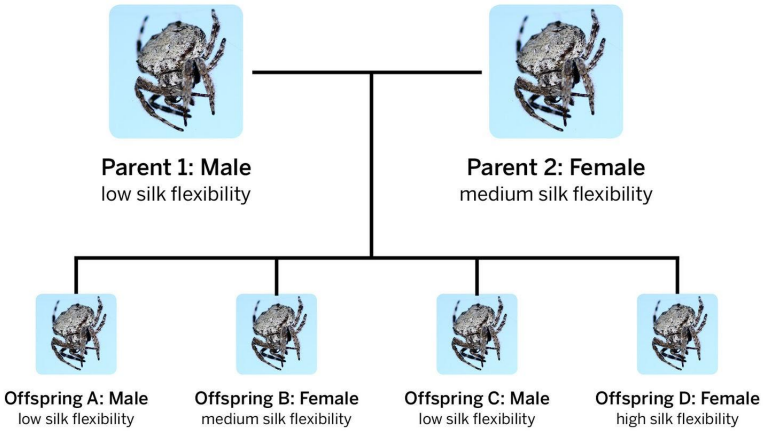
Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video and read the message from Bay Medical Company. While meeting, introduce the spider family and the vocabulary words *feature* and *trait*. Have students share their initial ideas about the Chapter 1 Question. You can either have students complete the Sim investigation individually, then share observations as a class, or have students observe and record their observations as you show the Sim. If you are meeting in person with students who don't have digital access at home, take the opportunity to have them complete the Sim investigation in class (as in *Traits and Reproduction*, Lesson 1.2, Activity 3).

In this lesson and many others in the *Traits and Reproduction* @Home unit you will need to **talk with a partner.** Check with your teacher about how you will work with partners in this @Home Unit.

Your partner could be a classmate on the phone or someone at home with you.

Darwin's Bark Spider Family Tree



This is the spider family you will be investigating. Observe the spider family and discuss this question with a partner.

What do you notice about the differences in **silk flexibility** traits among the spider family?

You probably noticed that the spiders have different **traits** for silk flexibility even though they are in the same family. In this unit, you will investigate why.

This is the end of the partner work in this lesson.

One feature you will be investigating is silk flexibility.

feature

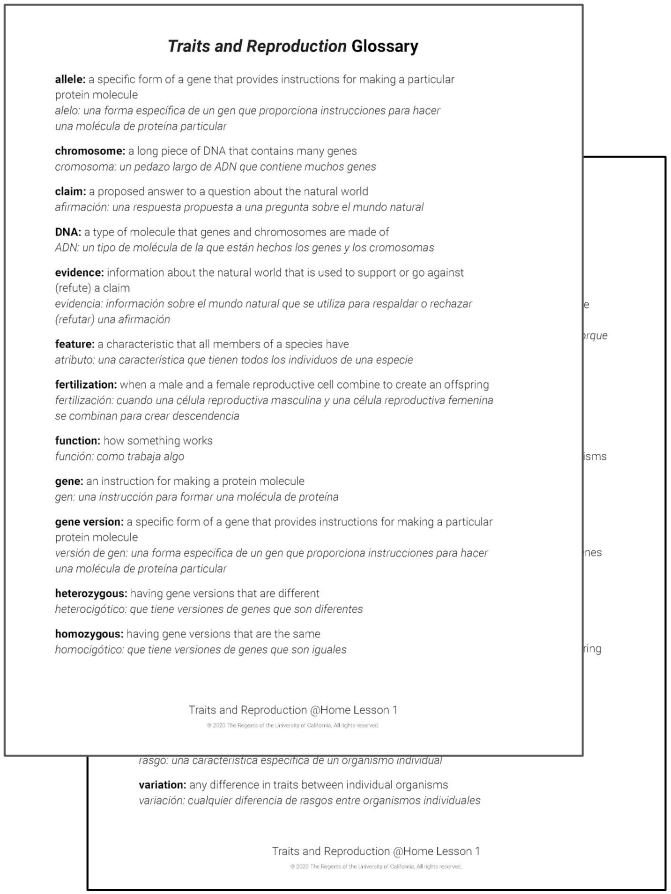
a characteristic that all members of a species have

High and low silk flexibility are examples of traits.

trait

a specific characteristic of an individual organism

In this lesson and throughout the unit you will need to **access different pages** such as the Glossary on the next slide. Check with your teacher about how you will access materials and complete and submit work in this @Home Unit.



