Amplify Science

Unit 4: Waves, Energy and Information (with a focus on Science & Engineering Practices) Grade 4. Part 1

School/District Name: LAUSD Date: Presented by:



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mCLASS Assessment



Content Area: ELA Grade Level: ES Content Type: Assessment Integration Type: App (Left Navigation) Purchase Type: District Getting Started Guide Other Info: App to be installed for Course Admins only

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Content Area: ELA Grade Level: ES Content Type: Assessment Integration Type: App (Left Navigation) Purchase Type: District Getting Started Guide Other Info: App to be installed for Course Admins only Vendor Support Desk: P: 800.823.1969 E: help@amplify.com S: amplify.com/support/ Textbook Title(s): NA

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This year's app(s).

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Grade Level

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Content Area: ELA Grade Level: ES Content Type: Supplemental Integration Type: App (Left Navigation) Purchase Type: District and School **Getting Started Guide** Other Info: School licenses required. This app is for

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Reading K-5



Science



Vocabulary











Amplify. 13



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



Part 1





Ice Breaker!

• Question: In the chat, share one or two of the Science and Engineering Practices in NGSS.





Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing

Overarching goals

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

- □ Internalize the unit
- Identify the Science and Engineering Practices within the unit



Next Generation Science Standards

Designed to help students build a cohesive understanding of science



Next Generation Science Standards

Science and Engineering Practices



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

Amplify Science Approach

Introduce a **phenomenon** and a related problem Collect **evidence** from multiple sources Build increasingly complex **explanations** **Apply** knowledge to solve a different problem

S



Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing



Activity 1 Introducing the Scientific Phenomenon



We are starting a new unit on **communication**.

We will study animals in a national park and work to explain how they **communicate**, or share information, underwater.





What do you know about dolphins?



This is Blue Bay, a place where many **bottlenose dolphins** live.

A **bay** is a section of a lake or the ocean that is formed by the shape of the shoreline.





This is a **bottlenose dolphin** family.

These dolphins are very social and like to be around other dolphins. They usually stay close to their family members. The park has a **superintendent** who keeps track of the dolphins. She has observed the dolphins swimming in groups, and she often sees mother dolphins with their **calves**.

She has noticed that the dolphins seem to be able to **communicate** using body language to signal when food or danger is nearby.



Sometimes the **mother dolphins** leave their **calves** to search for food.

Even when they are too far apart to see each other, somehow they still find each other again.



The superintendent is not sure how signals could travel so far underwater.

How could the dolphins be **sending signals** that travel underwater?

The park superintendent needs our help to study **dolphin communication**.

We will be **marine scientists** whose job is to investigate more about dolphin communication.

~ ^ 2 6 向

To: Marine Scientists From: Maya Martinez, Park Superintendent Subject: Dolphins in Blue Bay National Park



Thank you for helping us find out how the mother dolphins in Blue Bay National Park are communicating with their calves. Please investigate how signals could travel underwater and write to me once you have an explanation.

Waves, Energy and Information

Problem: How can a mother dolphin and her calf communicate underwater when they cannot see each other? How can humans use patterns to communicate?

Role: Marine Scientists

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Waves, Energy and Information

Coherent Storylines



Chapter 1: How does a mother dolphin communicate with her calf across a...

5 Lessons



Chapter 2: How does sound energy travel through water from a mother dolphin t... 6 Lessons



Chapter 3: How does a dolphin calf know which call is his mother's call?

7 Lessons



Chapter 4: How can humans use patterns to communicate?

4 Lessons

Waves, Energy and Information

Unit Question: How do organisms in an ecosystem get the matter and energy they need to grow and thrive?

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Explaining the phenomenon: Science Concepts

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

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Waves, Energy and Information, Progress Build

Prior knowledge

Assumed prior knowledge (preconceptions): Students are likely to have encountered the idea that sound happens when a source vibrates. They will also likely know that there are many different sounds, and that a sound can be heard at a point away from where it originated.



