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

Amplify Science

Unit Internalization & Guided Planning

Deep-dive and strengthening workshop Grade 8, Evolutionary History

LAUSD

Date Presented by Your Name In a new tab, please log in to your Amplify Science account through Schoology.

Norms: Establishing a Culture of Learners



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



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



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



- Make sure you have a note-catcher present
- Be an active participant chat, ask questions, discuss, share!

Workshop goals

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

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



Plan for the day

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



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Instructional Materials

Middle school course curriculum structure

Integrated model* Launch units Grade 6 Grade 7 Grade 8 • Launch: • Launch: • Launch: First unit Harnessing Human Energy Microbiome Geology on Mars 11 lessons Plate Motion Force and Motion Metabolism Engineering Internship: Engineering Internship: • Engineering Internship: Core units Force and Motion Metabolism Plate Motion Traits and Reproduction Rock Transformations Magnetic Fields Majority of units **Thermal Energy** Phase Change Light Waves • 19 lessons Ocean, Atmosphere, • Engineering Internship: Earth, Moon, and Sun and Climate Phase Change Natural Selection Weather Patterns Chemical Reactions • Engineering Internship: Earth's Changing Climate Populations and Resources Natural Selection . Engineering Internship: Matter and Energy **Evolutionary History** Earth's Changing Climate in Ecosystems

authored by

AmplifyScience

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Standard Amplify Science Curriculum

Amplify Science @Home Curriculum

Amplify Science @Home Curriculum

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



AmplifyScience@Home

Two different options:

@Home Units

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

@Home Videos

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





@Home Units

A shift in approach to respond to user feedback

Original approach: two different resources



Print-based: @Home packets

Digital: @Home slides and student sheets Updated approach: one resource, two formats





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

Digital: Google Slides @Home Slides and Google Doc student sheets 22

Amplify Science @Home Curriculum

You have access to the Evolutionary History @Home Unit.

The Evolutionary History @Home Unit has **14 lessons**. Each lesson is written to be **30 minutes** long.



Amplify Science @Home Curriculum

You have access to the Evolutionary History @Home Videos.

There are 16 @Home Videos for the Evolutionary History unit. This covers all lessons expect for the assessment lessons (1.1,2.6, and 4.4). The video playlists on YouTube teach the standard Amplify Science Lessons.





Questions?



Plan for the day

- Framing the day
 - Welcome
 - Instructional Materials

• Unit Internalization

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

Unit Guide Resources

	Planning for the Unit		Printable Resources
	Unit Overview	~	Article Compilation
(Unit Map	~	Coherence Flowchart
	Progress Build	~	Copymaster Compilation
	Getting Ready to Teach	~	Flextension Compilation
	Materials and Preparation	~	Investigation Notebook
	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	~	Offline Preparation
	Standards and Goals	~	Teaching without reliable classroom internet? Prepare unit and lesson
	3-D Statements	~	materials for offline access.
	Assessment System	~	Offline Guide
	Embedded Formative Assessments	~	
	Articles in This Unit	~	
	Apps in This Unit	~	
	Flextensions in This Unit	~	

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



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Unit Map

Planning for the Unit		Printable Resources
Unit Overview	~	Article Compilation
Unit Map		
Progress Build	~	eg PJ
Getting Ready to Teach	~	Flextension Compilation
Materials and Preparation	~	Investigation Notebook
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	~	Offline Preparation
Standards and Goals	~	Teaching without reliable classroom internet? Prepare unit and lesson
3-D Statements	~	materials for offline access.
Assessment System	~	Offline Guide
Embedded Formative Assessments	~	
Articles in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	

Evolutionary History Planning for the Unit

Unit Map

Unit Map

Is this Mystery Fossil more closely related to wolves or to whales?

Students act as student paleontologists to discover the evolutionary history of a mystery fossil. Is this species more closely related to wolves or whales, and how did all three species change over time? Students learn how to interpret similarities and differences among fossils, they investigate how natural selection can lead to one population becoming two different species, and also investigate evolution over vast periods of time.

Chapter 1: Where in the museum does this new fossil belong?