***Traits and Reproduction* Glossary**

allele: a specific form of a gene that provides instructions for making a particular protein molecule
alelo: una forma específica de un gen que proporciona instrucciones para hacer una molécula de proteína particular

chromosome: a long piece of DNA that contains many genes
cromosoma: un pedazo largo de ADN que contiene muchos genes

claim: a proposed answer to a question about the natural world
afirmación: una respuesta propuesta a una pregunta sobre el mundo natural

DNA: a type of molecule that genes and chromosomes are made of
ADN: un tipo de molécula de la que están hechos los genes y los cromosomas

evidence: information about the natural world that is used to support or go against (refute) a claim
evidencia: información sobre el mundo natural que se utiliza para respaldar o rechazar (refutar) una afirmación

feature: a characteristic that all members of a species have
atributo: una característica que tienen todos los individuos de una especie

fertilization: when a male and a female reproductive cell combine to create an offspring
fertilización: cuando una célula reproductiva masculina y una célula reproductiva femenina se combinan para crear descendencia

function: how something works
función: como trabaja algo

gene: an instruction for making a protein molecule
gen: una instrucción para formar una molécula de proteína

gene version: a specific form of a gene that provides instructions for making a particular protein molecule
versión de gen: una forma específica de un gen que proporciona instrucciones para hacer una molécula de proteína particular

heterozygous: having gene versions that are different
heterocigótico: que tiene versiones de genes que son diferentes

homozygous: having gene versions that are the same
homocigótico: que tiene versiones de genes que son iguales

Traits and Reproduction @Home Lesson 1

rasgo: una característica específica de un organismo individual

variation: any difference in traits between individual organisms
variación: cualquier diferencia de rasgos entre organismos individuales

Traits and Reproduction @Home Lesson 1

Throughout the year, you can look up vocabulary words in the **glossary** to help you understand what they mean. You can find this in your student sheets or in the Amplify Library.

***Traits and Reproduction* Glossary** pages or Amplify Library

Eye color is a **feature.**

People have different **traits** for eye color.

For example, they could have blue, brown, or green eyes.

example of a feature = body color

trait = yellow body color

trait = brown body color

Body color is an example of a **feature** in this species of spider.

Yellow and brown body colors are different **traits** of this species of spider.

Silk flexibility is also a **feature**. All of the Darwin’s bark spiders have this feature, but some spiders make silk that is more flexible than other spiders' silk.

High, medium, and low silk flexibility are different **traits** for the silk flexibility feature.

Think about this question.

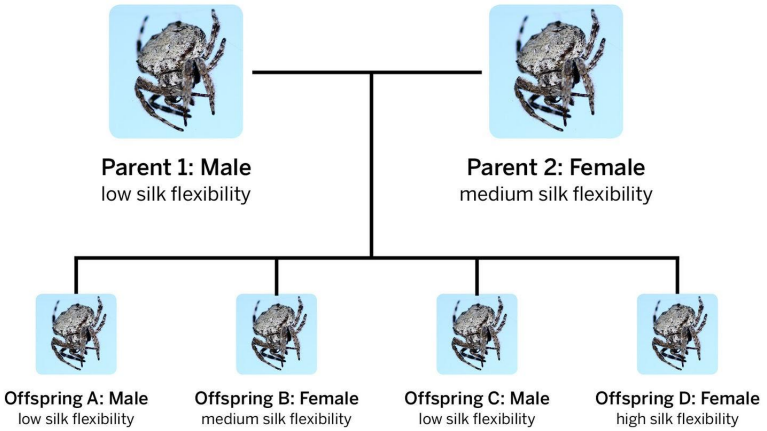
What are some **traits** you have that are different from your friends and family members?

To start the unit, we will investigate this Chapter Question.

Chapter 1 Question

Why do traits for silk flexibility vary within this family of Darwin's bark spiders?

Darwin's Bark Spider Family Tree



Think about your initial ideas about the Chapter 1 Question.

Why do traits for silk flexibility vary within this family of Darwin's bark spiders?

Darwin's Bark Spider Claims

Question: Why do traits for silk flexibility vary within this family of Darwin's bark spiders?

Claim 1: The offspring have mutations that affect their traits.

Claim 2: The offspring's traits depend on which parent the offspring received more traits from.

Claim 3: The offspring received different combinations of traits from their parents.

These are **claims** about why the trait for silk flexibility varies within the spider family.

We'll return to these claims as we learn more about traits in this unit.

Key Activities

- **Introducing Spider Silk Research:** Students are introduced to the unit problem and their role as student researchers.
- **Talk:** Students are introduced to the Darwin's Bark spider family tree and discuss with a partner their observations about the differences in silk flexibility traits among the spider family.
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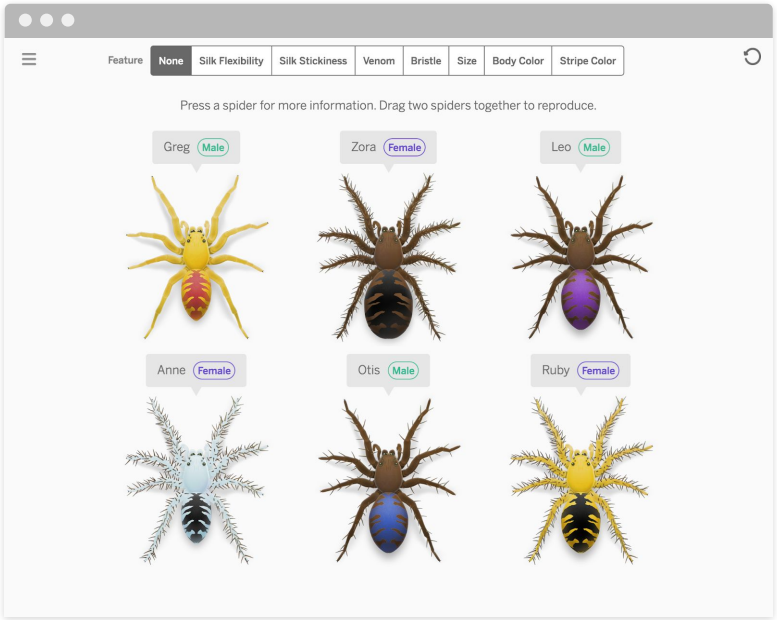
Ideas for synchronous or in-person instruction

