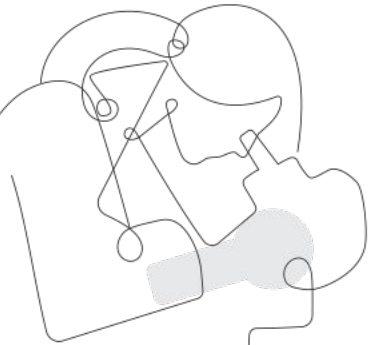
Amplify Science

# Unit Internalization & Guided Planning

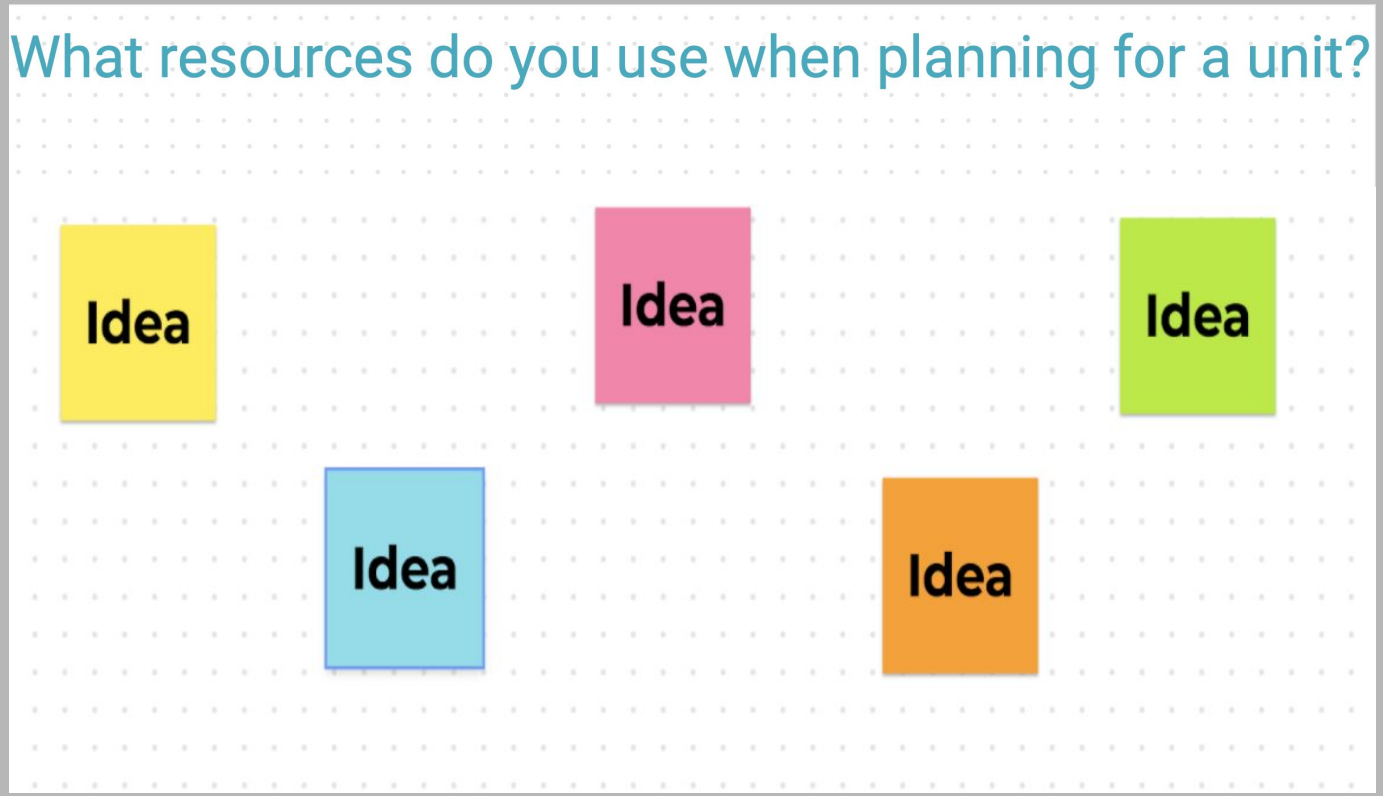
## Deep-dive and strengthening workshop
## Grade 6, Matter and Energy in Ecosystems



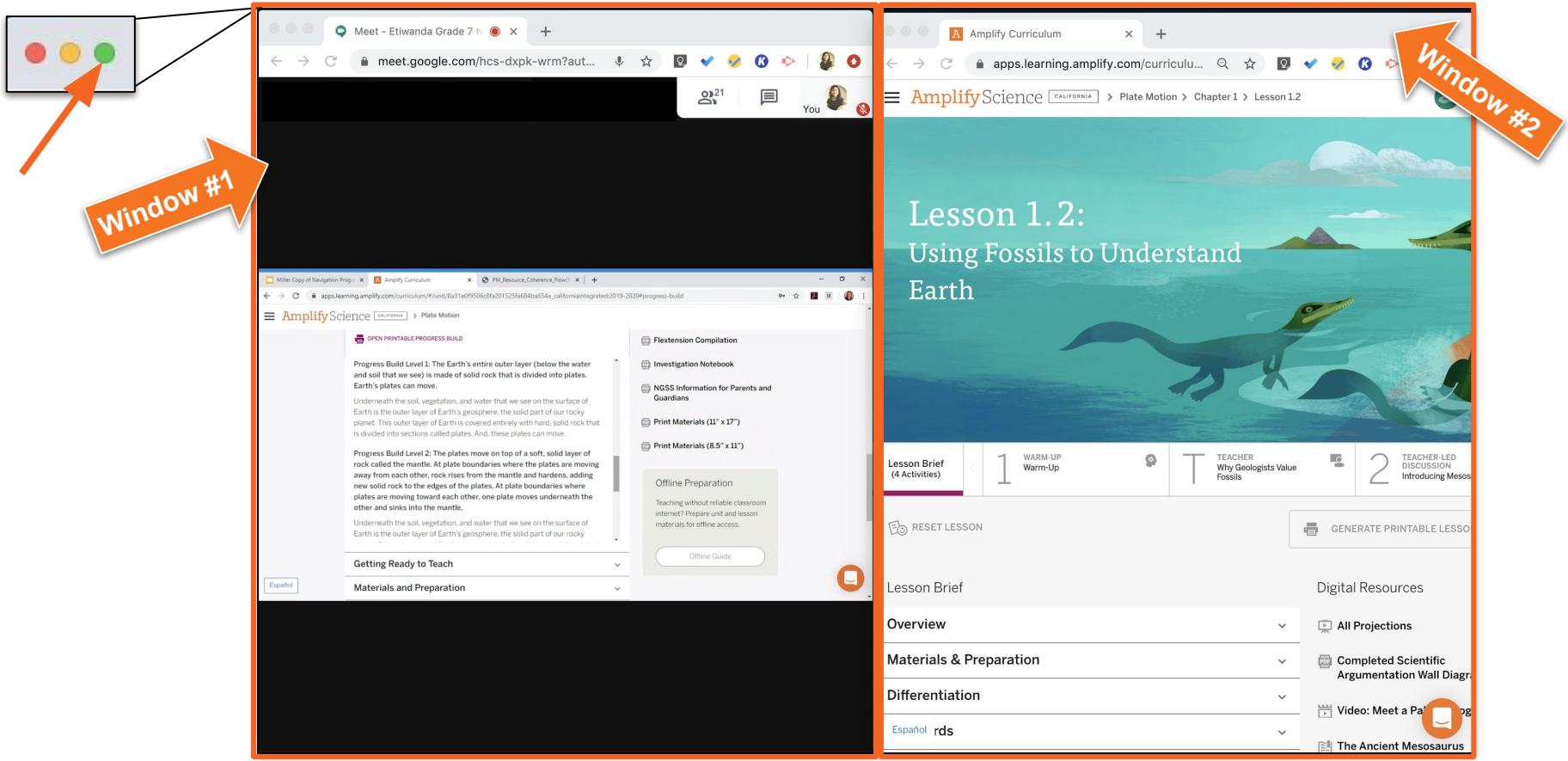
NYCDOE
March 2021
Presented by Your Name

# Planning Brainstorm

**Click on the Jamboard link and share the resources you use when planning for an upcoming unit.**



# Use two windows for today's webinar



# Remote Professional Learning Norms

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

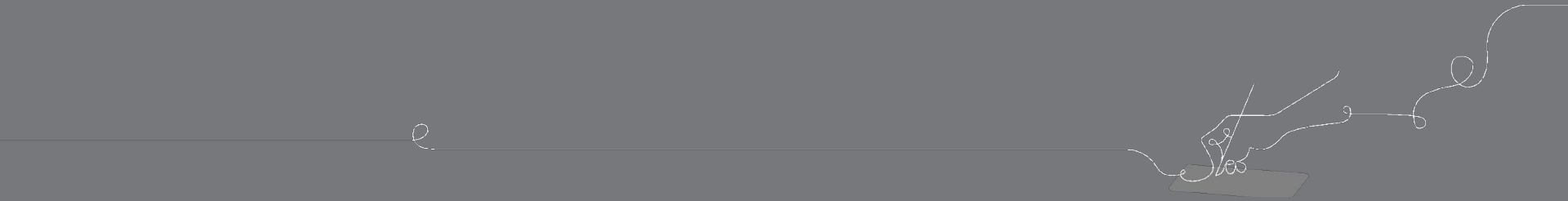
Make sure you have a note-catcher present


Engage at your comfort level - chat, ask questions, discuss, share!

# Workshop goals

By the end of this workshop, you will:

- Receive support from an Amplify Science professional learning specialist who will guide effective unit internalization and/ or lesson planning protocols.
- Effectively leverage the use of curriculum resources to address diverse learner needs.



# Plan for the day

- Framing the day
  - Revisiting the Amplify Science Approach
  - Instructional Materials
- Unit Internalization
- Planning to teach
  - Collecting evidence of student learning to meet diverse learner needs
  - Planning to differentiate instruction
- Reflection and closing

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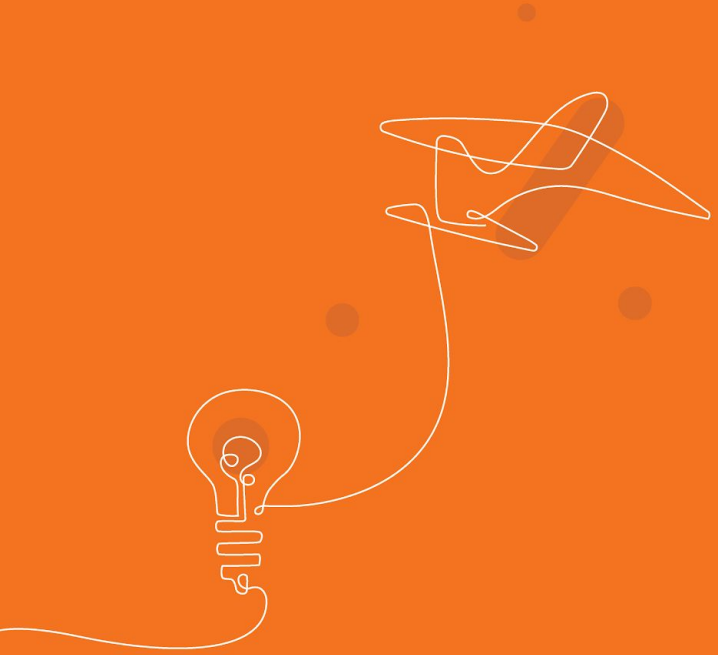


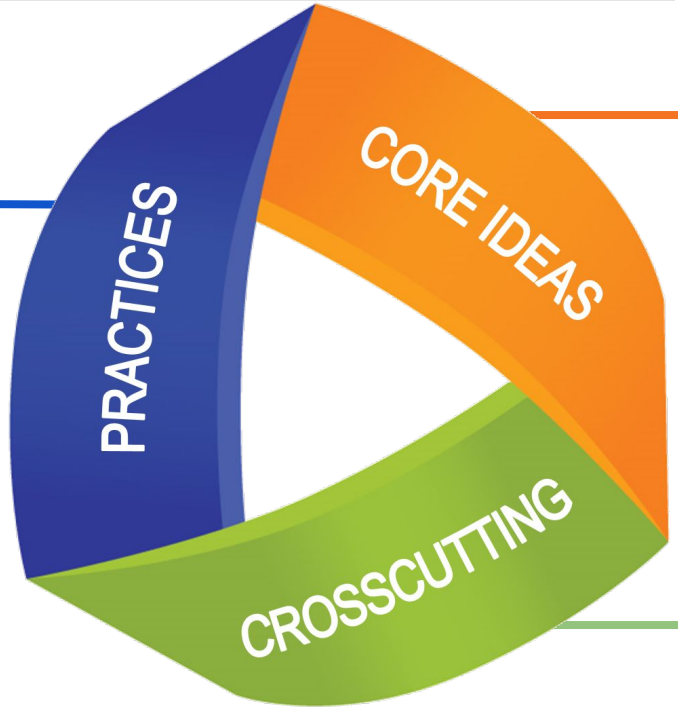
# Revisiting the Amplify Science Approach

# Next Generation Science Standards

## Designed to help students build a cohesive understanding of science

**What scientists do**

Science and Engineering Practices




**What scientists want to know**

Disciplinary Core Ideas

**How scientists think**

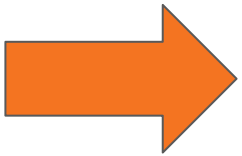
Crosscutting Concepts

# Comparing topics and phenomena

## A shift in science instruction

from learning about

(like a student)

