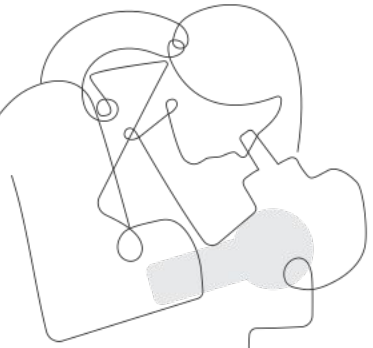
Do Now: *Use the link in the chat to add your best remote learning tips and tricks for teaching Amplify Science to the Jamboard.*

Amplify Science

Unit Internalization & Guided Planning

Deep-dive and strengthening workshop
Grade 7, Matter & Energy in Ecosystems



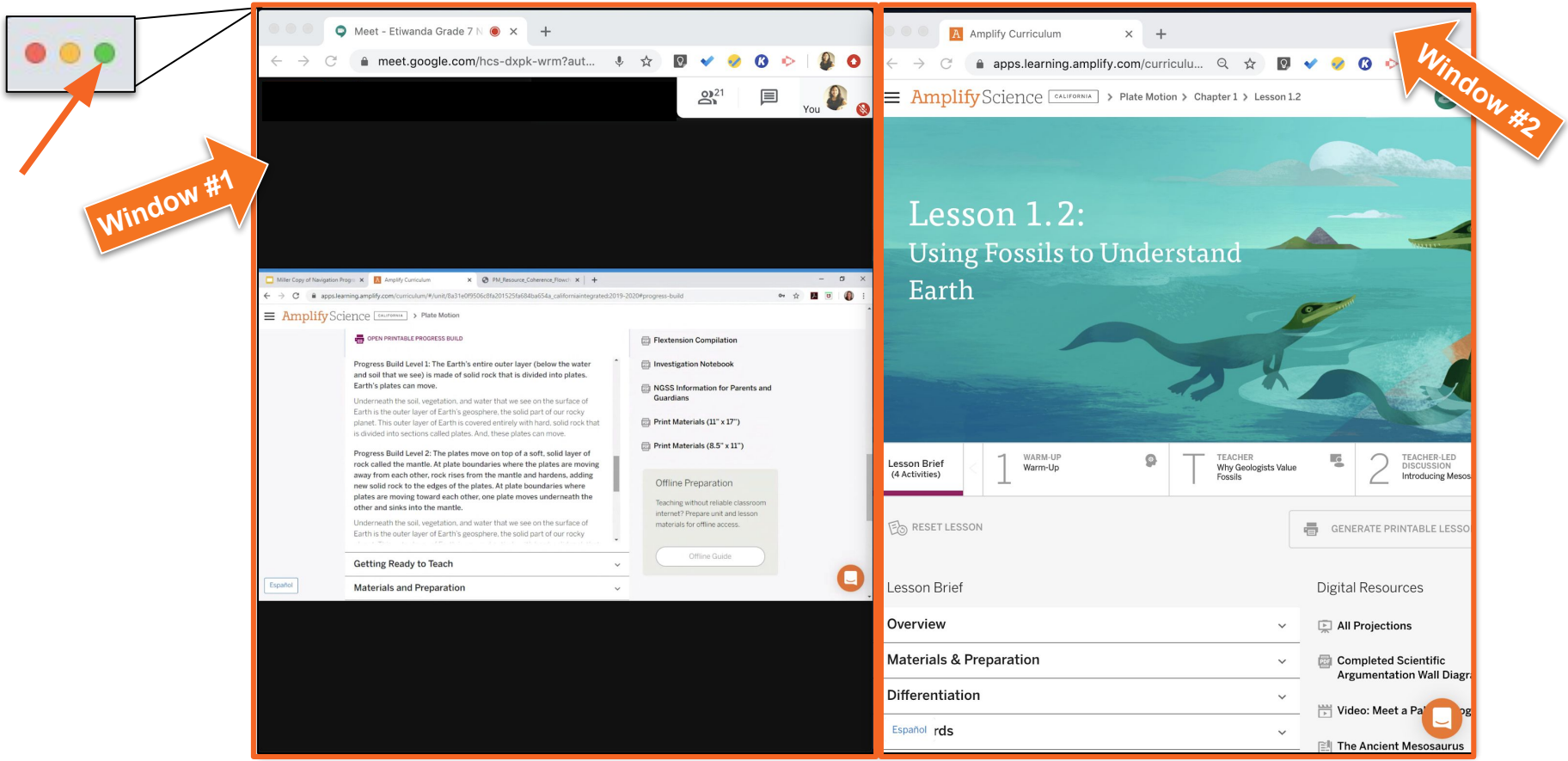
LAUSD

Date

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

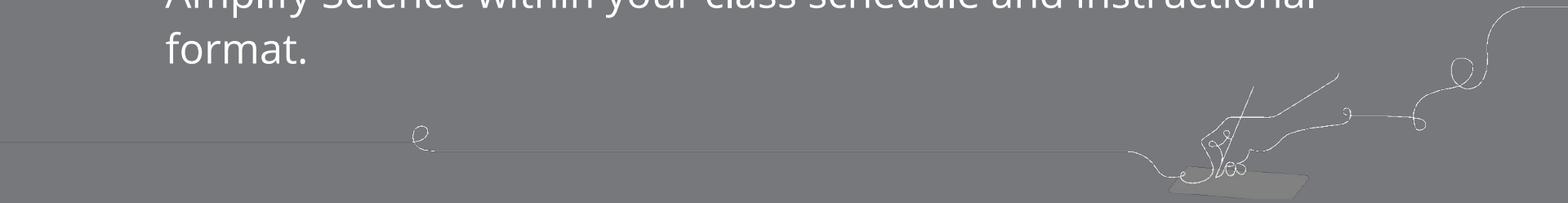
- Make sure you have a note-catcher present

- 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.



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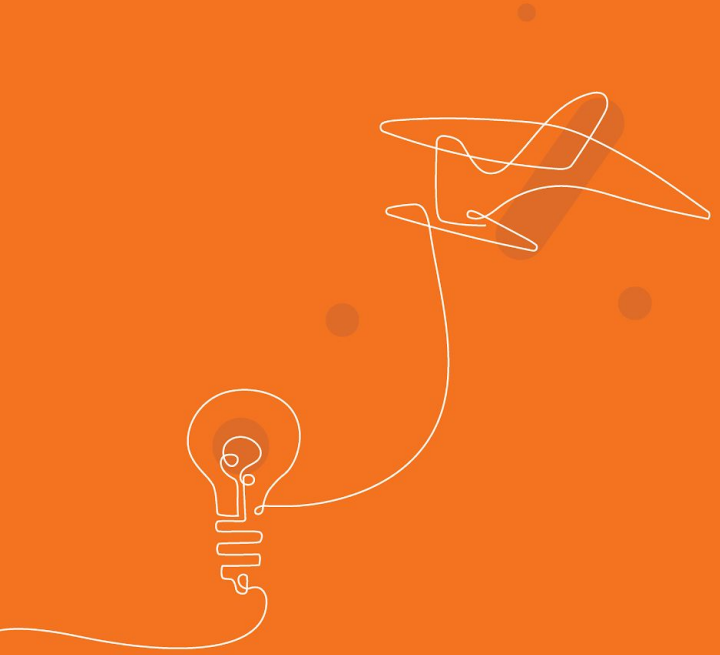
Plan for the day

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



Amplify Science Refresher

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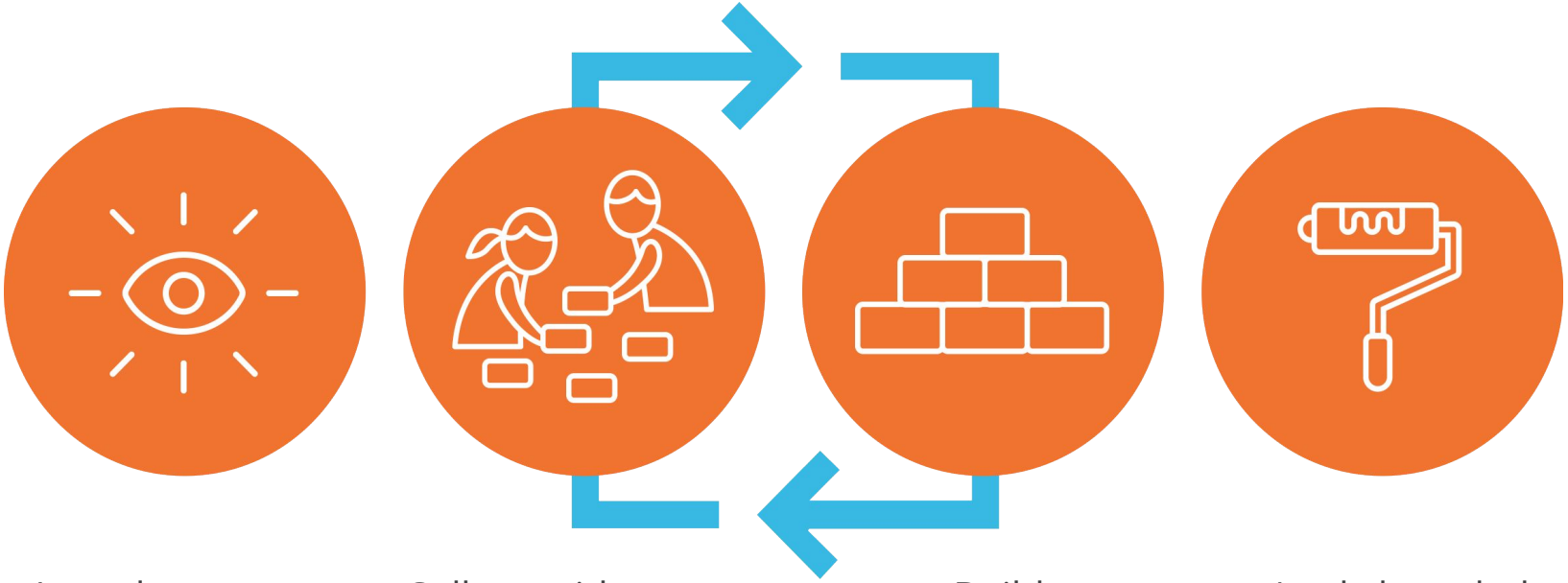
Amplify Science Instructional Approach

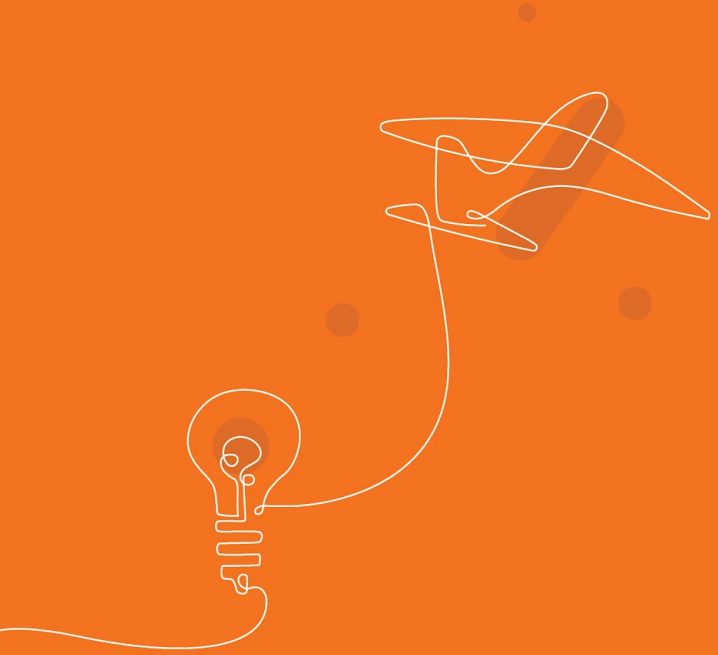


Introduce a phenomenon and a related problem

Collect evidence from multiple sources

Build increasingly complex explanations

Apply knowledge to solve a different problem



Instructional Materials

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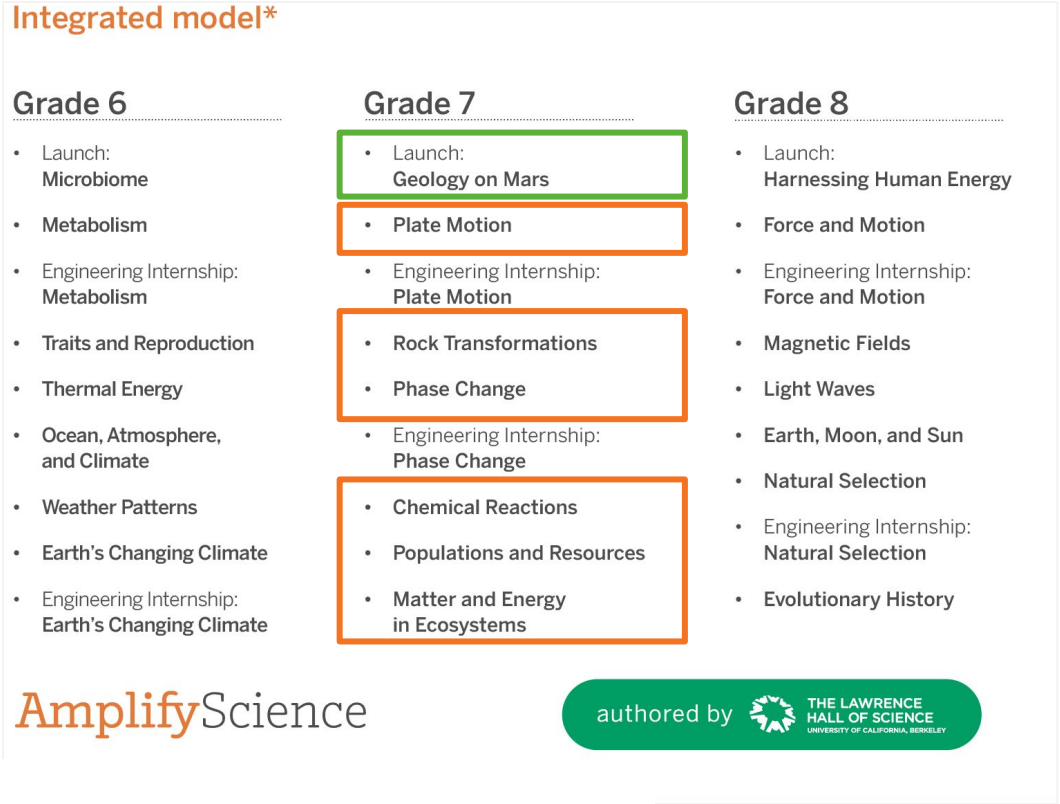
Middle school course curriculum structure