Deep, causal understanding



Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing

Navigate to the Unit Page





Key Unit Guide Documents for Planning

Planning for the Unit		Printable Resources
Unit Overview	~	Coherence Flowcharts
Unit Map	~	Copymaster Compilation
Progress Build	~	Flextension Compilation
Getting Ready to Teach	~	Investigation Notebook
Materials and Preparation	~	Multi-Language Glossary
Science Background	~	MGSS Information for Parents and Guardians
Standards at a Glance	~	Print Materials (8.5" x 11")
Teacher References		Print Materials (11" x 17")
Lesson Overview Compilation	~	
Standards and Goals	~	Offline Preparation
3-D Statements	~	Teaching without reliable classroom internet? Prepare unit and lesson
Assessment System	~	materials for offline access.
Embedded Formative Assessments	~	Offline Guide
Books in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

Core Unit Planning & Internalization

Unit Title:

Overview

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

What is the phenomenon/real-world problem students are investiga your unit?	ting in Student Role:
	\sim
	2 3
Unit Question:	Relationship between the Unit Phenomenon and Unit
	4 5
By the end of the unit, students figure out	
	\sim
	6
How do students engage with three-dimensional learning to figure o	ut the phenomenon/real-world problem in your unit?
	7
	1

Unit Guide resources:

- Unit Overview
- Unit Map

1

• Coherence Flowchart

Unit Guide resources:

- Lesson Overview Compilation
- Unit Overview

Unit Guide resources: • Unit Map

Unit Guide resources:

• 3D Statements at the Unit Level

Core Unit Planning & Internalization

Unit Title:

Waves, Energy and Information

Overview [Resources: Unit Overview, Teacher's Guide, Coherence Flowchart, Unit Map, 3-D Statements]			
What is the phenomenon/real-world problem students are investigating in	Student Role:		
How can a mother dolphin and her calf communicate	Marina Scientist		
underwater when they cannot see each other? How can	Marine Scientist		
humans use patterns to communicate?			
Unit Question:	Relationship between the Unit Phenomenon and Unit		
How do waves transfer information from one place to another?	Exploring patterns in communication enables students to see how waves, energy, and information play roles in their everyday lives. It allows students to engage deeply in essential disciplinary core ideas about sound waves and information technologies		
By the end of the unit, students figure out			
Dolphins make their own signature whistles. Each signature whistle has a certain pattern of wavelengths. When the wavelength of a sound is different, dolphins hear the sound at a different pitch. This means that dolphins hear certain patterns of pitches when they hear a signature whistle. The calf recognizes his mother's signature whistle and knows to respond.			
How do students engage with three-dimensional learning to figure out the phenomenon/real-world problem in your unit?			
Using physical and computer models to observe and analyze patterns (patterns), students figure out how sound travels as a wave (energy and matter). They apply that knowledge to explain how dolphins in the fictional Blue Bay send and receive signals underwater when separated (energy and matter) and how humans encode, send, and receive patterns of information for efficient communication across distances (patterns; scale, proportion, and quantity).			

1



Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing
Key Documents for Planning Work Time

Planning for the Unit		Printable Resources
Unit Overview	~	Coherence Flowcharts
Unit Map	~	🔤 Copymaster Compilation
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Assessment System	~	materiais for offline access.
Embedded Formative Assessments	~	Offline Guide
Books in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

Unit 3D Statements

Key

 Practices
 Disciplinary Core Ideas
 Crosscutting Concepts

 Unit Level

Using physical and computer models to observe and analyze patterns (patterns), students figure out how sound travels as a wave (energy and matter). They apply that knowledge to explain how dolphins in the fictional Blue Bay send and receive signals underwater when separated (energy and matter) and how humans encode, send, and receive patterns of information for efficient communication across distances (patterns; scale, proportion, and quantity)

Unit 3D Statements

Key

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 Unit Level

Using physical and computer models to observe and analyze patterns (patterns), students figure out how sound travels as a wave (energy and matter). They apply that knowledge to explain how dolphins in the fictional Blue Bay send and receive signals underwater when separated (energy and matter) and how humans encode, send, and receive patterns of information for efficient communication across distances (patterns; scale, proportion, and quantity)

Waves, Energy and Information

Science & Engineering Practices



These are the two main categories of Science and Engineering Practices that the students will be engaged with in this unit.