Before meeting, have students watch the introductory video and read the message from Bay Medical Company. While meeting, introduce the spider family and the vocabulary words *feature* and *trait*. Have students share their initial ideas about the Chapter 1 Question. You can either have students complete the Sim investigation individually, then share observations as a class, or have students observe and record their observations as you show the Sim. If you are meeting in person with students who don't have digital access at home, take the opportunity to have them complete the Sim investigation in class (as in *Traits and Reproduction*, Lesson 1.2, Activity 3).



Throughout this unit, we will be using the *Traits and Reproduction* **Simulation** to help us learn more about **variation in the traits** of spiders.

Next, you will watch a video about how to use the Sim.

Using the print version? Watch the video here: tinyurl.com/AMPTR-022

Next, you will make observations of spiders from the Sim. You will record similarities and differences in their **traits**.

Name: _____ Date: _____

Observing Spiders from the Sim

Observe the image of spiders from the Sim and record your observations below.

What similarities do you observe in the spiders' **traits**?

_____

_____

_____

What differences do you observe in the spiders' **traits**?

_____

_____

_____

Are all spiders the same? Explain your answer.

_____

_____

_____

Traits and Reproduction @Home Lesson 1

Go to the **Observing Spiders from the Sim** page.

Observe the image of spiders from the Sim on the next slide. **Record** similarities and differences in their traits.

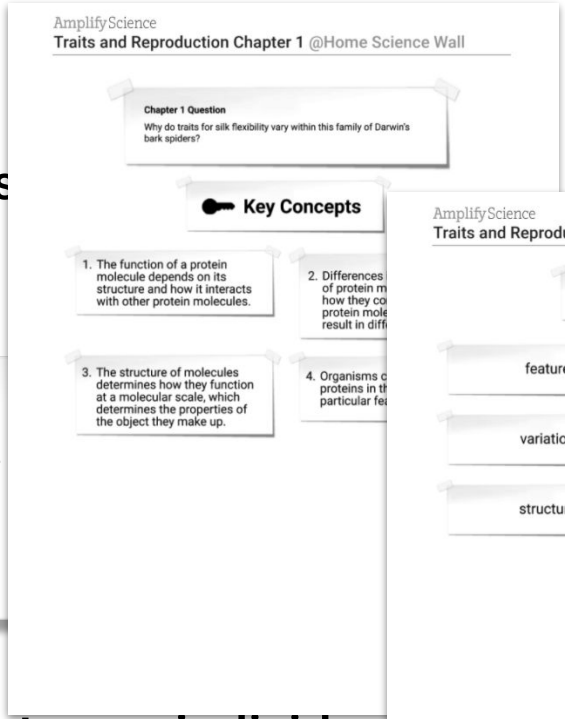
You probably noticed that all of the spiders are not the same. Some were different colors, some had bigger or smaller bodies, some had more or less bristle (the hair on their bodies).

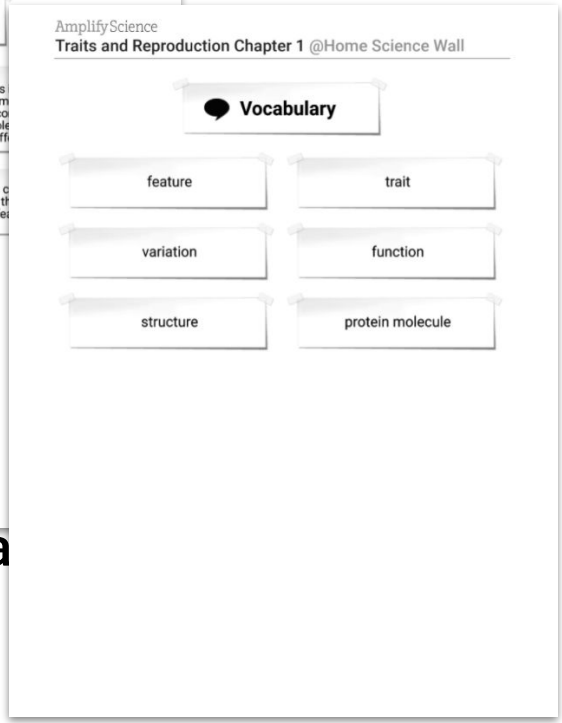
We know that humans can have different **traits**, but it can be more challenging to see these differences in other species, such as spiders.