Launch units

- First unit
- 11 lessons

Core units

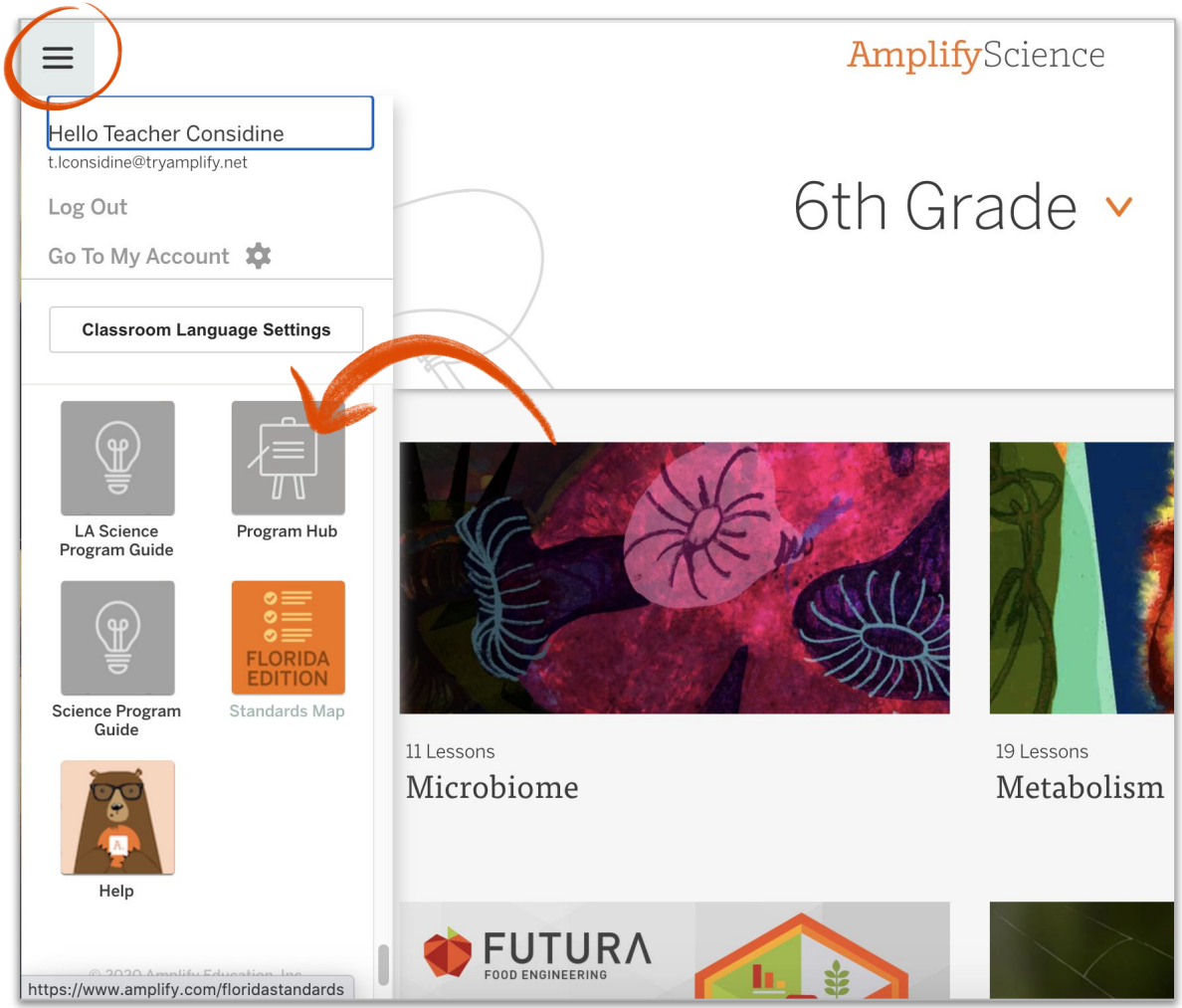
- Majority of units
- 19 lessons

Standard Amplify Science Curriculum

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

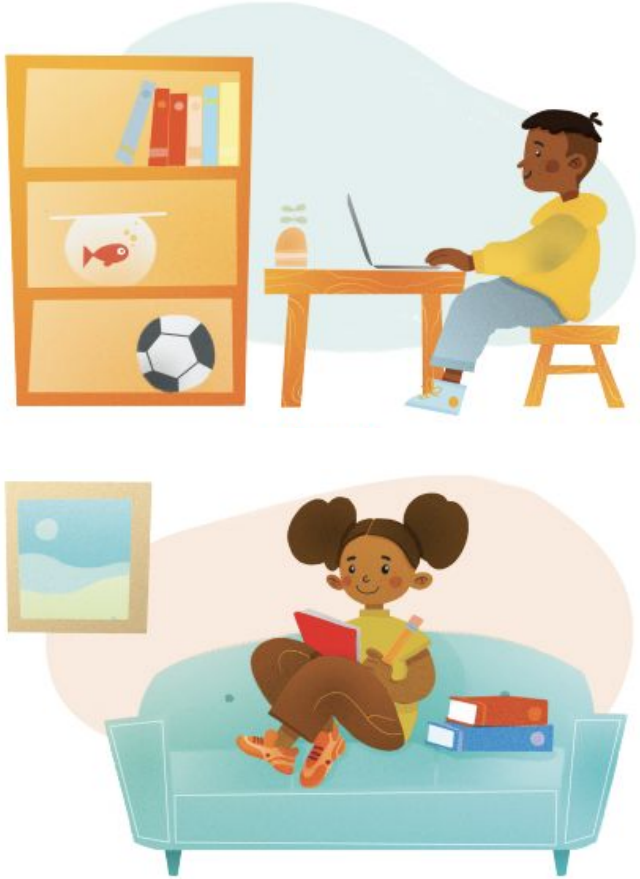
Two different options:

@Home Units

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

@Home Videos

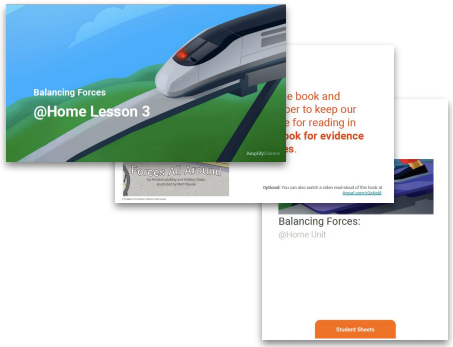
- Video playlists of Amplify Science lessons, taught by real Amplify Science teachers



@Home Units

A shift in approach to respond to user feedback

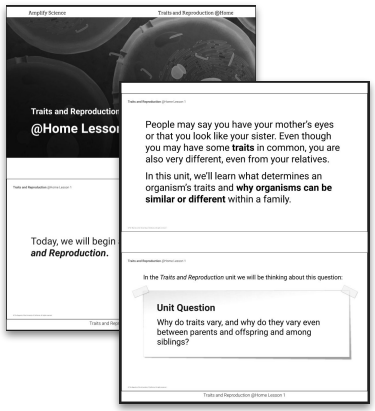
Original approach: two different resources

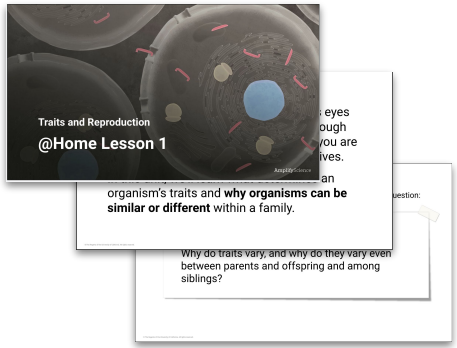


Print-based: @Home packets

Digital: @Home slides and student sheets

Updated approach: one resource, two formats





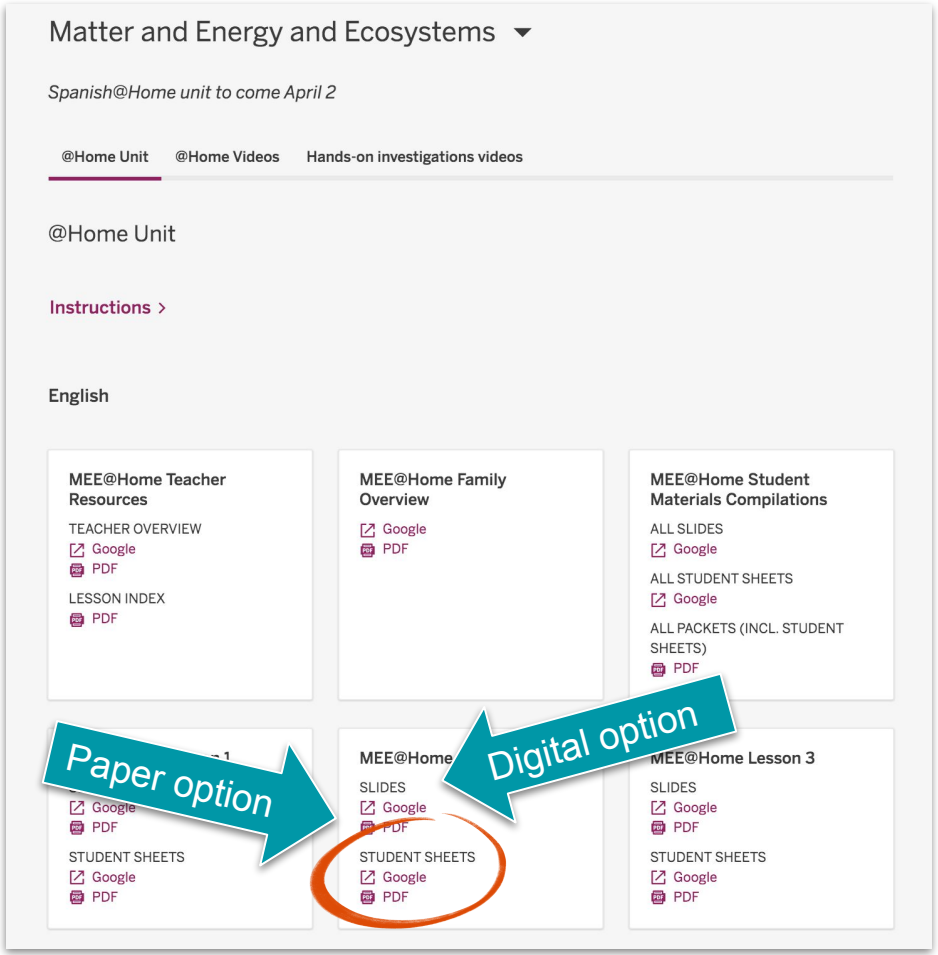
Print-based: PDFs of @Home Slides and student sheets

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

Amplify Science @Home Curriculum

You have access to the Evolutionary History @Home Unit.

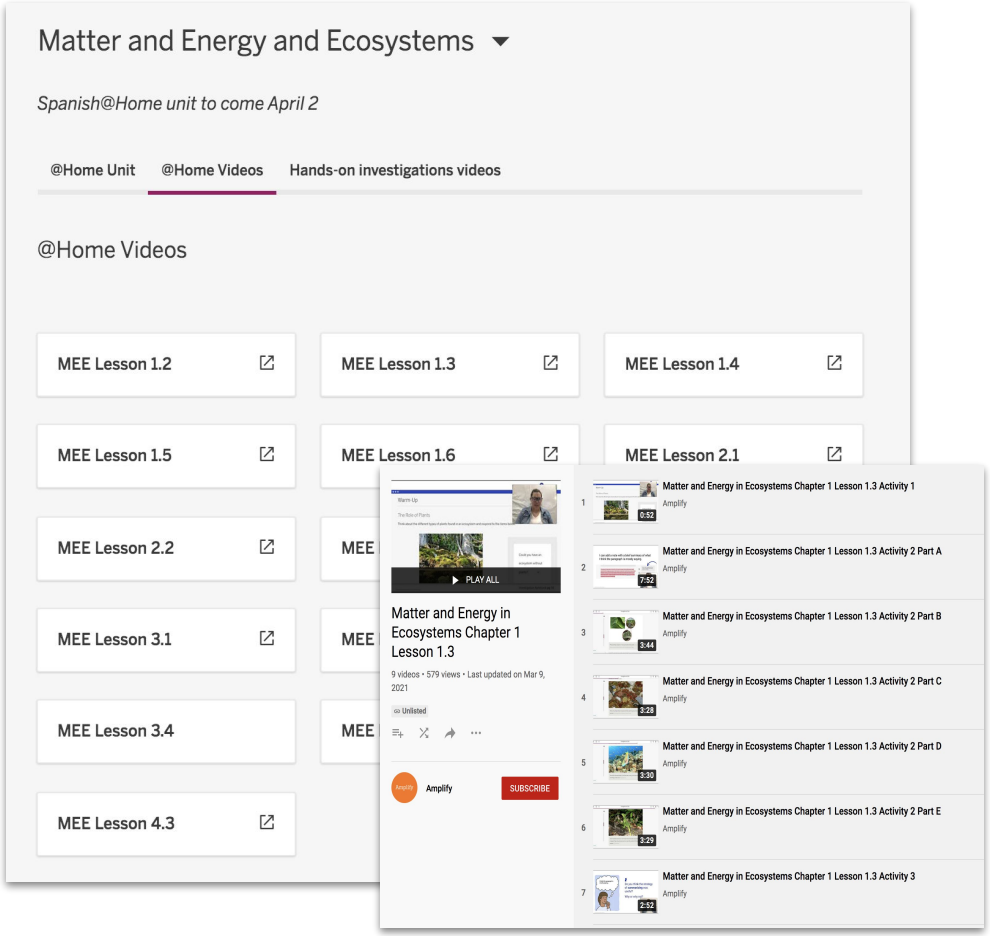
The Matter & Energy in Ecosystems @Home Unit has **14 lessons.** Each lesson is written to be **30 minutes** long.



