Getting to the Core

Second Grade-

The Changing Earth

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2nd Grade ELA / The Changing Earth

Santa Ana Unified School District Common Core Unit Planner-Literacy

Unit Title:	The Changing Earth	
Grade Level/Course:	2nd Grade	February – March (4 weeks)
Performance Task	Students will collaboratively complete a one-sided multi-flow map, then independently write an explanatory paragraph	
Big Idea (Enduring Understandings):	The Earth is Constantly Changing	
Essential Questions:	• What causes the Earth to change? • Do all of Earth's changes take the same amount of time to happen? Why or why not? • What clues from the past help us understand our Earth in the past and today?	

Instructional Activities: Activities/Tasks

Science Text:
Our Earth
Rocks (Chapter 3, Lesson 1)
Rocks Change (Chapter 3, Lesson 2)

Complex Informational Text:
Erosion,
Earthquakes,
Volcanoes

Open Court Reading (2002):
Fossils Tell of Long Ago
by Aliki

Our Earth	**Rocks**	**Rocks Change**	**Erosion**	**Earthquakes**	**Volcanoes**	**Fossils Tell of Long Ago**	**Performance Tasks**
Observation Grid	Observation Grid	Chant	Chant	Chant	Chant	Chant	Collaborative: Student will use information from the videos, text, and process grid to collaboratively complete a one-sided multi-flow map.
Inquiry	Inquiry	Weathering Experiment	Weathering Experiment	Weathering Experiment	Weathering Experiment	Informational Text	
Informational Text	Science Text	Science Text	Informational Text	Informational Text	Information Text	Video Notetaking	Independent: Students will use the information from the one-sided multi-flow map to write and explanatory paragraph.
Chant	Text Features	Text Features	Video Notetaking	Video Notetaking	Video Notetaking	Text Dependent Questions	
Movement Activity	Text Dependent Questions	Text Dependent Questions	Text Dependent Questions	Text Dependent Questions	Text Dependent Questions	One-Sided Multi-Flow Map	
Learning Journal	Chants	One-Sided	One-Sided	One-Sided	One-Sided	Learning Journal	
	Learning Journal	Multi-Flow Map	Multi-Flow Map Learning Journal	Multi-Flow Map Learning Journal	Multi-Flow Map Learning Journal		
		Learning Journal					

21st Century Skills:	**Learning and Innovation:** ☒Critical Thinking & Problem Solving ☒Communication & Collaboration ☒ Creativity & Innovation **Information, Media and Technology:** ☒Information Literacy ☒ Media Literacy ☒ Information, Communications & Technology Literacy
Essential Academic Language:	Formation, crust, mantle, outer core, inner core, plates, weathering, erosion

What pre-assessment will be given? Students will look at pictures showing the effects of changes to the earth's surface and make predictions as to what caused the earth to change.	**How will pre-assessment guide instruction?** If students struggle with using cause and effect language, use the cause and effect sentence frames found in the lesson.
Standards	**Assessment of Standards** (include formative and summative)
Content Standard(s): **Next Generation Science Standards** **2. Earth's Systems: Processes that Shape the Earth** **2-ESS1-1.C** Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe **2-ESS2-1.B** Wind and water can change the shape of the land	**F:** Students will identify key ideas and details from informational text that demonstrate that understanding of the changing earth. **F:** Students will participate in collaborative conversations while using cause and effect statements to discuss and provide evidence about changes to the Earth's surface. **S:** Students will work collaboratively to complete a collaborative museum artifact (visual representation) showing how the earth changes.

Common Core Learning Standards Taught and Assessed (*include one or more standards for one or more of the areas below. Please write out the complete text for the standard(s) you include.)*	**What assessment(s) will be utilized for this unit?** *(include the types of both formative assessments (**F**) that will be used throughout the unit to inform your instruction and the summative assessments (**S**) that will demonstrate student mastery of the standards.)*	**What does the assessment tell us?**
Bundled Reading Literature Standard(s): N/A	N/A	

Bundled Reading Informational Text Standard(s): **RIT 2.1** Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text. **RIT 2.2** Identify the main topic of a multi-paragraph text as well as the focus of specific paragraphs within the text. **RIT 2.4** Determine the meaning of words and phrases in a text relevant to a *grade 2 topic or subject area*. **RIT 2.5** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently. **RIT 2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe. **RIT 2.10** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**F:** Ask and answer text- dependent questions in whole groups/pairs after reading "Rocks", "Rocks Change", "Fossils Tell of Long Ago" and informational text on the continents. **F:** Students will use the text features to closely read informational text. **F**: Students will use information from pictures to describe key ideas and detail, along with causes of erosion. **S:** Students will collaboratively complete a one-sided multi-flow map and independently write an explanatory paragraph.	Are students able to ask and answer questions, identifying key ideas and details from information provided in the text? Are students able to use information from the text and one-sided multi-flow map to independently write an explanatory paragraph?
Bundled Foundational Skill(s) Standard(s): (K-5) **FS2.3** Know and apply grade-level phonics and word analysis skills in decoding words both in isolation and in text. a. Distinguish long and short vowels when reading regularly spelled one-syllable words. b. Know spelling-sound correspondences for additional common vowel teams. c. Decode regularly spelled two-syllable words with long vowels. d. Decode words with common prefixes and suffixes. e. Identify words with inconsistent but common spelling sound correspondences. f. Recognize and read grade-appropriate irregularly spelled words. **FS2.4** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**F***:* In small groups, students will read and understand grade level texts.	Are students able to use visual cues, syntax, and meaning to read words?

Santa Ana Unified School District Common Core Unit Planner-Literacy

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Bundled Writing Standard(s): **W2.2** Write informational/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section. **W2.4** With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1-3) **W2.5** With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing. **W2.6** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including collaboration with peers. **W2.7** Participate in shared reading and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations) **W2.8** Recall information from experiences or gather information from provided sources to answer a question. **W2.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	**F**: Students will write in their learning journal following every lesson. **S:** Students will collaboratively create a one-sided multi-flow map, and independently write an explanatory paragraph detailing the causes that effect changes to the earth's surface.	Are students able to write a complete sentence with subject/verb agreement? Can the student extend sentences and use cause and effect language to write an explanatory paragraph?
Bundled Speaking and Listening Standard (s): **SL2.1** Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by linking their comments to the remarks of others.	**Teacher Evaluation of student speaking and listening during:** **F:** Teacher will observe students, listen to responses, and gage their ability to participate in collaborative conversations with partners and large groups. **F:** Students will use complete sentences when	Are students able to participate in a collaborative conversation? Can the students speak in complete sentences?

c. Ask for clarification and further explanation as needed about the topics and texts under discussion. **SL2.2** Recount or describe key ideas or details from a text read aloud or information presented orally or through other media. a. Give and follow three- and four- step oral directions. **SL2.3** Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue. **SL2.4** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences. **SL2.6** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 on page 12 for specific expectations.)	"talking off the map" prior to writing. **S:** Students will work in collaborative groups to participate in academic conversations, group experiments, and complete collaborative projects.	Can the student work in a group to create a collaborative project?
Bundled Language Standard(s): **L2.1** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. **L2.2** Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. **L2.3** Use knowledge of language and its conventions when writing, speaking, reading, or listening. **L2.4** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies. **L2.5** Demonstrate understanding of word relationships and nuances in word meanings. **L2.6** Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy that makes me happy).	**F**: Students will speak in complete sentences. **F**: Students will write in their learning journal using standard English grammar and usage. **S**: Students will present their collaborative poster to the class. **S**: Students will use standard English conventions to write an explanatory paragraph.	Can students speak and write using standard English?

<table>
<tr><td>Resources/
Materials:</td><td colspan="2">Complex Texts to be used:
Informational Text(s) Titles:
Fossils Tell of Long Ago, by Aliki; Open Court Reading, 2nd Grade, Unit 4: Fossils
Earth’s Materials; California Science, 2nd Grade, Chapter 3, Lesson 1 & 2
Little Book
Literature Titles: n/a
Primary Sources: (NA)
Media/Technology: Billy Blue Hair on Erosion, Shape it up, Volcanoes 101, How are Fossils Formed?, Earth 100 Million Years Ago
Other Materials:
Student Learning Journal</td></tr>
<tr><td>Interdisciplinary Connections:</td><td colspan="2">Cite several interdisciplinary or cross-content connections made in this unit of study (i.e. math, social studies, art, etc.)
California Science>Earth Sciences>Chapter 3 Earth’s Materials> Lesson 1 and Lesson 2</td></tr>
<tr><td>Differentiated Instruction:</td><td>Based on desired student outcomes, what instructional variation will be used to address the needs of English Learners by language proficiency level?