Waves, Energy and Information



Chapter 1 3D Statements



Chapter Level

Chapter 1: How does a mother dolphin communicate with her calf across a distance?

Students use models to investigate waves and how sound travels (patterns; energy and matter). They figure out that sound energy travels as a wave from a source to a listener (patterns, energy and matter). Students create initial Sound Diagrams models, and the class constructs an initial scientific explanation about how a mother dolphin uses sound to communicate underwater with her calf across a distance (energy and matter; scale, proportion, and quantity).

Science & Engineering Practices

Waves, Energy and Information, Unit SEP

Using physical and computer models to observe and analyze patterns

Chapter 1: Use models, create initial Sound Diagram models

Chapter 2

Chapter 4

Chapter 3

Chapter 1: Construct an initial scientific explanation

Explain

Chapter 2

Chapter 3

Chapter 4

Chapter 1 Overview





3D Statements Work time

- 1. Go to the **3D Statement** on the **Unit Page.**
- Look at the 3D Statement
 for each chapter
- 3. Identify the **Science and Engineering Practices** for each chapter.
- 4. Categorize them.

	Planning for the	Unit		Printable Resources	
	i lanning for the	Planning for the Unit			
	Unit Overview	Unit Overview Unit Map		Coherence Flowcharts	
	Unit Map			Copymaster Compilation	
Progress Build		~		Flextension Compilation	
Waves, Energy, and Information Teacher References	3-D Statements	each	~	Investigation Notebook	
2 D Statements		aration	~	👼 Multi-Language Glossary	
Pract	tices Disciplinary Core Ideas Crosscutting Concepts	ιd	~	NGSS Information for Parents and Guardians	
Using physical and computer models to observe and analyze patter as awave (energy and matter). They apply that knowledge to explain receive signals underwater when separated (energy and matter) an of information for efficient communication across distances (nature).	ins (patterns), students figure out how sound travels in how dolphins in the fictional Blue Bay send and d how humans encode, send, and receive patterns ms; scale, proportion, and quantity).	nce	~	Print Materials (8.5" x 11")	
Chapter Level	a na manana ka makan mana manan di sama di ka			Print Materials (11" x 17")	
Chapter 1: How does a mother dolphin communicate with h	er calf across a distance?				
Students use models to investigate waves and how sound travels (patterns; energy and matter). They figure out that sound energy travels as a wave from a source to a listener (patterns; energy and matter). Students create initial Sound Dearware models, and the data setematicity and include including about how entires defaultures around in		ompliation	~	Offline Preparation	
communicate underwater with her calf across a distance (energy a	nd matter; scale, proportion, and quantity).	ils	~		
Chapter 2: How does sound energy travel through water from a mother dolphin to her calf? Students use motified and centralization sin westigations to figure out now about the idea that sound can towel through officent kinds of material—coloring layers, and to gate and that these materials are made of particular to small to see (energy and matter, take proportion and quarkity). Student's investigate the data that sound travels are series of obligons between particles collering: energy and matter), and they reade the Sound Dagmans models. They also construct their own content's explanation to show that when particles collids; they transfer energy and matter changes how they more (energy and matter).				Teaching without reliable classroom	
			<u>~</u>	internet? Prepare unit and lesson	
		m	~ ~	Offline Guide	
		ive Assessments	~		
Students figure out-through variating with the Sound Waves Simulation and reading information about sound waves (patterns) in the unit's reference book Patterns in Communication-how waveforms displict Volume (amplitude) and plint(wavefreight) catterns: scale properties and quantity, Subtan Frate the his cate how dopling instead another to catter (catterns) categories and quantity, Subtan Frate the his categories and their solution and another to cattern categories and catterns (catterns) and the solution of the solution of the solution of source how an another doplin's cat give the real and how the cat frace work in the solution of catterns in the solution of the solution of the solution of the solution of source how an another doplin's cat give the solution of the solution of the solution of the solution of the solution of the solution of the solution of solution of the solution of the solution of the solution of the solution of solution of the solution of the solution of the solution of the solution of solution of the solution of the solution of the solution of solution of the solution of the solution of solution of the solution of solution of the solution of solution of soluti					
			~		
energy and matter).			~		
Chapter 4: How can humans use patterns to communicate?	2	a linit			
Students and and reserve measures by using the Goods Communicator (Toda – an op that allows) students to encode and decoder messages, using many code (anterns) – and togation to develop a understanding of this definited develops encodes and decode information (catterns) and how humans have deviaed various methods to accomplish the challenging tasks of communicating according datafases (patients – acceler protor), and quantify).		some	~		
Lesson Level					
Lesson 1.1: Pre-Unit Assessment					