Just like humans, s

vari

any difference in traits between individua





End of @Home Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

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Key Activities

- **Introducing Spider Silk Research:** Students are introduced to the unit problem and their role as student researchers.
- **Talk:** Students are introduced to the Darwin's Bark spider family tree and discuss with a partner their observations about the differences in silk flexibility traits among the spider family.
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Suggestions for Online Synchronous Time

Online synchronous time
Online discussions: It's worthwhile to establish norms and routines for online discussions in science to ensure equity of voice, turn-taking, etc.
Digital tool demonstrations: You can share your screen and demonstrate, or invite your students to share their screen and think-aloud as they use a Simulation or other digital tool.
Interactive read-alouds: Screen share a digital book or article, and pause to ask questions and invite discussion as you would in the classroom.
Shared Writing: This is a great opportunity for a collaborative document that all your students can contribute to.
Co-constructed class charts: You can create digital charts, or create physical charts in your home with student input.

page 14

Reflection: Teaching @Home Lesson 1

How would you teach this lesson?

Multi-day planning, including planning for differentiation and evidence of student work

Day @Home Lesson 1

Minutes for science: 15 min.

Instructional format:
- [x] Asynchronous
- [ ] Synchronous

Lesson or part of lesson:
Introducing spider silk research (slides 1-10)

Mode of instruction:
- [x] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [x] Students work independently using:
  - [ ] Printed @Home Slides
  - [x] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
View the video about spider silk research and read the letter from Bay Medical Company. Jot down initial ideas about why the traits vary among spiders in the same family.	assign slides 1-10 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.

Minutes for science: _____

Instructional format:
- [ ] Asynchronous
- [x] Synchronous

Lesson or part of lesson:

Mode of instruction:
- [ ] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [ ] Students work independently using:
  - [ ] Printed @Home Slides
  - [ ] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...

Multi-day planning, including planning for differentiation and evidence of student work

Day @Home Lesson 1

Minutes for science: 15 min.

Instructional format:
- [x] Asynchronous
- [ ] Synchronous

Lesson or part of lesson:
Introducing spider silk research (slides 1-10)

Mode of instruction:
- [x] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [x] Students work independently using:
  - [ ] Printed @Home Slides
  - [x] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
View the video about spider silk research and read the letter from Bay Medical Company. Jot down initial ideas about why the traits vary among spiders in the same family.	assign slides 1-10 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.

Minutes for science: 30 min

Instructional format:
- [ ] Asynchronous
- [x] Synchronous

Lesson or part of lesson:
Talk and Observe activities (slides 11-32)

Mode of instruction:
- [ ] Preview
- [ ] Review
- [ ] Teach full lesson live
- [x] Teach using synchronous suggestions
- [ ] Students work independently using:
  - [ ] Printed @Home Slides
  - [ ] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
Pause for pair discussion prompts on slides 12, 21, and 23. Watch Sim model, and complete Student Sheet (slide 28). Practice logging in to find Amplify Library and Sim.	Lead students through the lesson activities using slides 11-32, pausing for partner discussion. Model Sim and lead class discussion about spider traits. Show how to navigate to Library and Sim.

Breakout groups

page 11

Discussion prompts

Planning:

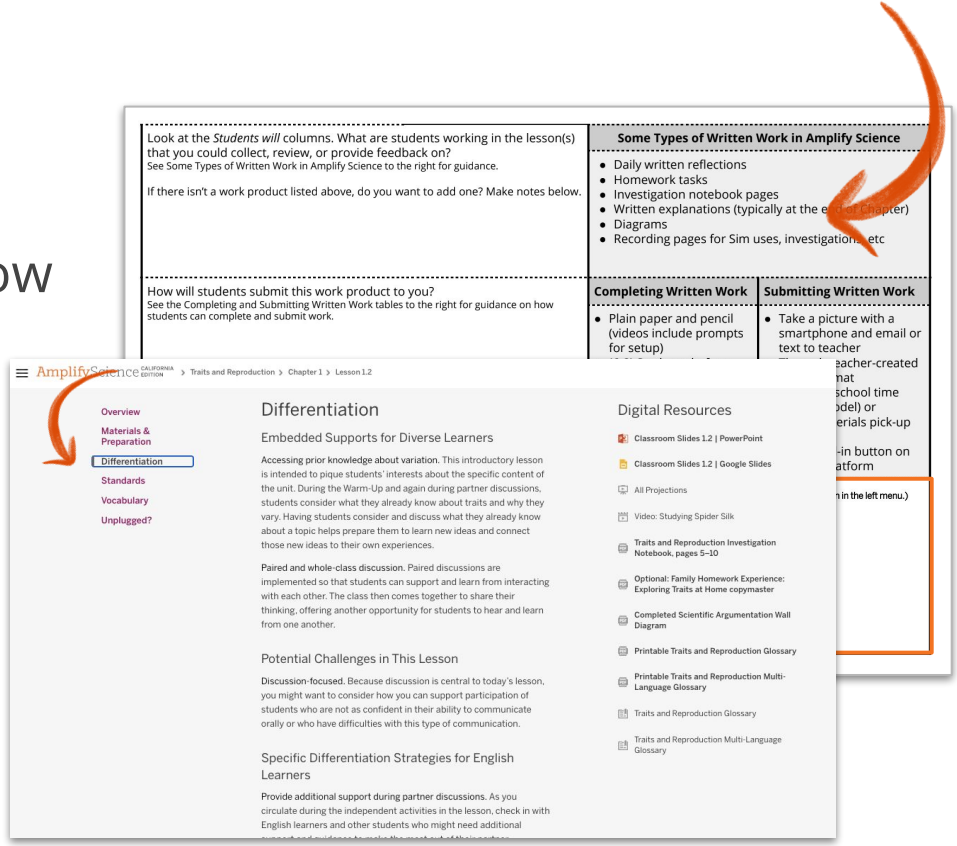
- Share additional ideas for how you plan to lead Lesson 1