• Academic Language Patterns by proficiency level
• Structured Language Practice Strategies (SLPS) throughout each of the lessons
• Small group instruction with support in meeting foundational skill needs. Use of charts, pictorials, process grids to help scaffold new learning throughout the unit.</td><td>Based on desired student outcomes, what instructional variation will be used to address the needs of students with special needs, including gifted and talented?

Special Needs- Accommodations and Modifications to Lessons, Companion Text at varying Lexile levels, Linguistic Patterns, Assistive Technology, Graphic Organizers, Videos, Pictures and Illustrations.

Small group instruction with support in meeting foundational skill needs. Use of charts, pictorials, process grids to help scaffold new learning throughout the unit.

GATE- Extension activities with opportunities to conduct additional research. See specific lessons for extension suggestions.</td></tr>
</table>

The Changing Earth

Big Idea: The Earth is Constantly Changing

Essential Questions:

- What causes the Earth to change?
- Do all of Earth's changes take the same amount of time to happen? Why or why not?
- What clues from the past help us understand our Earth in the past and today?

Day 1	**Lesson 1**	Pre-Assessment	Circle Map-Look at pictures showing changes that happen to the Earth's surface.
Day 2/3	**Lesson 2**	Our Earth- Informational Text	Introduce Big Idea/Essential Questions, Inquiry- Geologist Observation Grid, Interactive Pictorial, Our Earth-text, The Mighty, Mighty Earth Chant & movement activity, Learning Journal
Day 4	**Lesson 3**	Rocks – Science Text	Group Discussion, Review Geologist Observation Grid, "Rocks"- science text, text features, text dependent questions, Learning Journal
Day 5	**Lesson 4**	Rocks Change- Science Text	Introduce The Changing Earth Chant, Inquiry Experiments- Weathering, "Rocks Change"- science text, text dependent questions, one-sided multi-flow map "The Earth is constantly changing", Learning Journal, Revisit Big Idea/Essential Questions
Day 6/7	**Lesson 5**	Erosion- Informational Text	Introduce Erosion Chant, Inquiry Experiments- Erosion, Erosion powerpoint, Video- "What is erosion?", video notetaking guide, text dependent questions, "Shake it up activity", one-sided multi-flow map, Learning Journal
Day 8/9	**Lesson 6**	Earthquakes- Informational Text	The Changing Earth Chant, Big Idea/Essential Questions, "Earthquake"-text, text dependent questions, one-sided multi-flow map, Collaborative Academic Conversation, Learning Journal

Day 10/11	**Lesson 7**	Volcanoes- Informational Text	The Changing Earth Chant, Big Idea/Essential Questions, Inquiry Experiments- Volcanoes, Volcanoes 101 video, “Volcanoes” text, text dependent questions, one-sided multi-flow map, Collaborative Academic Conversation, Learning Journal,
Day 12	**Lesson 8**	Coop Paragraph – Cause and Effect	One-sided multi-flow map, all Chants, all text, oral rehearsal, co-op paragraph.
Day 13/14	**Lesson 9**	Fossils Tell of Long Ago – OCR Collaborative Poster Project	Fossil Bugaloo, Big Idea/Essential Questions, Fossils Tell of Long Ago”-Text, text dependent questions, collaborative poster project, gallery walk, one-sided multi-flow map, Inquiry Experiment- Imprints, collaborative academic conversations, Learning Journal
Day 15	**Lesson 10**	Fossils Tell of Long Ago-OCR	“How fossils are formed”-video, notetaking guide, text dependent questions, collaborative sequencing activity, one-sided multi-flow map,,
Day 16/17	**Lesson 11**	Collaborative Activity	Big Idea/Essential Questions, Talking off the map, “Earth 100 million years ago”-video, Collaborative Presentation, Learning Journal
Day 18	**Lesson 12**	Performance Task-Summative Assessment	Independent writing assessment

SAUSD Common Core Lesson Planner

<table>
<tr><td>Unit: The Changing Earth
Lesson: 1</td><td>Grade Level/Course:
2nd</td><td colspan="2">Duration: One Day</td></tr>
<tr><td colspan="4">Big Idea: The Earth is constantly changing.
Essential Questions:
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2. Do all of Earth’s changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?</td></tr>
<tr><td>Common Core and Content Standards</td><td colspan="3">RIT 2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
SL.2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
SL.2.3 Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue. Presentation of Knowledge and Ideas.</td></tr>
<tr><td>Materials/ Resources/ Lesson Preparation</td><td colspan="3">Learning Journal
Chart paper for teacher Circle Map</td></tr>
<tr><td>Objectives</td><td colspan="2">Content: Students will look at images of changes in the earth’s surface and determine the causes.</td><td>Language: Students will create a Circle Map and discuss with a partner using cause and effect language.</td></tr>
<tr><td>Depth of Knowledge Level</td><td colspan="3">☒ Level 1: Recall ☒ Level 2: Skill/Concept
☒ Level 3: Strategic Thinking ☒ Level 4: Extended Thinking</td></tr>
<tr><td>College and Career Ready Skills</td><td colspan="3">☒ 1. Demonstrating independence
☐ 2. Building strong content knowledge
☒ 3. Responding to varying demands of audience, task purpose, and discipline
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☒ 5. Valuing evidence
☐ 6. Using technology and digital media strategically and capably
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<tr><td>Common Core Instructional Shifts</td><td colspan="3">☒ Building knowledge through content-rich nonfiction texts
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<tr><td rowspan="2">Academic Vocabulary (Tier II & Tier III)
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<tr><td colspan="2">N/A</td><td></td></tr>
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	STUDENTS FIGURE OUT THE MEANING		
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	
Lesson Delivery			
Instructional Methods		**Check method(s) used in the lesson:** ☐ **Modeling** ☐ **Guided Practice** ☐ **Collaboration** ☒ **Independent Practice** ☐ Guided Inquiry ☐ Reflection	
Preparing the Learner		1. Tell students, "For the next few weeks we will be studying about earth and what causes its surface to change." *For Teachers: Throughout the unit, the following will be identified by these icons:  Inquiry Experiments/Observations  Finding Evidence  Collaborative Conversations/Talk Moves  Collaborative Groups	
Interacting with the Text/Concept		2. Pass out the Learning Journal to students. 3. Have students open to Learning Journal p.1. 4. Explain to students that the pictures in the Circle Map show changes in the earth's surface. 5. Read the question in the frame of reference: *What caused these changes to the earth's surface?* 6. Tell students their job is to answer this question by writing one sentence in the center of the Circle Map. 7. Have students share their ideas with a partner. After students share, call on students and record their ideas on your own Circle Map.	
Extending Understanding		8. **Talk off the map:** Tell students to open to Learning Journal p.2 to the Cause and Effect Linguistic Patterns. 9. Tell students that all of their ideas are things that may have **caused** the earth's surface to change. Practice talking off the map using the linguistic patterns.	
Lesson Reflection			

Lesson Continuum

Pictures for Teacher Circle Map

What caused these changes to the Earth's surface?

Cause  Effect

Linguistic Patterns

- _____ because _____.
- _____, so _____.
- Since _____, _____.
- Due to the fact____, ____.
- _____, therefore _____.
- _____, consequently _____.

SAUSD Common Core Lesson Planner

Unit: The Changing Earth **Lesson:** 2	**Grade Level/Course:** 2nd	**Duration:** Two Days

Big Idea: The Earth is constantly changing.