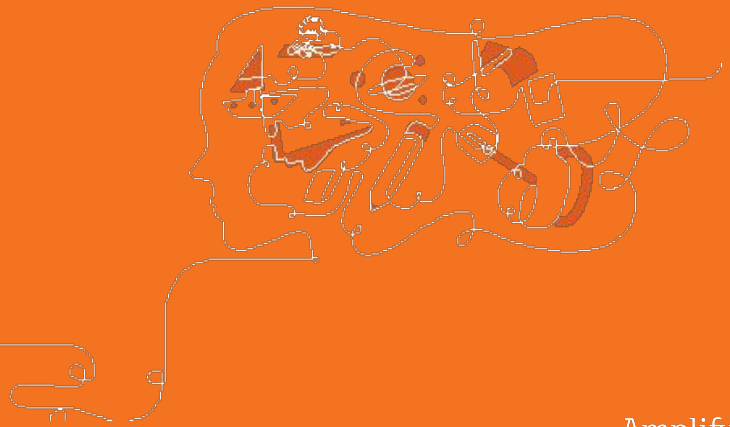


to figuring out

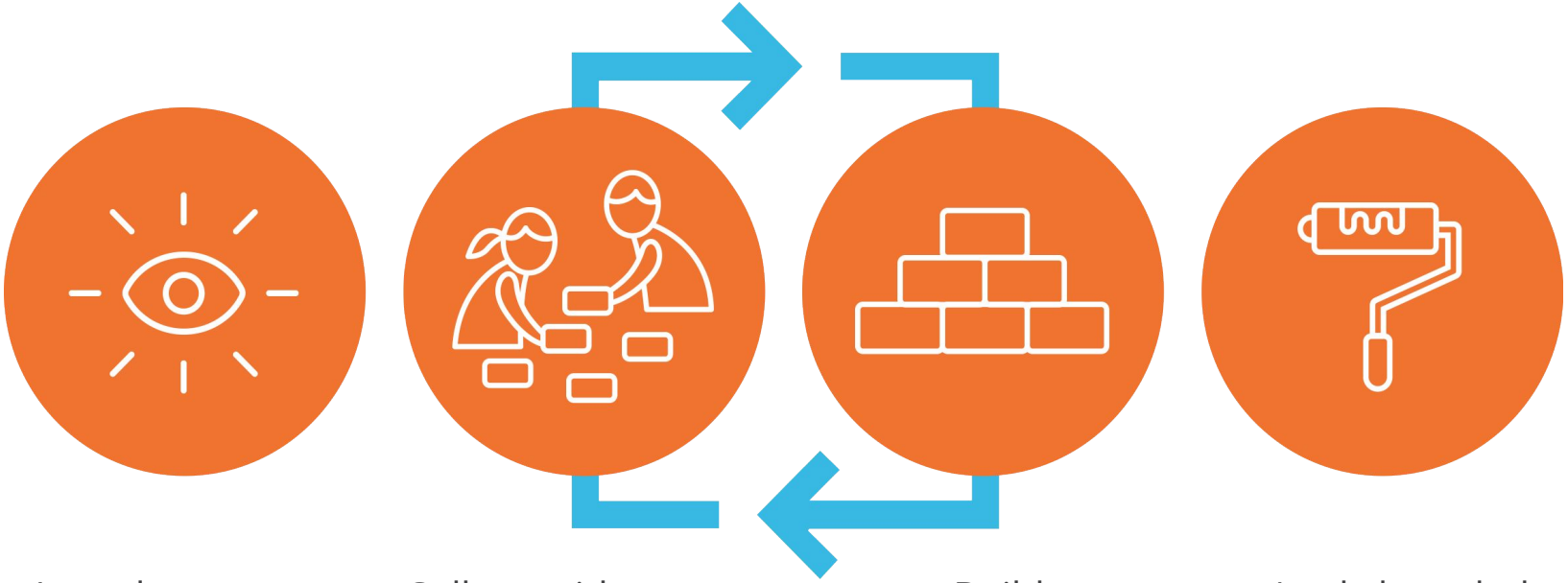
(like a scientist)

# Problem-based deep dives

Students inhabit the role of scientists and engineers to explain or predict phenomena. They use what they figure out to solve real-world problems.



# 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

Do

Talk

Read


Write

Visualize

# What is the first step to the Amplify Science Approach?

**A** Collect evidence from multiple sources

**B** Introduce a Phenomenon and/or real world problem

**C** Apply knowledge to solve different problem

**D** Build an increasingly complex explanation

# What are the multiple modalities?

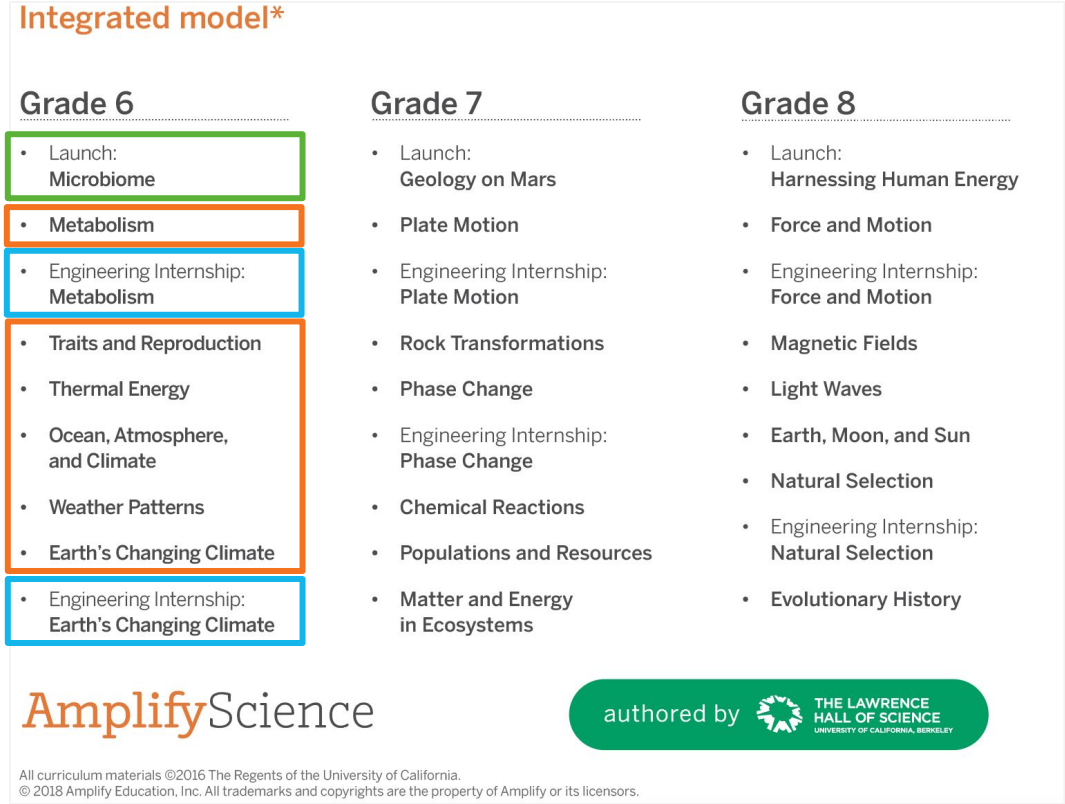
**A** Do, talk, read, write, visualize

**C** Do, visualize, hands-on projects

**B** Read, write, google search

**D** Reading, writing, math

# 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

# Middle School Curriculum New York City Edition

## Grade 6

- Launch: * Harnessing Human Energy
- Thermal Energy
- Ocean, Atmosphere,and Climate
- Weather Patterns
- Populations and Resources
- Matter and Energy in Ecosystems
- Earth's Changing Climate

## Grade 7

- Launch: * Microbiome
- Metabolism
- Phase Change
- Chemical Reactions
- Plate Motion
- Engineering Internship: Plate Motion
- Rock Transformations
- Engineering Internship: Earth's Changing Climate

## Grade 8

- Launch: Geology on Mars
- Force and Motion
- Engineering Internship: Force and Motion
- Earth, Moon, and Sun
- Magnetic Fields
- Light Waves
- Traits and Reproduction
- Natural Selection
- Evolutionary History

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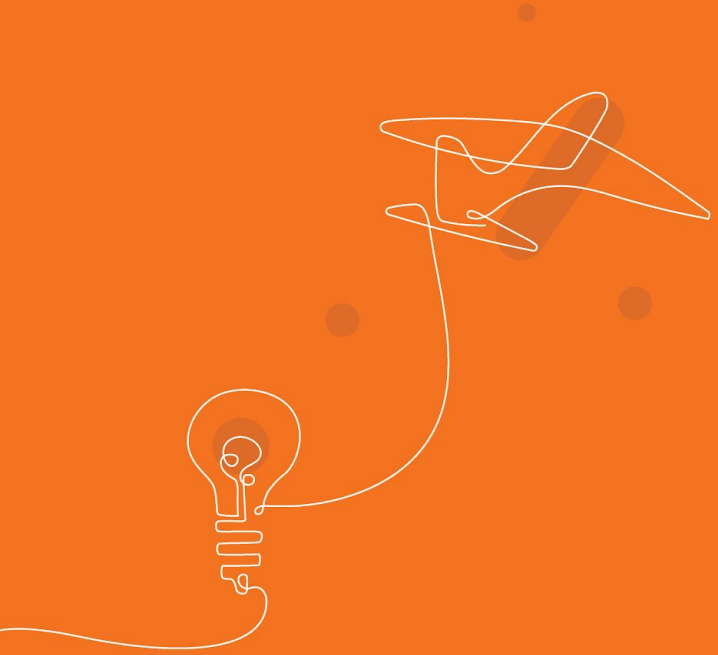
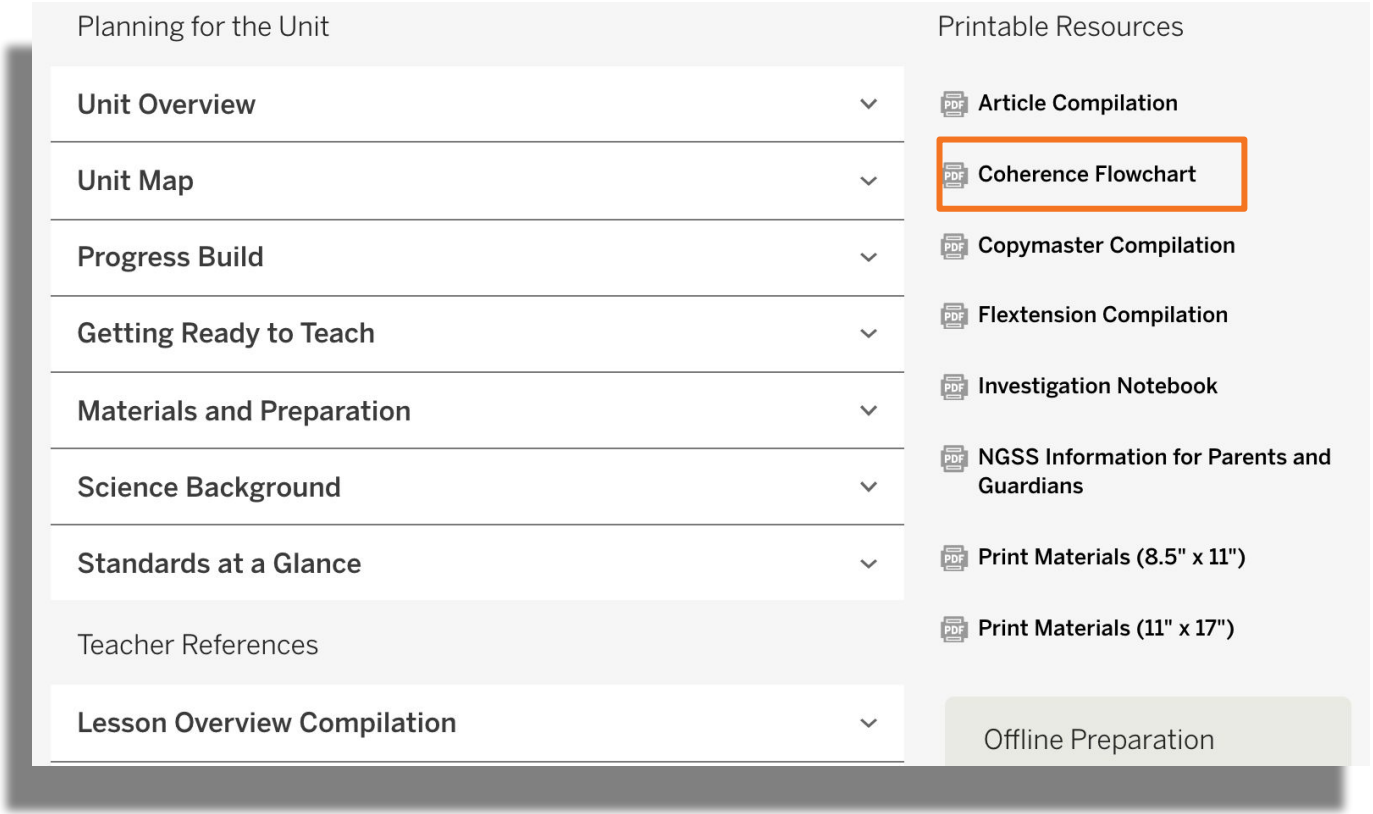


# Revisiting Resources

# Where do you find all of the Unit Phenomena listed with Unit questions?



# Matter and Energy in Ecosystems: Biodome Collapse

**The problem students work to solve**

Why did the biodome ecosystem collapse?

**Chapter 1 Question**

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

**Investigation Questions**

Where do the energy storage molecules in an ecosystem come from? (1.2, 1.3, 1.4)

What factors affect how many energy storage molecules producers are able to make? (1.5, 1.6)

**Evidence sources and reflection opportunities**

- Use the Sim to get evidence to answer the investigation question (1.2)
- Read "Sunlight and Life" (1.3)
- Revisit "Sunlight and Life" (1.4)
- Observe photosynthesis in the Sim (1.4)
- Use the Modeling Tool to show where the energy storage molecules in an ecosystem come from (1.5)

- Use the Sim to find ways to decrease energy storage molecules in an ecosystem's living things (1.5)

**Key concepts**

- Carbon is part of carbon dioxide, which is abiotic matter. Carbon is also part of energy storage molecules, which are biotic matter. (1.4)
- During the process of photosynthesis, producers make energy storage molecules, using carbon from carbon dioxide and energy from sunlight. This moves carbon from abiotic to biotic matter. (1.4)

- If one part of a system changes, this affects the rest of the system. (1.5)
- When there is more carbon (in the form of carbon dioxide) in abiotic matter, more carbon is available to producers for making energy storage molecules. (1.6)
- When there is less carbon (in the form of carbon dioxide) in abiotic matter, less carbon is available to producers for making energy storage molecules. (1.6)
- When there is more sunlight, producers can make more energy storage molecules from the carbon in carbon dioxide. (1.6)
- When there is less sunlight, producers cannot make as many energy storage molecules from the carbon in carbon dioxide. (1.6)

**Application of key concepts to problem**

- Examine graphs of sunlight, carbon dioxide, and water in the biodome to evaluate claims about why the plants and animals in the biodome didn't have enough energy storage molecules (1.6)
- Use the Reasoning Tool to connect the evidence about the biodome to a claim (1.6)

**Explanation that students can make to answer the Chapter 1 Question**

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.