Students figure out: The Mystery Fossil likely shares a common ancestor with both wolves and whales. A species is a group of the same kind of living thing that can reproduce with each other. Species that look very different can share similar structures. Traits, such as structures, are passed down from parents to offspring. When two species have many similar structures, this is evidence that both species descended from a common ancestor with those structures.

How they figure it out: They sort species using similarities and differences, read an article about related species and common ancestors, and trace similar structures back to common ancestors in the Simulation. They analyze similarities among the Mystery Fossil, wolves, and whates, and show their understanding in a visual model.

Chapter 2: How did wolves, whales, and the Mystery Fossil become so different from their common ancestor population?

Students figure out: These three species could have been separated into different environments. Populations can become separated in different environments, with different selection pressures. Mutations can introduce different changes to existing structures in each population. Due to natural selection, small changes that are helpful for survival in each population are more likely to get passed down to offspring. Over generations, two populations of the same species can begin to different form each other. When the two populations become so different that they no longer reproduce with each other, they become different species.

How they figure it out: They revisit the Natural Selection Simulation, read articles about examples of speciation, and model speciation in the Natural Selection Simulation. They explore evolution and deep time through a card sort and in the Sim. They create models to show how small changes can add up to larger changes over deep time, and apply their understanding to the evolutionary history of the Mystery Fossil species.

Chapter 3: How can we tell if the Mystery Fossil is more closely related to wolves or to whales?

Students figure out: Because the Mystery Fossil shares key features that are common to cetaceans and not found in other organisms, the Mystery Fossil is more closely related to whales. Life has been evolving on Earth for over 3 billion years. Small changes introduced by mutations add up to larger changes over geologic time. Populations continue to become separated in different environments, and speciation continues to happen again over geologic time. This makes it possible for descendants of the same common ancestor population to have very different structures.

How they figure it out: They investigate evolutionary relationships using a physical model. They explore the key common features of whales and wolves in the Sim, then analyze evidence about the Mystery Fossil to draw a final conclusion about the Mystery Fossil.



Pages 2-3

her mystery fossil and argue about whether it is more jumentation in a student-led discourse routine called a

Progress Build

Planning for the Unit		Printable Resources
Jnit Overview	~	Article Compilation
Jnjt Map	~	🔄 Coherence Flowchart
Progress Build		
Getting Ready to Teach	Ŷ	Flextension Compilation
Materials and Preparation	~	Investigation Notebook
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Embedded Formative Assessments	~	
Articles in This Unit	~	
Apps in This Unit	~	
Flextensions in This Unit	~	



Progress Build

Progress Build

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

The Evolutionary History Progress Build consists of three levels of science understanding. To support a growth model for student learning progress, each level encompasses all of the ideas of prior levels and represents an explanatory account of unit phenomena, with the sophistication of that account increasing as the levels increase. At each level, students add new ideas and integrate them into a progressively deeper understanding of how anatomical structures are inherited and change over evolutionary time, and how similarities and differences can be used to interpret evolutionary relationships. Since the Progress Build reflects an increasingly complex yet integrated explanation, we represent it by including the new ideas for each level in boild.

Prior knowledge (preconceptions). At the start of the Evolutionary History unit, we expect middle school students to have completed the Amplify Science Natural Selection unit or a similar unit that covers the mechanism of change in a population. Students may hold conceptions about how organisms can (or cannot) change over time: these conceptions are often influenced by creation stories students hear in their home lives and cultures of origin. When students do believe that species can change over time, they may hold a "tadder" conception of change in which some organisms can to chose the best structural changes to adapt to their environments. Many students are fascinated by the diversity of life on Earth, and will likely be familiar with various categories of animals (such as marmals, dincasars, and camirores) and will know that organisms in these groups are somehow related. However, students may not understand how scientists use anatomical structures to determine the relationships between species. Students are likely to have thought about extinction and fossils in the cortext of dinosaurs, but many not have considered other lossils and extinct and extincters? Build and unstitute are considered that different fossils may be very different times, and represent evidence of very different times on Earth. Students' experience and prior knowledge can be built on and re ned, which the *Evolutionary* History Progress Build and unit structure are designed to do.