Essential Questions:

1. What causes the Earth to change?
2. Do all of Earth's changes take the same amount of time to happen? Why or why not?
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Common Core and Content Standards	Next Generation Science Standards: **2-ESS1-1.C** Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe CCSS/ELA: **RIT 2.1** Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text. **RIT 2.2** Identify the main topic of a multi-paragraph text as well as the focus of specific paragraphs within the text. **RIT 2.5** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently. **RIT 2.10** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range. **W 2.7** Participate in shared reading and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations) **W 2.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **SL 2.1** Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups.
Materials/ Resources/ Lesson Preparation	Learning Journal Geologist Observation Process Grid (teacher copy) Assortment of rocks, numbered –one per group (see either 2nd or 4th grade science kits) – if rocks are unavailable, colored pictures have been provided. Our Earth text (teacher copy)
Objectives	**Content:** Students will observe and compare the properties of rocks. **Language:** Students will work in collaborative groups to observe and discuss the properties of rocks using linguistic patterns for language support.
Depth of Knowledge Level	☒ **Level 1: Recall** ☒ **Level 2: Skill/Concept** ☒ **Level 3: Strategic Thinking** ☐ **Level 4: Extended Thinking**
College and Career Ready Skills	☐ **1. Demonstrating independence** ☒ **2. Building strong content knowledge** ☒ **3. Responding to varying demands of audience, task purpose, and discipline** ☐ **4. Comprehending as well as critiquing** ☒ **5. Valuing evidence** ☐ **6. Using technology and digital media strategically and capably** ☐ **7. Coming to understand other perspectives and culture**

Common Core Instructional Shifts		☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☒ **Regular practice with complex text and its academic vocabulary**	
Academic Vocabulary (Tier II & Tier III)	**PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING** properties minerals	**WORDS WORTH KNOWING** surface composed
	STUDENTS FIGURE OUT THE MEANING	crust plates mantel core luster texture pattern	
Pre-teaching Considerations		Collaborative groups have been established and norms have been reviewed.	
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	

Lesson Delivery

Instructional Methods

Check method(s) used in the lesson:

☒ **Modeling** ☒ Guided Practice ☒ Collaboration

☒ **Independent Practice** ☒ **Guided Inquiry** ☒ **Reflection**

Preparing the Learner

1. Introduce the Big Idea and Essential Questions.
   - Big Idea: The Earth is Constantly Changing
   - Essential Questions:
     a) What causes the Earth to change?
     b) Do all of Earth's changes take the same amount of time to happen? Why or why not?
     c) What clues from the past help us understand our Earth in the past and today?
2. Ask students to think back to the Life Cycles Unit where they learned about animal traits and how scientists use their traits to classify animals. Explain that they will be observing different rocks and then describing them based on their characteristics, which are called **properties** when classifying **non-living objects.**

Interacting with the Text/Concept

Collaborative Inquiry Activity

3. Have student open the Learning Journal to p.3 to the Geologist Observation Process Grid. As a whole group, read and discuss each category on the grid. Each student will then enter information on their individual Process Grid.
4. **Teacher model/think aloud**
   a. Show the class rock #1 – enter the number on the Process Grid and have groups do the same on their individual Process Grid.
   b. Discuss what you observe (shape, color, size, texture, etc.) and then do a quick sketch of your rock on the Process Grid. Ask students to add a sketch to their grid.

Differentiated Instruction:

English Learners:

____and_____are similar because _____.

____and_____are similar because _____.

Students Who Need Additional Support:

Differentiate according to a student's IEP. See Special Education Appendix.

Accelerated Learners:

Students can create a compare and contrast map (double bubble) using evidence from the grid to identify similarities and differences of two rocks they observed.

Lesson Continuum

	c. Continue this process as you model reading each guiding question and entering information on your grid. 5. Give each group a numbered rock for their first collaborative observation. Remind students to read the guiding question and discuss their answers before recording them on the Process Grid. Allow time for groups to discuss and record. 6. After groups finish with their first observation, you may choose one of the following: a. Have groups rotate to the next table to observe a new rock. b. Teacher can rotate the rocks to the next table. c. If extra rocks are available, new rocks can be exchanged as groups finish. 7. Once finished, have groups come together for a collaborative discussion. Have students Think-Pair-Share as you guide them through the discussion. Provide linguistic patterns as needed. Call non-volunteers to share out after students share with a partner. a. Ask: *Do you think all rocks are the same? Why or why not?* I think all rocks are_____because_____. b. Ask: *What is one example of how the rocks are similar or different?* _____and_____are similar because _____. _____and_____are different because _____. **Day 2----------** **Interactive Reading** 1. Have students open their Learning Journal to the "Our Earth" text on p. 4-5. Explain to students that you will be working together to read and annotate/sketch. 2. After independently reading (or teacher may choose to read aloud) the first paragraph, have the students annotate and discuss with a partner. 3. Model how to annotate the first paragraph and use the information to label the picture (or sketch/take notes). 4. Repeat this process for the next section of text – Crust. 5. For the next two sections (Mantle and Core), have students continue to read, annotate, and sketch with a partner. Share out after each section and add to your model.	
Extending Understanding	6. Introduce "The Mighty, Mighty Earth" Chant (Learning Journal p. 6) and movement activity to review the learning from today. 7. Have students reflect on their learning from today's lesson by writing in their Learning Journal p. 7 using the following sentence frames: • One thing I learned was _____ • One fact I found interesting was_____.	
Lesson Reflection		

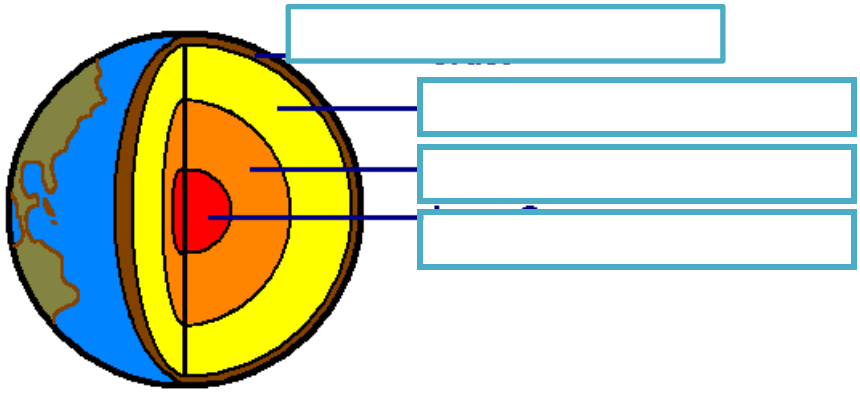
Teacher Reflection Evidenced by Student Learning/ Outcomes	

Geologist Observation Process Grid

Properties					
Rock Number and Sketch	***Color & Size*** What color(s) is it? What size is it? (Is it light brown?)	***Pattern*** What patterns or designs does it have?	***Luster*** How does it look? (Is it shiny or dull?)	***Texture*** How does it feel? (Is it rough, smooth, or bumpy)?	***Questions and Wonderings***
Rock # ___					
Rock # ___					
Rock # ___					
Rock # ___					

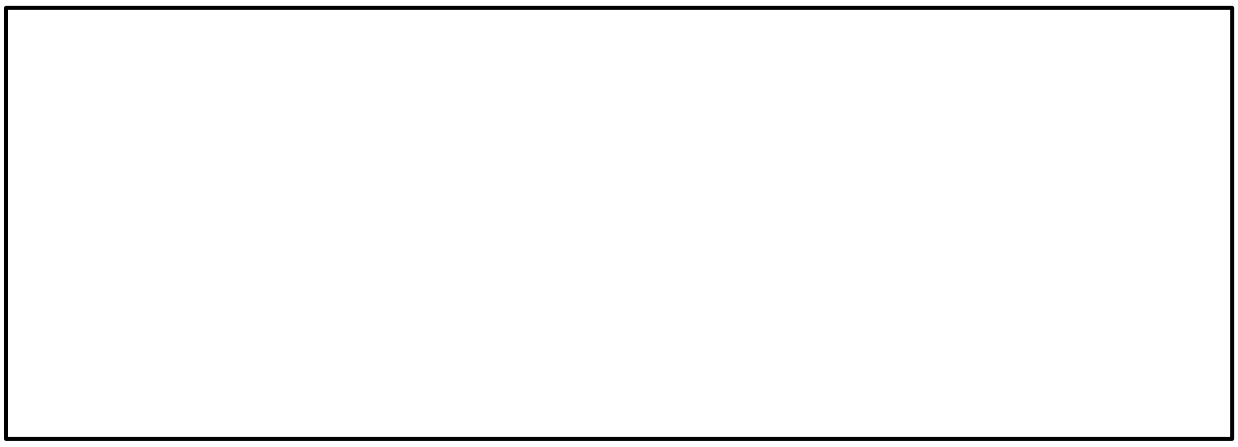
Our Earth

Our planet **Earth** is sphere-shaped and composed of four different layers; the **crust**, the **mantle**, the **outer core**, and the **inner core**.



Crust: The part of Earth that you can see, touch, and walk on is called the surface or crust. It is the thinnest of the four layers. The crust is composed of rock and soil. Decayed plants and leaves are part of the soil. The crust is divided into huge **plates**, or pieces like a jigsaw puzzle, that are always moving. They move just about as fast as your fingernails grow!

Mantle: Under the crust is a layer called the **mantle**. It is composed of rocks and metals. No one has ever gone down into the mantle, but we have been able to drill into the top edge of it. Sometimes the hot melted rocks in the mantle push up through cracks in the crust. This is called a **volcano**.



Core: Under the mantle is the **core**, which is the center of the earth. The core has two parts; the **outer core** and the **inner core**. The **outer core** is so hot that the rocks and minerals that make it up are liquid. The **inner core** is extremely hot, but it is solid. No one has ever been to the core; it is so deep that even our strongest drills cannot reach it.