Let's Review





Questions?



Science & Engineering Practices:

Building the practices incrementally, chapter by chapter.







Plan for the day: Part 1

- Framing and Review
- Introducing the Unit
- Unit Internalization
- Identifying the Science and Engineering Practices
- Closing

Overarching goals

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

- □ Internalize the unit
- Identify the Science and Engineering Practices within the unit



Additional resources

Welcome, caregivers!

EDREPORTS A

Grades 6-8





We hope you enjoy learning more about Amplify Science and what students are learning in science this year.

Para acceder a este sitio en español haga clic aquí.

Amplify welcomes you and your learner to the Science program for the new school vear. We are verv excited to



LAUSD Micrositehttps://amplify.com/lausd-science



Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the Amplify Science Program Hub (To help orient you to the new design, watch this video and view this reference guide.)
- Find out more about Amplify Science@Home
- Share the Caregiver Hub (Eng/Span) with your families
- For LAUSD ES Teachers- Amplify Science & Benchmark Advance Crosswalk
- Instructional guidance for a Responsive Relaunch of Amplify Science in 21-22

Click the button below to preview the digital Teacher's Guide, and check back for exciting updates to this site!

Additional resources and ongoing support

Customer Care

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



help@amplify.com





Amplify Chat



End of Part 1





Amplify Science

Unit 4: Waves, Energy and Information (with a focus on SEP)

Grade 4, Part 2

School/District Name: LAUSD Date: Presented by:









Overarching goals

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

 Identify the Science and Engineering Practices within a lesson and how they are taught.

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□ Apply this knowledge to prepare to teach.



Plan for the day: Part 2

• Review

- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

Next Generation Science Standards

Designed to help students build a cohesive understanding of science



Next Generation Science Standards

Science and Engineering Practices



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

Waves, Energy and Information

Problem: How can a mother dolphin and her calf communicate underwater when they cannot see each other? How can humans use patterns to communicate?

Role: Marine Scientists

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Unit 3D Statements

Key

 Practices
 Disciplinary Core Ideas
 Crosscutting Concepts

 Unit Level

Using physical and computer models to observe and analyze patterns (patterns), students figure out how sound travels as a wave (energy and matter). They apply that knowledge to explain how dolphins in the fictional Blue Bay send and receive signals underwater when separated (energy and matter) and how humans encode, send, and receive patterns of information for efficient communication across distances (patterns; scale, proportion, and quantity)

Chapter 1 3D Statements



Chapter Level

Chapter 1: How does a mother dolphin communicate with her calf across a distance?

Students use models to investigate waves and how sound travels (patterns; energy and matter). They figure out that sound energy travels as a wave from a source to a listener (patterns, energy and matter). Students create initial Sound Diagrams models, and the class constructs an initial scientific explanation about how a mother dolphin uses sound to communicate underwater with her calf across a distance (energy and matter; scale, proportion, and quantity).

Let's Review





Plan for the day: Part 2

- Review
- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

Waves, Energy and Information



3D Statements, Lesson 1.1

Key

Practices

Disciplinary Core Ideas

Crosscutting Concepts

Students explain what they know about sound and analyze a diagram of a

sound wave (patterns).