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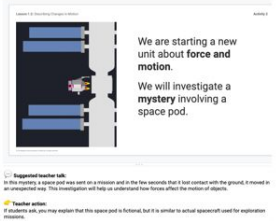
# Middle school unit resources

Investigation Notebooks or digital student experience

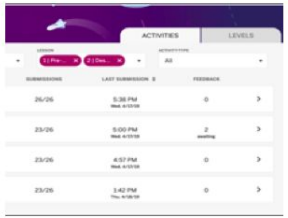

Articles (digital or print)

Simulations and other digital tools



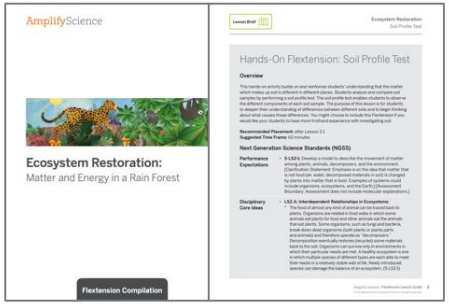

Classroom Slides


Teacher's Guide (digital or print)



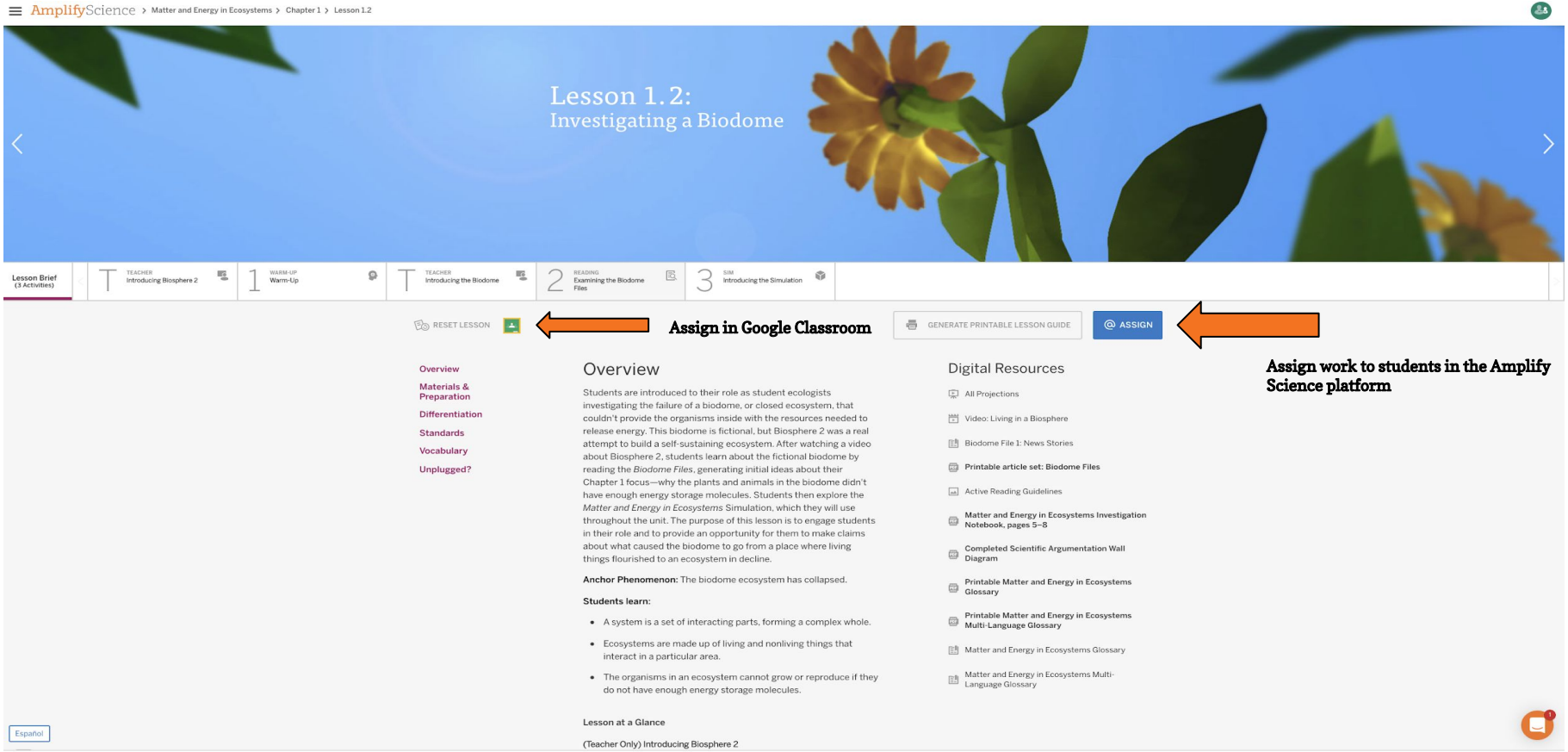

Assessments and Reporting


Hands-on and print materials




Hands-on Flextensions

# Middle School Online Component



# Welcome Science Educators!

The Amplify Science Program Hub was created to provide you with resources, tools, and advice for all stages of your implementation. Want a tour? Click here!

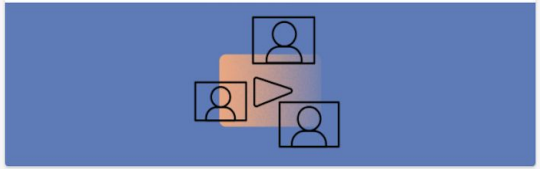
**Amplify Science @Home resources**

## Remote and hybrid learning resources

Amplify Science@Home makes remote and hybrid learning easier.

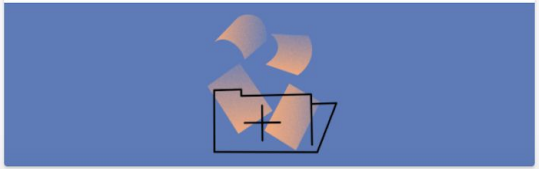
## Professional Learning Resources

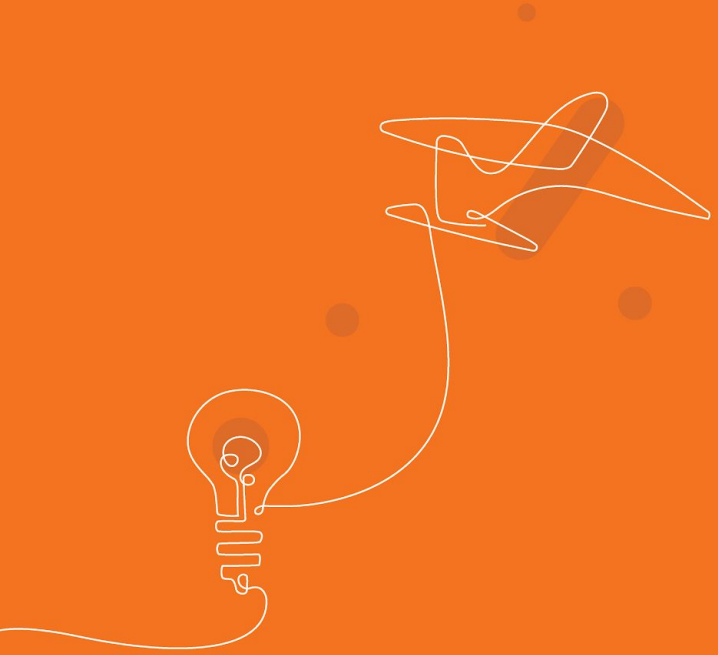
Let's get started!



## Additional Unit Materials

Additional resources to complement the units you're teaching.





# Instructional Materials

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# Standard Amplify Science Curriculum

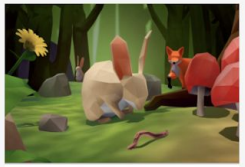

JUMP DOWN TO UNIT GUIDE

GENERATE PRINTABLE TEACHER'S GUIDE

The Matter in Energy and Ecosystems unit has **19 lessons** across 4 chapters. Each lesson is written to be **45 minutes** long.

Chapter 1: Photosynthesis

6 Lessons



Chapter 2: Cellular Respiration in Ecosystems

5 Lessons

Chapter 3: Carbon Movement in Ecosystems

4 Lessons

Chapter 4: Science Seminar

4 Lessons

Skip slide if modeling live on the platform.

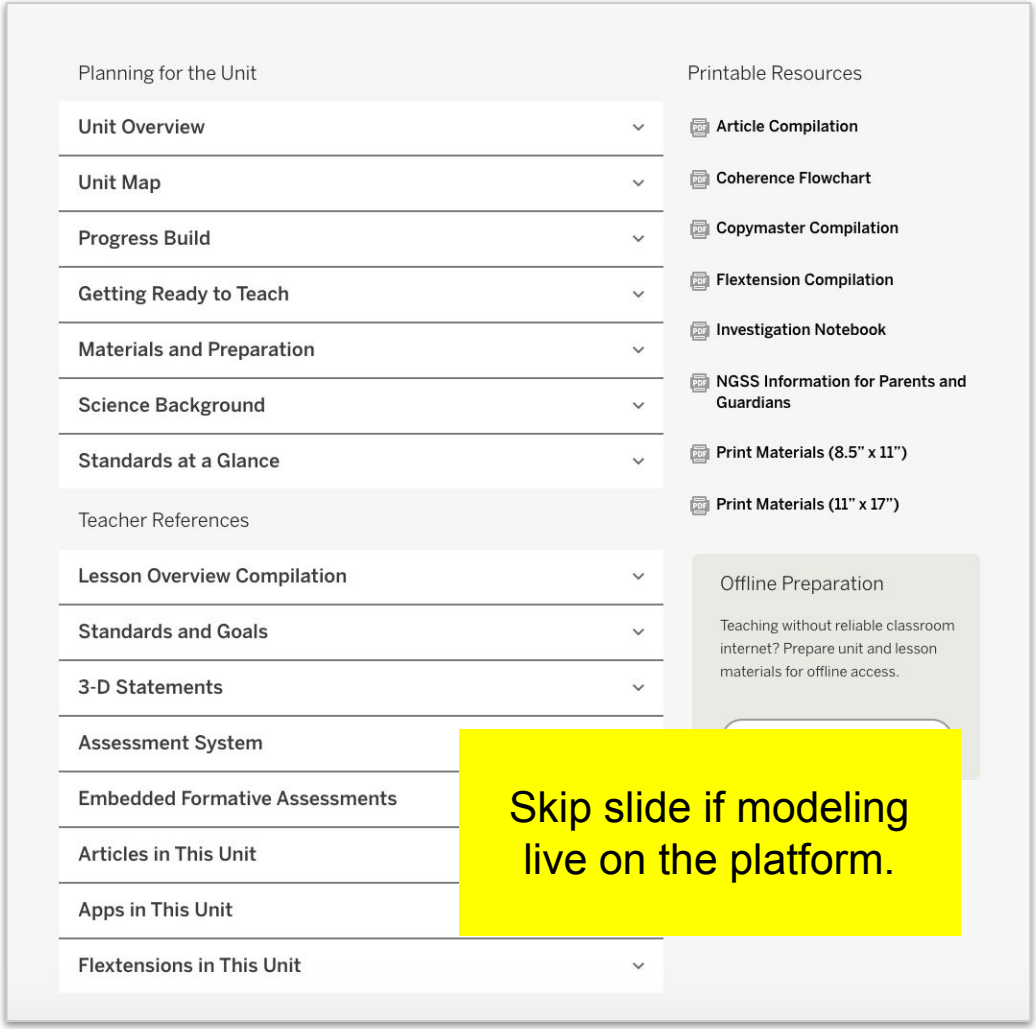
# Standard Amplify Science Curriculum

Español

# 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.

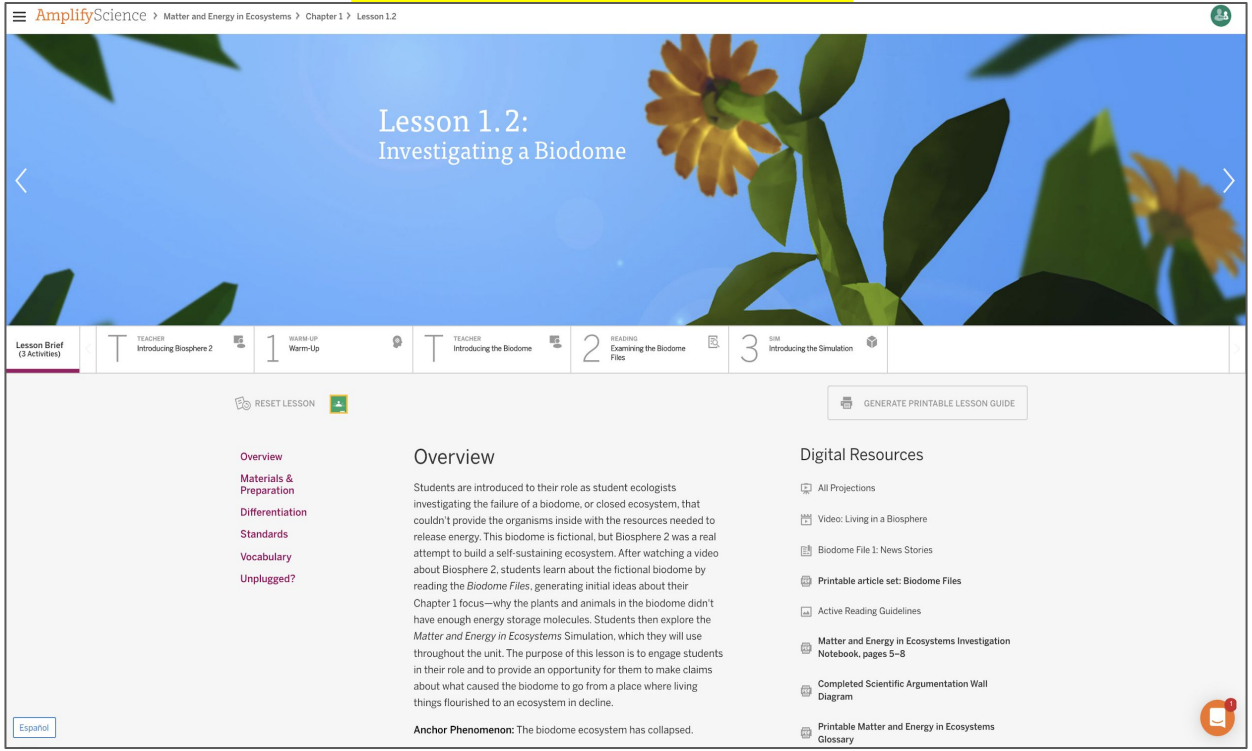


# Standard Amplify Science Curriculum

Skip slide if modeling live on the platform.