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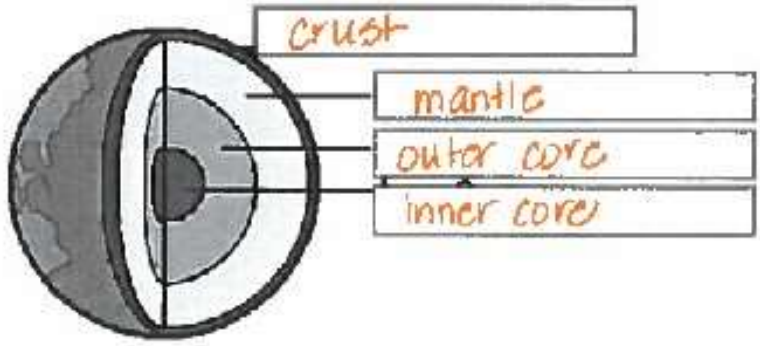

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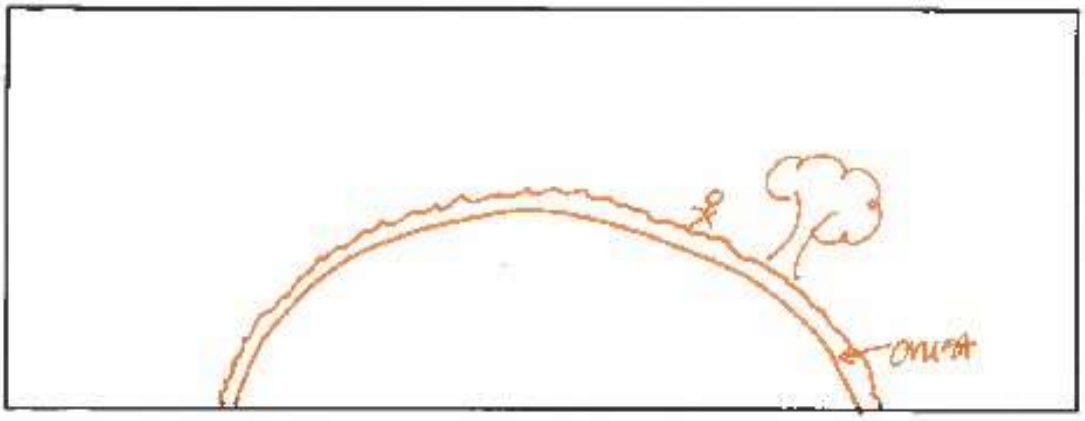

SAUSD Common Core Lesson

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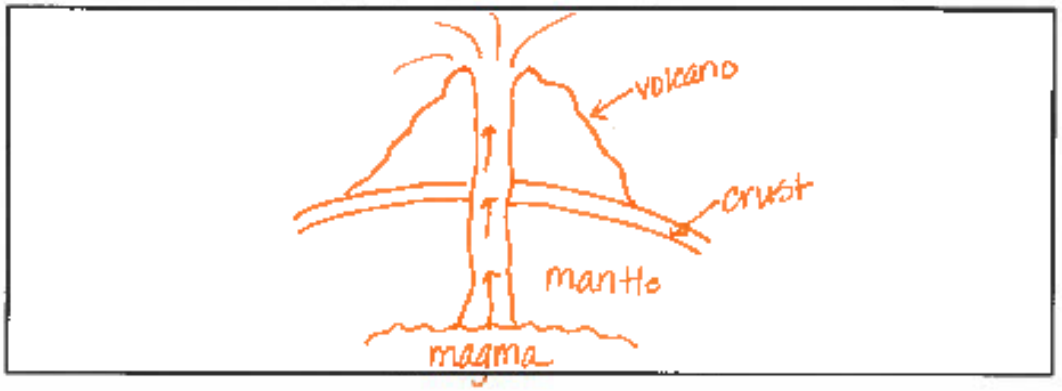

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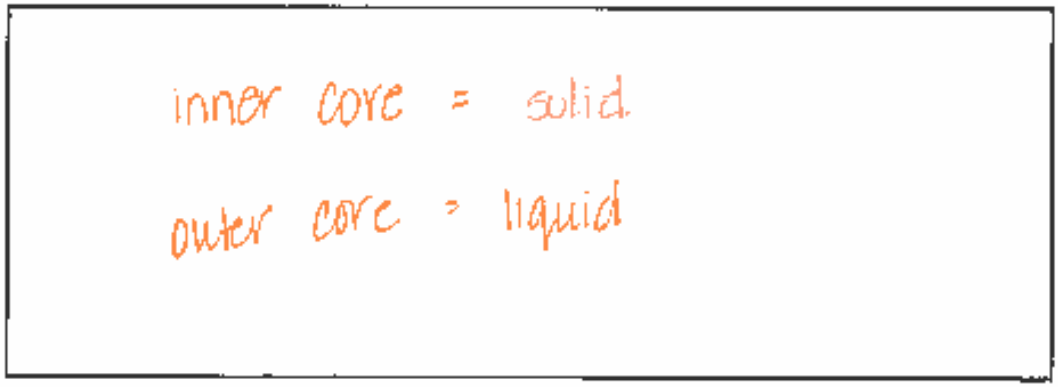
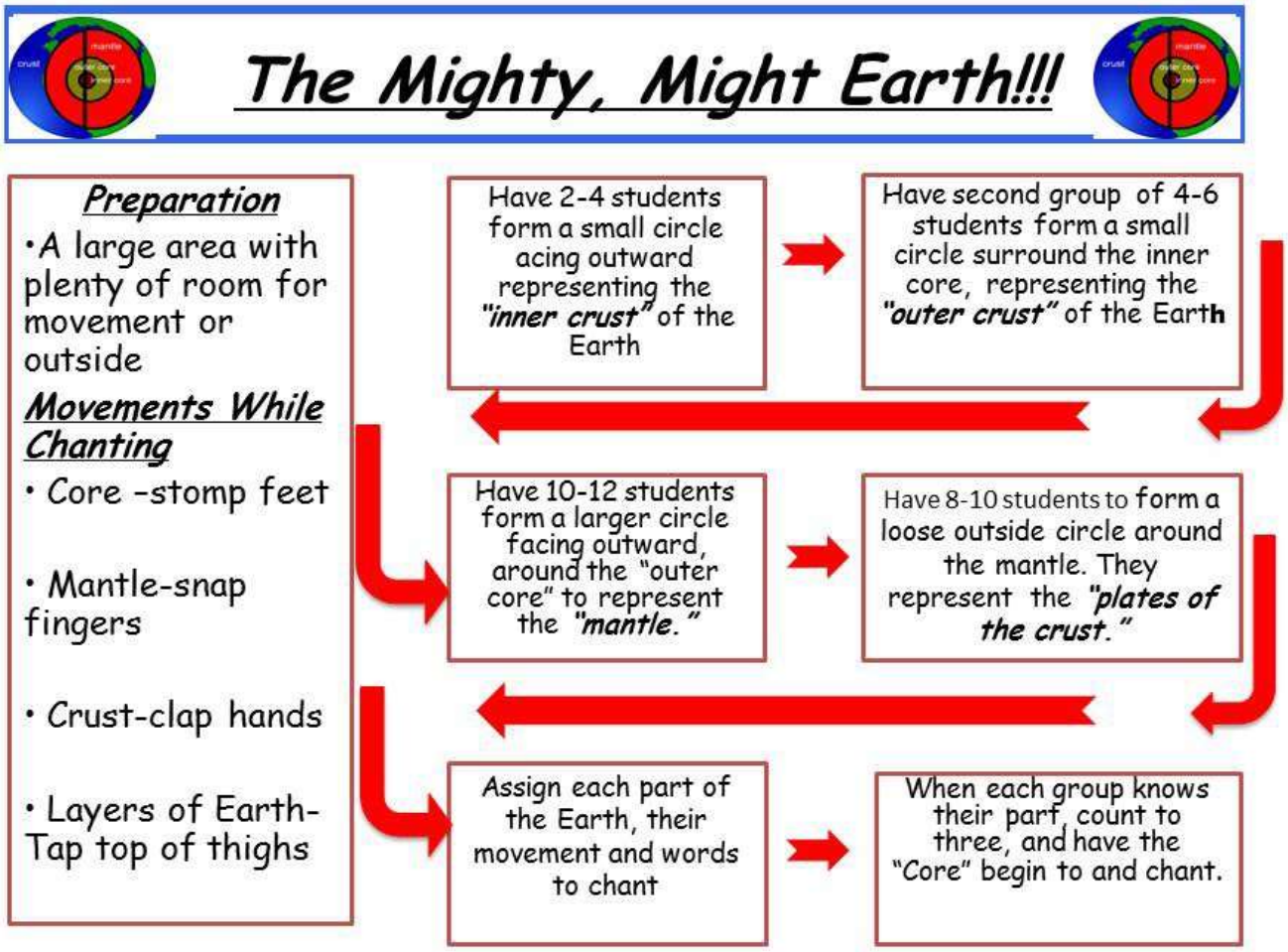


