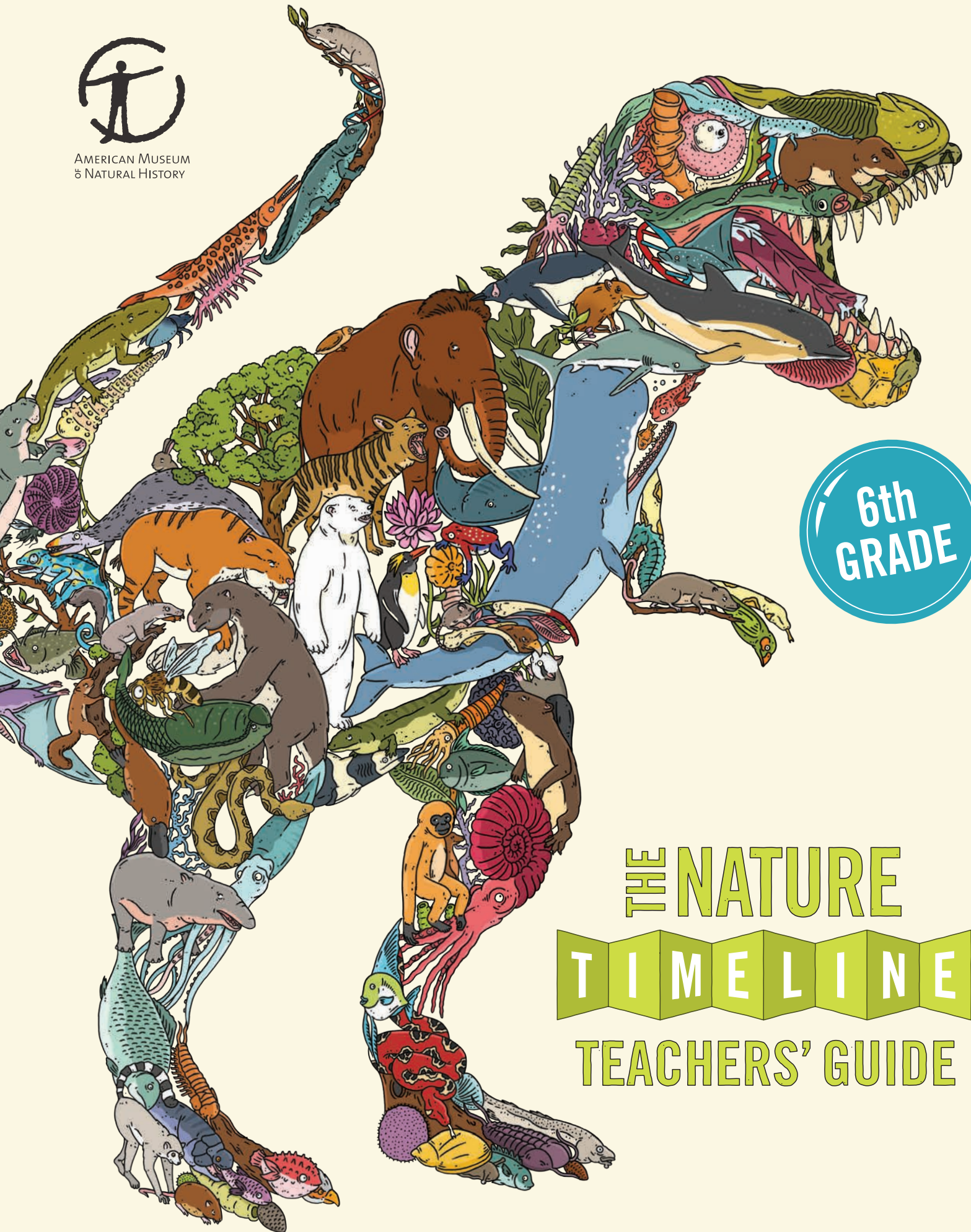




AMERICAN MUSEUM
OF NATURAL HISTORY



6th
GRADE

THE NATURE TIMELINE TEACHERS' GUIDE

ABOUT THIS GUIDE

Dear Educator,

This Activity Guide is designed to be used in conjunction with a unique book on natural history called **The Nature Timeline Wallbook**, published in association with experts at the American Museum of Natural History.