Grade 4 | Waves, Energy, and Information Lesson 1.1: Pre-Unit Assessment

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Activity 1 Introducing the Scientific Phenomenon



We are starting a new unit on **communication**.

We will study animals in a national park and work to explain how they **communicate**, or share information, underwater.





What do you know about dolphins?



This is Blue Bay, a place where many **bottlenose dolphins** live.

A **bay** is a section of a lake or the ocean that is formed by the shape of the shoreline.




This is a **bottlenose dolphin** family.

These dolphins are very social and like to be around other dolphins. They usually stay close to their family members. The park has a **superintendent** who keeps track of the dolphins. She has observed the dolphins swimming in groups, and she often sees mother dolphins with their **calves**.

She has noticed that the dolphins seem to be able to **communicate** using body language to signal when food or danger is nearby.



Sometimes the **mother dolphins** leave their **calves** to search for food.

Even when they are too far apart to see each other, somehow they still find each other again.



The superintendent is not sure how signals could travel so far underwater.

How could the dolphins be **sending signals** that travel underwater?

The park superintendent needs our help to study **dolphin communication**.

We will be **marine scientists** whose job is to investigate more about dolphin communication.

~ ^ 2 6 向

To: Marine Scientists From: Maya Martinez, Park Superintendent Subject: Dolphins in Blue Bay National Park



Thank you for helping us find out how the mother dolphins in Blue Bay National Park are communicating with their calves. Please investigate how signals could travel underwater and write to me once you have an explanation.

Chapter 1 Question

How does a mother dolphin communicate with her calf across a distance?

Vocabulary communicate

to share information



Activity 2 Thinking About Forms of Communication



We are trying to figure out how dolphins can **communicate across a distance,** when they are too far apart to see each other.

Let's start by thinking about how people can communicate when they can't see each other. I'm going to ask **two volunteers** to help act this out for us.

Demonstrating Forms of Communication

Student 1: Stay seated and close your eyes.

Student 2: Move to a new location so Student 1 doesn't know where you are standing.

The rest of the class: Help Student 1 figure out where Student 2 is located.

Think of as many ways as you can for them to **communicate** with each other, even though Student 1 can't see Student 2.





We identified talking and making sounds as two ways to communicate.

How might the dolphins be **communicating**?



Activity 3 Dolphin Communication



We think the dolphins may be communicating using **sound**.

One way marine scientists study dolphin communication by listening to and recording sounds dolphins make in the wild. We will **listen to some recordings** of dolphin sounds to find out more.



Waves, Energy, and Information:

Investigating How Dolphins Communicate

We are going to use **Investigation Notebooks,** just like scientists use.

Investigation Notebook



to try to learn more about something



Turn to page 3 in your notebooks.

As we listen to the dolphin calls, we will **record our observations.**



Record your observations in your notebooks as you listen to each dolphin call.



What observations did you make about the dolphin calls?

We think the dolphins might be using sound to communicate.

How is it possible to use **sound** to **signal** to one another underwater?

Does sound travel underwater?



In this unit, we're going to investigate **how sound can travel** between a mother dolphin and her calf underwater.



Activity 4 Writing Initial Explanations





Before we continue the unit, you are going to **write your first ideas** about sound.



There are **three pages** for writing, with one page for each question.

You can use the **diagram** of the sound on the first page to explain your thinking.

	Due Unit Multin au
	Pre-Onit writing:
Name	Dete
Name: _	Date:
	Pre-Unit Writing:
	Englatuta Battanza in Panananiantian
N	
v	Name: Date:
S	Bro-Unit Writing
5	Explaining Batterns in Communication (mainten)
т	
	Maria's brother used a computer (a digital device) to play his music. Ho
	computers help humans send information across distances?
L .	
h	
	Make a drawing if it helps you explain your thinking. Label your drawing

On the last page, there is a box for you to make a **drawing** if it helps you explain your thinking.

Lesson 1.1: Pre-Unit Assessment





Write to **explain** what you think happened.

