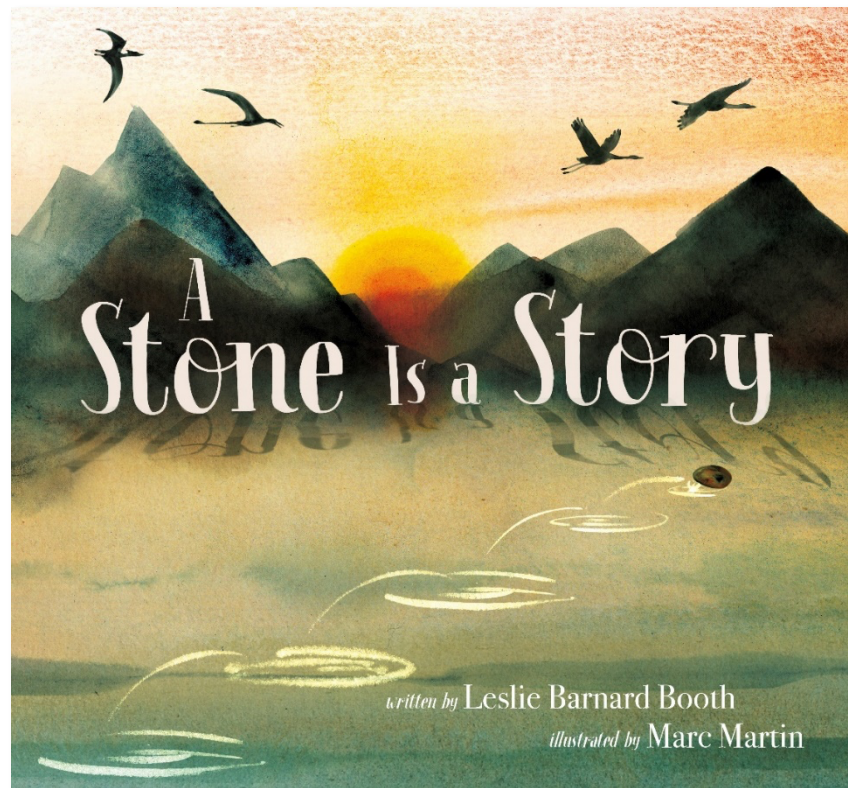


# Do Rocks Change or Stay the Same? – Earth Events

**Educator Guide**  
to accompany the nonfiction picture book  
*A Stone Is a Story*  
written by Leslie Barnard Booth  
illustrated by Marc Martin



**Inside you will find** the standards-based lesson **Do Rocks Change or Stay the Same? – Earth Events**. This lesson focuses on Next Generation Science Standards and includes connections to reading, writing, mathematics, and art. The core content can be covered in 1-2 sustained sessions or in shorter sessions throughout the week. Additional activities are provided for extended learning. All materials are meant to be adapted to your particular context; please pick and choose what is useful to you. Though this lesson targets second grade standards, it can be adapted for other grade levels. Printables can be found at the end of this guide and are also available at [www.lesliebarnardbooth.com/resources-stone](http://www.lesliebarnardbooth.com/resources-stone).

## BACKGROUND

### About the book

Follow a stone’s journey through time as it faces ice, water, wind, and scorching heat in this beautiful nonfiction picture book that is *Seeds Move!* meets *A Stone Sat Still*.

“Where do rocks come from?” The answer may be more incredible than you think! After all, a stone is not just a stone: a stone is a story. Embark on a journey across time to see how one stone can change and transform, from magma under Earth’s crust, to the sand swept up by a rushing river, to the very heart of the tallest mountain. Watch what happens when rain, ice, and wind mold this rock into something new, something you might even hold in your hand—something full of endless possibility.

Complete with additional information about geology and the rock cycle, this lyrical and captivating story invites readers to experience the wonder of the natural world around us, and to see—in every cliff, pebble, and stone—a window into Earth’s deep past.

Publisher: Margaret K. McElderry Books (October 3, 2023)

Length: 40 pages

ISBN13: 9781534496941

Grades: P - 3

Ages: 4 - 8

### About the author



Photo Credit: Kristal Passy Photography

**Leslie Barnard Booth** grew up in the Pacific Northwest, among giant trees and rugged mountains. She attended Pomona College and later earned an MFA in creative writing and an MS in education from the University of Oregon. She lives in Portland, Oregon, and loves exploring the natural world with her family. *A Stone Is a Story* is her first picture book. Visit her at [LeslieBarnardBooth.com](http://LeslieBarnardBooth.com).