Progress Build Level 1: Body structures shared between species are evidence that these two species inherited the shared structures from a common ancestor population.

Different species can share body structures. When two species share structures, it is evidence that these species may be descended from a common ancestor population that also had those structures. This is because species inherit their body structures from their ancestor populations.

Progress Build Level 2: Species that share structures can have differences because they have been in separate environments, and have changed in different ways over time.

Different species can share body structures. When two species share structures, it is evidence that these species may be descended from a common ancestor population that also had those structures. This is because species inherit their body structures from their ancestor populations. Although two or more species can share structures, these



y generations and very long periods use changes can result in different

ferences at different points in time, utionary relationships.

i. It is evidence that these species may est. This is because species inherit their can share structures, these structures these species had a common ancestor ges arose through natural selection as lods of time (fundreds of thousands to ulations having larger differences and different points over time. The more on ancestor and the more closely ire not shared by other species provide is more recent than the common

Amplify.

Pages 4-5

Unit Internalization Work Time

Pages 2-5

		Evolutionary History Planning for the Unit	Unit Map			
Guided Unit Internalization		Unit Map				
Part 1: Unit-level internalization		Is this Mystery Fossil more clo Students act as student paleontologists to closely related to wolves or whales, and the similarities and differences among fossils.	sely related to wolves or to whales? o discover the evolutionary history of a mystery tossil. Is this species more widial three species change over time? Students learn how to interpret they investigate how ratural selection can lead to one sociation becoming	Evolutionary History Planning for the Unit		
Unit title:		two different species, and also investigate Chapter 1: Where in the museum doe Students figure out: The Mystery Fossili il group of the same kind of living thing that similar structures. This is worken by the similar structures, this is worken by the	evolution over vast periods of time. is this new fossil belong? Wely shares a common ancestor with both wolves and whales. A species is a can reproduce with each other. Species that look very different can share es, are passed down from parents to offspring. When two species have many th species descende from a common ancestor with those structures.	ti fossil more closely related s argue about whether it is more ent-led discourse routine called a		
What is the phenomenon students are investigating in your unit?		How they figure it out: They sort species common ancestors, and trace similar stru among the Mystery Fossil, wolves, and wh	using similarities and differences, read an article about related species and ictures back to common ancestors in the Simulation. They analyze similarities iales, and show their understanding in a visual model.			
		Chapter 2: How did wolves, whales, a ancestor population?	nd the Mystery Fossil become so different from their common		Progress Build	1
		Students figure out: These three species become separated in different environmer changes to existing structures in each population are more likely to get pass can begin to differ more from each other. 1 with each other, they become different sp	could have been sparately into different environments. Populations an exact different electron pressures. Mutations can introduce different subtion. Due to natural selection, small changes that are helpful for survival ed down to diffyring. Over generations, two populations of the same spacins When the two populations become so different that they no longer reproduce cells.			tary History ; for the Unit
Unit Question:	Student role:	How they figure it out: They revisit the Ni model speciation in the Natural Selection the Sim. They create models to show how understanding to the evolutionary history	atural Selection Simulation, read articles about examples of speciation, and Simulation. They explore evolution and deep time through a card sort and in small changes can add up to larger changes over deep time, and apply their of the Mystery Fossil species.		ression, which we call the inding of the unit's focal in understanding the ction (generally, each level of dis the inferences about on. By aligning instruction tudent understanding is uction in an informaet way	pecies had a ges arose long periods in different