Use the **diagram** to help you explain.

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Lesson 1.1: Pre-Unit Assessment

End of Lesson





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Science and Engineering Practices

Describe the science and engineering practices the students were engaged in during this lesson.



Science & Engineering Practices



Lesson Brief

Lesson at a Glance

1: Introducing the Scientific Pheromenon (15 min.) Students are introduced to the unit context and to their role as marine scientists for Blue way National Park.

2: Jorms of Communication (10 min.) Students brainstorm ways two living things can communicate when those living things cannot see each other.

3: Dolphin Communication (10 min.)

Students receive their Waves, Energy, and Information Investigation Notebooks and learn some of the ways that scientists use notebooks. Students discover that dolphins communicate across distances by using sound.

4: Writing Initial Explanations (20 min.)

Students write responses to explain the characteristics of a sound by analyzing a diagram of the sound wave. Students' explanations can be assessed by using the Assessment Guide: Interpreting Students' Pre-Unit Explanations About Patterns in Communication (in Digital Resources). In addition to providing insight to the teacher, asking students to take stock of their initial knowledge helps prepare them to make connections to new knowledge.





Plan for the day: Part 2

- Review
- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

3D Statements Lesson Work time

- Identify what
 Science and
 Engineering
 Practices are
 addressed in each
 lesson in Chapter
 One.
- 2. Identify how the Science and Engineering Practices are addressed

Teacher References	3-D Statements	0
3-D Statements	Key	
	Practices Disciplinary Core Ideas Crosscutting Cor	rcepts
Unit Level		
Using physical and computer models to observe and as a wave (energy and matter). They apply that know receive signals underwater when separated (energy of information for efficient communication across de	analyze patterns (patterns), students figure out how sound fedge to explain how dolphins in the fictional Blue Bay send, and matter) and how humans encode, send, and receive patt tances (patterns; scale, proportion, and quantity).	travels and terns
Chapter Level		
Chapter 1: How does a mother dolphin commu	nicate with her calf across a distance?	
Students use models to investigate waves and how s sound energy travels as a wave from a source to a lis Diagrams models, and the class constructs an initial communicate underwater with her call across a dista	ound travels (patterns: energy and matter). They figure out lener (patterns, energy and matter). Students greate initial scientific explanation about how a mother dolphin uses sour nee (energy and matter; scale, proportion, and quantity).	inat Sound Ind to
Chapter 2: How does sound energy travel thro	igh water from a mother dolphin to her calf?	
Students use models and conduct hands-on investig through different kinds of materials—solids, gases, a small to see (energy and matter; scale, proportion a series of collisions between particles (patterns; ener they also construct their own scientific explanations changes how they move (energy and matter).	ations to figure out more about the idea that sound can tree not liquids—and that these materials are made of particles to diquantity). Students investigate the idea that sound travels ay and matter), and they revise their Sound Diagrams model to show that when particles cellide, they transfer energy and	ti o asa s. s. s.
Chapter 3: How does a dolphin calf know which	call is his mother's call?	
Students figure out—through working with the Soun (patterns) in the unit's reference book Patterrs in Co- ptch (wavelength) (patterns, scale, proportion and another's calls (energy and matter). Students revise describe how a mother dolphin's call gets to her call energy and matter).	4 Waves Simulation and reading information about sound we mmunication—how waveforms depict volume (amplitude) a antify). Shuders relate this idea to how dophins here one their Sound Diagrams models and their scientific explanation and how the call knows which call is his mother's call (patter	nd nd ns to ns:
Chapter 4: How can humans use patterns to c	ommunicate?	
Students send and receive messages by using the Cr and decode messages, using binary code (patterns) encode and decode information (patterns) and how) challenging task of communicating across distances	de Communicator Tool—an app that allows students to eno- –and begin to develop an understanding of how digital devic numans have devised various methods to accomplish the (patterns; scale, proportion, and quantity).	ode es
Lesson Level		
Lesson 1.1: Pre-Unit Assessment		
	and any an element of a second second for the second	