### About the illustrator



**Marc Martin** is an illustrator, artist, and book maker. He is the author and illustrator of *A River*, *Masters of Disguise*, *The Curious Explorers Illustrated Guide to Exotic Animals A to Z*, *Max*, and *Lots*, among others. Marc is based in Melbourne, Australia. You can learn more about his work at [MarcMartin.com](http://MarcMartin.com).

# LESSON: DO ROCKS CHANGE OR STAY THE SAME?

## Standards



### 2-ESS1-1

Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.]

#### Practices: Constructing Explanations and Designing Solutions

Make observations from several sources to construct an evidence-based account for natural phenomena.

#### Disciplinary Core Ideas: ESS1.C, The History of Planet Earth

Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.

#### Crosscutting Concept 7: Stability and Change

Things may change slowly or rapidly.



### RI.2.4

Determine the meaning of words and phrases in a text relevant to a *grade 2 topic or subject area*.

### W.2.8

Recall information from experiences or gather information from provided sources to answer a question.

## Vocabulary

See glossary for the following key terms:

**glacier**

**lava**

**magma**

**sediment**

**tectonic plates**

**volcano**

Additional useful definitions:

**Earth events** – events that shape Earth’s rocks and landscapes

**earthquake** – shaking of the ground caused by the movement of Earth’s tectonic plates

**erosion** – the process through which ice, water, wind, and other forces remove and transport sediment

**deposition** – the laying down of sediment in a new place

**landslide** – an event in which a mass of land or rock tumbles or slides downhill

**weathering** – the breaking down, fracturing, or dissolving of rocks while they remain in place

## Materials

- ✓ Book: *A Stone Is a Story*
- ✓ Pencil & Paper
- ✓ **Earth Events video:** Find it at [www.lesliebarnardbooth.com/resources-stone](http://www.lesliebarnardbooth.com/resources-stone).
- ✓ Scissors
- ✓ Glue
- ✓ **Fast or Slow? printable**, 1 per group of 2-4 students.
- ✓ **Fast or Slow? answer key** for teacher reference
- ✓ **My Stone’s Story (Grade 2) printable**, 1 per student.
- ✓ Drawing supplies
- ✓ Outdoor space where children can collect additional rocks
- ✓ Optional: Additional picture books about Earth events (see list of suggestions on pg. 7 of this guide)

Note: Find all printables and answer keys at the end of this guide. Extension activities may require additional materials.

## Procedure



### ENGAGE

Write on the board: Do rocks stay the same or do they change? How do you know?

Have students write a response on a sheet of paper. Tell them to keep this paper for now.

Show Earth Events video (about 1 minute long). Find it at [www.lesliebarnardbooth.com/resources-stone](http://www.lesliebarnardbooth.com/resources-stone).



After viewing, write 'Earth Events' on board. Say: *Earth events are events that shape Earth's rocks and landscapes. What Earth events did you see in the video?* List answers on board. [Target answers (a few is fine; students don't need to recall every one): volcano, waves crashing to shore, rain, river flowing, flood, wind blowing, sand blowing away, lightning, fire, glacier melting/calving.]



### INTRODUCE

Say: *Now we're going to read an informational text together: A Stone Is a Story by Leslie Barnard Booth, illustrated by Marc Martin. As we read, think about what happens to the rock in the book. What Earth events happen, and how do they affect the rock?*

Read the book to students.



## DISCUSS

After reading the book, ask students what Earth events occurred in the book. If prompting is needed, guide students through the book page by page, showing the illustrations and asking students what event is occurring on each page.

Add more Earth events to the list already on the board. If an event occurred in both the video and the book, underline that event. [Target answers (technical terms are a bonus, but not necessary): volcano erupts; roots wrench rocks apart (weathering); glacier flows, grinding down and transporting rock (erosion); river wears down and carries away sediment (erosion); sand settles on ocean floor and more sediment piles up on top of it (deposition); tectonic plates move, break rock apart, force rock underground; rock changes underground due to heat (metamorphism); rock rises up inside a mountain (due to plate tectonics and uplift); mountain is ground down by rain and ice (weathering and erosion); rock breaks off and falls (gravity/landslide/erosion); child picks up rock (even this is an example of erosion!)]

As you create this list together, demonstrate using the glossary to define terms and answer questions about unfamiliar terms in the text. Definitions of other key terms can be found in this guide on pg. 3.