Basalt 	Pumice 	Shale 
Basalt 	Obsidian 	Mudstone 

Chalk  	Pink granite 	Ironstone 
		Gabbro 


The Mighty, Might Earth!!!
Preparation
•A large area with plenty of room for movement or outside
Movements While Chanting
• Core –stomp feet
• Mantle-snap fingers
• Crust-clap hands
• Layers of Earth-Tap top of thighs
Have 2-4 students form a small circle acing outward representing the "inner crust" of the Earth
Have second group of 4-6 students form a small circle surround the inner core, representing the "outer crust" of the Earth
Have 10-12 students form a larger circle facing outward, around the "outer core" to represent the "mantle."
Have 8-10 students to form a loose outside circle around the mantle. They represent the "plates of the crust."
Assign each part of the Earth, their movement and words to chant
When each group knows their part, count to three, and have the "Core" begin to and chant.

The Mighty, Mighty Earth!

Chanting directions

(CORE students chant and stomp feet)
We are the ***core*** the mighty, mighty core!
Who are we?
(All other students respond)
You are the ***core*** the mighty, mighty core!

(MANTLE students chant and snap fingers)
We are the ***mantle*** the mighty, mighty ***mantle!***
Who are we?
(All other students respond)
You are the ***mantle*** the mighty, mighty ***mantle!***

(CRUST students clap that hands)
We are the ***crust*** the mighty, mighty ***crust!***
Who are we?
(All other students respond)
You are the ***crust*** the mighty, mighty ***crust!***
(All students chant and tap top of thighs)

WE ARE THE EARTH, ***THE LAYERS OF THE EARTH!!!***
Who are we?
(All students shout)
WE ARE THE EARTH, ***THE LAYERS OF THE EARTH!!!***

Name _____

What did you learn today?

One thing I learned was _____

One fact I found interesting was

SAUSD Common Core Lesson Planner

Unit: The Changing Earth **Lesson:** 3	**Grade Level/Course:** 2nd	**Duration:** One Day

Big Idea: The Earth is constantly changing.
Essential Questions:

1. What causes the Earth to change?
2. Do all of Earth's changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?

Common Core and Content Standards	Next Generation Science Standards: **2-ESS1-1.C** Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. CCSS/ELA: **RIT 2.1** Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text. **RIT 2.5** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently. **RIT 2.6** Identify the main purpose of a text, including what the author wants to answer, explain, or describe. **RIT 2.10** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range. **FS 2.4** Read with sufficient accuracy and fluency to support comprehension. Use context to confirm or self-correct word recognition and understanding, rereading as necessary. **W 2.7** Participate in shared reading and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations) **W 2.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **SL 2.1** Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups.
Materials/ Resources/ Lesson Preparation	Completed Geologist Observation Process Grid Science Textbook p. 130-137 Text Features Bookmark Learning Journal Text Features Chart (from Life Cycle Unit)
Objectives	**Content:** Students will learn how geologists look at rocks. **Language:** Students will read, discuss, and find evidence in the text to answer text dependent questions.
Depth of Knowledge Level	☒ **Level 1: Recall** ☒ **Level 2: Skill/Concept** ☒ **Level 3: Strategic Thinking** ☒ **Level 4: Extended Thinking**
College and Career Ready Skills	☐ **1. Demonstrating independence** ☒ **2. Building strong content knowledge** ☐ **3. Responding to varying demands of audience, task purpose, and discipline** ☒ **4. Comprehending as well as critiquing** ☒ **5. Valuing evidence** ☐ **6. Using technology and digital media strategically and capably** ☐ **7. Coming to understand other perspectives and culture**

Common Core Instructional Shifts		☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☒ **Regular practice with complex text and its academic vocabulary**	
Academic Vocabulary (Tier II & Tier III)	**PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**
	STUDENTS FIGURE OUT THE MEANING	geologist, minerals, property, luster, hardness	
Pre-teaching Considerations		Students should have completed the Geologist Observation Process Grid. Collaborative norms are established.	
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	

Lesson Delivery

Instructional Methods

Check method(s) used in the lesson:

☐ **Modeling** ☒ **Guided Practice** ☒ **Collaboration**

☒ **Independent Practice** ☒ Guided Inquiry ☒ Reflection

Preparing the Learner

1. Review the Big Idea and Essential Questions:
   Big Idea: The Earth is constantly changing.
   Essential Questions:
   - What causes the Earth to change?
   - Do all of Earth's changes take the same amount of time to happen? Why or why not?
   - What clues from the past help us understand our Earth in the past and today?

Group Discussion

2. Have groups work together to review the Geologist Observation Process Grid from the prior lesson.

   - Ask: *Do you think all rocks are the same? Why or why not? What is one comparison, or example, of how two rocks are similar or different?*
   - _____and_____are similar because_____.
   - _____and_____are different because_____.
3. Have students Think-Pair-Share before sharing with the whole group. Provide linguistic patterns as needed.
   - Ask: *What do you think might have caused these similarities and differences to occur?*
   - I think_____might have caused_____and_____to _____because_____.
     I think water might have caused rock 1 and rock 2 to be smooth because it cleaned them. Or *I think water might have caused rock 1 and rock 2 to be similar because it*

Differentiated Instruction:

English Learners:
____and_____are similar because_____.

___and____are different because_____.

I think_____might have cause_____and_____to ____ because _____.

Students Who Need Additional Support:
Differentiate according to a student's IEP. See Special Education Appendix.

Accelerated Learners:
Students can write more than one sentence describing their rock,

Lesson Continuum

	rubbed off the rough spots.	and can share out in groups or with the whole class.
Interacting with the Text/Concept	**Identify Text Features** **<u>Science Text: "Rocks" pages 130-137</u>** 4. Direct students back to the text features chart created earlier in the year. Review text features on the chart and add any below if not already listed. **TEXT FEATURES FOUND THROUGHOUT SCIENCE BOOK** **White Title –** This is the topic we are reading about **Blue Sub Titles** – Always in the form of a question and provide a purpose for reading (to answer the question) **Yellow Sub Titles** – Labels a diagram and includes a question about the diagram **Yellow Highlighted Vocabulary** – Important academic language **Diagrams –** Illustrations and pictures to clarify 5. Ask students: *Why does the author of the science book include these text features?* • *The author includes text features to help us organize and understand the information.* 6. Pass out the Text Features Bookmark. Review with students. 7. Examine the following text features **one at a time** to discover their purpose. • Look at the white title on page 130 (Rocks). *This is the topic we are reading about.* • Continue in same manner with each text feature used in the chapter. 8. Direct pairs to predict what they will learn in the text on pages 130-137, based on the previous examination of text features. • *I think we will learn about_____because_____."* **Whole Class Read and Discuss** 9. Read and discuss pp. 130-137. Chunk the text based on the text dependent questions.  • *You may not need to ask ALL of the text dependent questions. Modify and adjust the questions according to your students' needs.* • Require students to find evidence in the text to support their answers. • For each question, give students an opportunity to discuss with a partner and then share out. Emphasize that complete sentences should be used. <u>Pages 132-133</u> a. **Looking at the photographs, how would you describe rocks? Support your answer using evidence in the text.** • *Rocks are different colors. For example chalk is white but obsidian is black. Some rocks have more than one color like ironstone and pink granite. Rocks are different shapes. The Mudstone rock is rectangular but the pink granite is like a square. Some rocks like obsidian are shiny but others like Gabbro are dull.* b. **How are a pumice rock and a malachite rock different?**	

	• *They do not weigh the same. I know that the malachite rock is heavier than the pumice because the photograph of the scale shows this and the caption explains the difference.* c. **How do geologists describe rocks? Support your answer with evidence from the text.** • *Geologists describe rocks by looking at their color and size.* d. **Why would it be important for geologists to observe and describe rocks?** • *It is important for geologists to observe and describe rocks so they can classify them to study more closely.* <u>Pages 134-135</u> e. **What are rocks made of?** • *Rocks are made of minerals.* f. **How do we use the mineral fluorite?** • *Flourite is used to make some toothpastes.* g. **Do living things need rocks? Why or Why not? Cite evidence from the text to support your answer.** • *Yes, living things need rocks. I know this because the text says that plants need minerals to grow and also that our bodies need minerals.* <u>Pages 136-137</u> h. **What are some properties geologists use to describe minerals?** • *Geologists use color, luster, and hardness to describe and classify minerals.* i. **How are quartz and halloysite alike and different? Cite evidence from the text.** • *Quartz and halloysite are both minerals. Quartz has a shiny luster but halloysite has a dull luster.*	
Extending Understanding	10. Ask students to think-pair-share and share out: *How are the <u>traits</u> of animals like the <u>properties</u> of minerals?* • *Traits describe what animals look like and do and properties describe what minerals look like and what they can be used for. We can classify animals by their traits and classify minerals by their properties.* 11. Learning Journal: *Be the Geologist!* Pass out rocks or have students choose a rock from the textbook. Have students draw their rock and describe it as a geologist would. Encourage students to use the words in the word bank on Learning Journal p. 8.	
Lesson Reflection		
Teacher Reflection Evidenced by Student Learning/ Outcomes		

Text Features Comprehension Bookmark

1. Look at text features:
   * Title
   * Sub-title
   * Highlighted vocabulary
   * Diagrams / Illustrations
   * Illustrations with captions
2. Based on text features, predict what the text will be about.