Planning for the Unit		Printable Resources
Unit Overview	~	Coherence Flowcharts
Unit Map	~	Copymaster Compilation
Progress Build	~	Flextension Compilation
Getting Ready to Teach	~	Investigation Notebook
Materials and Preparation	~	👼 Multi-Language Glossary
Science Background	~	INGSS Information for Parents and Guardians
Standards at a Glance	~	Print Materials (8.5" x 11")
Teacher References		Print Materials (11" x 17")
Lesson Overview Compilation	~	
Standards and Goals	~	Offline Preparation
3-D Statements	~	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access
Assessment System	~	
Embedded Formative Assessments	~	Offline Guide
Books in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

3D Statements Share Out

Share the what and how of the Science and Engineering Practices addressed in each lesson.



Chapter 2: Why aren't the cecropia trees growing and thriving?

Students use models to investigate flow plants gat their food and how energy enters and flows through an ecosystem (energy and matter systems and system models). Students then use evidence to construct an argument about why the acceptoir tess are not growing and thriving in an area of the rain forest ecosystem (energy and matter: systems and system models: cause and effect).

Chapter 3: Why aren't the cecropia trees growing and thriving in the soil?

Students analyze and interpret new data to figure out how plants grow and thrive in some soils but not in others (energy and matter systems and system models). Students then use evidence to construct new arguments about why the exercipit trees are not growing and thriving in the rain forest acosystem project area (energy and matter; systems and system models: cause and refect).

Lesson Level

Lesson 1.1: Pre-Unit Assessment

Students write initial arguments and explore a digital model about the growth of organisms in an ecosystem (energy and matter, systems and system models).

Lesson 1.2: Introducing Ecosystems

Students create a model ecosystem (systems and system models) and make observations of different kinds of ecosystems (systems and system models).

Lesson 1.3: Matter Makes It All Up

Students read the book Matter Makes It All Up to obtain and evaluate information about how all parts of an accessstem are made of matter, which in turn is made of molecules (energy and matter; scale, proportion, and quantity, systems and system models).

Planning for the Unit		Printable Resources
Unit Overview	~	Coherence Flowcharts
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Progress Build	~	Flextension Compilation
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Teacher References		Print Materials (11" x 17")
Lesson Overview Compilation	~	
Standards and Goals	~	Offline Preparation
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3-D Statements	~	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access
3-D Statements Assessment System	~ ~	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access.
3-D Statements Assessment System Embedded Formative Assessments	~ ~ ~	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access.
3-D Statements Assessment System Embedded Formative Assessments Books in This Unit	~ ~ ~	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access. Offline Guide
3-D Statements Assessment System Embedded Formative Assessments Books in This Unit Apps in This Unit	* * * *	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access. Offline Guide
3-D Statements Assessment System Embedded Formative Assessments Books in This Unit Apps in This Unit Flextensions in This Unit	* * * *	Teaching without reliable classroom internet? Prepare unit and lesson materials for offline access. Offline Guide

Science & Engineering Practices

Chapter 1: How does a mother dolphin communicate with her calf across a distance?

Chapter 1: Use models, create initial Sound Diagram model

Chapter 1: Construct an initial scientific explanation

Lesson 1.1 What - Explore a digital model How - Sim exploration

Lesson 1.2 What - Use physical models to observe How - Using a rope and a spring toy as models allows students to observe patterns in the motion of waves

Lesson 1.3 What - N/A How - N/A Lesson 1.1 What - Write their initial argument

How - Pre-Unit Assessment

Lesson 1.2 What - N/A How - N/A

Lesson 1.3 What - Obtain and evaluate information How - Students read the book *Warning: Tsunami!*

Science & Engineering Practices

Chapter 1: How does a mother dolphin communicate with her calf across a distance?

Chapter 1: Use models, create initial Sound Diagram model

Chapter 1: Construct an initial scientific explanation

Lesson 1.4

What - Engage with a variety of wave models How - The Sound Waves Simulation is introduced as a model to help students observe and understand something that cannot be seen—sound waves.