		Chapter 3: How can we tell if the Mys Students figure out: Because the Mystery other organisms, the Mystery Fossil is more years. Small changes introduced by mutat become separated in different environmer it possible for descendants of the same co	teey reasin is more closely related to works or to whates? Yossil shares key features that are common to celeans and not found in re closely related to whates. Life has been exolving on Earth for over 3 billion fors add up to larger changes over geologic time. Populations continue to this, and specializer changes over geologic time. Populations continue to this, and specializer changes over geologic time. Populations continue to minorial and the specializer of the special population is continue to minorial and the specializer of the special population is obtained. The special population to have very different stuctures.		to support a growth model presents an explanatory increase. At each level, ow anatomical structures are ed to interpret evolutionary anation, we represent it by	 e species may ies inherit their ese structures
By the end of the unit, students figure out		How they figure it out: They investigate e common features of whales and wolves in conclusion about the Mystery Fossil.	volutionary relationships using a physical model. They explore the key the Sim, then analyze evidence about the Mystery Fossil to draw a final		middle school students to mechanism of change in a over time; these conceptions	mmon ancestor al selection as f thousands to ferences in
			carefue: They may not have considered that do different times on Earth. Students' sequences a Patistry Progress Build and unit structures and or Progress Build Level 1. Body Antonians Alexe ethaned directures from a common ancester poblic body and curves from the ancester population body and curves from the ancester population body and curves from the ancester population Progress Build Level 2. Species that share an environment, and have change in different	event forsitio may be very different agence a nd price however, an obe built on and re agence to do. the behavior, agence to do. the behavior, agence to do. the the specialized share structures. It is own to that also had these structures. This is no to that also had these structures. This is no to be agence to the structures. The set to be agence to the set of the set	In which some organisms are bion of change in which beens are fascinated by the mammals, dividence of the blackstare lakely to have the organized of the source of the blackstare lakely to have ind other foositis and destinct id represent evidence of very ind other foositis and destinct in the source of the source of the providence of the source of the providence of the source of the providence of the source of	ire closely species provide common
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Page 6				P	mplif	v.
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Unit Guide	Guided Unit Internalization Part 1: Unit-level internalization	Page 7
Document	Unit title: Evolutionary History	
Unit Map	What is the phenomenon students are investigating in your unit? Students acts as student paleontologists to discover the ex mystery fossil. Is this species more closely related to wolv did all three species change over time?	colutionary history of a es or whales, and how
Lesson Overview Compilation	Why do species, both living and extinct, share similarities and also have differences?	student role: Student paleontologists
	By the end of the unit students figure out Because the Mystery Fossil shares key features that are common to co organisms, the Mystery Fossil is more closely related to whales. Life h billion years. Small changes introduced by mutations add up to larger Populations continue to become separated in different environments, or again over geologic time. This makes it possible for descendants of the to have very different structures.	etaceans and not found in other as been evolving on Earth for over 3 changes over geologic time. Ind speciation continues to happen same common ancestor population
Progress Build	What science ideas do students need to figure out in order to explain the phenomenon Body structures shared between species are evidence that these structures from a common ancestor population. Species that sh differences because they have been in separate environments, an over time. Because populations separate and begin evolving differ similarities and differences in body structures can be used to in-	two species inherited the shared hare structures can have and have changed in different ways erences at different points in time, rerpret evolutionary relationships.