   "I think I will learn about __ because __."

   "The main idea of this text is ____."
3. Try to determine the meaning of the text. If you can't, use a strategy below:
   * Reread the text slowly
   * Look for word clues
   * Look at the pictures and charts
   * Ask your partner for help

4. Try to determine the structure of the text using the back of your bookmark.

Understand the Structure of the Text:

Tree Map: Main Idea and Details, Categorize

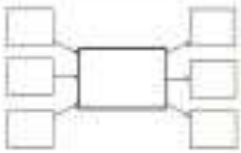
Words you might see: types of, all about, kinds of, there are...

Flow Map: "How To" Sequence

Words you might see: first, next, then, after, later, before, finally,

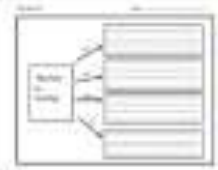
Double Bubble Map: Compare and Contrast

Words you might see: same, both, also, too



Multi-Flow Map: Cause/ Effect or "To Explain Why"

Words you might see: so, because, then, therefore



Semi Multi-Flow Map: My opinion backed by evidence

Words you might see: These are the reasons why ___, I think ___

Brace Map: Whole and Parts

Words you might see: parts of, has the following, includes

Bubble Map: Describes a person, place or thing

Words you might see: can be , is, has, describes

Circle Map: Explaining what the topic is about

Words you might see: is a _____, has, is all about

Name _____

Be a Geologist

geologist	property	mineral
hardness	luster	

1. Draw a picture of your rock.
2. Describe the rock as a geologist. Use the word bank above.

SAUSD Common Core Lesson Planner

<table>
<tr><td>Unit: The Changing Earth
Lesson: 4</td><td>Grade Level/Course:
2nd</td><td colspan="2">Duration: One Day</td></tr>
<tr><td colspan="4">Big Idea: The Earth is constantly changing.
Essential Questions:
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2-ESS2-1.B Wind and water can change the shape of the land
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<tr><td>Materials/ Resources/ Lesson Preparation</td><td colspan="3">Chants, Chants, Chants
Chant – The Changing Earth
Copy of Science Experiments Exploring Weathering and Erosion (behind lesson) and experiment materials for selected activity
Student Science Textbook pp. 140-145
Chart paper for Cause and Effect Map (make this large)
Learning Journal</td></tr>
<tr><td>Objectives</td><td colspan="2">Content: Students will learn about how rocks change and why this affects the Earth.</td><td>Language: Students will use cause and effect language to discuss how rocks changing affect the Earth.</td></tr>
<tr><td>Depth of Knowledge Level</td><td colspan="3">☐ Level 1: Recall ☒ Level 2: Skill/Concept
╳ Level 3: Strategic Thinking ╳ Level 4: Extended Thinking</td></tr>
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Common Core Instructional Shifts	☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☒ **Regular practice with complex text and its academic vocabulary**	
Academic Vocabulary (Tier II & Tier III) — **PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**
STUDENTS FIGURE OUT THE MEANING	weathering, earthquakes, roots	
Pre-teaching Considerations	Students should be familiar with text features.	
CCSS Foundational Standards (K-5 only)	Continue teaching the foundational standards through the Open Court Reading.	
Lesson Delivery		
Instructional Methods	**Check method(s) used in the lesson:** ☒ **Modeling** ☒ **Guided Practice** ☒ **Collaboration** ☒ **Independent Practice** ☒ Guided Inquiry ☒ Reflection	
Preparing the Learner	**Introduce The Changing Earth Chant (Learning Journal p 10-11)** 1. Tell students: *Throughout this unit we will be learning about how the Earth changes. Some changes happen quickly and others happen slowly.* 2. Introduce the chant using the direction in *"Chants, Chants, Chants".* **Review Big Idea and Essential Questions** **Big Idea:** The Earth is constantly changing. **Essential Questions:** • What causes the Earth to change? • Do all of Earth's changes take the same amount of time to happen? Why or why not? • What clues from the past help us understand our Earth in the past and today?	
Interacting with the Text/Concept	**Inquiry Experiments/Observations** 3. The purpose of this activity is for students to have hands-on experience with the concept of weathering prior to reading the text. 4. Complete Explore activity on p. 141 of Science Text "How can you change rocks?" (Additional Optional experiments can be	**Option:** Set up a few experiments in centers for students to rotate through.

Lesson Continuum

found following this lesson)

5. Have a brief discussion about the students' observations.

<u>Science Text: "Rocks Change" pp. 140-145</u>

Identify Text Features

6. Review the text features using the Text Features Comprehension Bookmark.
7. Direct partners to predict what they will learn in the text on pages 140-145, based on the text features.
   - I think we will learn about_____because_____.
   - *"I think we will learn about <u>rocks changing</u> because <u>the blue sub-title on page 142 asks, 'How do rocks change?'.</u>"*

Unencumbered First Read

8. Direct students to read the text on pp. 140-145 to themselves (or teacher may choose to read aloud) to check their predictions.
9. Give students the opportunity to annotate their text (Learning Journal p12-13) and discuss with their partners using the Discussion Time sentence starters in their Learning Journal p.9.
10. Briefly share out predictions and discussions from annotations.

2nd Read - Text Dependent Questions and Cause and Effect Map

11. Read and discuss pp. 142-145. Chunk the text based on the text dependent questions.

- Require students to find evidence in the text to support their answers.
- For each question, give students an opportunity to discuss with a partner and then share out. Emphasize that complete sentences should be used.

<u>Science Text pp. 142-143</u>

a. **What is weathering?**
   - *Weathering is the way water and wind change rocks.*

b. **How does weathering change the size and shape of rocks? Cite evidence from the text.**
   - *Water freezes inside the cracks of rocks and makes the crack bigger until the rocks break.*
   - *Rocks can be made smooth when water moves sand over them.*
   - *Strong winds can blow sand against rocks and wears the rock away.*
   - *For example: The arch formed because the powerful wind picked up sand and blew it against the rocks. This wore away part of the rock.*

c. **Rocks are part of the soil. Explain how this can happen.**
   - *When rocks slide down a hill or mountain, they can break and become smaller. Then these smaller rocks continue to move and break into tiny pieces of rock. These tiny pieces can become part of the soil.*

<u>Science Text pp. 144-145</u>

d. **Other things can cause the <u>shape and size</u> of rocks to change. Give at least two examples from the text.**

Differentiated Instruction:

English Learners:
I think we will learn about____because _____.

Students Who Need Additional Support:
Differentiate according to a student's IEP. See Special Education Appendix.