Lesson 1.5 What - N/A How - N/A Lesson 1.4 What - N/A How - N/A

Lesson 1.5

What - Construct a scientific explanation How - Students are introduced to scientific explanations, and the teacher leads the class in writing a scientific explanation to answer the Chapter 1 Question.
Standards at a Glance

Planning for the Unit		Printable Resources
Unit Overview	~	E Coherence Flowcharts
Unit Map	~	Copymaster Compilation
Progress Build	~	Flextension Compilation
Getting Ready to Teach	~	Investigation Notebook
Materials and Preparation	~	Multi-Language Glossary
Science Background	~	MGSS Information for Parents Guardians
Standards at a Glance	~	📴 Print Materials (8.5" x 11")
Teacher References		Print Materials (11" x 17")
Lesson Overview Compilation	~	
Standards and Goals	~	Offline Preparation
3-D Statements	~	Teaching without reliable classro internet? Prepare unit and lessor
Assessment System	~	materials for offline access.
Embedded Formative Assessments	~	Offline Guide
Books in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

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JUMP DOWN TO UNIT GUIDE	GUIDE	
		T
Chapter 1: Why aren't the jaguars and sloths growing and thriving?	Chapter 2: Why aren't the cecropia trees growing and thriving? 7Lessons	Chapter 3: Why aren't the cecropia trees growing and thriving in the soil? 7Lessons
Planning for the Unit		Printable Resources
nit Overview ~		3-D Assessment Objectives
Unit Map	~	Coherence Flowcharts
Progress Build	~	Copymaster Compilation
Getting Ready to Teach	v.	Crosscutting Concept Tracker
Materials and Preparation	~	Eliciting and Leveraging Students' Prior Knowledge, Personal Superior and College
Science Background	~	Backgrounds
Standards at a Glance		Flextension Compilation
Teacher References		Investigation Notebook
Lesson Overview Compilation	~	Multi-Language Glossary
Standards and Goals	~	. I NGSS Information for Parents and Guardians
3-D Statements	~	Print Materials (8.5" x 11")
Assessment System	~	Print Materials (11" x 17")
Embedded Formative Assessment	s ~	Offline Preparation
Books in This Unit	~	Teaching without reliable classroom
Anns in This Unit	~	materials for offline access.
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Next Generation Science Standards

Science and Engineering Practices



Asking questions (for science) and defining Ch. 1-4 problems (for engineering) Developing and using models Ch. 1-4 Planning and carrying out investigations Ch. 1,3,4 Analyzing and interpreting data Ch. 1-4 Using mathematics and computational thinking Ch. 3,4 Constructing explanations (for science) and designing solutions (for engineering) Ch. 1-4 Engaging in argument from evidence Ch. 1.3. Obtaining, evaluating, and communicating information Ch. 1-4

Science & Engineering Practices:



Questions?







Plan for the day: Part 2

- Review
- Science and Engineering Practices within a lesson
- Lesson Planning
- Closing

Overarching goals

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

 Identify the Science and Engineering Practices within a lesson and how they are taught.

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□ Apply this knowledge to prepare to teach.

Closing reflection

Based on our work today, share:

Head: something you'll keep in mind

Heart: something you're feeling

Feet: something you're planning to do

LAUSD Micrositehttps://amplify.com/lausd-science



Welcome to Amplify Science!

This site contains supporting resources designed for the LAUSD Amplify Science adoption for grades TK–8.

- Access the Amplify Science Program Hub (To help orient you to the new design, watch this video and view this reference guide.)
- Find out more about Amplify Science@Home
- Share the Caregiver Hub (Eng/Span) with your families
- For LAUSD ES Teachers- Amplify Science & Benchmark Advance Crosswalk
- Instructional guidance for a Responsive Relaunch of Amplify Science in 21-22

Click the button below to preview the digital Teacher's Guide, and check back for exciting updates to this site!

Additional resources and ongoing support

Customer Care

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



help@amplify.com





Amplify Chat



End of Part 2