Questions?



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Evolutionary History Planning for the Unit

Unit Map

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How they figure it out: They sort species using similarities and differences, read an article about related species and common ancestors, and trace similar structures back to common ancestors in the Simulation. They analyze similarities among the Mystery Fossil, wolves, and whales, and show their understanding in a visual model.



Unit Map



@Home Unit Lesson Index

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

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

Evolutionary Histo	ory @Home	Less	on Index						N
The Amplify Science@Home earning or hybrid learning sit Lessons alongside the Ampli Index: @Home Unit Le	Units are versions uation. To help you fy Science unit's Le ssons and corr	of Ampli u plan ins esson(s)	fy Science units adapted for us struction, below we have listed from which they come. ding Evolutionary History	e in a remote the @Home ' Lessons					
@Home Lesson	Adapted 1	from Am	plify Science Evolutionary Histo	ny					
@Home Lesson 1	Lesson 1.	.2							
@Home Lesson 2	Lesson 1.	.3							
@Home Lesson 3	Lesson 1.	.4						. 4	and the second se
@Home Lesson 4	Lesson 1.	.5				nodified versions of the unit's			
@Home Lesson 5	Lesson 2	.1			S	neet and Packet page titles and			\
@Home Lesson 6	Lesson 2	2			- 1				
@Home Lesson 7	Lesson 2	.3 and 2.	4		n	ding Evolutionary History			
@Home Lesson 8	Lesson 2	.4 and 2.	5		- 1			New	N/A
@Home Lesson 9	Lesson 3.	.1			int	Possible Responses			Lesson 2.5. Activity 2. Possibl
@Home Lesson 10	Lesson 3.	.2						Modified based on pg. 53	Responses
@Home Lesson 11	Lesson 3.	.3				Lesson 1.2, Activity 3, Possible		New, based on Classroom Wall materials	N/A
@Home Lesson 12	Lesson 4	.1 and 4.	2			N/A		Modified, based on Pg. 81	Lesson 3.1, Activity 2, Card 1, Possible Responses
@Home Lesson 13	Lesson 4.	.3			ł			Modified, based on Pg. 82	Lesson 3.1, Activity 2, Card 2, Possible Responses
@Home Lesson 14	Lesson 4.	.4			-	N/A		Modified, based on Pgs. 88	Lesson 3.2, Activity 2, Possibl
						N/A		and 89	Responses
						Lesson 1.4, Activity 2, Possible		Modified, based on Pg. 90	Responses
					7	Responses Lesson 1.4. Activity 3. Card 1.		Modified, based on Pg. 94 and Printable Resource 11	Lesson 3.3, Activity 2, Possib
					ſ	Possible Responses	[x 17	Responses
						Lesson 1.5, Activity 3, Possible		Printable Resource 11 x 17	N/A
						Lesson 1.5, Activity 4, Possible		Modified, based on Pg. 95	Lesson 3.3, Activity 3, Possib Responses
					m	hi/h		Modified, based on Pg. 97	Lesson 3.3, Activity 4, Possib
	Evolutionary Histo	ory @Ho	me Lesson Index	1		n/a			
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	Evolutionary Histo 0 200 The Republic of Inc	ory @Ho Consensity of Co 5 s	rme Lesson Index atoms at references Consider Differences Species Cards	and 31 Printable Resources 11	0 8.5 x	Lesson 2.1 Activity 2, Cards 1 and 2, Possible Responses N/A		New, based on Classroom Wall materials Lesson 4.2 Digital Resources	N/A N/A
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Amplify.

Evolutionary History @Home Lesson Inde

AmplifyScience

@Home Lesson 1

Adapted from: Amplify Science Evolutionary HistoryLesson 1.2

Key activities

- Introducing the Mystery Fossil and the Natural History Museum: Students are introduced to the unit problem and their role as student paleontologists.
- Observe: Students gain experience noticing similarities between species by examining images that show the body structures of many different species, living and extinct, and considering how to group these species.
- Introduction to how paleontologists make careful observations. Students compare two
 organisms in order to learn about the importance of making careful observations when
 examining body structures.



Today, we will begin a new unit called *Evolutionary History*. This unit explores the history of life on Earth.

We will use fossil evidence to investigate how species change over millions—and even billions—of years.

This is the question that will guide our investigations throughout the *Evolutionary History* unit:

Unit Question

Why do species, both living and extinct, share similarities and also have differences?



Let's watch a video that will explain your role in this unit.

You will be working to help solve a fossil mystery.



Using the print version? Watch the video at tinyurl.com/AMPEH-01



What problem do the scientists in the video need our help with?



In the video, we learned that a new fossil was found at a dig site and brought back to the Natural History Museum.



We also learned that the director of the museum needs to know where to place the new fossil in the museum. Museums often decide where to place fossils based on an understanding of evolutionary history.

This is your role for this unit.

paleontologist

a scientist who studies fossils in order to understand the ancient history of life on Earth