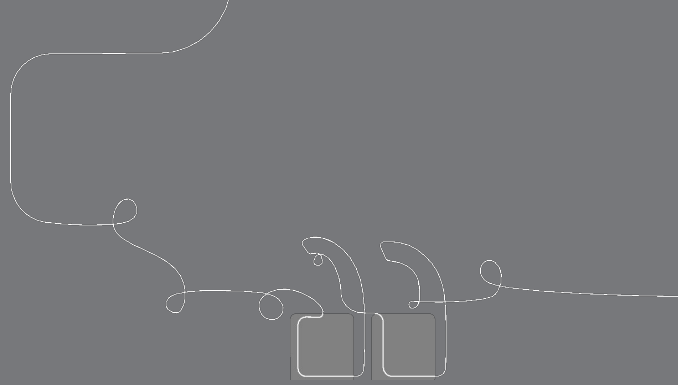
Amplify Science @Home Curriculum

You have access to the Matter & Energy in Ecosystems @Home Videos.

There are 16 @Home Videos for the Matter & Energy in Ecosystems unit. This covers all lessons expect for the assessment lessons (1.1, 2.4, and 4.4). The video playlists on YouTube teach the standard Amplify Science Lessons.



Go LIVE to Program Hub

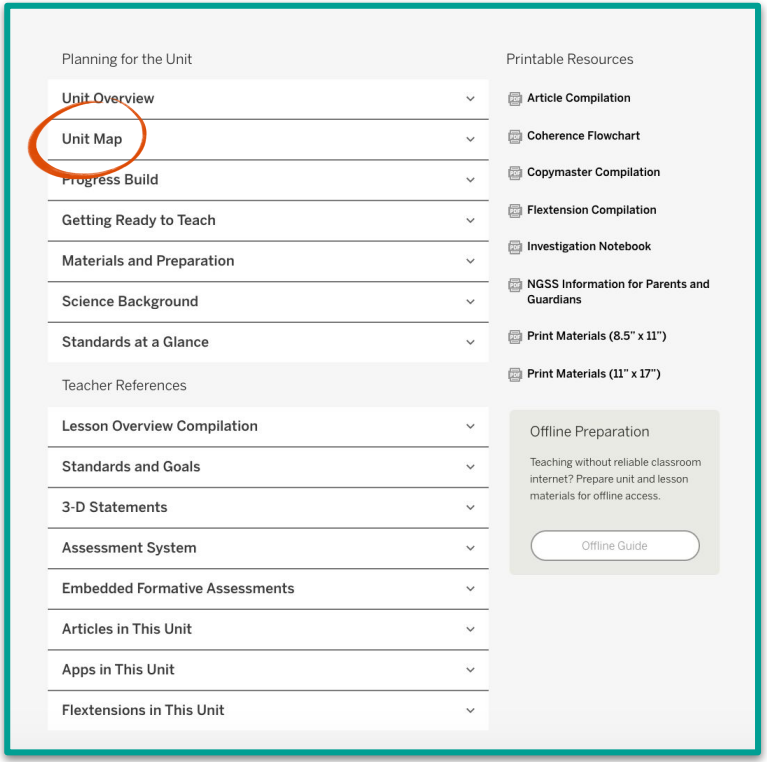


Questions?

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



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 Next Generation Science Standards (NGSS) (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

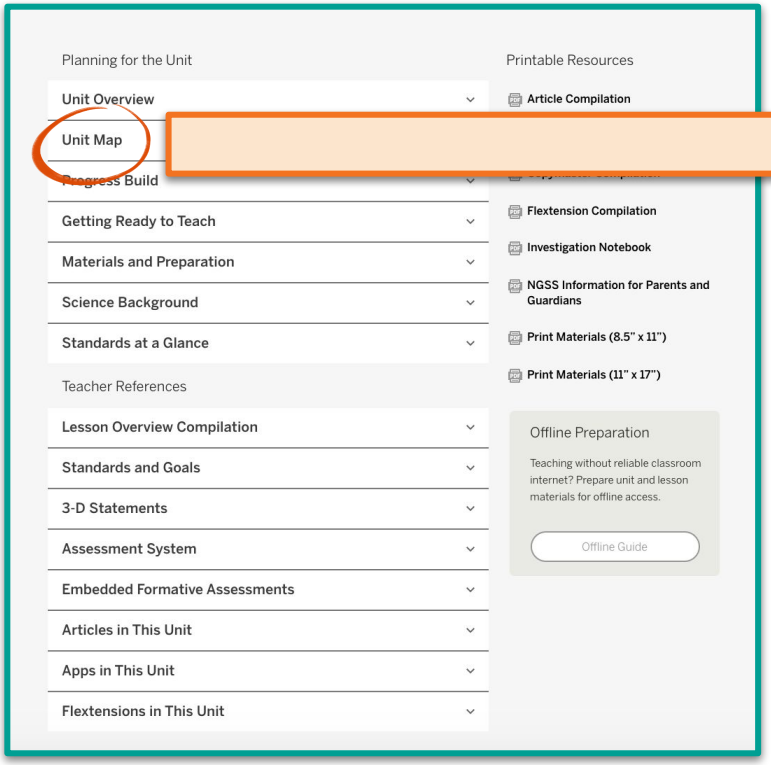
Teacher references

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) 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
Books 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 2-5)

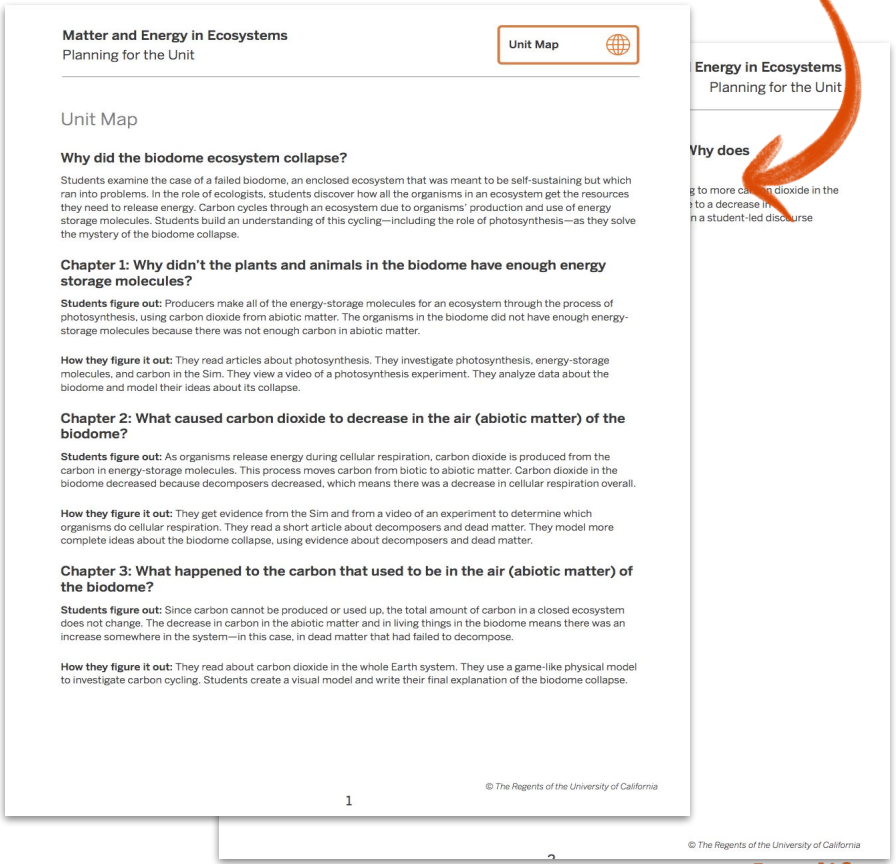
Printable resources

Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting
Multi-Language Glossary	Glossary of unit vocabulary in multiple languages
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 Unit Question, Chapter Questions, and Key Concepts provided in the kit

Unit Map



Pages 2-3



Matter and Energy in Ecosystems
Planning for the Unit

Unit Map

Unit Map

Why did the biodome ecosystem collapse?

Students examine the case of a failed biodome, an enclosed ecosystem that was meant to be self-sustaining but which ran into problems. In the role of ecologists, students discover how all the organisms in an ecosystem get the resources they need to release energy. Carbon cycles through an ecosystem due to organisms' production and use of energy storage molecules. Students build an understanding of this cycling—including the role of photosynthesis—as they solve the mystery of the biodome collapse.

Chapter 1: Why didn't the plants and animals in the biodome have enough energy storage molecules?

Students figure out: Producers make all of the energy-storage molecules for an ecosystem through the process of photosynthesis, using carbon dioxide from abiotic matter. The organisms in the biodome did not have enough energy-storage molecules because there was not enough carbon in abiotic matter.

How they figure it out: They read articles about photosynthesis. They investigate photosynthesis, energy-storage molecules, and carbon in the Sim. They view a video of a photosynthesis experiment. They analyze data about the biodome and model their ideas about its collapse.

Chapter 2: What caused carbon dioxide to decrease in the air (abiotic matter) of the biodome?

Students figure out: As organisms release energy during cellular respiration, carbon dioxide is produced from the carbon in energy-storage molecules. This process moves carbon from biotic to abiotic matter. Carbon dioxide in the biodome decreased because decomposers decreased, which means there was a decrease in cellular respiration overall.

How they figure it out: They get evidence from the Sim and from a video of an experiment to determine which organisms do cellular respiration. They read a short article about decomposers and dead matter. They model more complete ideas about the biodome collapse, using evidence about decomposers and dead matter.

Chapter 3: What happened to the carbon that used to be in the air (abiotic matter) of the biodome?

Students figure out: Since carbon cannot be produced or used up, the total amount of carbon in a closed ecosystem does not change. The decrease in carbon in the abiotic matter and in living things in the biodome means there was an increase somewhere in the system—in this case, in dead matter that had failed to decompose.

How they figure it out: They read about carbon dioxide in the whole Earth system. They use a game-like physical model to investigate carbon cycling. Students create a visual model and write their final explanation of the biodome collapse.

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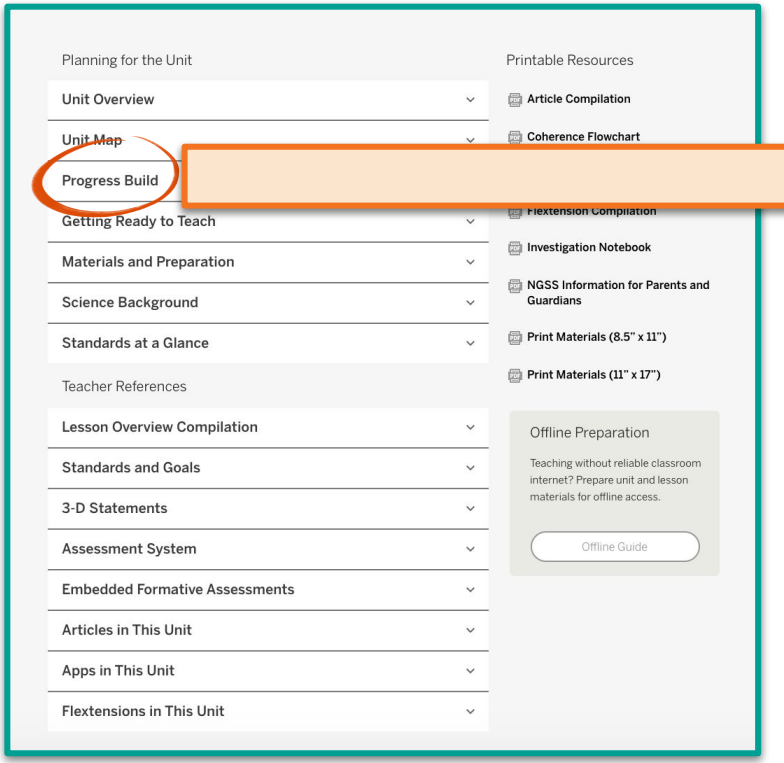
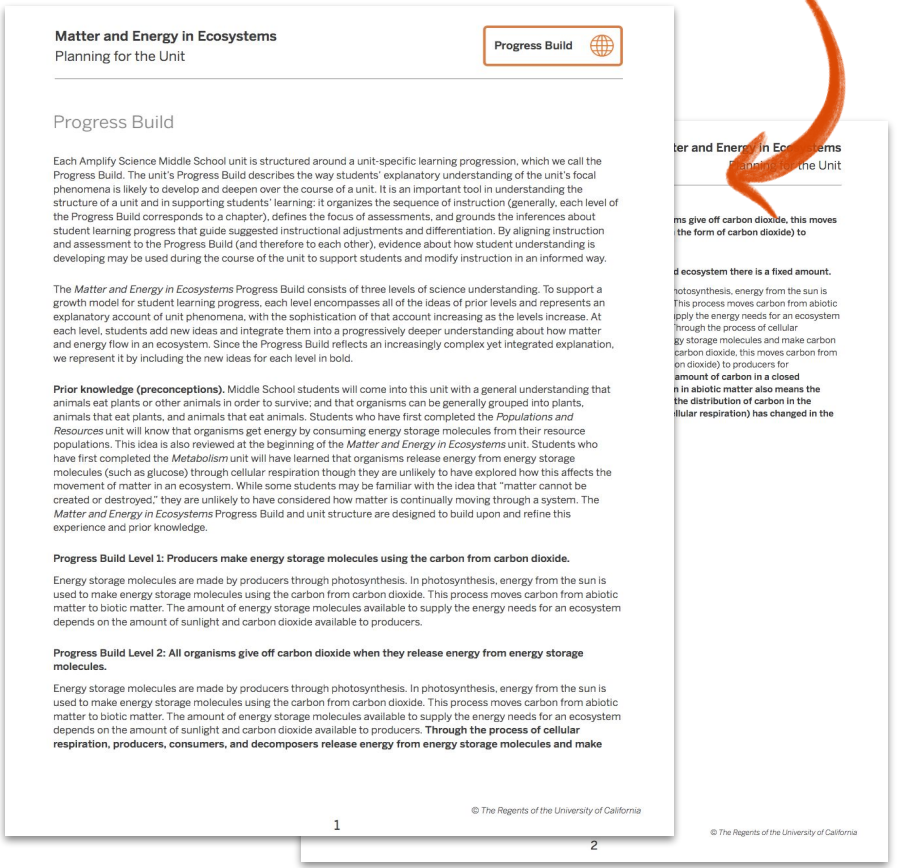
Progress Build

Pages 4-5





Matter and Energy in Ecosystems
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 *Matter and Energy in Ecosystems* 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 about how matter and energy flow in an ecosystem. 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). Middle School students will come into this unit with a general understanding that animals eat plants or other animals in order to survive; and that organisms can be generally grouped into plants, animals that eat plants, and animals that eat animals. Students who have first completed the *Populations and Resources* unit will know that organisms get energy by consuming energy storage molecules from their resource populations. This idea is also reviewed at the beginning of the *Matter and Energy in Ecosystems* unit. Students who have first completed the *Metabolism* unit will have learned that organisms release energy from energy storage molecules (such as glucose) through cellular respiration though they are unlikely to have explored how this affects the movement of matter in an ecosystem. While some students may be familiar with the idea that "matter cannot be created or destroyed," they are unlikely to have considered how matter is continually moving through a system. The *Matter and Energy in Ecosystems* Progress Build and unit structure are designed to build upon and refine this experience and prior knowledge.