## PRACTICE

Point to your list of Earth events. Explain that some Earth events happen slowly, while others happen quickly.

Say: *For example, lightning striking a rock and melting it happens in an instant, while a rock getting buried really deep takes millions of years.* Refer to *A Stone Is a Story* pgs. 16-17. Read those pages aloud. Say: *This is evidence that it takes millions of years for a rock to get buried really deep.* Model evidence-based thinking about lightning strikes by referring to personal experience of a lightning storm or news stories you've seen/articles you've read.

Divide students into groups of 2-4. Distribute pages 1 and 2 of the **Fast or Slow? printable**. (Find it at the end of this guide.)

Tell students that their job is to cut out the Earth Event cards and arrange them on their Fast or Slow table. Point out that Fast, in this case, means **less than 100 years**, while Slow means **more than 100 years**.

Before students start, tell them you want them to decide whether an event is fast or slow based on **evidence**. Explain that this evidence can come from the Earth Events video or *A Stone Is a Story*, as well as other books, articles, news reports, or personal experience.

Make *A Stone Is a Story* available for reference and encourage students to look at the back matter at the end of the book if they want more information. If possible, provide additional books about Earth events for students to reference while they work.

These could include:

*Grand Canyon* by Jason Chin

*The Big One* by Elizabeth Rusch

*Nature Is a Sculptor* by Heather Ferranti Kinser

*River of Dust* by Jilanne Hoffmann

*Eruption* by Elizabeth Rusch



If your class might benefit from extra support, read all the Earth Events on page 2 of the **Fast or Slow? printable** out loud and discuss any tricky vocabulary before students begin working. As students work, walk around and ask them about their thinking. Ask them for examples or evidence that explains or supports their choices. You can use their verbal responses as an informal assessment.



If time allows, have each group take turns going on a 'Gallery Walk.' During the Gallery Walk, they walk around the room and look at other group's tables. Allow groups to talk to each other to find out why they put different events where. Then allow all groups to reconsider their own answers. Finally, when all groups are ready, have them glue their answers in place.



Ask students to return to the sheet of paper where they answered the questions: "Do rocks change or do they stay the same? How do you know?" Have them look at what they wrote. Now ask them to write a new answer on the back based on what they've learned. Have them turn in their work.



## EXPLORE

Take students outside. Have students find a rock that interests them. You can set limits on the size of the rock. Have them bring their rock inside.

Hand out both pages of **My Stone's Story (Grade 2) printable**. Tell students to look at their rock. Ask them to imagine what things might have happened to it during its long existence. Was it once lava? Was it under the feet of the dinosaurs? Or at the bottom of the ocean? Was it ever a tiny piece of sand that got mashed together with other bits of sand?

Ask students to write and illustrate the imaginary story of their rock, starting with the first thing that happened, then the next thing, then the next thing, then the last thing. **Tell them to include both fast and slow Earth events in their rock's story.** If time allows, have students share their stories with a partner.