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



Evolutionary History Glossary (continued) argama: a graph that uses bars to show how characteristics or values are distributed in a group grama: an allowes denth allowes denth Evolutionary History Glossary can organis atom: a rand ation: a rand ation: a rand ascelut: a rand ascelut: a rand ascelut: a rand ation: a rand ascelut: a rand
orgam: a graph that uses bars to show how characteristics or values are distributed in a group grams: ung gram
rit: to receive dar: recibir g an organis and agtive trait: a trait that makes it more likely that an individual will survive in a specific environment rasgo adaptativo: un rasgo que hace más probable que un individuo sobreviva en un ambiente específico ancesto: a related organism from a previous generation ancesto: a related organisme framerentado de una generación anterior in ancesto: a related organisme (for example, one or more bones) estructura corporal: una parte de un organismo (for ejemplo, uno o más huesos) common ancestor population: an older population más antigua de la cual descended población ancestral descended población ancestral común: una población más antigua de la cual descenderon dos más especies nuevas arth antidogorár is sobre la Tie
an organis an organis andaptive trait: a trait that makes it more likely that an individual will survive in a specific environment rasgo adaptativo: un rasgo que hace más probable que un individuo sobreviva en un ambiente especifico ancesto: a rad ancesto: a rad ancesto: a related organism from a previous generation ancesto: un organism from a previous generation ancesto: un organism from a previous generation ancesto: un organism (for example, one or more bones) estructura corporal: una parte de un organism (for elemple, uno or más huesos) common ancestor population: an older population from which two or more newer species descended pobleción ancestral común: una pobleción más antigua de la cual descendieron dos mismos: sere arth arth despecientemter: a more recent species that evolved from an ancestor population arth diagnose: to classify based on scientific examination
diagnosticar: clasificar con base én pruebas cientificas idea diagnosticar: clasificar con base én pruebas cientificas ación: un gru arbiente: todo (viviente y no viviente) lo que rodea a un organismo ambiente: todo (viviente y no viviente) lo que rodea a un organismo arentado: qu evolution: the process by which species adapt to environmental changes over a very long time evolución: el process por medio del cual las especies se adaptan a los cambios ambientales a lo atargo et periodos de tiempo muy prolongados arample, the evolutionary time: the very long time that spans the history of Earth, from the very first cellulai life to the present
tiempo evolutivo: el periodo de tiempo muy prolongado que abarca la historia de la vida sobre la Tierra, desde la primera vida celular hasta el presente extinct: having died out completely and no longer alive anywhere on Earth extinct: que ha desaparecido completamente y ya no vive más en ninguna parte de la Tierra fossil: evidence of life from the past, such as fossilized bones, footprints, or leaf prints fósil: evidencia de vida del pasado, como huesos, huellas o impresiones de hojas fosilizados generation: a group o di individuals born and living at about the same time
ered exa ucti es i ciat

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

Evolutionary History Glossary pages or Amplify Library





You'll take on the role of student paleontologists.

You will work to help the museum director decide where in the museum to place the Mystery Fossil.

@Home Lesson 1

Adapted from: Amplify Science Evolutionary HistoryLesson 1.2

Key activities

- Introducing the Mystery Fossil and the Natural History Museum: Students are introduced to the unit problem and their role as student paleontologists.
- Observe: Students gain experience noticing similarities between species by examining images that show the body structures of many different species, living and extinct, and considering how to group these species.
- Introduction to how paleontologists make careful observations. Students compare two
 organisms in order to learn about the importance of making careful observations when
 examining body structures.





Here you will see an image of the mystery fossil. This is a drawing of the fossil that was found and that we will try to identify and place in the museum.

Take a few moments to examine the drawing of the fossil.





To compare organisms, both living and dead, paleontologists look at **bone structures**. Bone structures are often the only thing left to examine once an organism is a fossil.

All kinds of scientists have to get **empirical evidence**, which means evidence from the physical world.

Paleontologists get evidence by observing fossils, while an astronomer might observe the light from distant stars, and a biologist might observe cells growing in a lab.

Evolutionary History @Home Lesson 1

Here is the question that will guide our first few lessons, and will help us begin to answer our Unit Question:

Chapter 1 Question

Where in the museum does this new fossil belong?



When paleontologists discover a new fossil, they compare it to other fossils that have already been found, and to organisms that are alive today. They look for similarities.





Paleontologists are interested in how fossils are similar to other extinct species and to species that are alive today.

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



You will need a partner for the next activity.

Your first task as student paleontologists will be to decide how to put these **species cards** into groups that make sense to you and your partner.

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

In this activity, each card describes a species or group of species.



a group of organisms of the same kind (in one or more populations) that do not reproduce with organisms from any other group



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Today, and throughout this unit, you will be investigating many different types of living and extinct organisms. Another way to say this is that you will be talking about many different species. Some examples of different species are lions, chickens, and apple trees.