Progress Build Level 1: Producers make energy storage molecules using the carbon from carbon dioxide.

Energy storage molecules are made by producers through photosynthesis. In photosynthesis, energy from the sun is used to make energy storage molecules using the carbon from carbon dioxide. This process moves carbon from abiotic matter to biotic matter. The amount of energy storage molecules available to supply the energy needs for an ecosystem depends on the amount of sunlight and carbon dioxide available to producers.

Progress Build Level 2: All organisms give off carbon dioxide when they release energy from energy storage molecules.

Energy storage molecules are made by producers through photosynthesis. In photosynthesis, energy from the sun is used to make energy storage molecules using the carbon from carbon dioxide. This process moves carbon from abiotic matter to biotic matter. The amount of energy storage molecules available to supply the energy needs for an ecosystem depends on the amount of sunlight and carbon dioxide available to producers. **Through the process of cellular respiration, producers, consumers, and decomposers release energy from energy storage molecules and make**

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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?

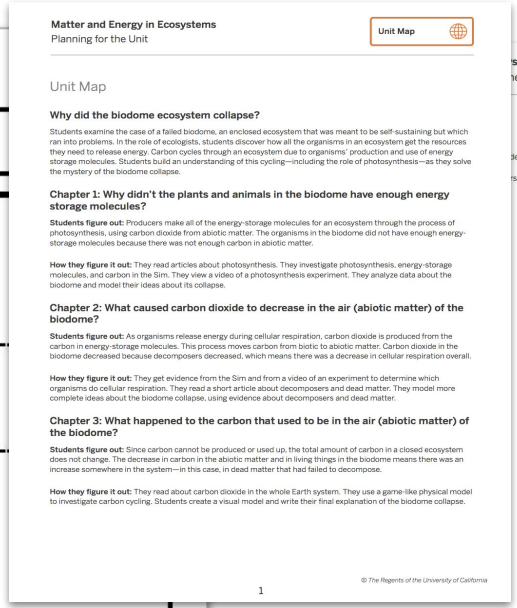
Unit Question:

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



Matter and Energy in Ecosystems
Planning for the Unit

Unit Map

Unit Map

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Students examine the case of a failed biodome, an enclosed ecosystem that was meant to be self-sustaining but which ran into problems. In the role of ecologists, students discover how all the organisms in an ecosystem get the resources they need to release energy. Carbon cycles through an ecosystem due to organisms' production and use of energy storage molecules. Students build an understanding of this cycling—including the role of photosynthesis—as they solve the mystery of the biodome collapse.

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Unit Guide Document

Unit Map

Lesson Overview Compilation

Progress Build

Guided Unit Internalization

Part 1: Unit-level internalization

Unit title: Matter & Energy in Ecosystems

What is the phenomenon students are investigating in your unit?

Students examine the case of a failed biodome, an enclosed ecosystem that was meant to be self-sustaining but which ran into problems. In the role of ecologists, students discover how all the organisms in an ecosystem get the resources they need to release energy. Carbon cycles through an ecosystem due to organisms' production and use of energy storage molecules. Students build an understanding of this cycling—including the role of photosynthesis—as they solve the mystery of the biodome collapse.

Unit Question:

How do all the organisms in an ecosystem get the resources they need to release energy?

Student role:

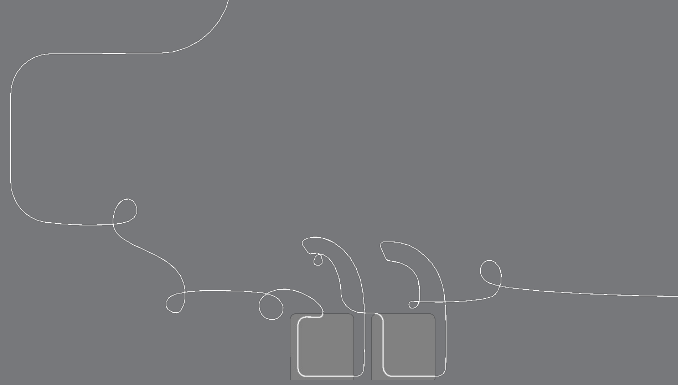
Ecologists

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

Since carbon cannot be produced or used up, the total amount of carbon in a closed ecosystem does not change. The decrease in carbon in the abiotic matter and in living things in the biodome means there was an increase somewhere in the system—in this case, in dead matter that had failed to decompose.

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

Producers make energy storage molecules using the carbon from carbon dioxide. All organisms give off carbon dioxide when they release energy from energy storage molecules. Carbon cannot be produced or used up, so in a closed ecosystem there is a fixed amount.



Questions?

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- **Planning to teach**
  - **Collecting evidence of student learning to meet diverse learner needs**
- Reflection and closing

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How they figure it out: They read articles about photosynthesis. They investigate photosynthesis, energy-storage molecules, and carbon in the Sim. They view a video of a photosynthesis experiment. They analyze data about the biodome and model their ideas about its collapse.

Chapter 1: Photosynthesis

JUMP DOWN TO CHAPTER OVERVIEW

Lesson 1.1:
Pre-Unit Assessment

SETTINGS

Lesson 1.2:
Investigating a Biodome

Lesson 1.3:
Sunlight and Life

Lesson 1.4:
How Energy Storage Molecules Are Made

Lesson 1.5:
Photosynthesis in Ecosystems

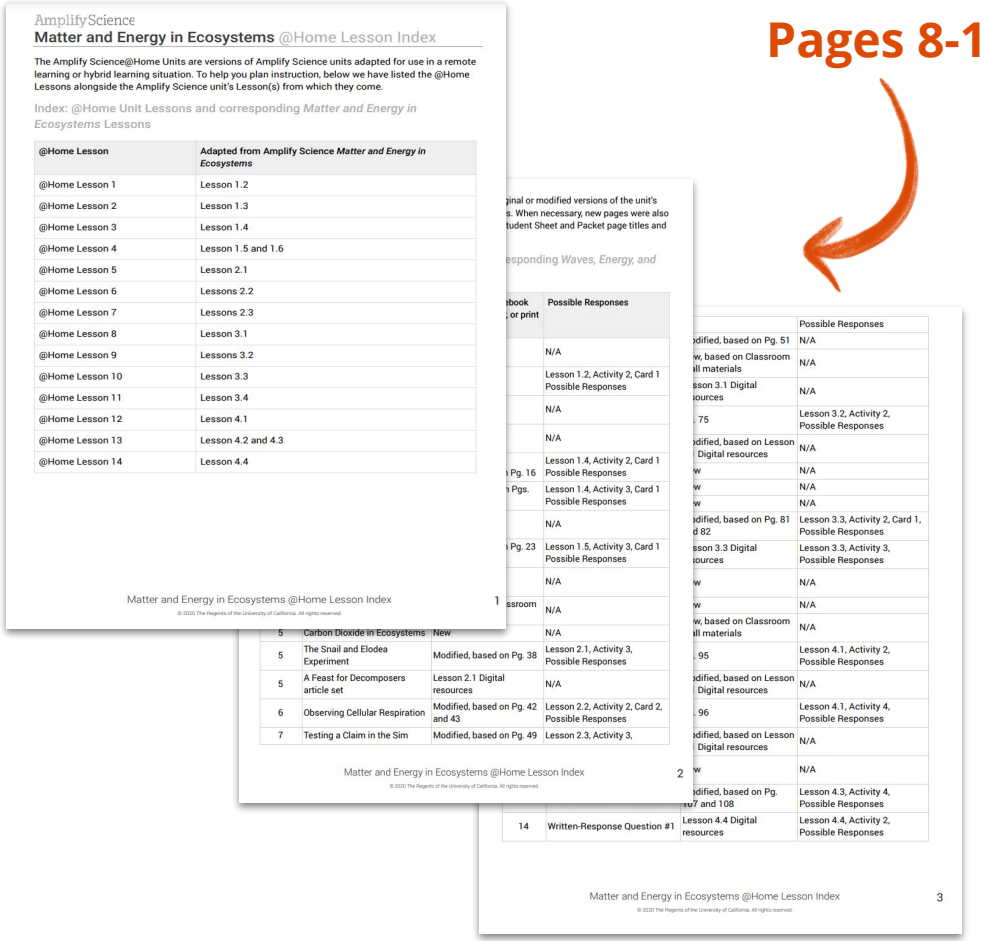
Lesson 1.6:
Examining Data from the Biodome

@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 8-10



AmplifyScience
Matter and Energy in Ecosystems @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 *Matter and Energy in Ecosystems* Lessons

@Home Lesson	Adapted from Amplify Science *Matter and Energy in Ecosystems*
@Home Lesson 1	Lesson 1.2
@Home Lesson 2	Lesson 1.3
@Home Lesson 3	Lesson 1.4
@Home Lesson 4	Lesson 1.5 and 1.6
@Home Lesson 5	Lesson 2.1
@Home Lesson 6	Lessons 2.2
@Home Lesson 7	Lessons 2.3
@Home Lesson 8	Lesson 3.1
@Home Lesson 9	Lessons 3.2
@Home Lesson 10	Lesson 3.3
@Home Lesson 11	Lesson 3.4
@Home Lesson 12	Lesson 4.1
@Home Lesson 13	Lesson 4.2 and 4.3
@Home Lesson 14	Lesson 4.4

Matter and Energy in Ecosystems @Home Lesson Index 1

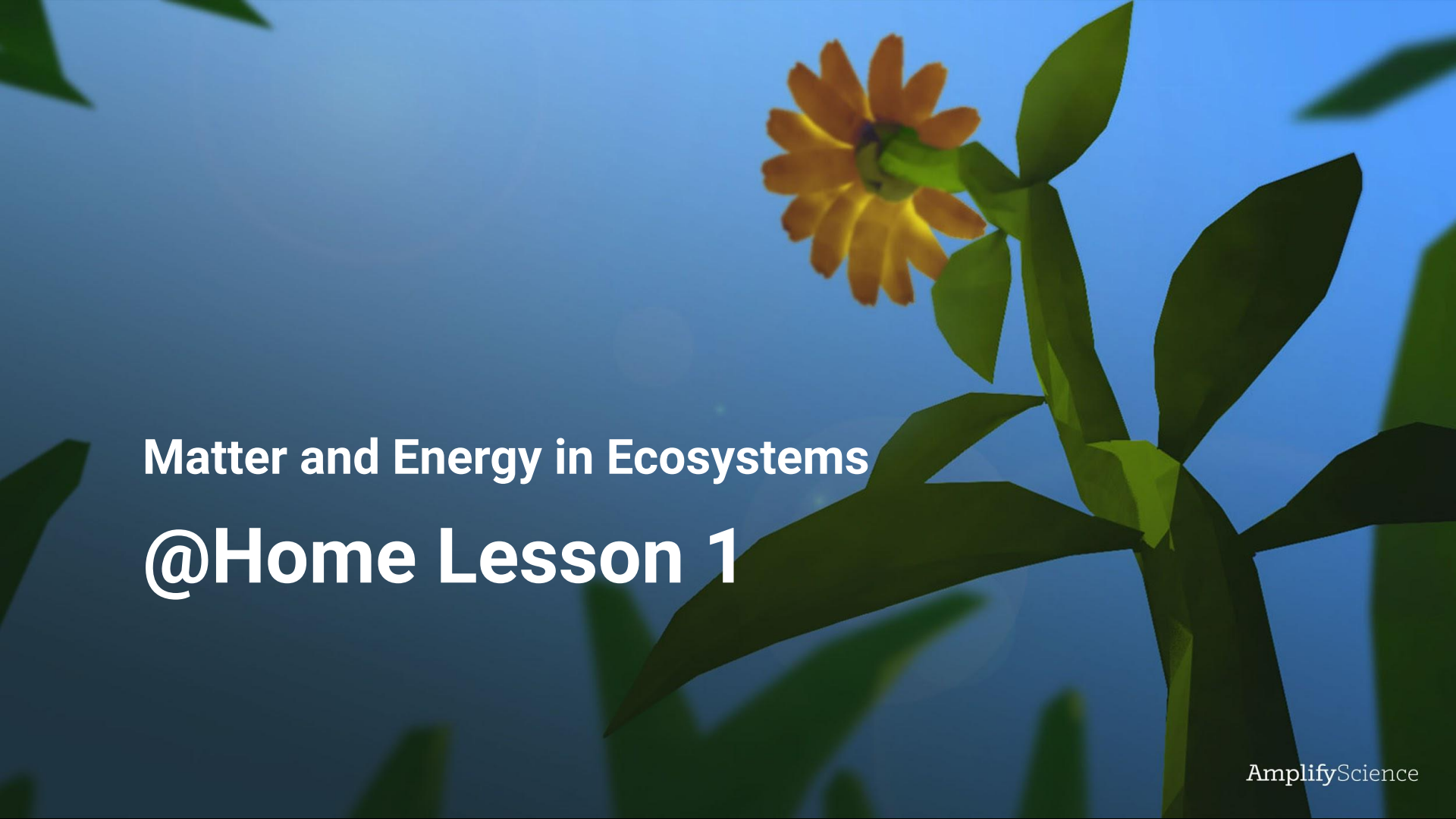
5	Carbon Dioxide in Ecosystems	New	N/A
5	The Snail and Elodea Experiment	Modified, based on Pg. 38	Lesson 2.1, Activity 3, Possible Responses
5	A Feast for Decomposers article set	Lesson 2.1 Digital resources	N/A
6	Observing Cellular Respiration	Modified, based on Pg. 42 and 43	Lesson 2.2, Activity 2, Card 2, Possible Responses
7	Testing a Claim in the Sim	Modified, based on Pg. 49	Lesson 2.3, Activity 3,

Matter and Energy in Ecosystems @Home Lesson Index 2

			Possible Responses
		dified, based on Pg. 51	N/A
		w, based on Classroom ll materials	N/A
		sson 3.1 Digital ources	N/A
		. 75	Lesson 3.2, Activity 2, Possible Responses
		dified, based on Lesson Digital resources	N/A
		w	N/A
		w	N/A
		w	N/A
		dified, based on Pg. 81 d 82	Lesson 3.3, Activity 2, Card 1, Possible Responses
		sson 3.3 Digital ources	Lesson 3.3, Activity 3, Possible Responses
		w	N/A
		w	N/A
		w, based on Classroom ll materials	N/A
		. 95	Lesson 4.1, Activity 2, Possible Responses
		dified, based on Lesson Digital resources	N/A
		. 96	Lesson 4.1, Activity 4, Possible Responses
		dified, based on Lesson Digital resources	N/A
		w	N/A
		dified, based on Pg. 107 and 108	Lesson 4.3, Activity 4, Possible Responses
14	Written-Response Question #1	Lesson 4.4 Digital resources	Lesson 4.4, Activity 2, Possible Responses

Matter and Energy in Ecosystems @Home Lesson Index 3

Amplify.