## EXTENSION ACTIVITIES

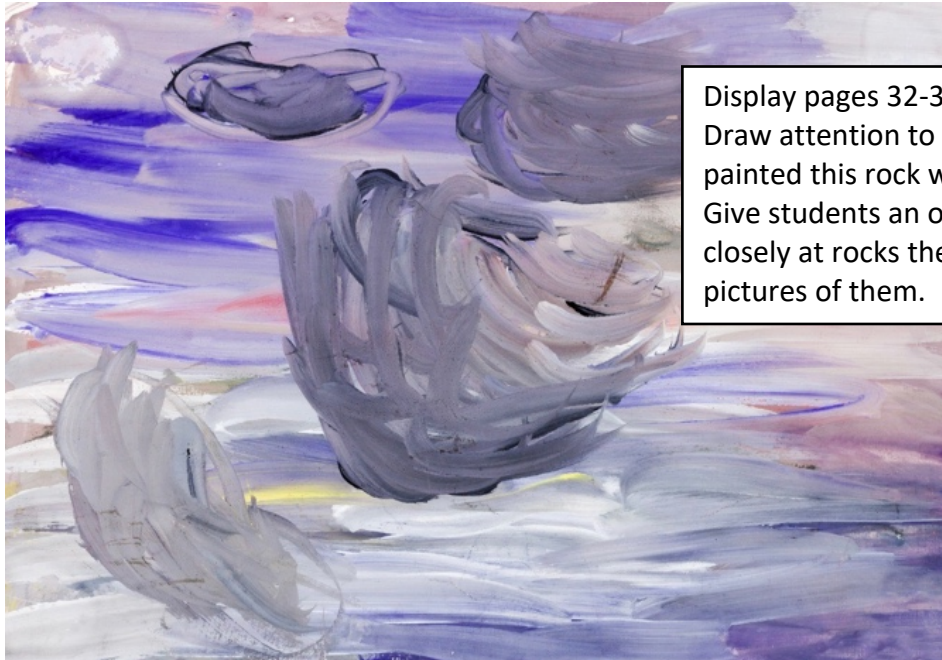
### Home Connection

**Show and Tell:** Invite students to bring a rock from home for show and tell. They can tell the class where they found it and offer a guess as to where it came from and what different Earth events might have occurred over its long history.

**Earth Events Interview:** Explain that interviews are another way to collect evidence. Students choose an adult to interview. They take home and complete the **Earth Event Interview printable**. (Find it at the end of this guide.) Students can share what they learned with the class.



### Art Connection



Display pages 32-33 of *A Stone Is a Story*. Draw attention to how Marc Martin has painted this rock with such detail and care. Give students an opportunity to look closely at rocks they have found and paint pictures of them.

## Mathematics Connection



### 2.MD.10

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Have students collect rocks outside and then sort them into categories. Categories might include: smooth/rough, big/small, black/gray/spotted, etc. Students can sort the rocks by different features on different days. With teacher help, students lay rocks out on a grid under categories, creating a bar graph. Students can use this bar graph to solve put-together, take-apart, and compare problems. These may be problems they generate, driven by their curiosity about the rocks in their area. Students can use these concrete bar graphs to create more formal bar graphs that represent the same data.



More activities available at: [www.lesliebarnardbooth.com/foreducators](http://www.lesliebarnardbooth.com/foreducators)



Names: \_\_\_\_\_

Fast or Slow?

Some Earth events happen quickly. Others happen slowly. Cut out the cards on the next page. Decide whether each event happens fast or slow. Use evidence from books, personal experience, and other sources to decide. Place events on the chart.

**Fast: it takes less than 100 years**

**Slow: it takes more than 100 years**

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## Earth Events

A river wears down a huge boulder, breaks it apart, grinds it to sand, and carries that sand to the ocean.

A piece of rock on the ocean floor gets buried miles belowground as sand, shells, and bones pile on top of it.

A meteorite (a chunk of rock from space) strikes Earth, leaving a giant crater in the ground.

Extreme heat from a forest fire causes a rock to crack in half.

A mountain gets worn down by moving water and ice, until it is only a small hill.

A volcano erupts, filling a valley with lava.

In the desert, drenching rains cause a flood that knocks down trees and destroys homes.

Lightning strikes a rock, melting its surface.

Harsh winds filled with sand sculpt a large cliff into a skinny tower of rock.

A big chunk of rock breaks off a cliff and tumbles onto the road below.

## Earth Events: ANSWER KEY

A river wears down a huge boulder, breaks it apart, grinds it to sand, and carries that sand to the ocean. **SLOW**

A piece of rock on the ocean floor gets buried miles belowground as sand, shells, and bones pile on top of it. **SLOW**

A meteorite (a chunk of rock from space) strikes Earth, leaving a giant crater in the ground. **FAST**

Extreme heat from a forest fire causes a rock to crack in half. **FAST**

A mountain gets worn down by moving water and ice, until it is only a small hill. **SLOW**

A volcano erupts, filling a valley with lava. **FAST**

In the desert, drenching rains cause a flood that knocks down trees and destroys homes. **FAST**

Lightning strikes a rock, melting its surface. **FAST**

Harsh winds filled with sand sculpt a large cliff into a skinny tower of rock. **SLOW**

A big chunk of rock breaks off a cliff and tumbles onto the road below. **FAST**

Name: \_\_\_\_\_

What is the story of your stone? What has it been through during its long time on Earth?

**First . . .**


**Then . . .**




**After that . . .**


**Finally . . .**


Name: \_\_\_\_\_

Find an adult to interview. Write their name below. Ask them the questions and write down their answers.

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I interviewed: \_\_\_\_\_

## Interview Questions

- Have you ever experienced an Earth Event such as a landslide, earthquake, or flood? Or, has an event like this ever happened near where you were living?
  
- What kind of event was it?
  
- How long did it last?
  
- What was it like?