On the six-foot-long Timeline, using more than a thousand pictures and captions, we've told the extraordinary story of life on Earth beginning in the seas some 4 billion years ago. Along the top, the narrative unfolds between the globes depicting the slow, grinding movements of the Earth's tectonic plates. Beneath are hundreds of species inhabiting the seas, the land, and the sky, with the Timeline itself running along the bottom.

But there is so much more to this amazing book than meets the eye! It can be used in countless ways to help students connect knowledge together and develop their own critical thinking skills. This Activity Guide, which is aligned to Common Core Standards, suggests various ways of using The Nature Timeline Wallbook in class or as a curriculum-enrichment strategy.

We hope you will have as much fun using these activities as we have had making them! If you have any ideas for more activities based on using the Wallbook in class, then please feel free to email us at contactus@whatonearthbooks.com so that we can include them in future editions.

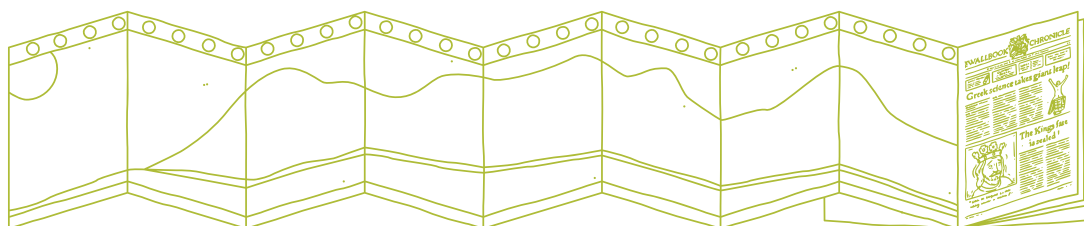
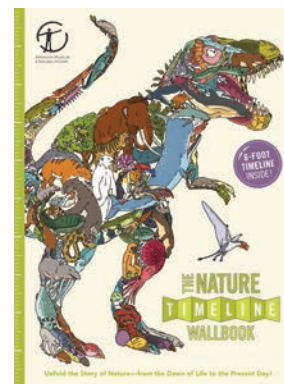
Very best wishes!



CHRISTOPHER LLOYD

Author and CEO, What on Earth Publishing

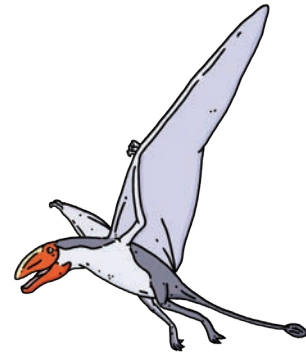
chris@whatonearthbooks.com



Fold-out Timeline Wallbook

Chronicle

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INTRODUCTION

A Curiosity Manifesto!

Two things matter most when children launch into the world. First, they must have a treasure trove of general knowledge; second, they must carry with them a lifelong love of learning.

A free-wheeling study of history—one that encourages students' natural curiosity and teaches them to make unexpected connections—can help create and empower young adults with grit, flexibility, and a hunger for knowledge that will stand them in good stead throughout their lives. The Nature Timeline Wallbook and the others in the Timeline Wallbook series from What on Earth Publishing are designed to help encourage your students along this path.

Beginning some four billion years ago in the seas and reaching all the way to the present day, The Nature Timeline Wallbook invites your students to explore a 6-foot fold-out Timeline jammed with creatures and natural events. They can work as a class, in small groups, or individually, allowing their curiosity to take the lead as they discover the forces of nature at work. The format of the Timeline serves as a constant reminder that this was, and continues to be, an ongoing progression. The different sections of the Timeline focus on the sky, the land, what lies below the land, and the sea, depicting simultaneous developments. Students can follow their own special interests over time or concentrate on a single period that most intrigues them.



One of the most fascinating parts of the Timeline runs across the top of the panels. It is a 24-hour clock that encapsulates the natural history of the world into one day, making the almost incomprehensible span of time understandable. Students will quickly see that all of human history takes place in the last second of the day.

In addition, the lively Wallbook Chronicle adds an immediate connection. Its newspaper-style reports cover a range of key moments in the history of natural science—from Naples, Italy in AD 79 (“Insatiable curiosity kills man of nature”) to Amsterdam in 1683 (“Miniature world revealed”) and Washington, DC, in 2016 (“Embryo created from three parents”).

This guide offers activities that extend the learning, connect to the curriculum, and support Common Core State Standards. Curriculum ties are noted at the start of each activity and Common Core Standards at the end of each activity.