Student work:

- Discuss how you can collect evidence of student work

Differentiation:

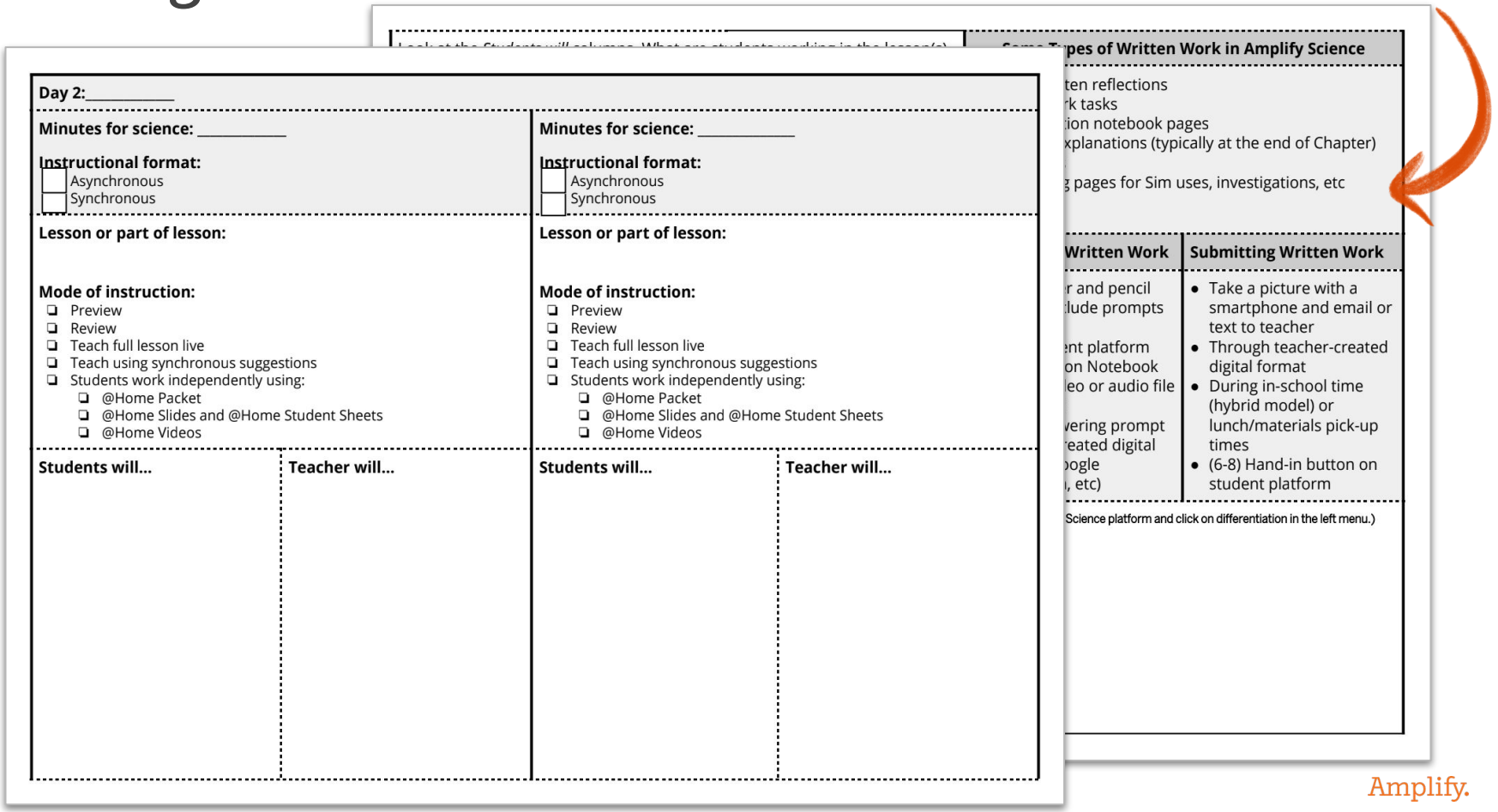
- Consider how you might differentiate this lesson



Look at the *Students will* columns. What are students working in the lesson(s) that you could collect, review, or provide feedback on? See Some Types of Written Work in Amplify Science to the right for guidance. If there isn't a work product listed above, do you want to add one? Make notes below.	**Some Types of Written Work in Amplify Science** • Daily written reflections • Homework tasks • Investigation notebook pages • Written explanations (typically at the end of Chapter) • Diagrams • Recording pages for Sim uses, investigations, etc
How will students submit this work product to you? See the Completing and Submitting Written Work tables to the right for guidance on how students can complete and submit work.	**Completing Written Work** • Plain paper and pencil (videos include prompts for setup) • (6-8) Student platform • Investigation Notebook • Record video or audio file describing work/answering prompt • Teacher-created digital format (Google Classroom, etc) **Submitting Written Work** • Take a picture with a smartphone and email or text to teacher • Through teacher-created digital format • During in-school time (hybrid model) or lunch/materials pick-up times • (6-8) Hand-in button on student platform
How will you differentiate this lesson for diverse learners? (Navigate to the lesson level on the standard Amplify Science platform and click on differentiation in the left menu.)	