Matter and Energy in Ecosystems

@Home Lesson 1

AmplifyScience

Key activities

- **Introducing the biodome:** Students watch the *Living in a Biosphere* video. Students are introduced to Unit and Chapter Questions, and to their role as ecologists who are investigating why the energy needs of the organisms in the biodome were not met.
- **Read:** Students read from the *Biodome Files* article set, which they use to brainstorm initial ideas about the Chapter Question.
- **Talk:** Pairs of students discuss their ideas from the reading and their initial ideas about why there weren't enough energy storage molecules for plants and animals in the biodome.

Ideas for synchronous or in-person instruction

While meeting, introduce the biodome and the students' mission. Invite students to suggest reasons that organisms need energy storage molecules, and remind students of the connection between energy storage molecules and releasing energy. After meeting, students can read the *Biodome Files*.

Today, we will begin a new unit called ***Matter and Energy in Ecosystems***. In this unit, you will be learning about how **matter and energy** affect the way **ecosystems** work.

To begin, you will watch a video about Biosphere 2, a closed ecosystem that is an actual scientific research station built by humans.

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

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Using the print version? Watch the video here: tinyurl.com/AMPMEE-09

During this unit, you will work for the Biodome Investigation Team under head ecologist, Dr. Bryan Corry, as he tries to discover possible reasons **why the biodome experiment failed**. This is a fictional scenario, but it is based on Biosphere 2, which is real.

Read about your **mission** on the next slides.

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To: Student Ecologists
From: Dr. Bryan Corry
Subject: Welcome to Your Mission!

Welcome to the Biodome Investigation Team! You just learned about Biosphere 2, an experimental research facility that was built for learning more about Earth and its ecosystems.

Five years ago, the Econauts constructed a biodome similar to Biosphere 2. They recently noticed that the organisms inside the biodome were getting sick and failing to reproduce. To protect the people and organisms inside, they shut down the biodome. The Econauts hired us to figure out what caused their biodome to fail, but we need your help. I'm including a presentation that explains your mission in more detail.

Student ecologists, we are counting on you!

Bryan
Dr. Bryan Corry, Head Ecologist
Biodome Investigation Team

Introducing the Biodome

Five years ago, a local group called the Econauts began an ambitious project to determine if humans could survive on another planet. They constructed a biodome, an ecosystem inside a glass dome larger than a football field. The ecosystem was filled with plants, animals, and a volunteer group of eight humans.

The Problem

For the first few years, the plants and animals inside the biodome seemed healthy and normal. In the last few years, however, the Econauts began to notice some problems. Animals were getting sick and failing to reproduce.

Plants weren't growing as big or producing as much fruit as they once did. The Econauts realized that something had gone wrong. Although the organisms were safely removed from the biodome, the cause of these problems is still a mystery.

The Econauts want to build another biodome, but first, they need to understand **what went wrong** with this one.

Your mission is to help them solve this mystery.

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To solve the mystery of the failed biodome, we will need to answer this question about energy in ecosystems.

Unit Question

How do all the organisms in an ecosystem get the resources they need to release energy?

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In order to **release energy,** organisms need **energy storage molecules.**

To answer our question about how organisms get what they need to release energy, we'll investigate why the biodome organisms didn't have enough energy storage molecules.

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This is the question you will investigate in your role as student ecologists.

Chapter 1 Question

Why didn’t the plants and animals in the biodome have enough energy storage molecules?

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What are some reasons that organisms might need **energy storage molecules?**

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As student ecologists, you will investigate how organisms store and release energy.

energy storage molecule

a molecule that organisms can use to release the energy they need to survive

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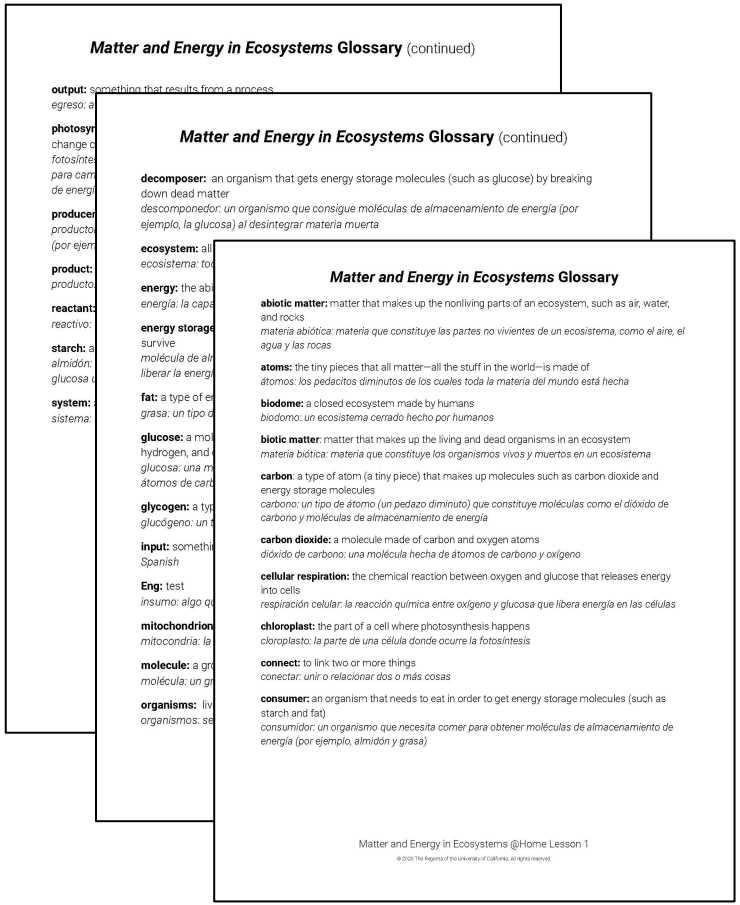

***Matter and Energy in Ecosystems* Glossary** (continued)

output: something that results from a process
egreso: a

photosyn
change
fotosínte
para carr
de energí

produce
producto
(por ejem

product:
producto

reactant:
reactivo:

starch: a
almidón:
glucosa

system:
sistema:

***Matter and Energy in Ecosystems* Glossary** (continued)

decomposer: an organism that gets energy storage molecules (such as glucose) by breaking down dead matter
descomponedor: un organismo que consigue moléculas de almacenamiento de energía (por ejemplo, la glucosa) al desintegrar materia muerta

ecosystem: all
ecosistema: to

energy: the abi
energía: la capa

energy storage
survive
molécula de alr
liberar la energí

fat: a type of e
grasa: un tipo d

glucose: a mol
hydrogen, and
glucosa: una m
átomos de carb

glycogen: a typ
glucógeno: un t

input: somethi
Spanish

Eng: test
insumo: algo q

mitochondrion
mitocondria: la

molecule: a gr
molécula: un gr

organisms: liv
organismos: se

***Matter and Energy in Ecosystems* Glossary**

abiotic matter: matter that makes up the nonliving parts of an ecosystem, such as air, water, and rocks
materia abiótica: materia que constituye las partes no vivientes de un ecosistema, como el aire, el agua y las rocas

atoms: the tiny pieces that all matter—all the stuff in the world—is made of
átomos: los pedacitos diminutos de los cuales toda la materia del mundo está hecha

biodome: a closed ecosystem made by humans
biodomo: un ecosistema cerrado hecho por humanos

biotic matter: matter that makes up the living and dead organisms in an ecosystem
materia biótica: materia que constituye los organismos vivos y muertos en un ecosistema

carbon: a type of atom (a tiny piece) that makes up molecules such as carbon dioxide and energy storage molecules
carbono: un tipo de átomo (un pedazo diminuto) que constituye moléculas como el dióxido de carbono y moléculas de almacenamiento de energía

carbon dioxide: a molecule made of carbon and oxygen atoms
dióxido de carbono: una molécula hecha de átomos de carbono y oxígeno

cellular respiration: the chemical reaction between oxygen and glucose that releases energy into cells
respiración celular: la reacción química entre oxígeno y glucosa que libera energía en las células

chloroplast: the part of a cell where photosynthesis happens
cloroplasto: la parte de una célula donde ocurre la fotosíntesis

connect: to link two or more things
conectar: unir o relacionar dos o más cosas

consumer: an organism that needs to eat in order to get energy storage molecules (such as starch and fat)
consumidor: un organismo que necesita comer para obtener moléculas de almacenamiento de energía (por ejemplo, almidón y grasa)

Matter and Energy in Ecosystems @Home Lesson 1

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

***Matter and Energy in Ecosystems* Glossary** pages or Amplify Library

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Key activities

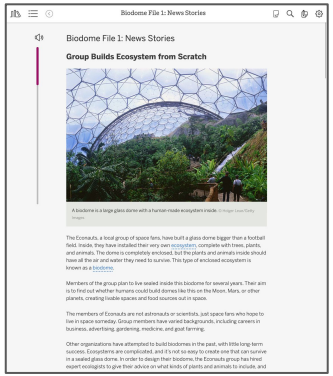
- **Introducing the biodome:** Students watch the *Living in a Biosphere* video. Students are introduced to Unit and Chapter Questions, and to their role as ecologists who are investigating why the energy needs of the organisms in the biodome were not met.
- **Read:** Students read from the *Biodome Files* article set, which they use to brainstorm initial ideas about the Chapter Question.
- **Talk:** Pairs of students discuss their ideas from the reading and their initial ideas about why there weren't enough energy storage molecules for plants and animals in the biodome.

Ideas for synchronous or in-person instruction

While meeting, introduce the biodome and the students' mission. Invite students to suggest reasons that organisms need energy storage molecules, and remind students of the connection between energy storage molecules and releasing energy. After meeting, students can read the *Biodome Files*.

Next, you will read from an article set called the *Biodome Files*.

Check with your teacher about how you will access articles in this @Home Unit.



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You will use the *Biodome Files* to make some **initial claims** about the Chapter 1 Question. After reading, you'll **share ideas** with a partner.

As you read, look for information that might help you figure out why **there weren't enough energy storage molecules** for plants and animals in the biodome.

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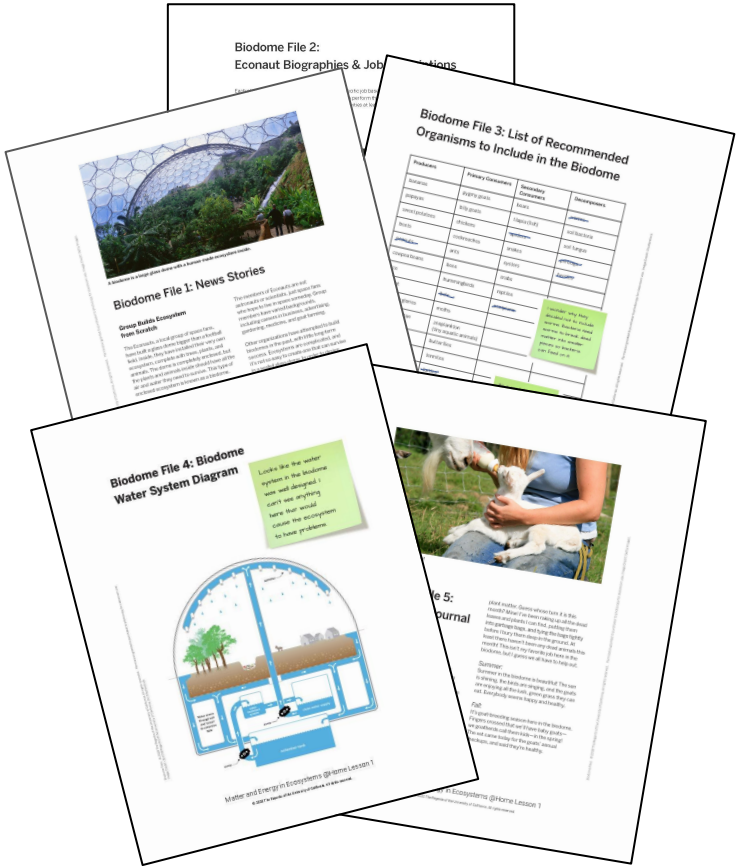

Go to the *Biodome Files*. There are five files in the article set.

Read at least one file. As you read, **annotate** parts of the article that help you answer the Chapter 1 question.