Surround your students with the natural history of our world and enjoy the journey together.



COMMON CORE STATE STANDARDS CODE

RI

Reading Informational Text

W

Writing

SL

Speaking and Listening

RH

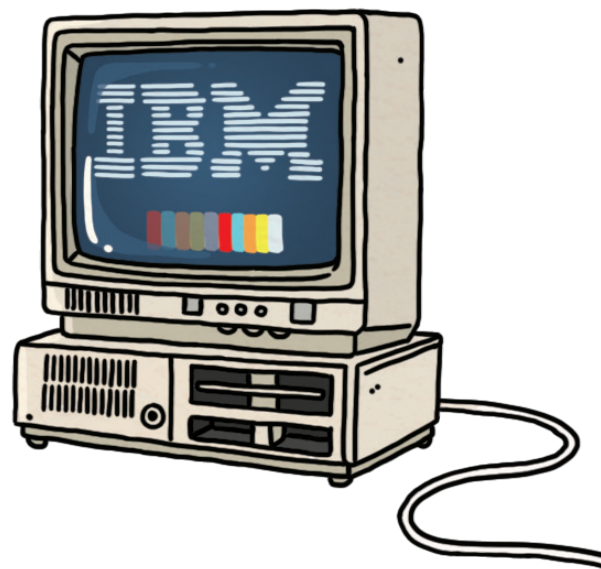
Literacy in History/
Social Studies

M

Mathematics

WHST

Writing in History/
Social Studies, Science,
& Technical Subjects



ACTIVITY 1

Finding new words

Language Arts: Vocabulary

RI

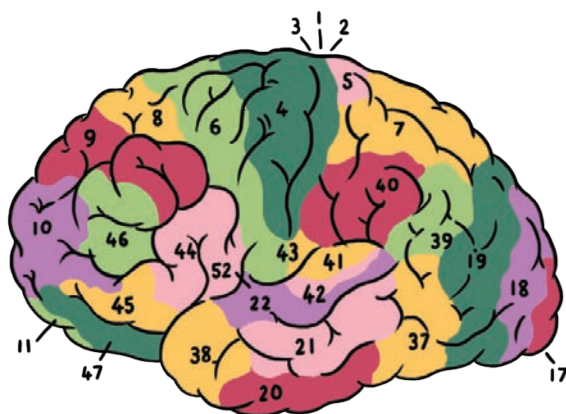
RH

The Nature Timeline Wallbook contains many words and phrases that your students will be encountering for the first time. As they scan through the Timeline and read the Chronicle articles they should take note of unfamiliar words or phrases, putting each at the top of a 4x6 index card, followed by the sentence that word appears in. On the back of the card, they should write what they think the word means based on how it is used in the sentence.

They can begin the speculation with the words: “I think the word means....” Next, they should look up the word in a dictionary and write down the definition. As a fun additional step and to cement the meaning of the words in their minds, they can write their own sentences using the words and quiz one another on their meanings. Cards should be alphabetized and kept in a Timeline Wallbook Vocabulary Box.

RI: 6.4

RH: 6–8.4



ACTIVITY 2

Exploring past mass extinctions

Part 1: Researching past extinctions

Language Arts: Writing

Science: Natural History

RH

WHST

The natural world has seen five major mass extinctions over geologic time. After each extinction event, the animal and plant kingdoms have regenerated with new dominant species replacing the ones that couldn't adapt to the changing world. Have your students locate the eras and approximate ages of these extinctions on the Timeline.

The fifth extinction is clearly marked. The others will take some searching. They should find the causes of the extinctions and the resulting effects and then enter their findings on a chart (see example).