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

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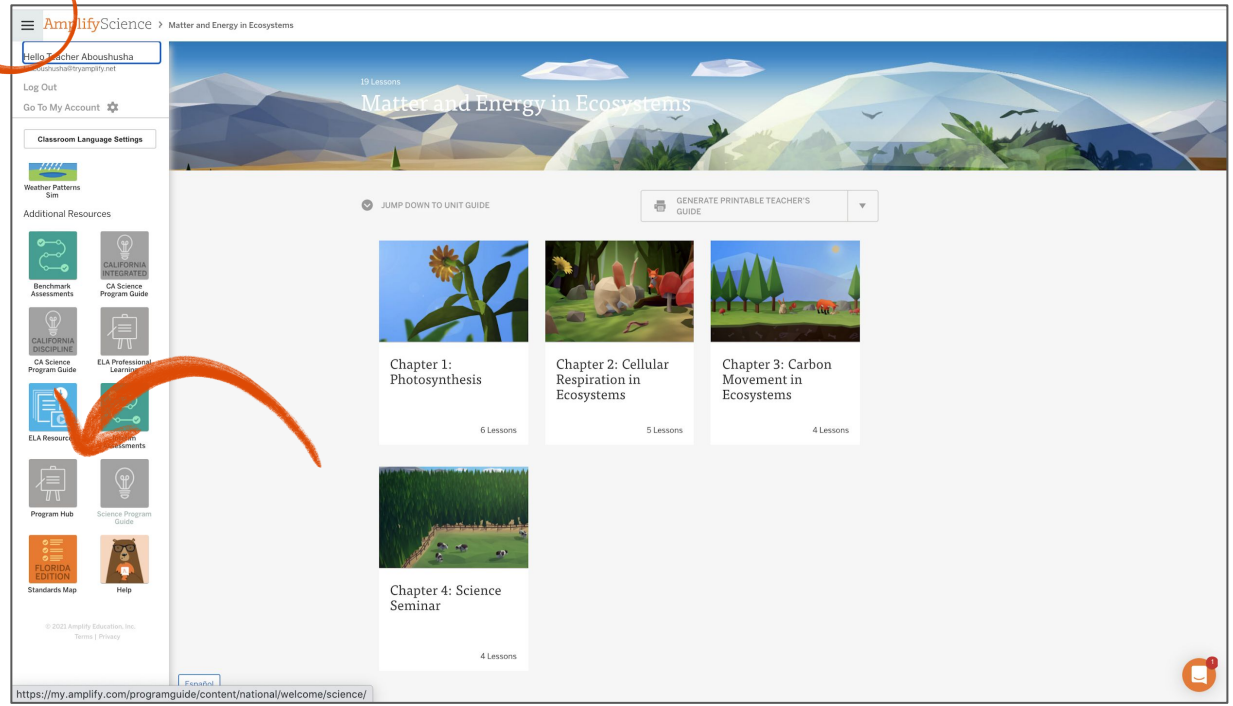
In addition to the standard Amplify Science curriculum, you also have access to Amplify Science @Home Curriculum on the Science Program Hub.



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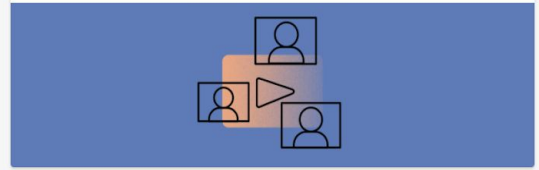

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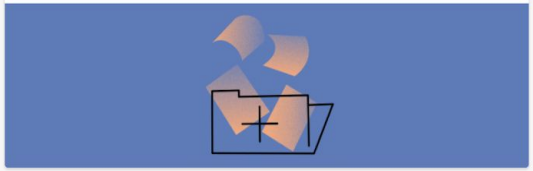


# AmplifyScience@Home

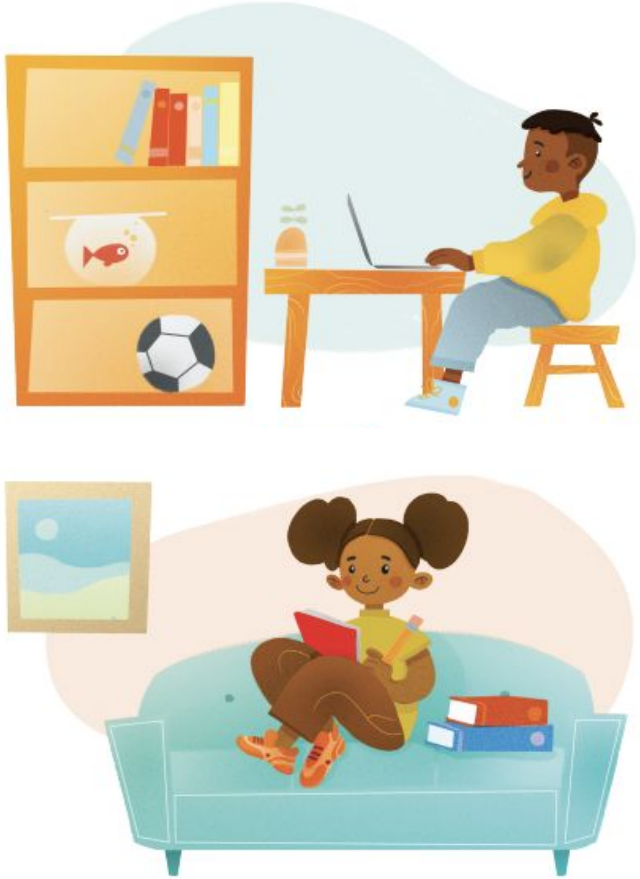
Two different options:

## @Home Units

- Packet or slide deck versions of Amplify Science units condensed by about 50%

## @Home Videos

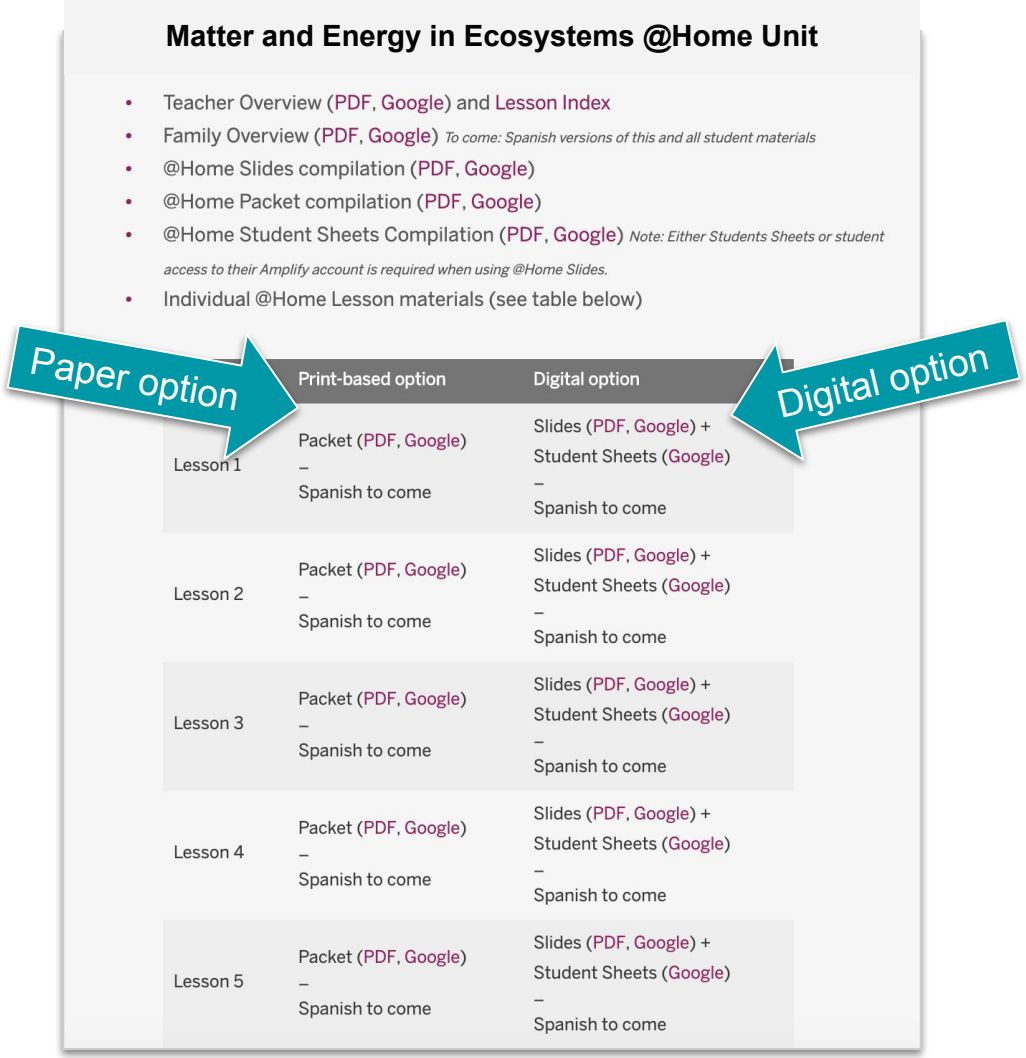
- Video playlists of Amplify Science lessons, taught by real Amplify Science teachers



# Amplify Science @Home Curriculum

You will have access to the Matter and Energy in Ecosystems @Home Unit.

The Matter and Energy in Ecosystems @Home Unit to come *March 21(English)* & *April 2(Spanish)*. Each lesson is written to be **30 minutes** long.



**Matter and Energy in Ecosystems @Home Unit**

- Teacher Overview (PDF, Google) and Lesson Index
- Family Overview (PDF, Google) *To come: Spanish versions of this and all student materials*
- @Home Slides compilation (PDF, Google)
- @Home Packet compilation (PDF, Google)
- @Home Student Sheets Compilation (PDF, Google) *Note: Either Students Sheets or student access to their Amplify account is required when using @Home Slides.*
- Individual @Home Lesson materials (see table below)

Paper option

Digital option

| | Print-based option | Digital option |
|---|---|---|
| Lesson 1 | Packet (PDF, Google) – Spanish to come | Slides (PDF, Google) + Student Sheets (Google) – Spanish to come |
| Lesson 2 | Packet (PDF, Google) – Spanish to come | Slides (PDF, Google) + Student Sheets (Google) – Spanish to come |
| Lesson 3 | Packet (PDF, Google) – Spanish to come | Slides (PDF, Google) + Student Sheets (Google) – Spanish to come |
| Lesson 4 | Packet (PDF, Google) – Spanish to come | Slides (PDF, Google) + Student Sheets (Google) – Spanish to come |
| Lesson 5 | Packet (PDF, Google) – Spanish to come | Slides (PDF, Google) + Student Sheets (Google) – Spanish to come |

**Matter and Energy in Ecosystems @Home Unit**

# Amplify Science @Home Curriculum

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

There are @Home Videos for the Matter and Energy Ecosystems unit. This covers all lessons except for the assessment lessons. The video playlists on YouTube teach the standard Amplify Science Lessons. @Home videos and Hands on Investigation video to come on *March 12*.

## Matter And Energy in Ecosystems

*Note: Assessment lessons are not included. Spanish videos to come.*

Instructions:

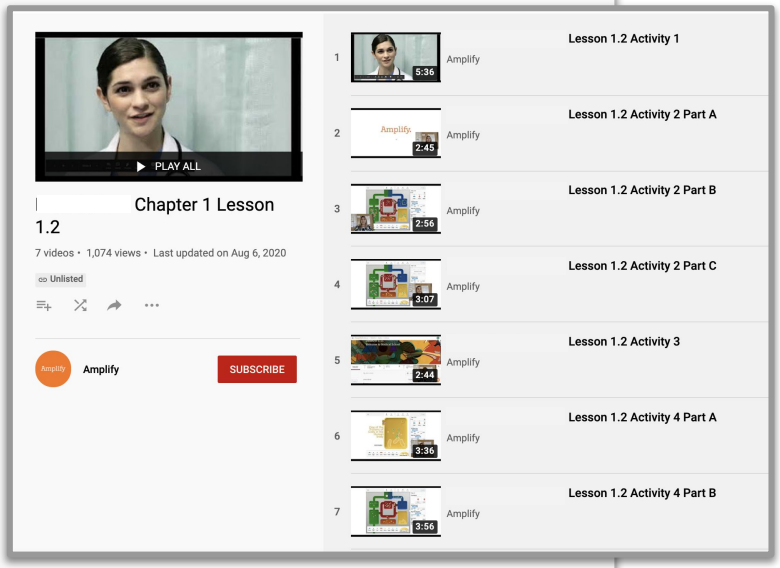
- The @Home Videos are separate from the @Home Units. The lessons listed below correspond with the lessons in the full version of Amplify Science. Each lesson is linked to a playlist of recorded versions of the activities that make up that lesson, which you can share with your students

Chapter 1
- Lesson 1.2
- Lesson 1.3

Chapter 2
- Lesson 2.1
- Lesson 2.2
- Lesson 2.3
- Lesson 2.4
- Lesson 2.6
- Lesson 2.7

Chapter 3
- Lesson 3.1
- Lesson 3.2
- Lesson 3.3
- Lesson 3.4
- Lesson 3.5

Chapter 4
- Lesson 4.1
- Lesson 4.2
- Lesson 4.3



# @Home Unit resources

## All resources are fully editable and customizable

- **Family Overview**
  - Provides context for families
- **Teacher Overview**
  - Outlines the unit and summarizes each lesson
  - Suggestions for adapting for different scenarios
- **Student materials**
  - ~30-minute lessons (slide decks or packets) featuring prioritized activities from Amplify Science curriculum

# @Home Videos

## Using the resources

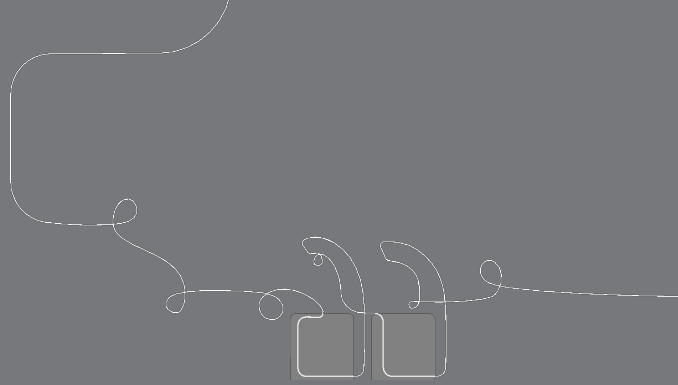
- Assign videos for students to watch during remote, asynchronous time
- Leverage synchronous time for live teaching
  - Lots of time? Teach full lessons
  - Less time? Revisit and preview (see table)

| Synchronous time | |
|---|---|
| **In-person** | **Online class** |
| • Discourse routines<br>• Class discussions<br>• Hands-on investigations (option for teacher demo)<br>• Physical modeling activities | • Online discussions<br>• Sim demonstrations<br>• Interactive read-alouds<br>• Shared Writing<br>• Co-constructed class charts |

# Resource Poll

Which of these resources have you been using?