Planning Resource

pages 12-13



Day 2:_____

Minutes for science: _____ **Instructional format:** ☐ Asynchronous ☐ Synchronous	**Minutes for science:** _____ **Instructional format:** ☐ Asynchronous ☐ Synchronous
Lesson or part of lesson: **Mode of instruction:** ❑ Preview ❑ Review ❑ Teach full lesson live ❑ Teach using synchronous suggestions ❑ Students work independently using: ❑ @Home Packet ❑ @Home Slides and @Home Student Sheets ❑ @Home Videos	**Lesson or part of lesson:** **Mode of instruction:** ❑ Preview ❑ Review ❑ Teach full lesson live ❑ Teach using synchronous suggestions ❑ Students work independently using: ❑ @Home Packet ❑ @Home Slides and @Home Student Sheets ❑ @Home Videos
Students will... / **Teacher will...**	**Students will...** / **Teacher will...**

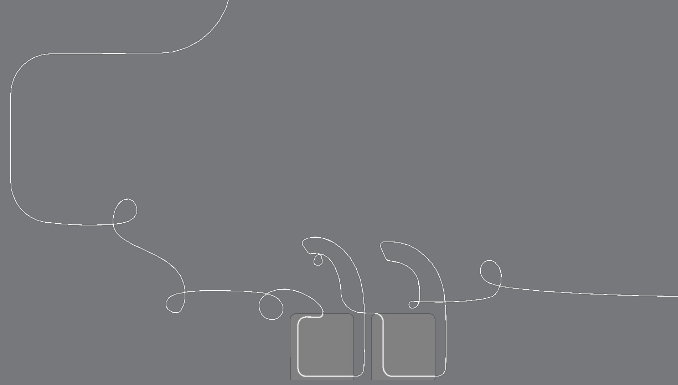
pes of Written Work in Amplify Science

ten reflections
k tasks
ion notebook pages
xplanations (typically at the end of Chapter)

g pages for Sim uses, investigations, etc

Written Work	Submitting Written Work
r and pencil lude prompts nt platform on Notebook eo or audio file vering prompt eated digital oogle , etc)	• Take a picture with a smartphone and email or text to teacher • Through teacher-created digital format • During in-school time (hybrid model) or lunch/materials pick-up times • (6-8) Hand-in button on student platform

Science platform and click on differentiation in the left menu.)



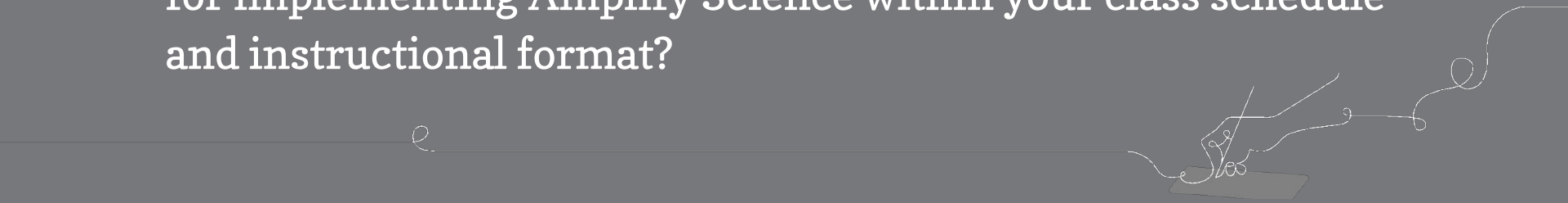
Questions?

Plan for the day

- Framing the day
  - Welcome
  - Instructional Materials
- Unit Internalization
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
- **Reflection and closing**

During this workshop did we meet our objectives?

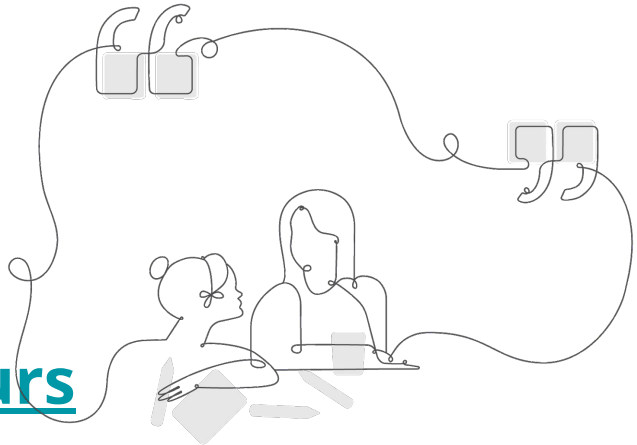
- Were you able to internalize your upcoming unit?
- Do you know how to plan for **collecting evidence of student learning** in order to make instructional decisions to **support diverse learner needs**?
- Do you have the resources you need to develop a multi-day plan for implementing Amplify Science within your class schedule and instructional format?