RH: 6–8.1 / 6–8.2 / 6–8.3 / 6–8.7

WHST: 6–8.2



Geologic mass extinctions

NAME OF EXTINCTION	CAUSE OF EXTINCTION	TIME SPAN	ANIMALS AND PLANTS THAT BECAME EXTINCT

Part 2: Debating the sixth extinction

Language Arts: Reading, Critical Thinking, Speaking and Listening, Debating

Social Studies: Current Events

WHST

SL

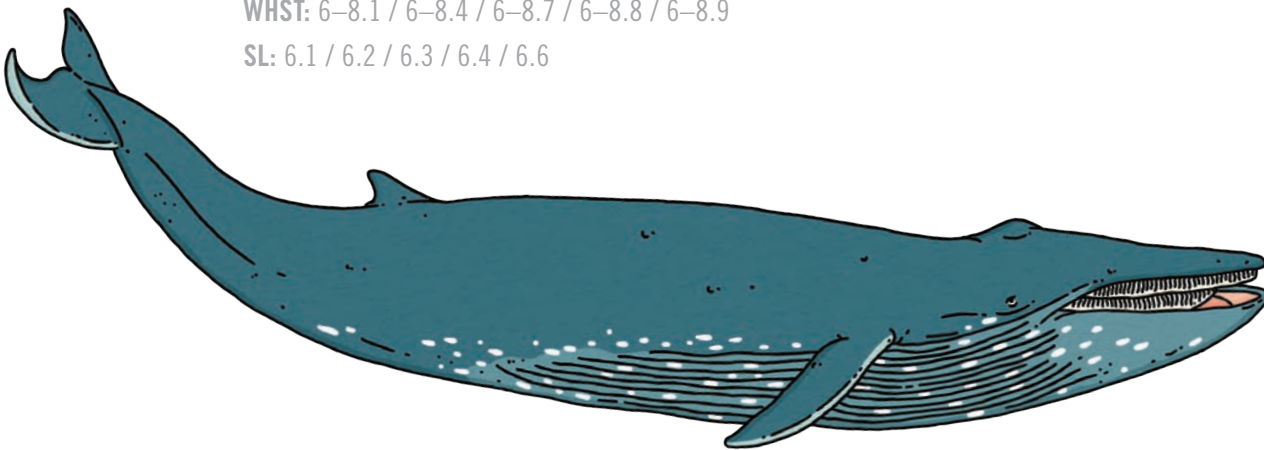
The author Elizabeth Kolbert has written about the sixth extinction. Using the Timeline, students should research its meaning, how this current extinction differs from previous events, and identify possible causes.

Then they should research using outside sources, focusing on whether the extinction is inevitable or if humankind can reverse the destructive forces that seem to be bringing it about. This can be the subject for debate among your students with one side advocating that it is not too late to change the course of history and the other side advocating that we are past the point of no return, and an extinction of life on Earth as we know it is inevitable.

Guidelines for setting up a debate for middle school students can be found at: <http://www.learnnc.org/lp/pages/636>

WHST: 6–8.1 / 6–8.4 / 6–8.7 / 6–8.8 / 6–8.9

SL: 6.1 / 6.2 / 6.3 / 6.4 / 6.6



ACTIVITY 3

Conceptualizing billions of years of time: building a to-scale timeline on a football field

Math

Science: Natural History

Cooperative Learning

RI

Conceptualizing 4.6 billion years of the natural history of the Earth is a daunting task. Because it's impossible to represent it to scale on a 6-foot Timeline, The Nature Timeline Wallbook helps to make it concrete by scaling it down to one 24-hour day.

SL

W

M

Your students will see that the first land animal emerged from the sea in the twenty-first hour, dinosaurs roamed the Earth from the twenty-second to the twenty-third hour, and the first human species arrived at twenty-three hours, fifty-nine minutes, and fifty-nine seconds, or the last second of the day.

As a class activity have students create a large to-scale Timeline so that anyone looking at it can visualize the immense length of time from the beginning of life on Earth to the present. The Timeline will be laid out on the length of your school's athletic field. The scale will be one inch equals 3 million years, or one foot equal 36 million years. Students should mark the edge of the field with the times then place their favorite events in the correct places. For example, Snowball Earth occurred about 650 million years ago, so it should be marked at that spot, which will be about 18 feet before the present.

They will discover that a lot of what they think of as very long ago is much more recent than they realized, and they will have to figure out how to mark those crowded-together events, including the emergence of humans. They can invite other classes to view the Timeline and explain how it works to them.

RI: 6.7

SL: 6.1 / 6.4

W: 6.2 / 6.4

M: 6 / NS.A.1 / 6.1 / NS.B.2

ACTIVITY 4

Dinosaur neighbors: researching other animals that lived alongside dinosaurs

Language Arts: Reading, Writing, Research

Art

Science: Natural History

W

Most children are fascinated by dinosaurs. They may know an extraordinary number of facts about them. But dinosaurs were not the only animals that flourished on the Earth in pre-historic times. Other reptiles, amphibians, mammals, and insects co-existed with them, along with a wide variety of plants.