Biodome Files printed article set or [Lesson 1.2, Activity 2]

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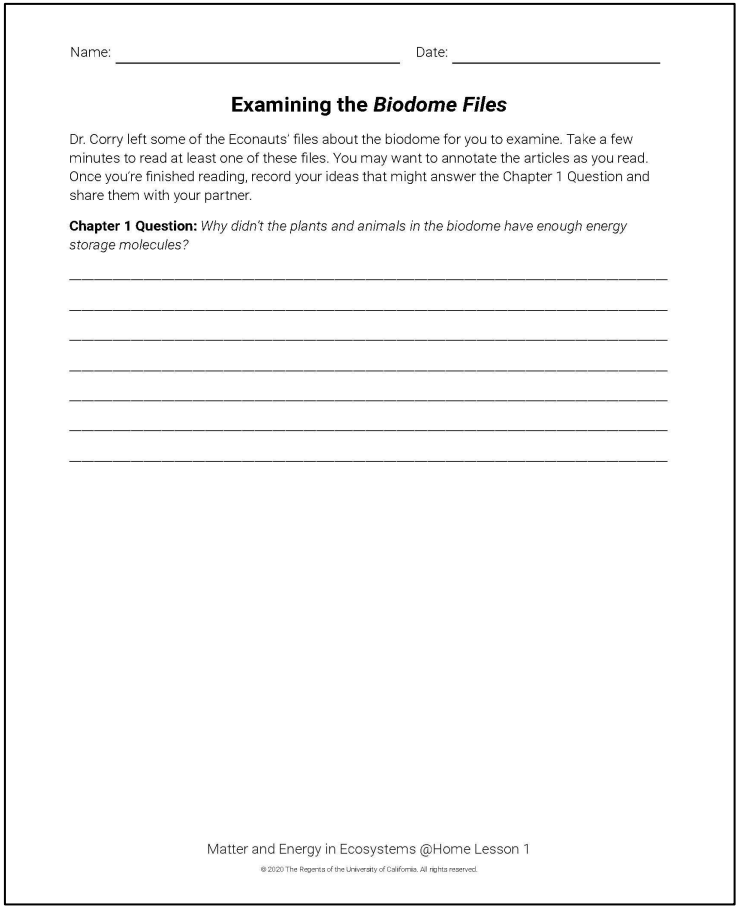

Name: _____ Date: _____

Examining the *Biodome Files*

Dr. Corry left some of the Econauts' files about the biodome for you to examine. Take a few minutes to read at least one of these files. You may want to annotate the articles as you read. Once you're finished reading, record your ideas that might answer the Chapter 1 Question and share them with your partner.

Chapter 1 Question: *Why didn't the plants and animals in the biodome have enough energy storage molecules?*

_____

_____

_____

_____

_____

_____

_____

Matter and Energy in Ecosystems @Home Lesson 1

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Go to the Examining the *Biodome Files* activity.

Write down your initial ideas about the Chapter 1 question.

Examining the *Biodome Files* page or Lesson 1.2, Activity 2

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Key activities

- **Introducing the biodome:** Students watch the *Living in a Biosphere* video. Students are introduced to Unit and Chapter Questions, and to their role as ecologists who are investigating why the energy needs of the organisms in the biodome were not met.
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Ideas for synchronous or in-person instruction

While meeting, introduce the biodome and the students' mission. Invite students to suggest reasons that organisms need energy storage molecules, and remind students of the connection between energy storage molecules and releasing energy. After meeting, students can read the *Biodome Files*.

In this lesson and many others in the *Matter and Energy in Ecosystems* @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.

You and your partner will discuss your ideas, following the instructions on the next slide.

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

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Share some initial claims about the Chapter 1 Question. Why do you think the plants and animals in the biodome didn't have enough **energy storage molecules**?

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You are making claims about different things that could cause an ecosystem to change.

What ideas do you have about what an **ecosystem** is?

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The biodome ecosystem included many different kinds of living and nonliving things.

ecosystem

all the living and nonliving things interacting in a particular area

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What are some different examples of **ecosystems** and some of the **parts** that make them up?

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As you investigate why the biodome failed, you will learn about the complex interactions between different parts of the biodome.

system

a set of interacting parts forming a complex whole

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The biodome ecosystem includes living things such as humans and other animals, plants, and other organisms.

biotic matter

matter that makes up the living and dead organisms in an ecosystem

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The biodome ecosystem also included many nonliving things.

abiotic matter

matter that makes up the nonliving parts of an ecosystem, such as air, water, and rocks

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Did your **initial claim** about why the organisms in the biodome didn't have enough energy storage molecules point to **biotic matter** or **abiotic matter?**

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

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End of @Home Lesson

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UNIVERSITY OF CALIFORNIA, BERKELEY

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Key activities

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While meeting, introduce the biodome and the students' mission. Invite students to suggest reasons that organisms need energy storage molecules, and remind students of the connection between energy storage molecules and releasing energy. After meeting, students can read the *Biodome Files*.

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.

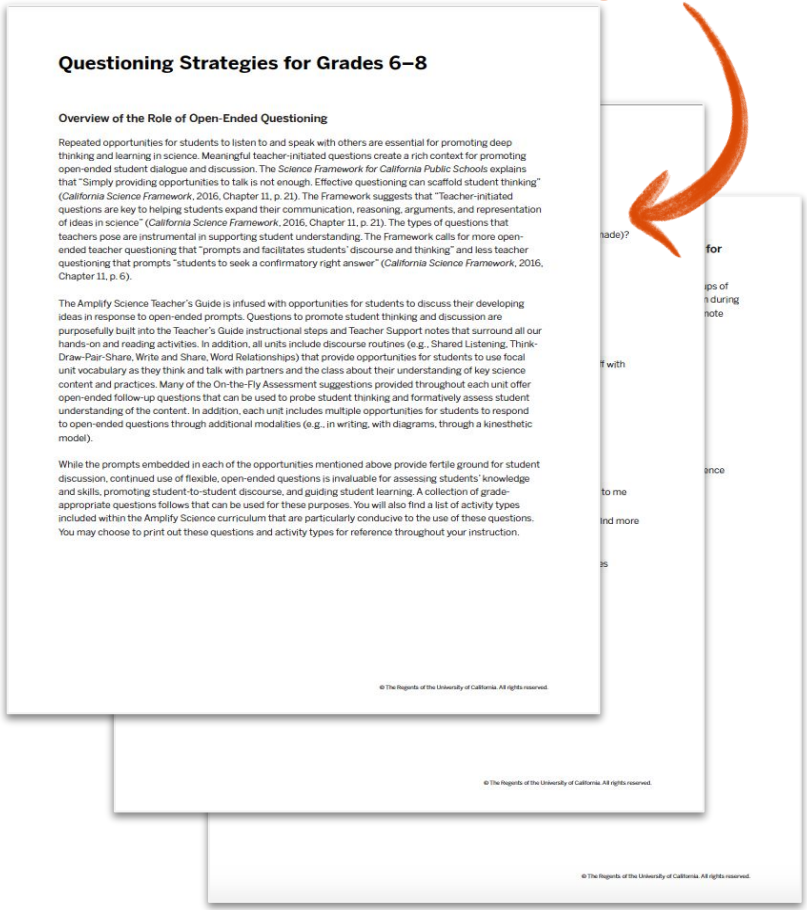
page 18

Questioning Strategies

Pages 19-21

Open-Ended Questions to Facilitate Student Thinking & Discourse

- Questions to assess students' knowledge and skills
- Questions to promote student-to-student discourse
- Questions to guide student learning



Questioning Strategies for Grades 6–8

Overview of the Role of Open-Ended Questioning

Repeated opportunities for students to listen to and speak with others are essential for promoting deep thinking and learning in science. Meaningful teacher-initiated questions create a rich context for promoting open-ended student dialogue and discussion. The *Science Framework for California Public Schools* explains that "Simply providing opportunities to talk is not enough. Effective questioning can scaffold student thinking" (*California Science Framework*, 2016, Chapter 11, p. 21). The Framework suggests that "Teacher-initiated questions are key to helping students expand their communication, reasoning, arguments, and representation of ideas in science" (*California Science Framework*, 2016, Chapter 11, p. 21). The types of questions that teachers pose are instrumental in supporting student understanding. The Framework calls for more open-ended teacher questioning that "prompts and facilitates students' discourse and thinking" and less teacher questioning that prompts "students to seek a confirmatory right answer" (*California Science Framework*, 2016, Chapter 11, p. 6).

The Amplify Science Teacher's Guide is infused with opportunities for students to discuss their developing ideas in response to open-ended prompts. Questions to promote student thinking and discussion are purposefully built into the Teacher's Guide instructional steps and Teacher Support notes that surround all our hands-on and reading activities. In addition, all units include discourse routines (e.g., Shared Listening, Think-Draw-Pair-Share, Write and Share, Word Relationships) that provide opportunities for students to use focal unit vocabulary as they think and talk with partners and the class about their understanding of key science content and practices. Many of the On-the-Fly Assessment suggestions provided throughout each unit offer open-ended follow-up questions that can be used to probe student thinking and formatively assess student understanding of the content. In addition, each unit includes multiple opportunities for students to respond to open-ended questions through additional modalities (e.g., in writing, with diagrams, through a kinesthetic model).

While the prompts embedded in each of the opportunities mentioned above provide fertile ground for student discussion, continued use of flexible, open-ended questions is invaluable for assessing students' knowledge and skills, promoting student-to-student discourse, and guiding student learning. A collection of grade-appropriate questions follows that can be used for these purposes. You will also find a list of activity types included within the Amplify Science curriculum that are particularly conducive to the use of these questions. You may choose to print out these questions and activity types for reference throughout your instruction.

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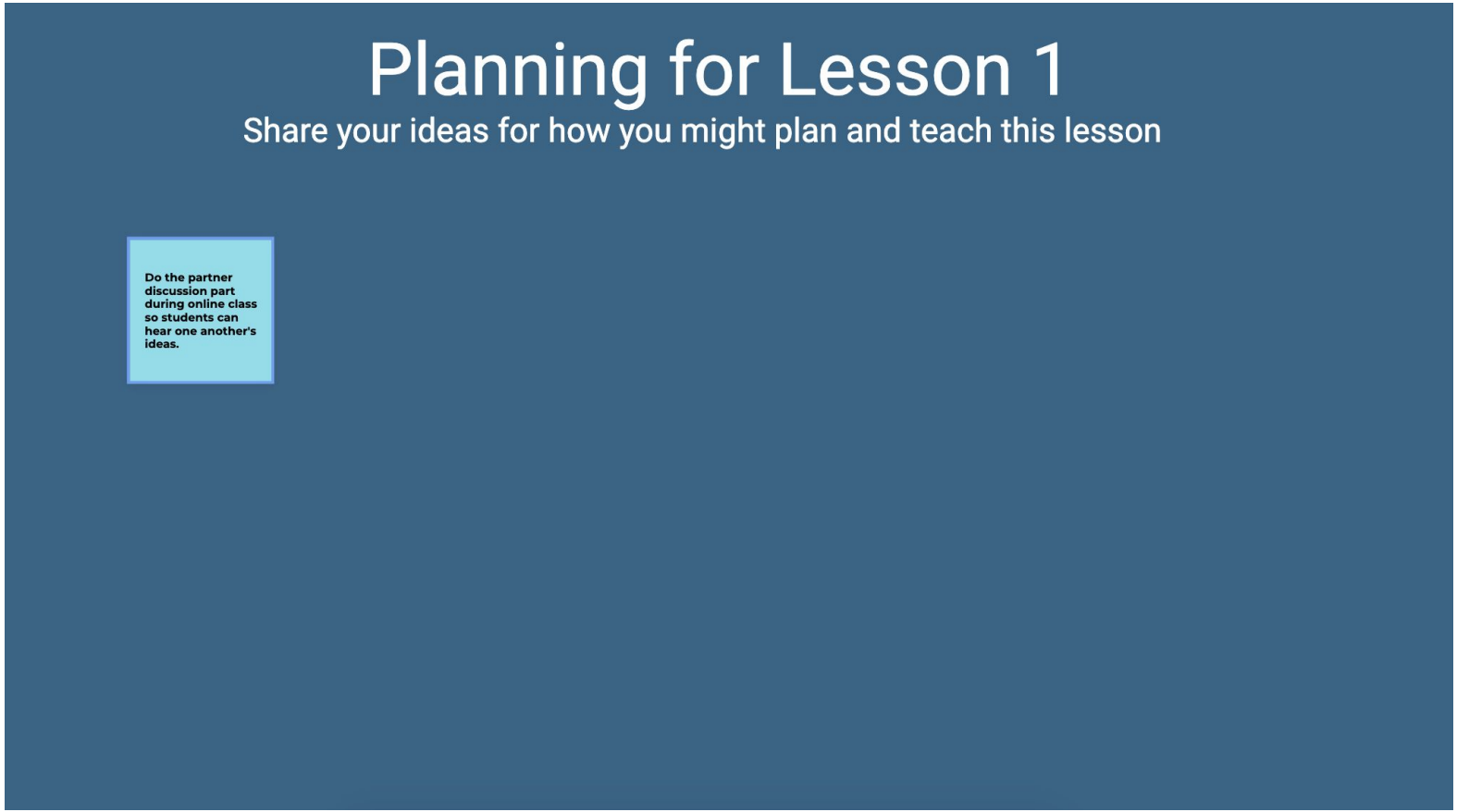
Reflection: Teaching @Home Lesson 1

How would you teach this lesson?

How might you include suggestions for online synchronous time and/or questioning strategies?

Sample Jamboard # 2



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

Day @Home Lesson 1	
Minutes for science: 15 min.	**Minutes for science:** _____
Instructional format: ☒ Asynchronous ☐ Synchronous	**Instructional format:** ☐ Asynchronous ☒ Synchronous
Lesson or part of lesson: Introducing the biodome (slides 1-13)	**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	**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...	Students will...	Teacher will...
View slides and the video that introduces students to the unit. Jot down initial ideas about their reactions to the video.	Assign slides 1-13 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.		

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 the biodome (slides 1-13)

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 slides and the video that introduces students to the unit. Jot down initial ideas about their reactions to the video.	Assign slides 1-13 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:
Read article set & discuss ideas

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...
Read from the *Biodome Files* article set, which they use to brainstorm initial ideas about the Chapter Question. Discuss their ideas from the reading and their initial ideas about why there weren't enough energy storage molecules for plants and animals in the biodome.	Lead students through the lesson activities using slides 13-28 allowing students time to collaborate as they discuss their ideas about the Chapter question

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.