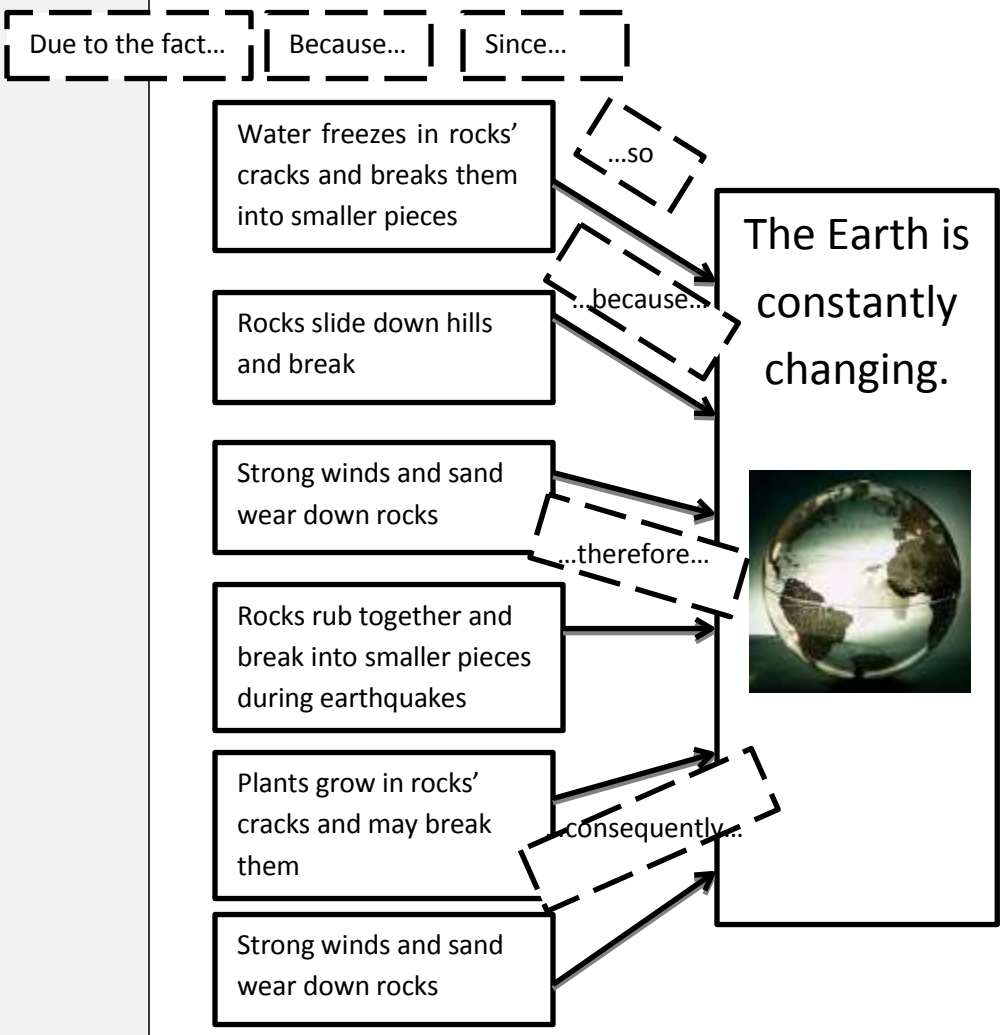
Accelerated Learners:
Students can write more than one sentence telling how rocks change.

- *Plants can cause rocks to change when the roots grow into cracks in a rock and cause it to break into pieces.*
- *Earthquakes can cause rocks to rub together and break so rocks change.*

e. **What causes some rocks to change color? Cite one example.**
   - *Rocks can change color because water can cause the minerals in rocks to change. One example is when water causes copper in rock to turn green.*

f. **You have learned that Earth's surface (crust) is made of rock and that different things cause rocks to change. Knowing this, what do you predict will happen to Earth in the future and why?**
   - *I predict Earth will continue to change and the surface will look different than it does today because rocks will continue to weather and move to new places.*

12. As a whole group, create a Cause and Effect/One-Sided Multi-Flow (The Earth is constantly changing). Sentence frames can be found in their Learning Journal on p.2 . Have students practice talking off the map.



Extending Understanding	 13. Learning Journal: p. 14 Have students draw and write, citing evidence from the text, about how rocks change. 14. Review the big idea and essential questions. **Big Idea**: The Earth is constantly changing. **Essential Questions**: 1. What causes the Earth to change? 2. Does all change occur at the same rate? Why or Why not? 3. How do living and non-living things change over time? 4. How does the past help us predict the future?	
Lesson Reflection		
Teacher Reflection Evidenced by Student Learning/ Outcomes		

Science Experiments Exploring Weathering

Shake It Up (Mechanical Weathering)

Materials

- 15 rough, jagged stones that are all about the same size
- Three containers with lids (like coffee cans)
- Three clear jars
- A pen, paper, and masking tape

What to do:

1. Separate the stones into three piles of five. Put each pile on a sheet of paper.
2. Label each pile A, B, or C. Label each can and jar A, B, or C.
3. Fill Can A halfway with water and put in the stones from Pile A. Do the same with Can B and Pile B and Can C and Pile C. Let the stones stand in water overnight.
4. The next day, hold Can A with both hands and shake it hard about 100 times
5. Remove the stones from Can A with your hands and pour the water into Jar A. Observe the tones and the water.
6. Give Can B about 1,000 shakes (you can pass it around to share turns). Remove these stones and pour the water into Jar B. Observe the stones and the water.
7. Do not shake Can C. Remove the stones and pour the water into Jar C. Observe the stones and the water.
8. Compare the three piles of stones and the three jars of water.

What do you think about:

- How do the piles of stones differ?
- Which pile acted as the control?
- Why?
- How do the jars of water differ?

- How does this experiment show what happens to stones that are knocked about in a fast-moving river?

What should have happened: The stones that were shaken should have more rounded edges than the stones that weren't shaken, and the stones in Can B should have rounder edges than the ones in Can A. Both jars should have some sediment in the bottom, but Jar B should have more sediment because more shakes would have broken off more bits of rock. The same thing happens to rocks that are carried along in rivers or are tumbled about by water. This is the process of weathering by water.

Steel Wool and Water (Chemical Weathering)

Materials:

- Three shallow dishes
- Three pieces of steel wool
- Water and Salt
- Pair of Gloves

What to do:

1. Place each piece of steel wool in a shallow dish (wear gloves because steel wool can give splinters).
2. Pour equal amounts of water over two of the pieces of steel wool. Leave the third piece dry.
3. Sprinkle one of these wet pieces with plenty of salt.
4. Observe and compare.

What to think about:

- What happened to each piece of steel wool?
- Which piece changed the most?
- Why do you think steel wool changed?
- Which piece of steel wool acted as the control?

- What does this experiment have to do with weathering?

What should have happened: When iron gets wet, the water acts a an agent to speed up oxidation (oxidation occurs when oxygen combines with another substance). In this case, oxygen in the water combined with the iron in the steel wool to form an iron oxide, or rust. Rust is a weaker material than the original metal and erodes quickly. When salt is added to the water, it speeds up the oxidation of iron. So, the steel wool in salt water should have changed the most. The same thing happens to rocks that contain iron as happens to cars during northern winters when salt is put on the roads to melt the ice so cars can travel.

Chants, Chants, Chants!

Procedures for making chants meaningful and powerful

1. ***First time:*** Introduce by: Singing and modeling the chant for the students so they can hear the rhythm, words, and language clearly. (This should also be motivational tool.)

2. ***Second time:*** Read a section of the chant at a time, and have students echo it back. Have students identify scientific or important words that they haven't heard, but know are important to the meaning of the chant. Highlight these words. Have students make predictions about the meanings of some of these new words. (Afterwards have students go back and read a student copy of the chant at their seats, and highlight those same words with crayons or highlighters and have them illustrate or sketch the meaning of the chant in the box provided.

3. ***Third time:*** Read each section together singing together. You may want to ask content and vocabulary driven questions after each section or two. Have students continue to use vocabulary strategies to predict meanings of new words. Also, have students come up with hand gestures and movements that help them remember the content and new words (Tier 3).

4. ***Fourth and continuous readings:*** Review the chants whole group and then have small groups sing it or choose past ones to review. Some chants you might want to write on sentence strips too, scramble them up, and put them back in proper order.

5. ***Continuous review:*** Have students practice reading chants independently from their poetry or chant folders.

Discussion Time

- I underlined_____ because_____.
- I was confused by_____.
- I was surprised to read_____.
- I wonder why_____.
- I circled this word because_____.
- I think_____means _____ because _____.

The Changing Earth *(chanted to Military Cadence)*

We know Earth changes fast and slow
Weathering is a force you know
Changing the shapes and sizes of rocks
Slowly breaking, carving blocks

Sound off: **Weathering!**

Sound off: **Changing Earth!**

Water freezes in rocks' cracks
Breaking them apart, never going back
Waves eat away at rocks and land
Turning sea cliffs into beach sand

Sound off: **Weathering!**

Sound off: **Changing Earth!**

Wind blows sand and wears rocks too,
Like sandpaper, changing rough to smooth
The wind has such amazing power
It carves arches and rock towers

Sound off: **Weathering!**

Sound off: **Changing Earth!**

Earthquakes shake causing plates to collide
Mountains are formed, side by side
Volcanoes erupt and lava flows
That's how islands begin to grow

Sound off: **Earthquakes, Volcanoes!**

Sound off: **Changing Earth!**

Plants in rocks grow very long
Roots grow down, big and strong
The rock begins to crack and break
Soon one rock, two pieces make

Sound off: **Plants**

Sound off: **Changing Earth!**

People walk and ride on a path
Wearing down the land, just do the math
Building roads, just you think
Causes land to change, quick as a wink

Sound off: **People!**

Sound off: **Changing Earth!**

Rocks Change

Macmillan/McGraw-Hill California Science, Grade 2 (2008)

Earth Science Chapter 3/Lesson 2 (pgs. 142-145)

How do rocks change?