Each student should select their favorite dinosaur and locate it on the Timeline, then find at least six animals that existed at the same time. Their selections should include animals from land, sea, and air distributed across the classes listed above. Students should do additional research to fill out their knowledge of each of their selections and then enter what they find on a chart (see template).

Each entry should include time period, class, habitat (known locations), size, prominent features, diet, and an illustration.

W: 6.2 / 6.4 / 6.7



Animals co-existing with *(my favorite dinosaur name)*

ANIMAL	CLASS	FACTS	PICTURE
		TIME PERIOD: HABITAT: DIET: SIZE: FEATURES:	
		TIME PERIOD: HABITAT: DIET: SIZE: FEATURES:	
		TIME PERIOD: HABITAT: DIET: SIZE: FEATURES:	
		TIME PERIOD: HABITAT: DIET: SIZE: FEATURES:	

ACTIVITY 5

Into the past: students as time-traveling reporters

Language Arts: Creative Writing, Research, Speaking and Listening
Cooperative Learning

W

Ask your class to imagine that they have come into the possession of a futuristic time machine that will enable pairs of students to travel into the pre-historic past and view life on Earth.

SL

The sophistication of the time machine allows them to go undetected so that they do not face any danger from the predators they encounter. Students should scan through the geological timeline that runs across the Timeline just below the twenty-four hour clock and select a time they would like to visit. They should bring with them paper and pen, sketch pads, and/or cameras to record their visit.

After exiting the time machine, they will have three hours to make their observations before returning to the present. When they come back, they will have to go into decontamination booths so that nothing from the past ends up in the present.

They will write and publish articles and pictures for their own Nature Chronicle that documents their visit to the past. Since the use of the time machine is highly secretive, only the class will be able to read the articles and view the pictures they took.

W: 6.3 / 6.4 / 6.6 / 6.7

SL: 6.1 / 6.2 / 6.5

ACTIVITY 6

Quiz time!

Language Arts: Research, Speaking and Listening

Science: Natural History

Cooperative Learning

RI

At the end of The Nature Timeline Wallbook there are fifty “brain-teasing” nature questions. All of the answers can be found in the fold-out Timeline.

W

SL

RH

WHST

For fairness to all of your students and to ensure that all of the questions are answered, have a lottery to see which student is responsible for answering particular questions. Write numbers from one to fifty on slips of paper. Each student will draw out two numbers. He/she will have to search through the Timeline for the answers to his/her questions.

Students may wish to learn more about their assigned questions. Their answers should be presented to the entire class along with what they learned from further research. Presenters should be prepared to answer questions from their peers about the subject of their inquiry.

RI: 6.1 / 6.2 / 6.4 / 6.7

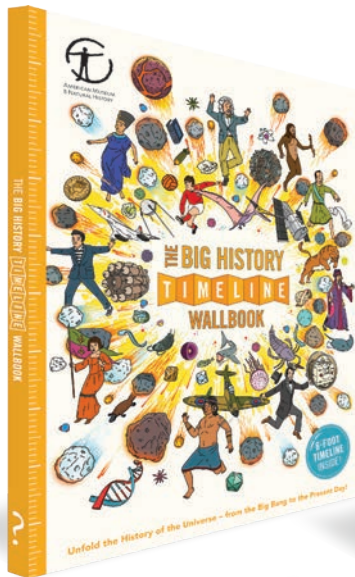
W: 6.2 / 6.4

SL: 6.1 / 6.2 / 6.3 / 6.4

RH: 6–8.1 / 6–8.2 / 6–8.4 / 6–8.7

WHST: 6–8.2

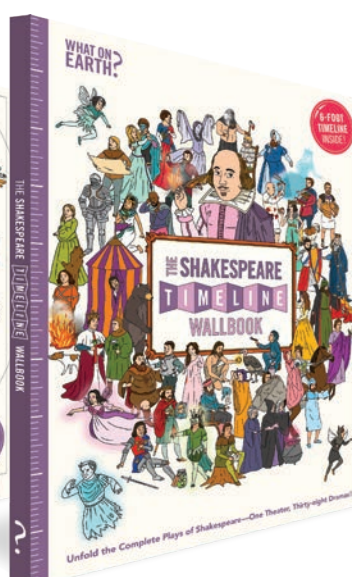
OTHER WHAT ON EARTH? TIMELINE WALLBOOKS



Big History



Science



Shakespeare

All our timeline books are available wherever books are sold and at www.whatonearthbooks.com.

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