Asynchronous: students jot down their initial ideas

Synchronous: record revised ideas about Chapter 1 question after peer discussion

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

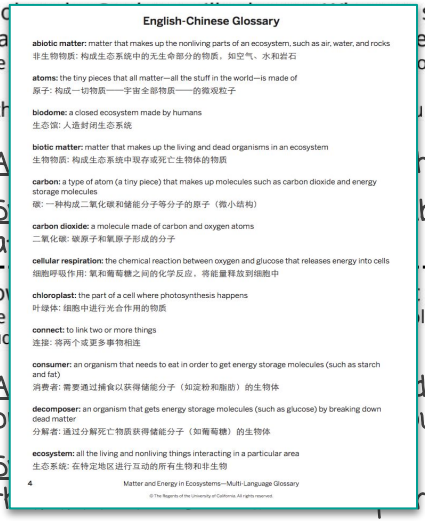
How will students submit this work product to you?
See the Completing and Submitting Written Work tables to the right for guidance on how students can complete and submit work.

Asynchronous: students jot initial ideas on paper or digitally to bring with them to the asynchronous lesson

Synchronous: Students will use the student sheets to record their initial ideas about the Chapter 1 question

Completing Written Work	Submitting 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)	• 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.)



English-Chinese Glossary

abiotic matter: matter that makes up the nonliving parts of an ecosystem, such as air, water, and rocks
非生物物质: 构成生态系统中的无生命部分的物质，如空气、水和岩石

atoms: the tiny pieces that all matter—all the stuff in the world—is made of
原子: 构成一切物质——宇宙全部物质——的微观粒子

biodome: a closed ecosystem made by humans
生态馆: 人造封闭生态系统

biotic matter: matter that makes up the living and dead organisms in an ecosystem
生物物质: 构成生态系统中现存或死亡生物体的物质

carbon: a type of atom (a tiny piece) that makes up molecules such as carbon dioxide and energy storage molecules
碳: 一种构成二氧化碳和储能分子等分子的原子（微小结构）

carbon dioxide: a molecule made of carbon and oxygen atoms
二氧化碳: 碳原子和氧原子形成的分子

cellular respiration: the chemical reaction between oxygen and glucose that releases energy into cells
细胞呼吸作用: 氧和葡萄糖之间的化学反应，将能量释放到细胞中

chloroplast: the part of a cell where photosynthesis happens
叶绿体: 细胞中进行光合作用的物质

connect: to link two or more things
连接: 将两个或更多事物相连

consumer: an organism that needs to eat in order to get energy storage molecules (such as starch and fat)
消费者: 需要通过捕食以获得储能分子（如淀粉和脂肪）的生物体

decomposer: an organism that gets energy storage molecules (such as glucose) by breaking down dead matter
分解者: 通过分解死亡物质获得储能分子（如葡萄糖）的生物体

ecosystem: all the living and nonliving things interacting in a particular area
生态系统: 在特定地区进行互动的所有生物和非生物

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students working in the lesson(s)

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us lesson

student sheets to record

r 1 question

- I notice/observe . . .
- I think this is important because . . .
- I wonder . . .

Some Types of Written Work in Amplify Science	
	at the end of Chapter)
	investigations, etc
Completing Written Work	**Submitting 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)	• 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.)

Supports:

- Provide students with the Multi-Language Glossary where appropriate
- Provide sentence starters
- Leverage primary language for discussions

Extension:

- Have students write questions about the unit phenomenon.

Teacher Overview - Chapter 1

Overview of @Home Lessons 2-5

@Home Lesson 2: GROUP 1

- Students learn about photosynthesis through reading and annotating the *Sunlight and Life* article set. Students discuss their thinking about the reading in order to share important insights and surface alternative conceptions.

@Home Lesson 3: GROUP 2

- Students examine several different types of energy storage molecules in order to learn more about what they are, how they are used, and where they come from. Students revisit the *Sunlight and Life* article set and focus on using a diagram to help them deepen their understanding of photosynthesis. Students use the Sim to get a dynamic visualization of photosynthesis at the cellular level that will help them think more about where energy storage molecules come from. Students compare the visual model from the Sim with the photosynthesis diagram from the article set and gather more evidence about where energy storage molecules come from.

@Home Lesson 4: GROUP 3

- Students evaluate two completed models to determine which one accurately depicts where the energy storage molecules in an ecosystem come from. Students use the Sim to gather evidence for the new Investigation Question, finding out what factors can cause energy storage molecules in an ecosystem to decrease. In pairs, students discuss graphical data about the amounts of carbon dioxide, sunlight, and water in the biodome. Students complete an explanation to the Econauts, answering the Chapter 1 Question.

@Home Lesson 5: GROUP 4

- Students are introduced to the Chapter 2 question and the new Investigation Question. Students use the Sorting Tool to make claims about what parts of the ecosystem release carbon dioxide to the atmosphere. Students make predictions and then observe a video of an experiment in order to think more about what types of organisms produce carbon dioxide. Students read the introduction to an article set about decomposers and then revise their ideas from earlier about which parts of an ecosystem give off carbon dioxide.

Breakout groups

pages 13-14

Discussion prompts

Planning:

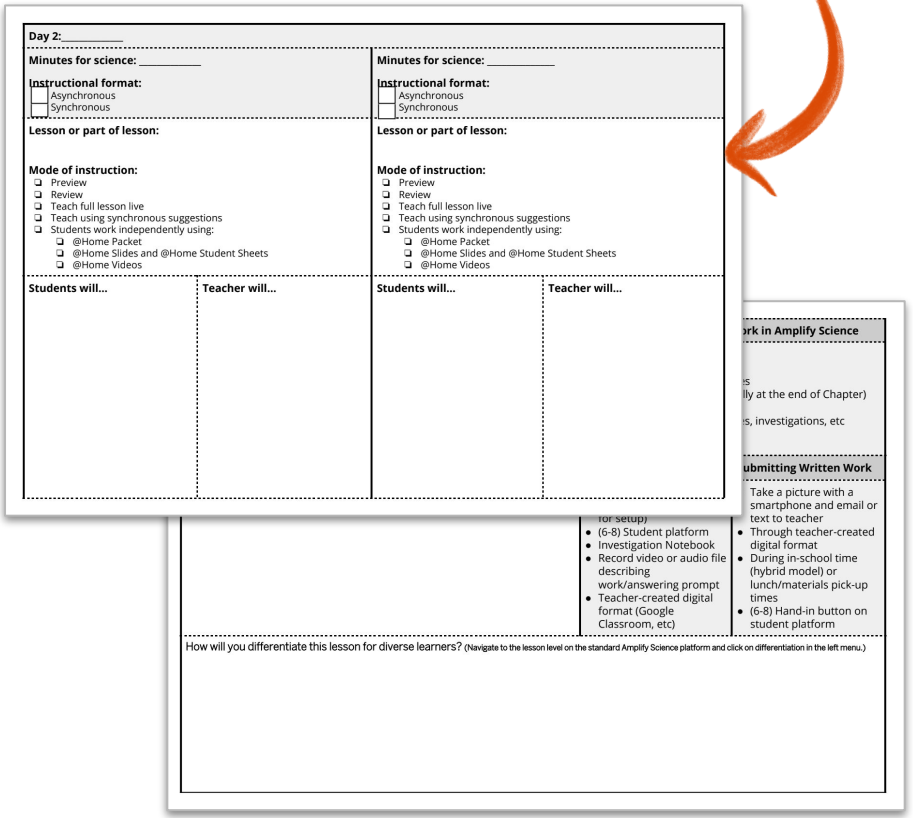
- Dig into the @Home Resources for your assigned lesson.

Student work:

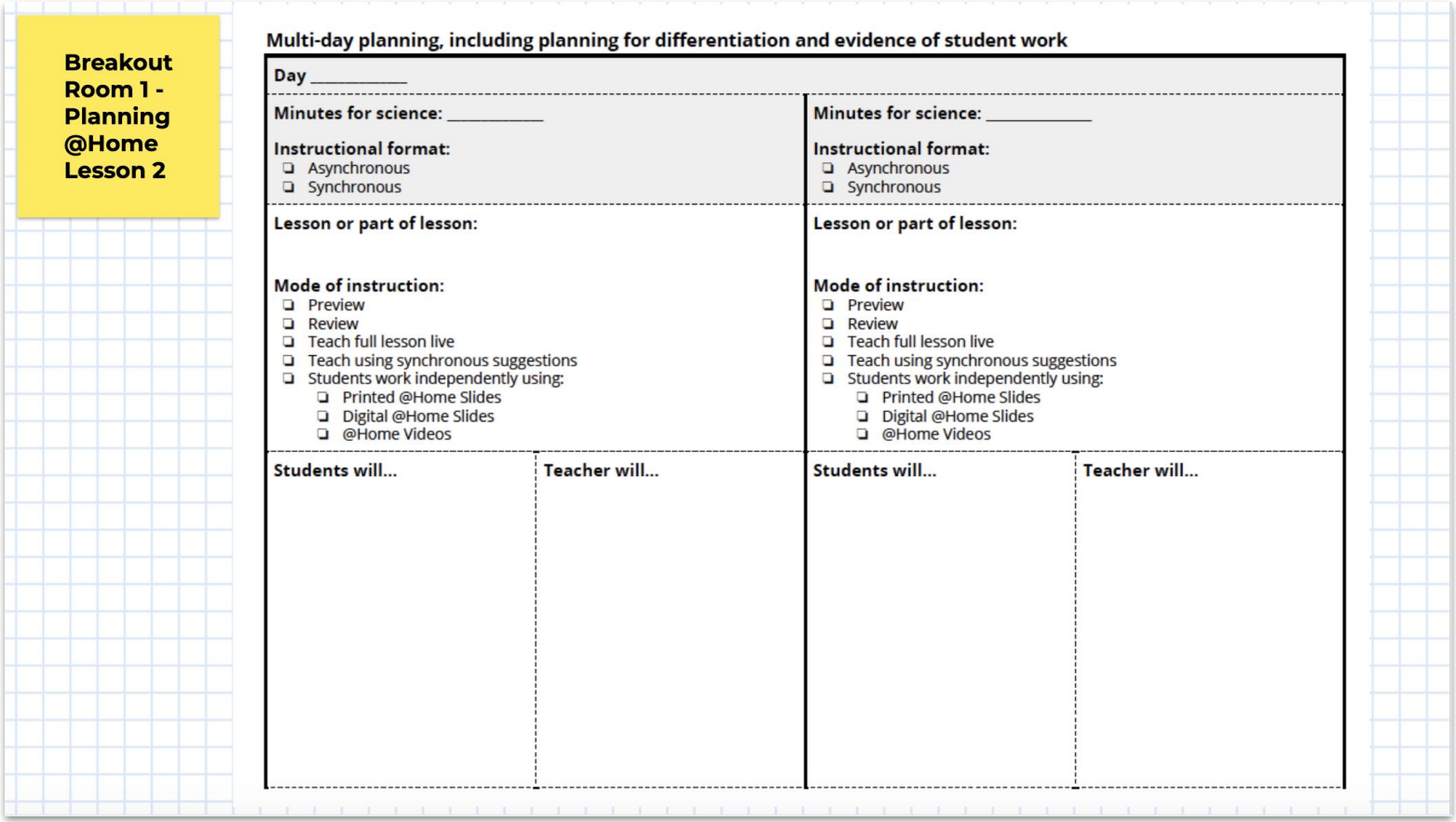
- Discuss how you can collect evidence of student work

Differentiation:

- Consider how you might differentiate your lesson

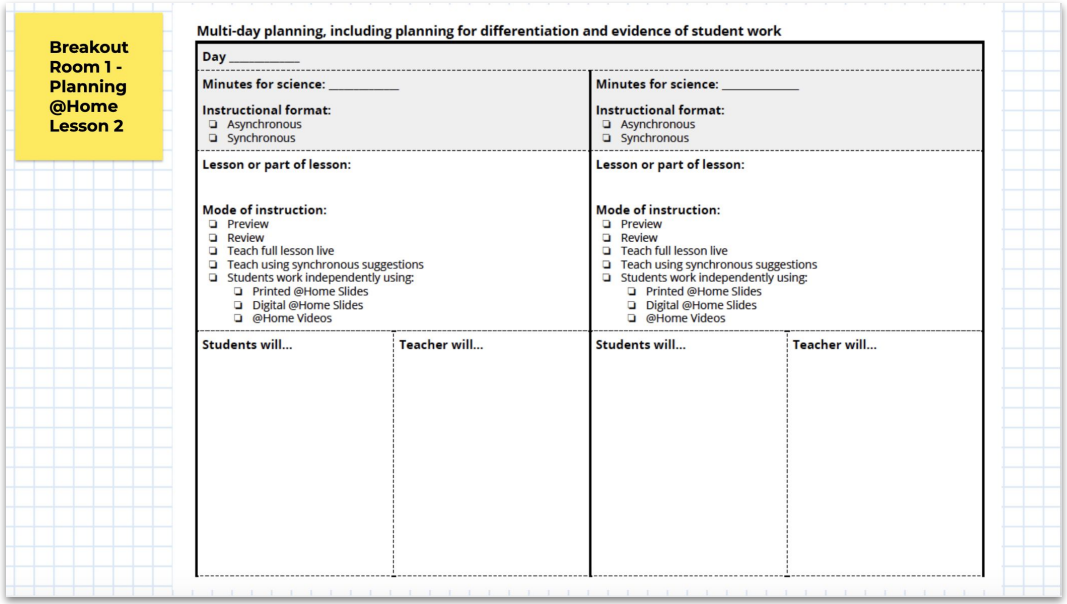


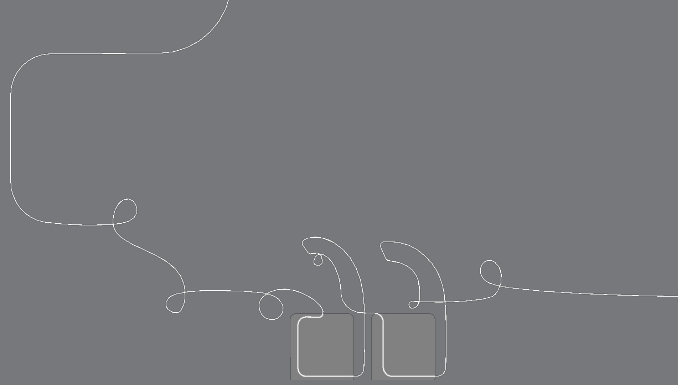
Sample Jamboard # 3



Planning Share Out

- What are your key takeaways from planning?
- Which lesson parts did you plan for synchronous vs. asynchronous time?