- ❑ Standard Amplify Science Curriculum
- ❑ @Home Units
- ❑ @Home Videos



# Questions?

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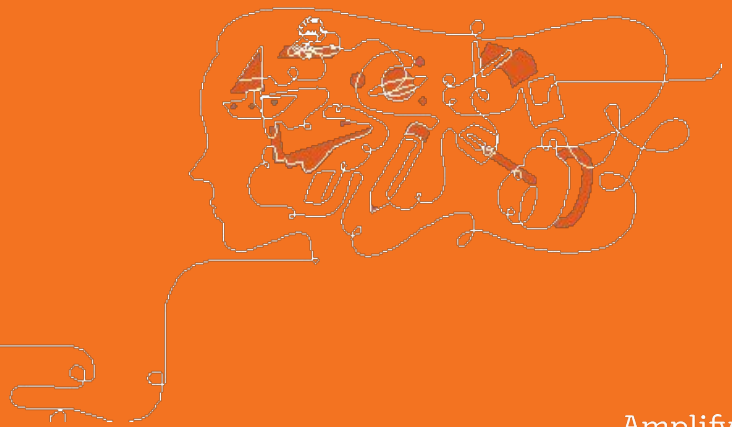
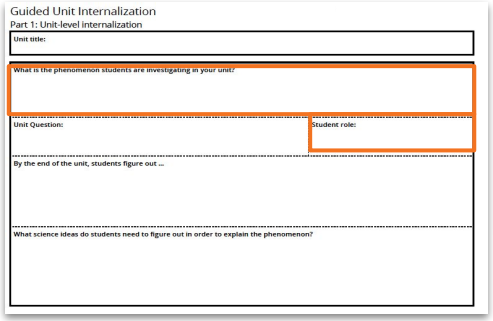
# Unit Internalization



# What is the student role? What will students figure out in Chapter 1?


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?

Planning for the Unit

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

Teacher References

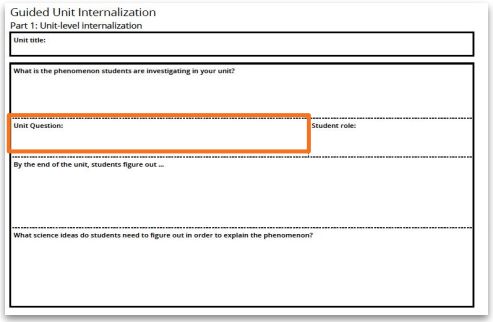
- Lesson Overview Compilation

Printable Resources

- Article Compilation
- Coherence Flowchart
- Copymaster Compilation
- Flextension Compilation
- Investigation Notebook
- NGSS Information for Parents and Guardians
- Print Materials (8.5" x 11")
- Print Materials (11" x 17")

Offline Preparation

# What are the Unit and Chapter Questions unit two?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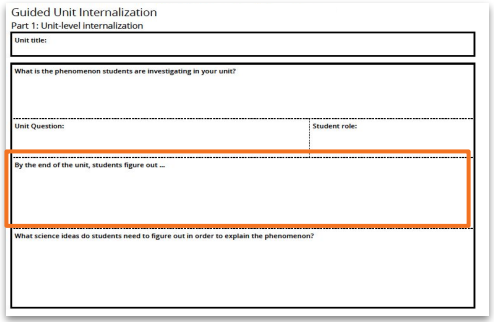
Offline Preparation

# By the end of the unit what will the students figure out?


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?

Planning for the Unit

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

Teacher References

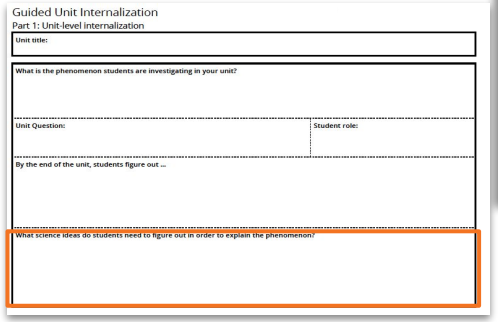
- Lesson Overview Compilation

Printable Resources

- Article Compilation
- Coherence Flowchart
- Copymaster Compilation
- Flextension Compilation
- Investigation Notebook
- NGSS Information for Parents and Guardians
- Print Materials (8.5" x 11")
- Print Materials (11" x 17")

Offline Preparation

# What science concepts do students need to figure out in order to build an explanation of the unit phenomena?


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 ...

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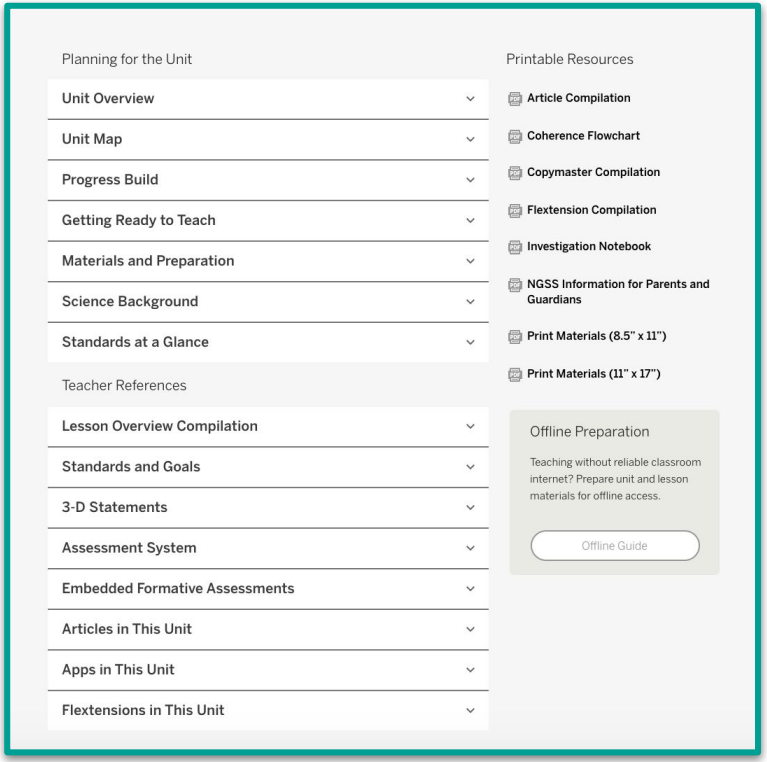
Offline Preparation

# 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 |

# Guided Unit Internalization with @Home Resources Planner

## Part 1: Unit-level internalization

**Unit title:** Matter and Energy in Ecosystems

**What is the phenomenon students are investigating in your unit?**

Why did the biodome Ecosystem collapse?

**Unit Question:** How do all the organisms in an Ecosystem get the resource they need to release energy?

**Student role:** Student Ecologists

**By the end of the unit, students figure out** Deforestation, with large areas of forest being replaced with grass and livestock, is leading to more carbon dioxide in the air, and warming of the Earth's climate. Students investigate whether this is primarily due to a decrease in photosynthesis or an increase in cellular respiration. They engage in oral argumentation in a student-led discourse routine called a Science Seminar and then write final arguments.

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

Students need to be able to understand 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.

# Guided Unit Internalization

## Part 1: Unit-level internalization

**Unit title:**

**What is the phenomenon students are investigating in your unit?**

**Unit Overview**

**Unit Question:**

**Lesson Overview Compilation**

**Student role:**

**Unit Overview**

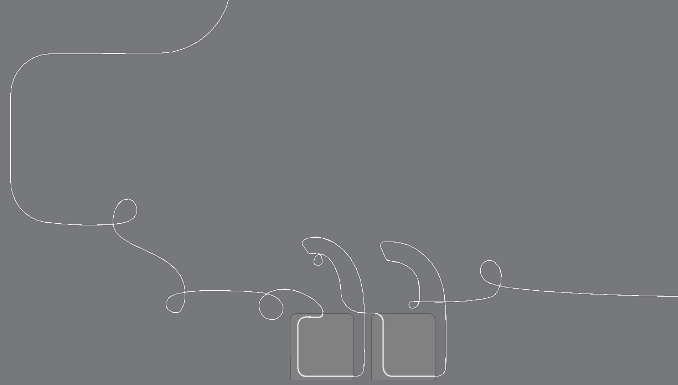
**By the end of the unit, students figure out ...**

**Unit Map, See also Progress Build**

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

**Unit Map, Progress Build, Science Background Document**

**Where to Look!**

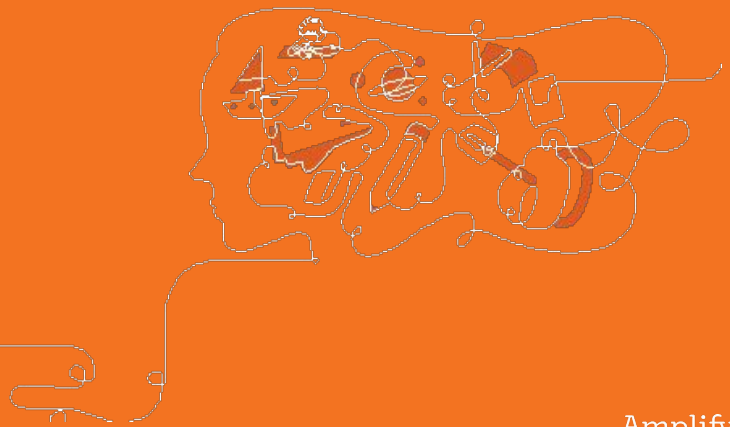


# Questions?

# Plan for the day

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

# Collecting Evidence of Student Learning



# 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 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

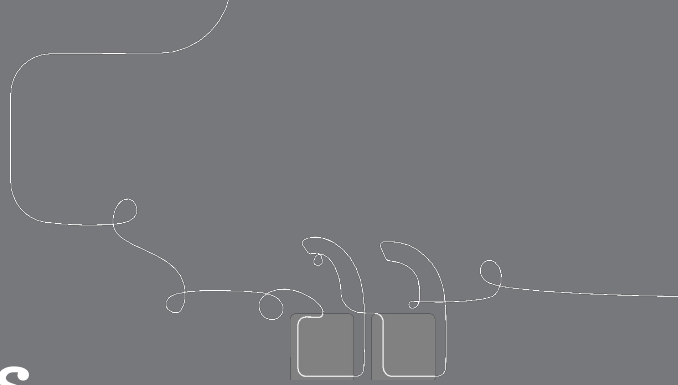
## Key Activities

- ***Introducing the Matter and Energy in Ecosystems unit:*** Students are introduced to the unit problem and 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*, which they use to brainstorm initial ideas about the Chapter Question.
- **Do:** Students use the Sim to make observations about where the energy storage molecules in an ecosystem come from.

## Ideas for synchronous or in-person instruction

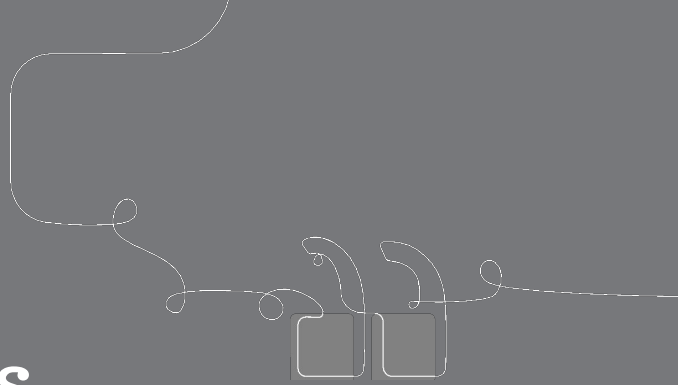
Before meeting, have students watch the introductory video. While meeting, have students share their initial ideas about organisms in the biodome. You can either have students complete the Sim investigation individually, the share the observations as a class, or have students observe and record as you show the Sim. If you are meeting in person with students who don't have digital access at home, take the opportunity to have the complete the Sim investigation in class.

# Reflect and Share:



What are the opportunities within this lesson for teachers to collect evidence of student learning?

# Reflect and Share:



What are the opportunities within this lesson for teachers to collect evidence of student learning?

# 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 9

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

**Day 1:** @Home Lesson 1

**Minutes for science:** 15 min.

**Instructional format:**
- [X] Asynchronous
- [ ] Synchronous

**Lesson or part of lesson:**

@Home Lesson 1, video (slides 1-4)

**Mode of instruction:**
- [X] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [X] Students work independently using:
  - [ ] @Home Packet
  - [X] @Home Slides and @Home Student Sheets
  - [ ] @Home Videos

| Students will... | Teacher will... |
|---|---|
| respond to a video about a biosphere, a closed and self-sustaining ecosystem, similar to the one featured in this unit. | assign slides 1-4 in Schoology and provide direction for students to jot down their ideas when they get to slide 4 to share during the next lesson. |

**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:
  - ❑ @Home Packet
  - ❑ @Home Slides and @Home Student Sheets
  - ❑ @Home Videos

| Students will... | Teacher will... |
|---|---|
| | |

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

**Day 1:** @Home Lesson 1

| | |
|---|---|
| **Minutes for science:** 15 min | **Minutes for science:** 30 min |
| **Instructional format:**<br>[X] Asynchronous<br>[ ] Synchronous | **Instructional format:**<br>[ ] Asynchronous<br>[X] Synchronous |
| **Lesson or part of lesson:**<br>@Home Lesson 1, video (slides 1-4)<br>**Mode of instruction:**<br>[X] Preview<br>[ ] Review<br>[ ] Teach full lesson live<br>[ ] Teach using synchronous suggestions<br>[X] Students work independently using:<br>[ ] @Home Packet<br>[X] @Home Slides and @Home Student Sheets<br>[ ] @Home Videos | **Lesson or part of lesson:**<br>@Home Lesson 1, discussion and simulation (slides 4-28)<br>**Mode of instruction:**<br>[ ] Preview<br>[ ] Review<br>[ ] Teach full lesson live<br>[X] Teach using synchronous suggestions<br>[ ] Students work independently using:<br>[ ] @Home Packet<br>[ ] @Home Slides and @Home Student Sheets<br>[ ] @Home Videos |
| **Students will...**<br>respond to a video about a biosphere, a closed and self-sustaining ecosystem, similar to the one featured in this unit. | **Teacher will...**<br>assign slides 1-4 in Schoology and provide direction for students to jot down their ideas when they get to slide 4 to share during the next lesson. |
| **Students will...**<br>engage in a discussion about their initial ideas, be introduced to the claims they will investigate, explore the simulation, and reflect on learning. | **Teacher will...**<br>lead students through the lesson activities using slides 4-28. |

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 notes about their initial ideas for A video about biosphere

Synchronous: record observations
jot new ideas about the claims after using the sim

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 will bring handwritten notes to the synchronous lesson to share on a Jamboard and discuss

Synchronous: students will turn in the simulation worksheet in Schoology, and add new ideas to the Jamboard to reflect on their learning

**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

| Completing Written Work | Submitting Written Work |
|---|---|
| • Plain paper and pencil (videos include prompts for setup)<br>• (6-8) Student platform<br>• Investigation Notebook<br>• Record video or audio file describing work/answering prompt<br>• Teacher-created digital format (Google Classroom, etc) | • Take a picture with a smartphone and email or text to teacher<br>• Through teacher-created digital format<br>• During in-school time (hybrid model) or lunch/materials pick-up times<br>• (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.)