Upcoming LAUSD Office Hours

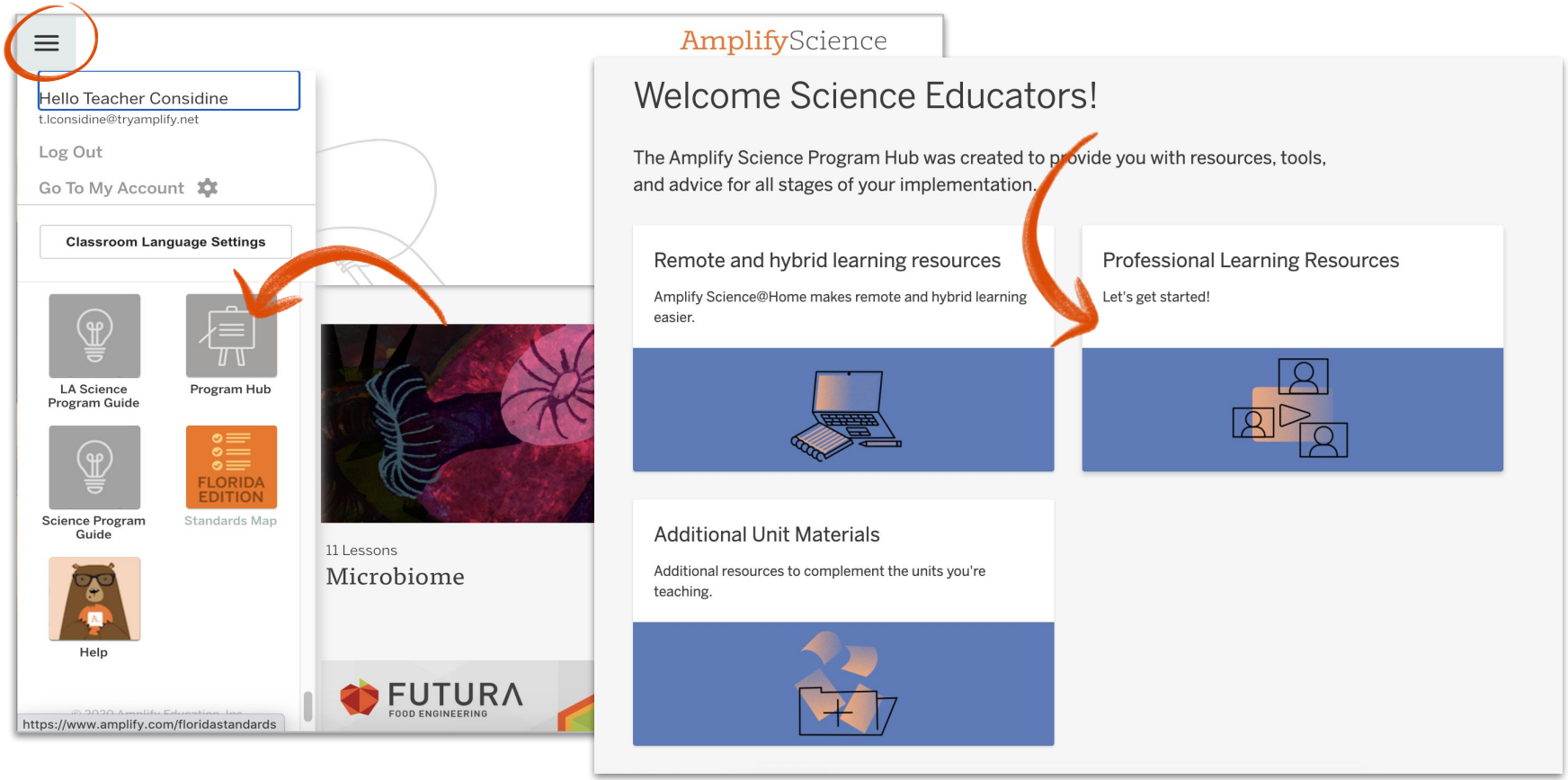
Monthly through January

- Thursday, 1/14 (3-4pm)