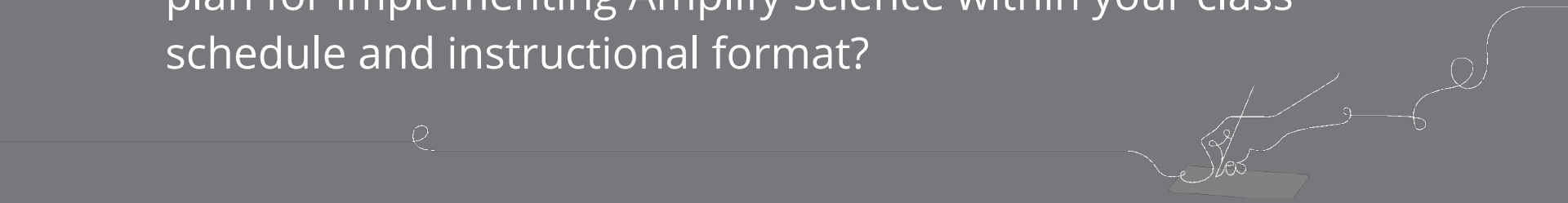
Questions?

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?



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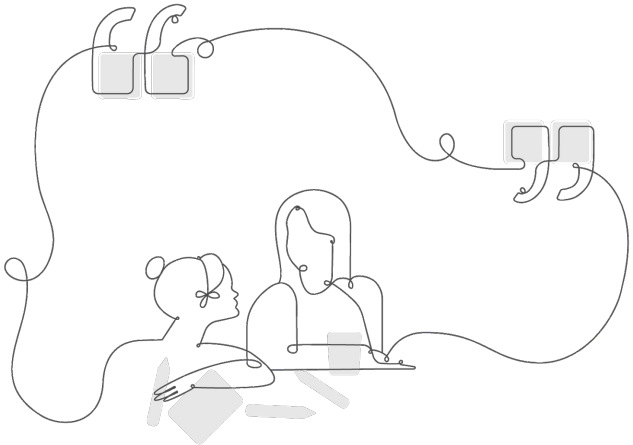
Upcoming LAUSD MS Office Hours

Bi-weekly from 3-4pm

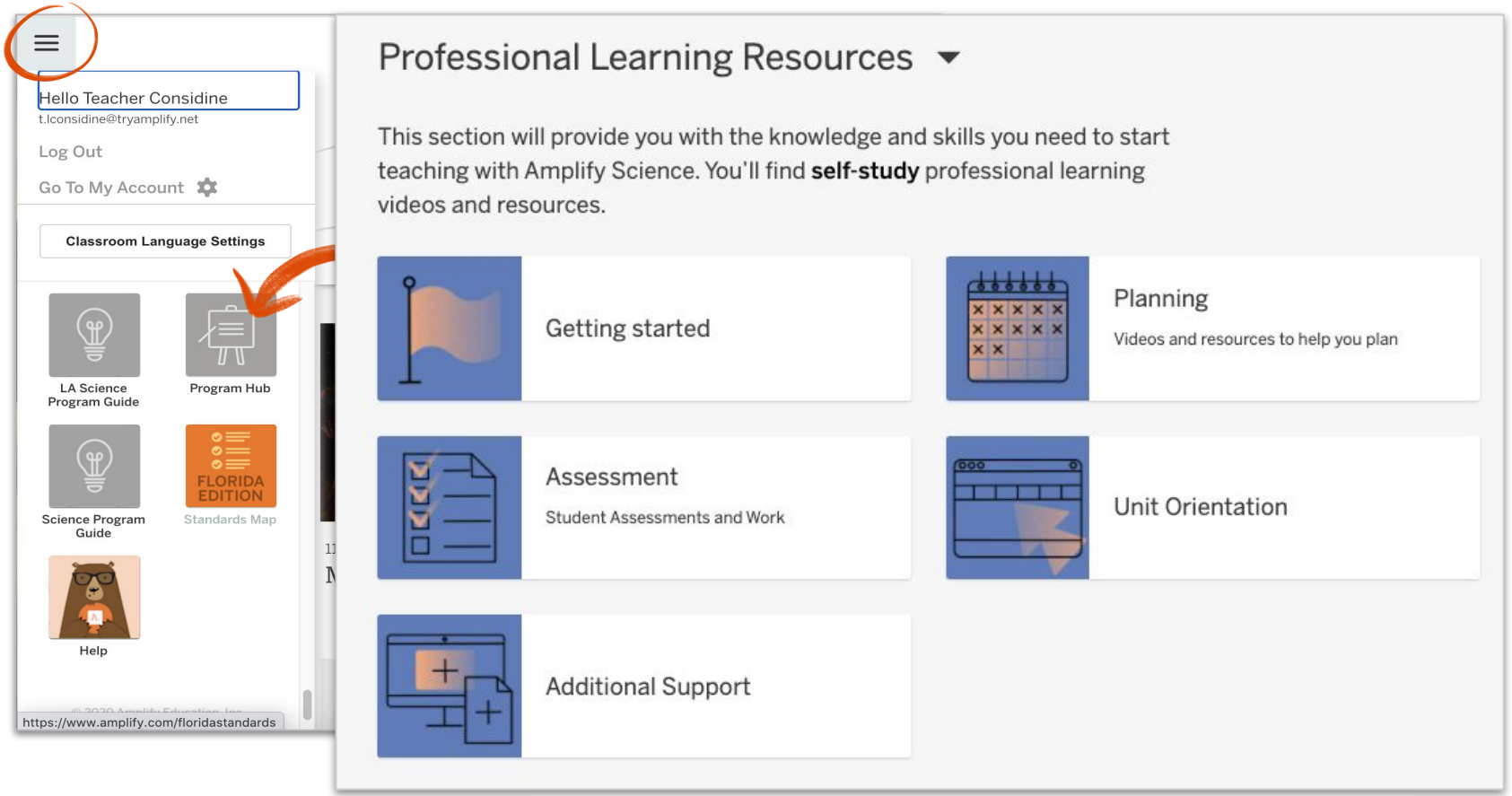
- Thursday, 5/13
- Thursday, 5/27

https://meet.google.com/gcx-dhke-jxd

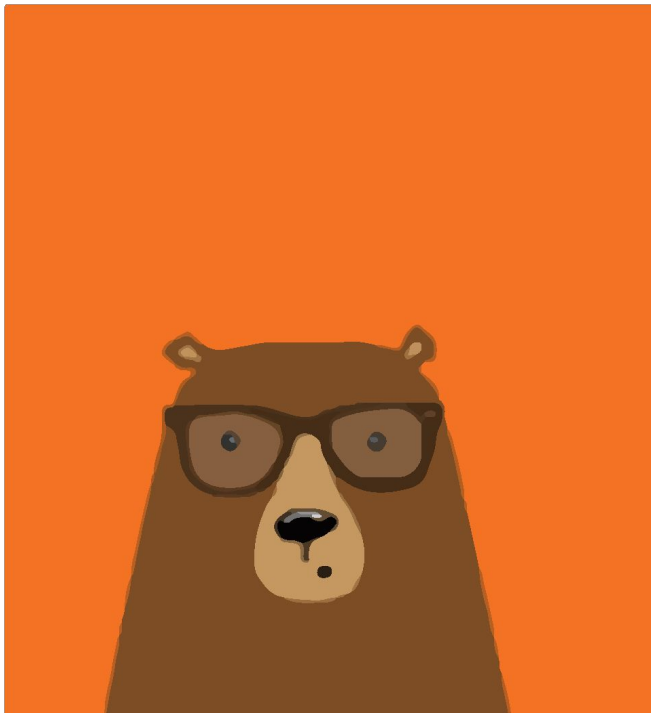


Additional Amplify resources

Program Hub: Professional Learning Resources



Additional Amplify resources

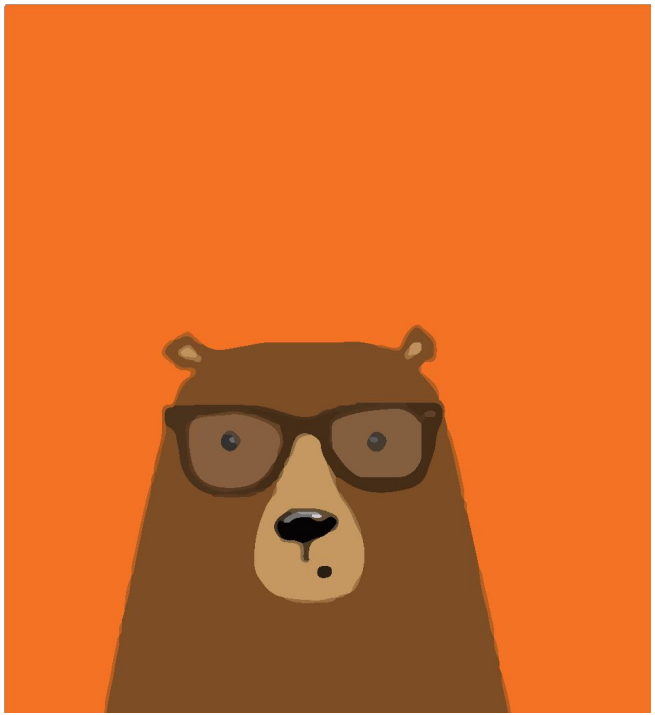


Caregivers site

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

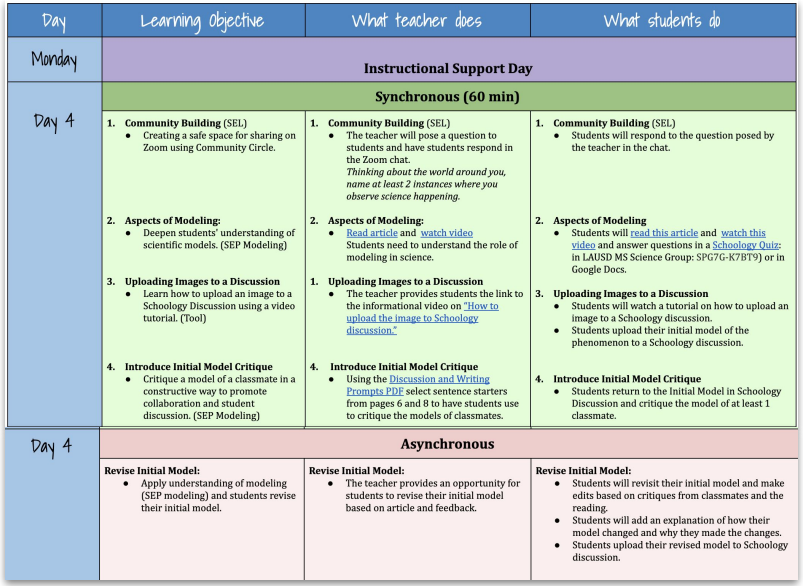
When contacting the customer care team:

- 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.

Smart Start Plans

Middle School Science Schoology Group

- Access code to join the Schoology Group: **SPG7G-K7BT9**
- Once in the group, you will find the Smart Start Plans under *resources*.



Day	Learning Objective	What teacher does	What students do
Monday	**Instructional Support Day**		
Day 4	**Synchronous (60 min)**		
	1. Community Building (SEL) • Creating a safe space for sharing on Zoom using Community Circle.	**1. Community Building** (SEL) • The teacher will pose a question to students and have students respond in the Zoom chat. *Thinking about the world around you, name at least 2 instances where you observe science happening.*	**1. Community Building** (SEL) • Students will respond to the question posed by the teacher in the chat.
	2. Aspects of Modeling: • Deepen students' understanding of scientific models. (SEP Modeling)	**2. Aspects of Modeling:** • Read article and watch video Students need to understand the role of modeling in science.	**2. Aspects of Modeling** • Students will read this article and watch this video and answer questions in a Schoology Quiz: in LAUSD MS Science Group: SPG7G-K7BT9) or in Google Docs.
	3. Uploading Images to a Discussion • Learn how to upload an image to a Schoology Discussion using a video tutorial. (Tool)	**1. Uploading Images to a Discussion** • The teacher provides students the link to the informational video on "How to upload the image to Schoology discussion."	**3. Uploading Images to a Discussion** • Students will watch a tutorial on how to upload an image to a Schoology discussion. • Students upload their initial model of the phenomenon to a Schoology discussion.
	4. Introduce Initial Model Critique • Critique a model of a classmate in a constructive way to promote collaboration and student discussion. (SEP Modeling)	**4. Introduce Initial Model Critique** • Using the Discussion and Writing Prompts PDF select sentence starters from pages 6 and 8 to have students use to critique the models of classmates.	**4. Introduce Initial Model Critique** • Students return to the Initial Model in Schoology Discussion and critique the model of at least 1 classmate.
Day 4	**Asynchronous**		
	Revise Initial Model: • Apply understanding of modeling (SEP modeling) and students revise their initial model.	**Revise Initial Model:** • The teacher provides an opportunity for students to revise their initial model based on article and feedback.	**Revise Initial Model:** • Students will revisit their initial model and make edits based on critiques from classmates and the reading. • Students will add an explanation of how their model changed and why they made the changes. • Students upload their revised model to Schoology discussion.

Creating Assignments in Schoology

- Click Add Materials.
- Select Add Assignment.
- Fill out the Create Assignment form.
- Options. Use Options to turn on/off the following features: Use Individually Assign to only display the assignment to a specific member of the course or a grading group.
- Click Create to complete

LAUSD Shared Logins

AmplifyScience

Go to: my.amplify.com

A. Log In with Amplify

District Shared Logins		
Grade	**Username**	**Password**
Kindergarten	LAUSDscienceK	LAUSD1234
1	LAUSDscience1	LAUSD1234
2	LAUSDscience2	LAUSD1234
3	LAUSDscience3	LAUSD1234
4	LAUSDscience4	LAUSD1234
5	LAUSDscience5	LAUSD1234
6	LAUSDscience6	LAUSD1234
7	LAUSDscience7	LAUSD1234
8	LAUSDscience8	LAUSD1234

Elementary Student Apps Shared Logins

English
- Username: ampsci123
- Password: ampsci123

Spanish
- Username: ampsci123sp
- Password: ampsci123sp