Look at the *Students will* columns. What are students working in the lesson(s) that you could collect, review, or provide feedback on?

See Som… guidance.

If there… one? Make notes below.

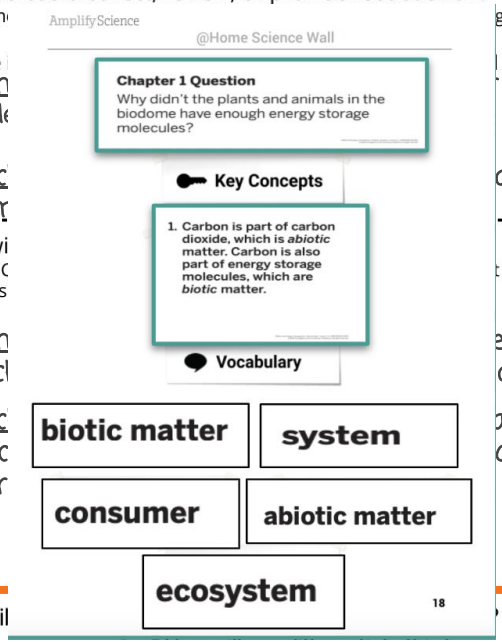
Asyn… initial ideas for
A vide…

Sync… as about the
claim…

How wi… t for guidance on how
See the C…
students…

Asyn… en notes to the
synch… and discuss

Sync… ation worksheet
in Sc… oard to reflect on
their…




**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

| Completing Written Work | Submitting Written Work |
|---|---|
| format (Google Classroom, etc) | (6-8) Hand-in button on student platform |

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

How wil… (Navigate to the lesson level on the standard Amplify Science platform and click on differentiation in the left menu.)

Supports:

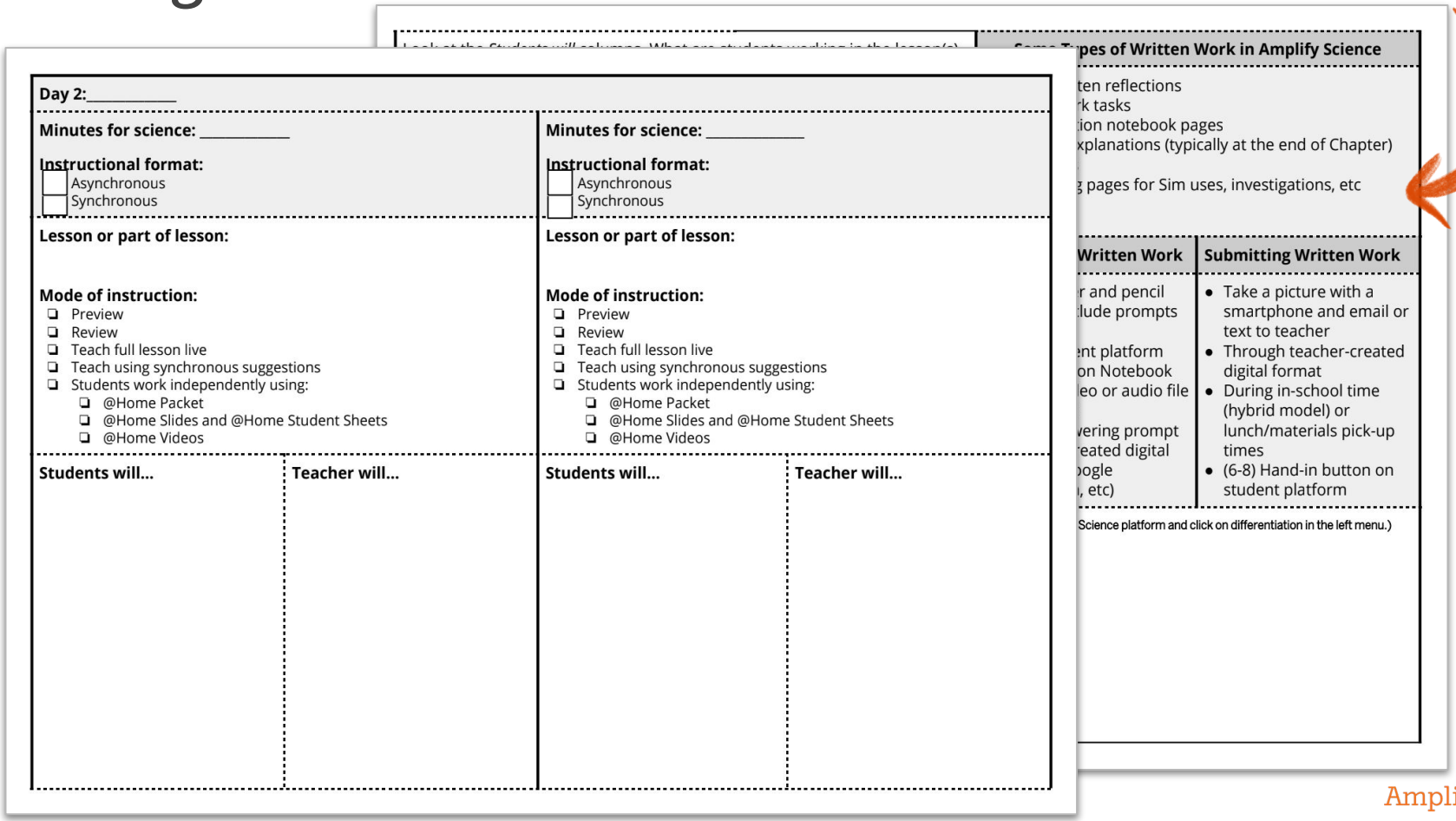
- Make available the @Home Classroom Wall found in the @Home Student Packets to support discussions and writing. Students can add pictures to go with the vocabulary/key concepts to help them make meaning.
- Provide sentence starters for use in discussion and writing.

Extension:

- Write a critique of the simulation as a model of the human body.

# Planning Resource

**pages 7 & 8**



**Day 2:**_____

**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

| Students will... | Teacher will... |
|---|---|
| | |

**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:
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  - ❑ @Home Slides and @Home Student Sheets
  - ❑ @Home Videos

| 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)

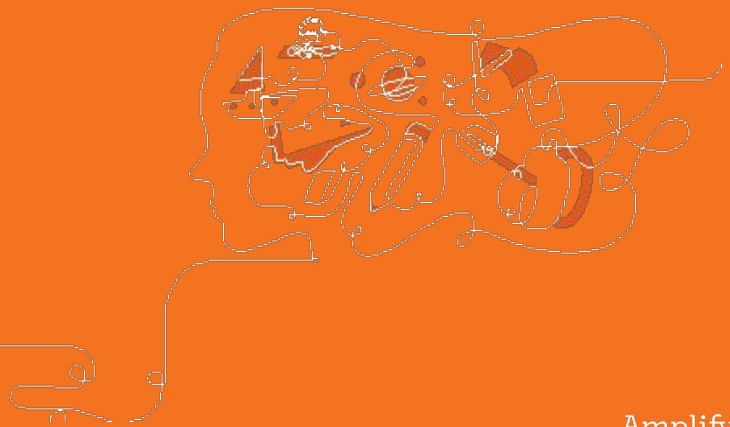
g pages for Sim uses, investigations, etc

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

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

Amplify.

# Planning to Differentiate Instruction

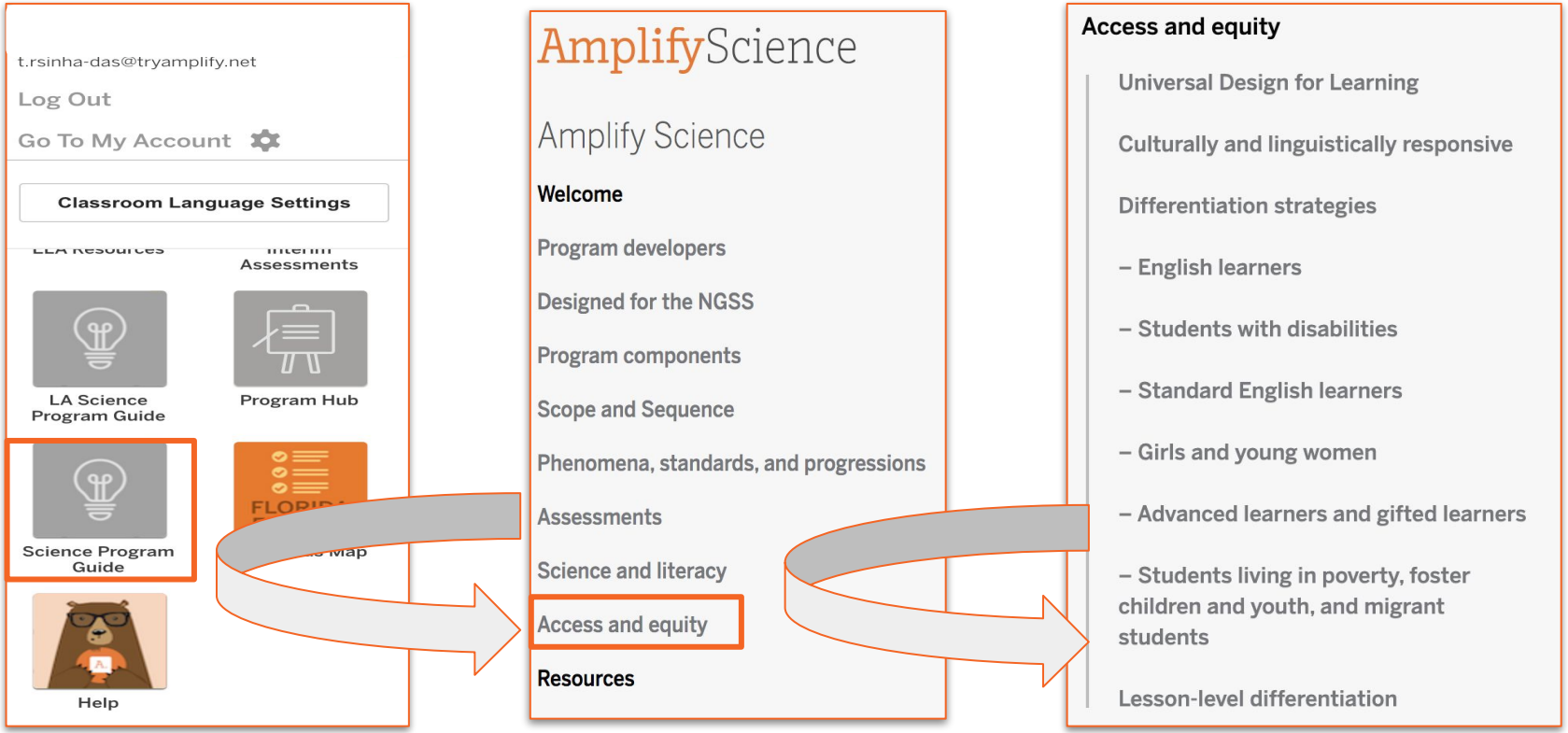


# The Amplify Science curriculum was developed with supporting diverse learning needs in mind.

# Two overarching conceptual frameworks informed Amplify Science's approach to ensuring access and equity for all students:

Universal Design for Learning & Culturally Linguistically Responsive Teaching.

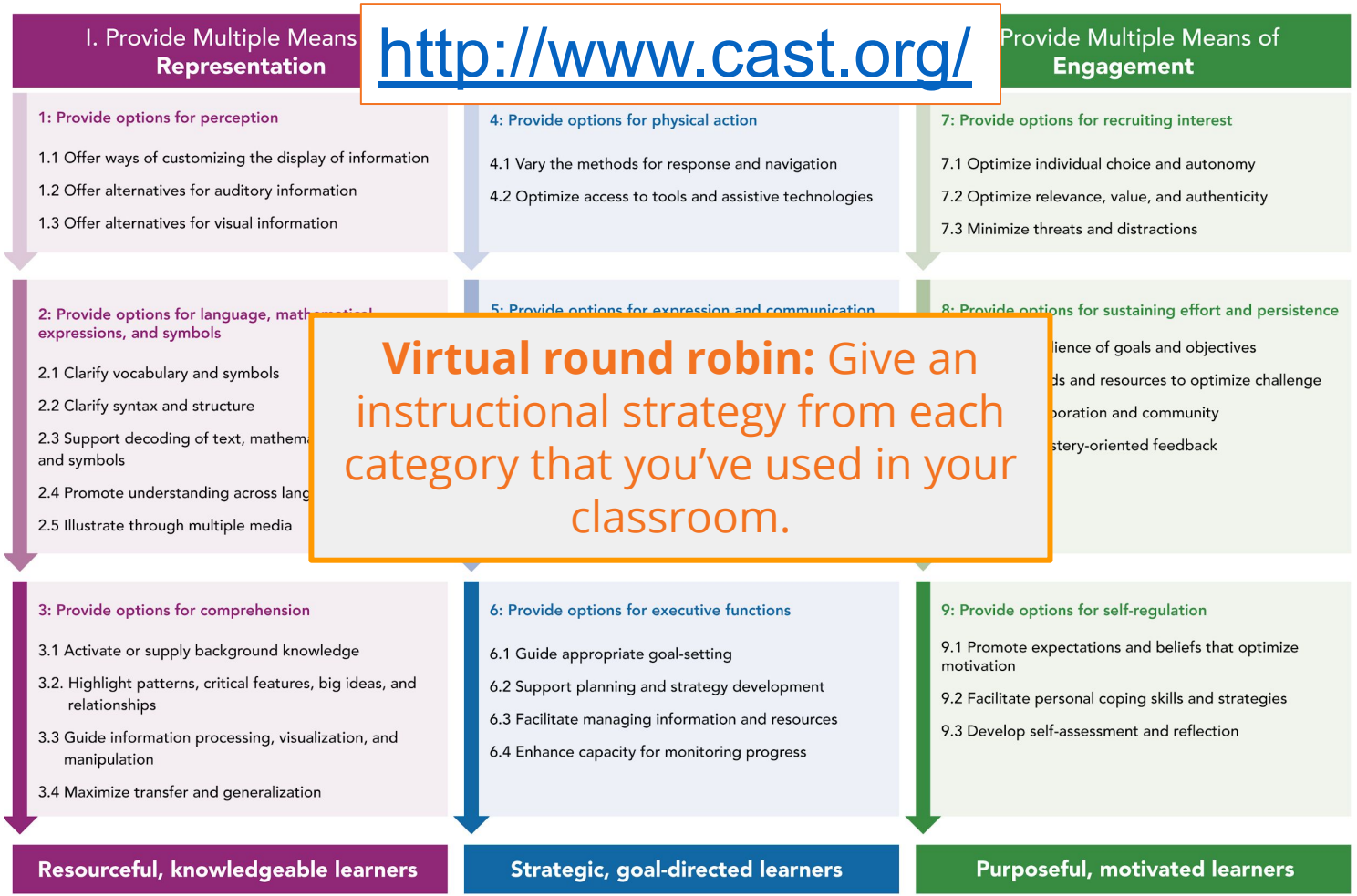
# Differentiation strategies to support ALL students