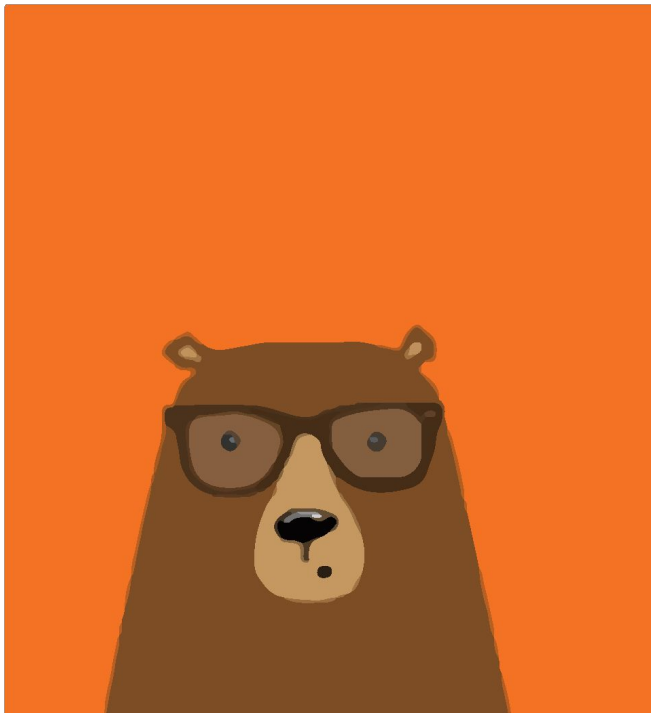


http://bit.ly/LAUSDMSOfficeHours

Program Hub: Self Study Resources



Back to school national webinar series

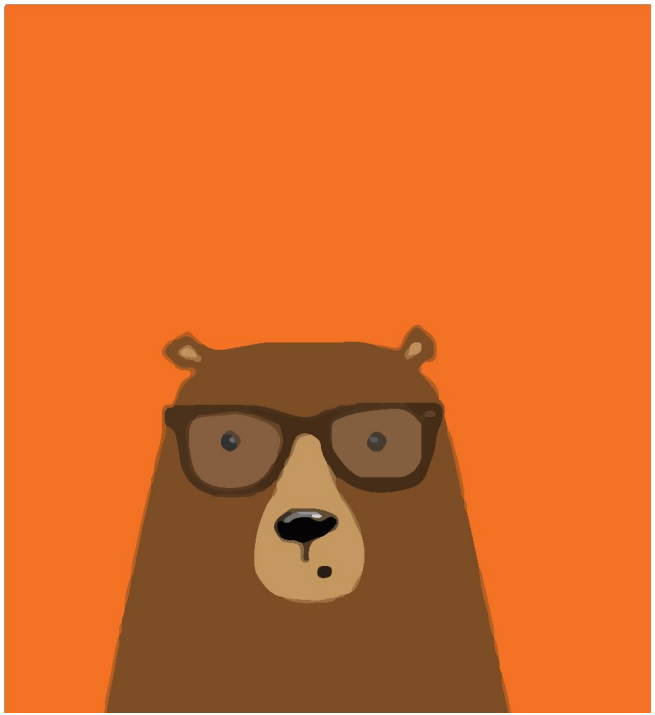


Topics included:

- Remote and hybrid learning support
- Navigation support
- What's new for 2020-2021
- Planning support
- Curriculum overview

bit.ly/BTSwebinars

Additional Amplify resources

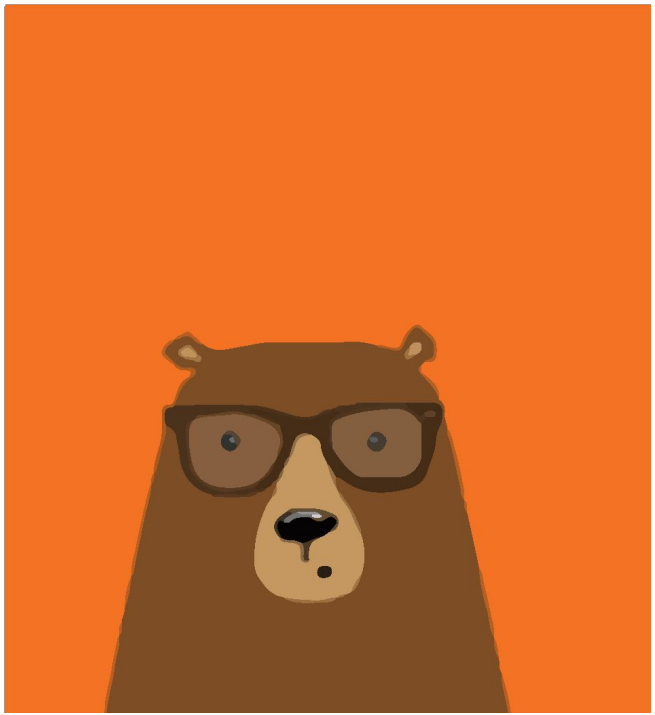


Caregivers site

Provide your students' families information about Amplify Science and what students are learning

amplify.com/amplify-science-family-resource-intro/

Additional Amplify resources



Program Guide

Glean additional insight into the program's structure, intent, philosophies, supports, and flexibility.

http://amplify.com/science/california/review

Amplify Help

Find lots of advice and answers from the Amplify team.

my.amplify.com/help

Additional Amplify Support

Customer Care

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

scihelp@amplify.com

800-823-1969

Amplify Chat

When contacting the customer care team:

- Identify yourself as an Amplify Science user.
- Note the unit you are teaching.
- Note the type of device you are using (Chromebook, iPad, Windows, laptop).
- Note the web browser you are using (Chrome or Safari).
- Include a screenshot of the problem, if possible.
- Copy your district or site IT contact on emails.

Please provide us feedback!

URL: https://www.surveymonkey.com/r/AmplifyLAUSDMS

Presenter names:

Date: xx