# Universal Design for Learning

Universal Design for Learning (UDL) is a **research-based framework** for improving student learning experiences and outcomes by **focusing on careful instructional planning to meet the varied needs of students.** UDL is **NOT a special-education initiative**. Through the UDL framework, the **needs of ALL learners are considered** and planned for at the point of first teaching, thereby **reducing the need to reteach concepts.**

# Universal Design for Learning Guidelines



# Culturally and linguistically responsive teaching

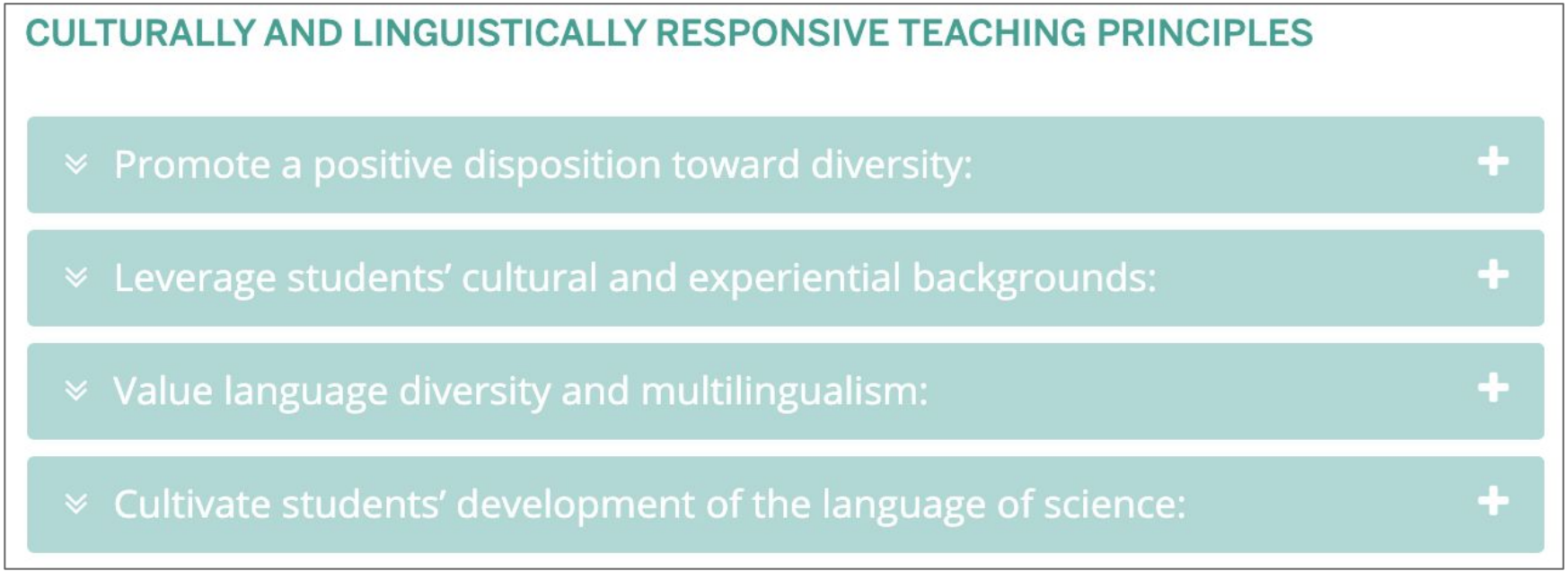
Culturally and linguistically responsive teaching (CLRT) principles **emphasize validating and valuing students' cultural and linguistic heritage** and **creating positive and nurturing learning environments** so that learning is more effective.


*Source: (l): Aaron Yaazie; (um): Kyle Spradley/ University of Missouri; (lm) Dr. Grace O'Connell; (ur) Jane Rigby; (lr) Tina Shelton/ John A. Burns/ University of Hawaii at Manoa*

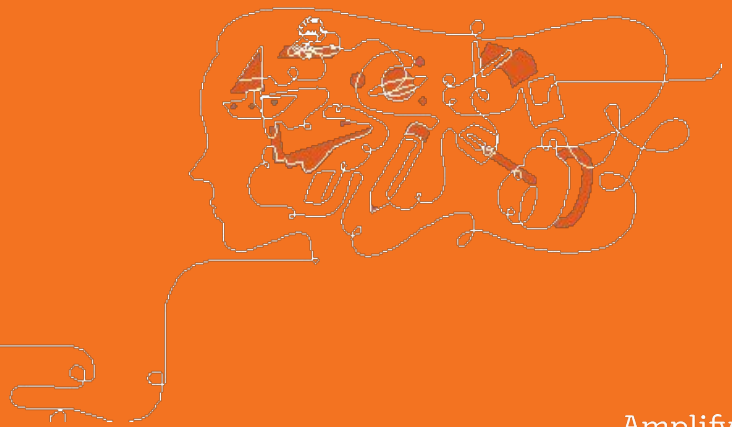
Access and Equity

# Culturally and linguistically responsive teaching

**Think, type, chat:** What have you leveraged from the Amplify curriculum to support culturally and linguistically responsive teaching?



# Discourse Routines



# Amplify Science discourse routines

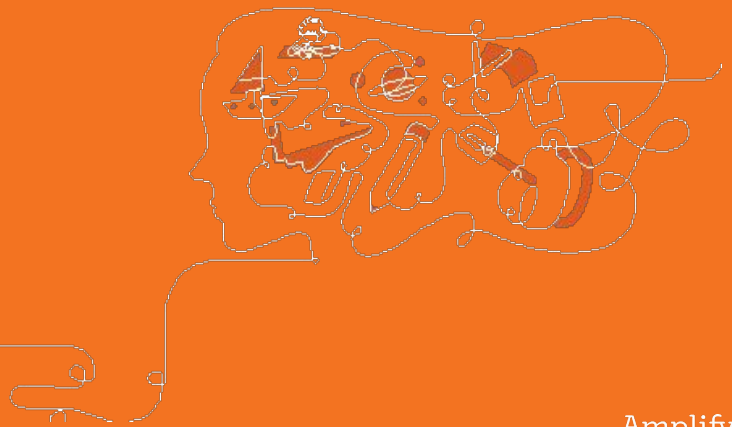
- Oral Composition and/or Drawings as teacher captures words (K-1)
- Explanation Language Frames
- Shared Listening
- Partner Reading
- Thought Swap
- Think-Pair-Share
- Word Relationships
- Questioning Strategies [K-8]
    - Do you agree/disagree?

# Additional support considerations

## Modifying the instructional suggestions for my students

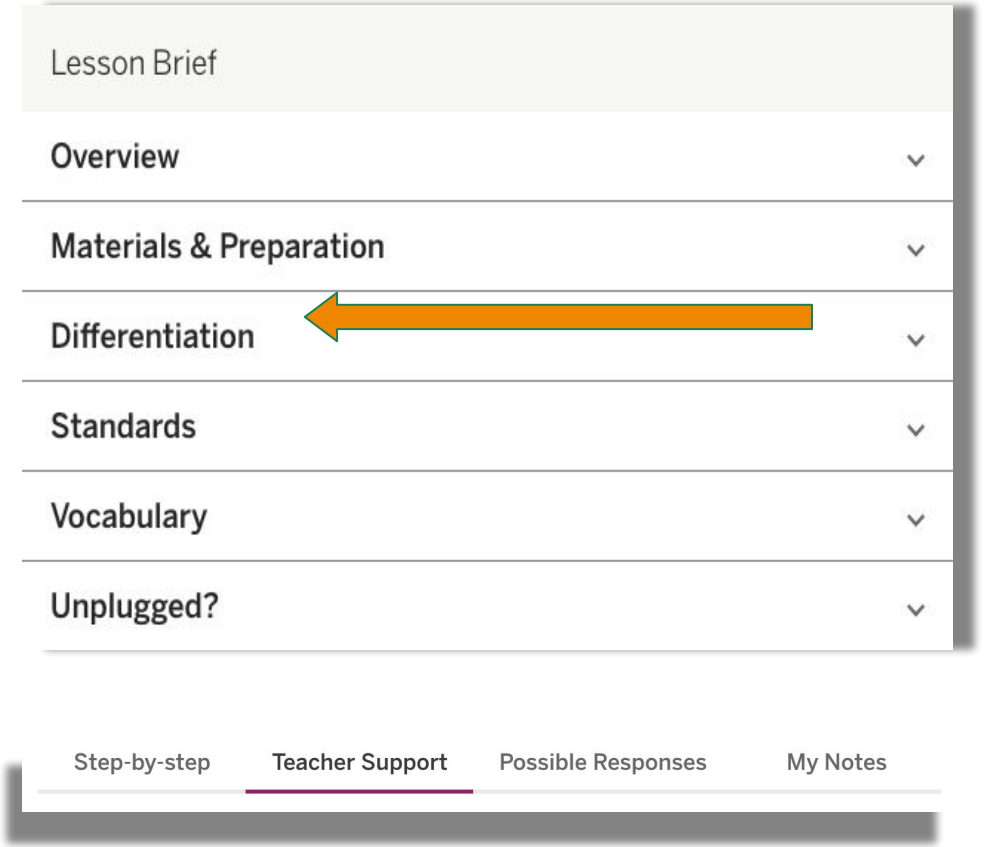
- Additional practice time
- Strategic grouping
- Additional resources (multilingual glossary, word banks, other environmental print)
- Increased support for gradual release of responsibility
- Alternative response options

# Differentiation Resources



# Differentiation Briefs

- Embedded supports for diverse learners
- Potential challenges in this lesson
- Specific differentiation strategies for English learners
- Specific differentiation strategies for students who need more support
- Specific differentiation strategies for students who need more challenge



# Differentiation briefs

## Categories of differentiation briefs

- Embedded supports for diverse learners
- Potential challenges in this lesson
- Specific differentiation strategies for English learners
- Specific differentiation strategies for students who need more support
- Specific differentiation strategies for students who need more challenge

# Lesson 1.2 Specific Differentiation

## Embedded Supports for Diverse Learners

**Student categorization of biotic matter and abiotic matter.** Rather than telling students at the beginning what the terms *biotic matter* and *abiotic matter* mean, this lesson provides students with time to access prior knowledge and process information from their reading and what they learn in an introductory video in order to think about these two distinct, integral parts of an ecosystem. Afterward, the terms *biotic matter* and *abiotic matter* are revealed and defined. Setting the lesson up in this way provides students with time to construct a deeper understanding of these terms. When students are allowed time to develop an understanding of concepts, rather than just being provided with definitions, they remember and understand these concepts in a much deeper way.

## Potential Challenges in This Lesson

***Matter and Energy in Ecosystems* Simulation introduction.** This lesson introduces students to the *Matter and Energy in Ecosystems* Sim. The Sim will be used often throughout the unit. If you have students who might find working with this Sim challenging—e.g., because it is dependent on clearly seeing the colors that denote various aspects of the Sim or because your students have trouble processing information in this way—you may want to support them by sitting with them and providing additional guidance while they use the Sim in this lesson. You may also want to think ahead about how you can support these students in the future, or consider offering these students alternative ways of participating in this aspect of the unit.

**Cognates.** Many of the academic language that students will be learning over the course of this lesson and unit are Spanish cognates. Cognates are words in two or more different languages that sound and/or look the same or very nearly the same, and that have similar or identical meanings. Cognates are especially rich linguistic resources to exploit for academic English language development and for biliteracy development. In the activities where a new vocabulary word is introduced, if the word has a cognate in Spanish and is called out in the *Matter and Energy in Ecosystems* Glossary, introduce the cognate and give the definition in Spanish also.

## Specific Differentiation Strategies for Students Who Need More Support

**Encouraging discussion.** Students will regularly engage in discussion throughout the unit. At the beginning of the unit you may want to work with your class to create a set of class norms for discussions. This will help to ensure that all students understand how to include their peers and respect their contributions during the learning tasks.

**Strategically choose partners for students who need support.** Creating positive and supportive student partnerships is a crucial first step in developing a classroom culture where students feel confident and comfortable sharing their thinking. This unit provides many opportunities for student learning to occur through paired or small-group discussion. Creating good working partnerships will be an essential component to the success of these types of lessons. You may want to offer support for students who are less comfortable speaking in class by providing the following prompts as scaffolds and by encouraging students to use them as needed:

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

## Specific Differentiation Strategies for English Learners

***Matter and Energy in Ecosystems* Glossary.** Throughout this unit, you will find resources for supporting English learners in science, including a glossary in the Amplify Library that includes Spanish definitions for primary Spanish speakers. If you have English learners in your class whose primary language is Spanish, make sure to point out the glossary to them in Digital Resources.

**Provide additional support during partner discussions.** As you circulate during the independent activities in the lesson, check in with English learners and other students who might need additional support and guidance to see that they are making the most of their partner discussions. As needed, remind students what it means for the biodome to be a closed ecosystem, and refer back to the class discussion of the terms biotic and abiotic. Provide encouraging feedback, highlighting connections to science ideas and use of science terms.

**Support for academic discussion.** To support English learners in this and all other discussion-oriented lessons, consider making more time for discussion. It is important that students have ample time to share their initial ideas about energy. English learners can benefit from extended, structured discussion time. Promoting inclusion in discussions is critical for English learners to develop critical science knowledge and the language of science. Some English learners may be hesitant to contribute to class or small-group discussions because they lack experience or confidence in participating in small or large

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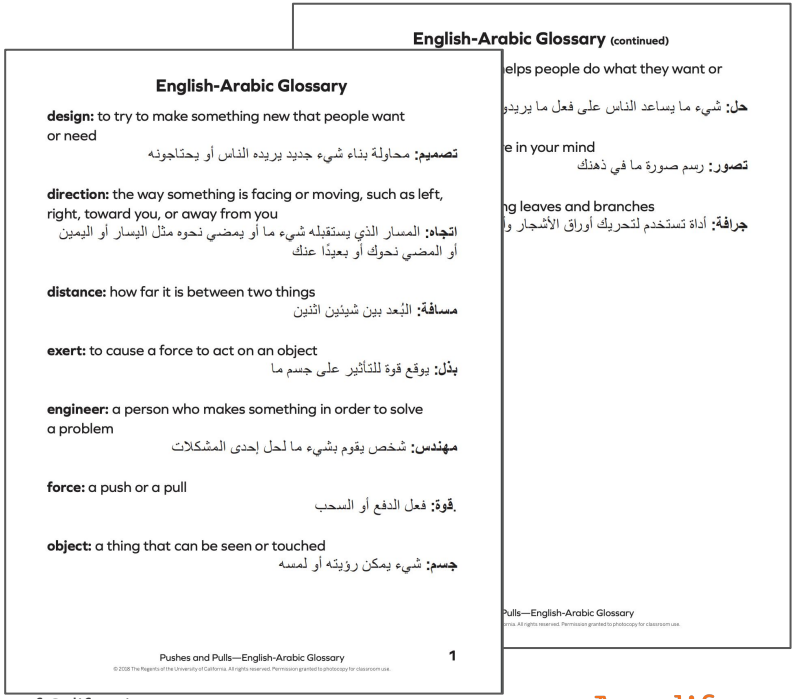
- Ahead of time, create in collaboration with the class (and frequently refer to) norms for discussions to ensure that all students understand how to include their peers and respect their contributions.
- Students should be encouraged to express themselves in the language in which they are most comfortable and to increasingly integrate accurate science terms and phrasing in English into their discussions. Students can refer to the classroom wall, where resources such as key concepts and unit vocabulary words are posted, or the argumentation wall, where resources related to the practice of argumentation are placed.
- Invite students to read the prompts to their partners during discussions. Hearing and seeing a prompt before responding can help students prepare to share their ideas.
- Once an activity is complete, ask students reflect on their level of participation and what helped them to be an active participant in the discussions.

# Embedded instructional design

- Modeling Active Reading/ Active Reading
- Anticipation Guides
- Science/ Everyday Word Chart
- Word Relationships Activities
- Graphic Organizers
- Reflective writing with language frames/ sentence starters
- Practice Tools
- Physical and digital models

# Additional supports

- Cognates
- Multilingual Glossary
- Word Banks
- Multiple-Meaning Words
- Extended Modeling
- Additional Visual Representations
- Optional Graphic Organizers
- Response Option



English-Arabic Glossary

**design:** to try to make something new that people want or need
**تصميم:** محاولة بناء شيء جديد يريده الناس أو يحتاجونه

**direction:** the way something is facing or moving, such as left, right, toward you, or away from you
**اتجاه:** المسار الذي يستقبله شيء ما أو يمضي نحوه مثل اليسار أو اليمين أو المضي نحوك أو بعيدًا عنك

**distance:** how far it is between two things
**مسافة:** البُعد بين شيئين اثنين

**exert:** to cause a force to act on an object
**بذل:** يوقع قوة للتأثير على جسم ما

**engineer:** a person who makes something in order to solve a problem
**مهندس:** شخص يقوم بشيء ما لحل إحدى المشكلات

**force:** a push or a pull
**قوة:** فعل الدفع أو السحب.

**object:** a thing that can be seen or touched
**جسم:** شيء يمكن رؤيته أو لمسه

Pushes and Pulls—English-Arabic Glossary 1

English-Arabic Glossary (continued)

elps people do what they want or

**حل:** شيء ما يساعد الناس على فعل ما يريدو

e in your mind
**تصور:** رسم صورة ما في ذهنك

g leaves and branches
**جرافة:** أداة تستخدم لتحريك أوراق الأشجار و

Pulls—English-Arabic Glossary

# Resources for Diverse Learners

- Optional investigation notebook pages
- Digital copy of vocabulary words
- Access to lesson level powerpoints (editable)
- Remote learning access for students (via Program Hub)
  - Student readers (English/Spanish)
  - Modeling tools/Sims/Practice tools
  - Videos with calls to action (English/Spanish)
  - Student slides, packets, and sheets ( editable)

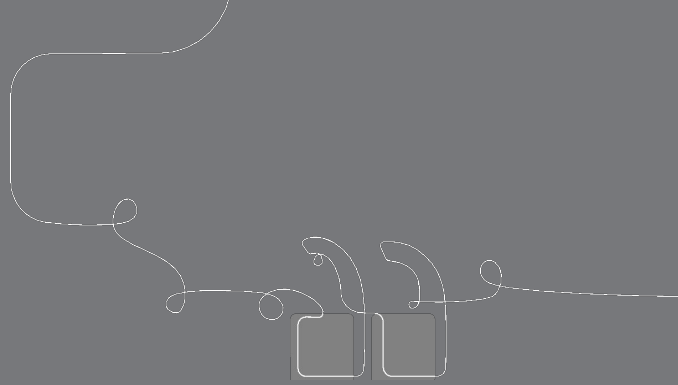
# Group Planning

## Diverse Learner needs

- In groups, choose a diverse student population. **(ex: ELL's, students that need more support)**
- Navigate to the Matter and Energy in Ecosystems unit
- Choose a lesson and look at the differentiation section
- Jot down strategies to support your diverse learner. You can also use the **Program Guide** & those from your **own practice**.

Lesson __ Activity ___

| Diverse Learner of Choice | Support from lesson Differentiation | Support from the Program Guide | Support from my own toolkit |
|---|---|---|---|
| | | | |
| | | | |

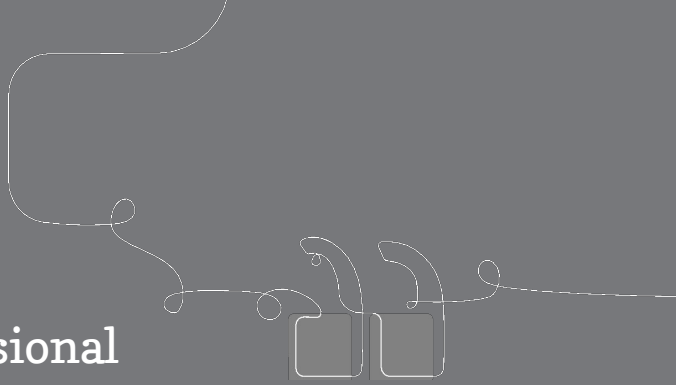


# Questions?

# Plan for the day

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

# Revisiting Our Objectives:



- Receive support from an Amplify Science professional learning specialist who will guide effective unit internalization and/ or lesson planning protocols.

- Effectively leverage the use of curriculum resources to address diverse learner needs.

# Revisiting our objectives

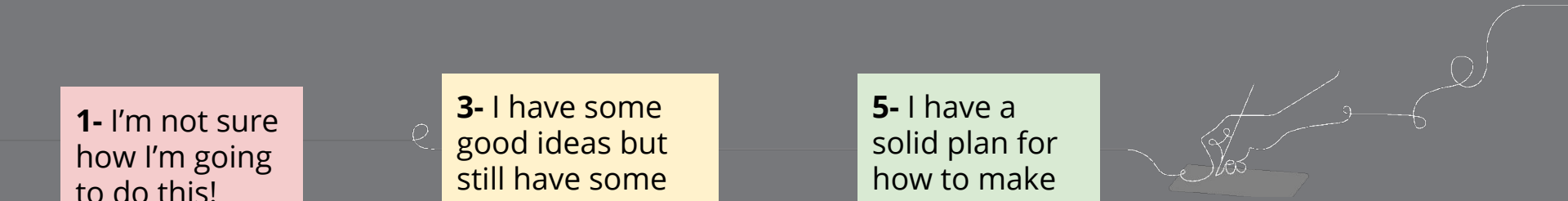
Do you feel ready to...

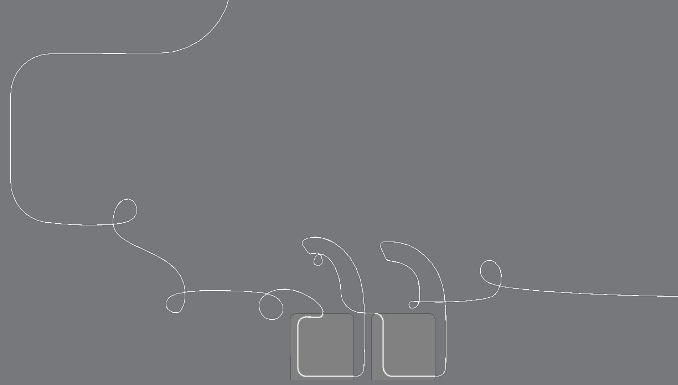
- Were you able to internalization the unit and/or lesson planning protocols?
- Can you effectively leverage the use of curriculum resources to address diverse learner needs?

**1-** I'm not sure how I'm going to do this!

**3-** I have some good ideas but still have some questions.

**5-** I have a solid plan for how to make this work!



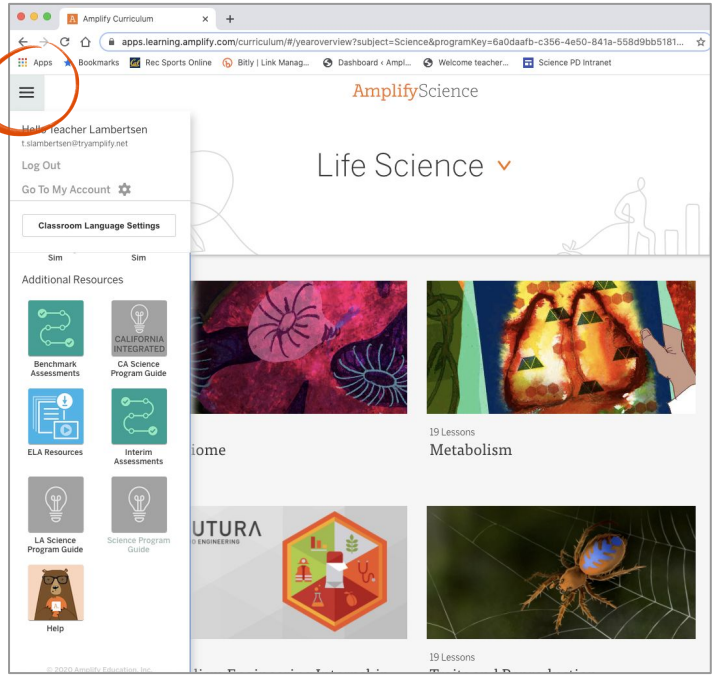


# Questions?

# Amplify Science Program Hub

## A new hub for Amplify Science resources

- **Videos and resources to continue getting ready to teach**
- Amplify@Home resources
- Keep checking back for updates




science.amplify.com/programhub

# New York City Resources Site

https://amplify.com/resources-page-for-nyc-6-8/

Amplify.

## Amplify Science Resources for NYC (6-8)

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Welcome! This site contains supporting resources designed for the New York City Department of Education Amplify Science adoption for grades 6–8.

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

Educator Spotlight Submission

20-21 Login Update

Professional learning opportunities

Introduction

started resources

Contact Us

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### Educator Spotlight Submission

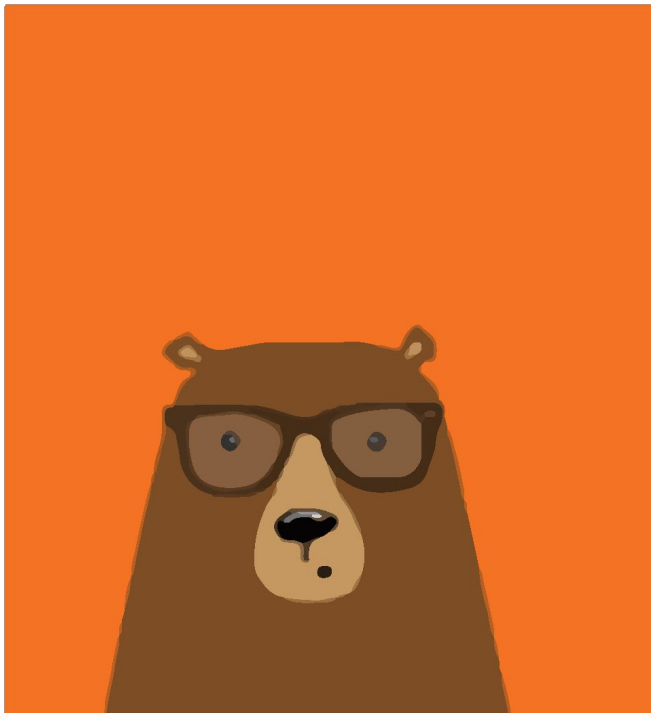
Calling all NYC DOE educators! Do you know an educator who has gone above and beyond? Would you like to highlight your teaching experience for others? Submit nominations here to see them featured as a spotlight in a future edition of our monthly newsletter and on our Instagram pages!

## Site Resources

- Login information
- Pacing guides
- Getting started guide
- NYC Companion Lessons
- **Resources from PD sessions**
- And much more!

Amplify.

# Additional Amplify resources



## Program Guide

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

**https://my.amplify.com/programguide/content/national/welcome/science/**

## 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.

# Upcoming Amplify Science Sessions

| Date | Grade | Session | Audience | Time |
|---|---|---|---|---|
| March 4th | 4 | **Unit 4:** Focusing on Evidence of Learning | New Teachers | 3:00-4:30 |
| March 9th | 4 | **Unit 4:** Focusing on Evidence of Learning | Returning Teachers | 3:00-4:30 |
| March 9th | 6 | Guided Planning | All Teachers | 3:00-5:00 |
| March 9th | 8 | Guided Planning | All Teachers | 3:00-5:00 |
| March 9th | 7 | Unpacking the Engineering Internship | All Teachers | 3:00-5:00 |
| March 11th | 5 | **Unit 4:** Focusing on Evidence of Learning | New Teachers | 3:00-4:30 |
| March 16th | 5 | **Unit 4:** Focusing on Evidence of Learning | Returning Teachers | 3:00-4:30 |