Most rocks are very hard, but did you know that they can change size and shape? The way water and sand change rocks is called **weathering**. When water gets into the cracks of rocks, it can freeze and push against the rocks. The cracks get bigger ad then the rocks break.

Look closely at the rocks. What do you think the water is doing to them?

When rocks slide down a hill, they may break and become smaller. The smaller rocks can then break down into sand. Tiny rocks can become part of the soil.

Strong winds can blow sand against rocks. Wind and sand wore this rock into an arch.

How does weathering change the shape and size of rocks?

What other ways can rocks change?

Weathering is not the only thing that causes rocks to change. Earthquakes can change rocks, too. When Earth shakes, rocks rub against each other. They can break into smaller pieces.

Plants can also change rocks. Plants can grow in soil inside the cracks of rocks. Sometimes the roots are so strong they cause the rocks to break.

The roots of this tree have grown into the rock and cracked it.

You know that rocks are made of minerals. Water can cause some minerals to change.

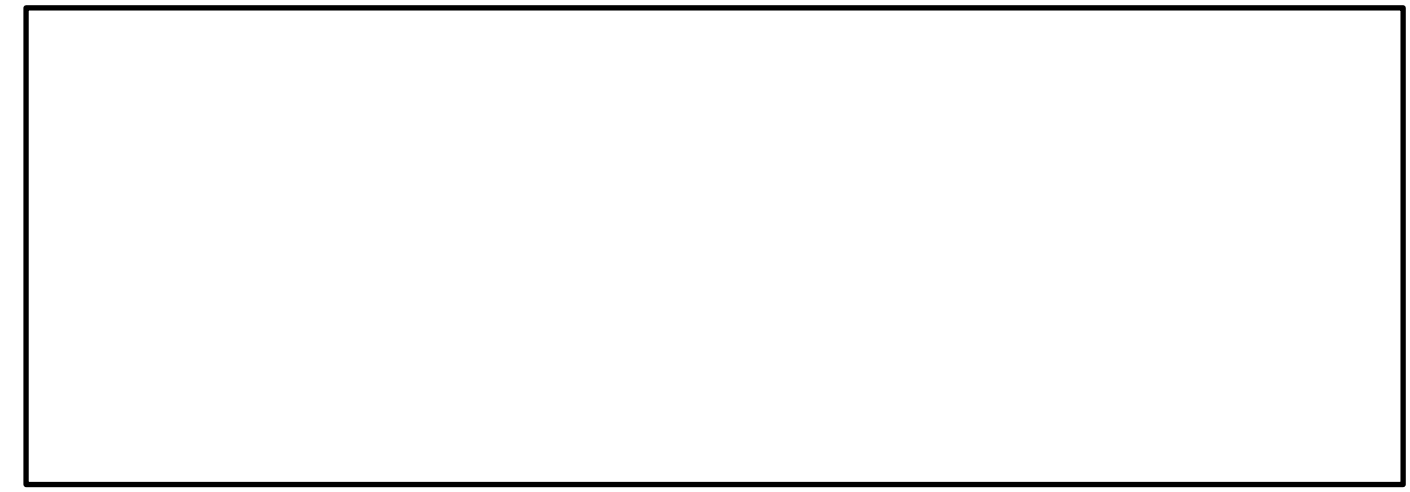
Water caused this copper penny and the copper in these rocks to turn green.

A rock that has iron will rust in water. It will turn red and brown.

What are some ways rocks can change?

Name _____

How do rocks change? Draw a picture in the box and answer the question below. Remember to cite evidence from the text.



SAUSD Common Core Lesson Planner

Unit: The Changing Earth **Lesson:** 5	**Grade Level/Course:** 2nd	**Duration:** Two Days

Big Idea: The Earth is constantly changing.

Essential Questions:

1. What causes the Earth to change?
2. Do all of Earth's changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?

Common Core and Content Standards	Next Generation Science Standards: **2-ESS1-1.C** Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. **2-ESS2-1.B** Wind and water can change the shape of the land. CCSS/ELA: **RIT 2.1** Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text. **RIT 2.5** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently. **RIT 2.10** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range. **FS 2.4** Read with sufficient accuracy and fluency to support comprehension. Use context to confirm or self-correct word recognition and understanding, rereading as necessary. **W 2.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **SL 2.1** Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups. **SL 2.2** Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
Materials/ Resources/ Lesson Preparation	Erosion Chant Materials and directions for selected erosion experiments *Erosion* PowerPoint *Billy Blue hair on Erosion* Video *Shape it Up* Internet Activity http://sciencenetlinks.com/media/filer/2011/10/07/forces.swf Class One-Sided Cause and Effect Map Collaborative Matching Game (Before and After Matching)
Objectives	**Content:** Students will understand that erosion causes the earth's surface to change. **Language:** Students will take notes, read, discuss, and find evidence in the text to answer text dependent questions about erosion.
Depth of Knowledge Level	☐ **Level 1: Recall** ☒ **Level 2: Skill/Concept** ☒ **Level 3: Strategic Thinking** ☐ **Level 4: Extended Thinking**
College and Career Ready Skills	☐ **1. Demonstrating independence** ☒ **2. Building strong content knowledge** ☐ **3. Responding to varying demands of audience, task purpose, and discipline** ☐ **4. Comprehending as well as critiquing** ☒ **5. Valuing evidence** ☒ **6. Using technology and digital media strategically and capably** ☐ **7. Coming to understand other perspectives and culture**

Common Core Instructional Shifts		☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☒ **Regular practice with complex text and its academic vocabulary**	
Academic Vocabulary (Tier II & Tier III)	**PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**
		carves, "mother nature", depositing	
	STUDENTS FIGURE OUT THE MEANING	landform, erosion	
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	
Lesson Delivery			
Instructional Methods		**Check method(s) used in the lesson:** ☒ **Modeling** ☒ **Guided Practice** ☒ **Collaboration** ☐ **Independent Practice** ☒ Guided Inquiry ☐ Reflection	
Preparing the Learner		**Erosion Song** 1. Introduce the Erosion Song (Learning Journal p. 15) and practice with students. **Review Big Idea and Essential Questions** **Big Idea:** The Earth is constantly changing. **Essential Question:** • What causes the Earth to change? • Do all of Earth's changes take the same amount of time to happen? Why or why not? • What clues from the past help us understand our Earth in the past and today?	**Option:** Set up a few experiments in centers for students to rotate through.
Interacting with the Text/Concept		 **Inquiry Experiments/Observations** 1. Purpose: for students to have hands-on experience with the concept of erosion prior to reading the text. 2. Select at least one of the Science Experiments Exploring Erosion, such as the Water-Erosion Experiment, to demonstrate for class. (Other experiment lesson options follow the lesson.)	

Lesson Continuum

Water-Erosion Experiment

Erosion occurs from the weathering aspect of land formation, as the smaller particles are moved from one location to another. Explain to students that this can be caused by wind or water over a period of time, or suddenly due to weather conditions. An example of this would be the sudden erosion of the coastline of Louisiana after Hurricane Katrina. Showing students a coastal map of the Gulf coast region before and after the storm will demonstrate this.

As an experiment, students can create a simulated land form and see how water (rain or flooding) can erode and reshape the land. Have students pack down sand into the bottom of a paint tray. Next, using a watering can, have students slightly sprinkle water on the packed sand and discuss what they are observing. The water should move the sand a bit. Next, have students pour the water. Sand should move down the slope of the paint tray, simulating land erosion. Explain to students the process of heavy rains upon land with the interaction of gravity, moving matter down slope

3. Have a brief discussion about the students' observations.

Erosion PowerPoint

4. Introduce the concept of erosion by showing and discussing the slides. *This is just a preview of the concept!*

Video *Billy Blue Hair: What is Erosion?*

5. **First Viewing: Unencumbered view**
   - Have students open to their Learning Journals p.16-17 /Note Taking Guide
   - Tell students that the first time they watch the video they are going to listen for interesting facts.
   - After viewing the video, give students time to Think-Write-Pair-Share their interesting facts. (If students do not write anything, you may choose to add after the second viewing).
6. **Second Viewing: Text Dependent Questions**

   - Read the Text Dependent Questions with students.
   - As you watch the video, pause and reread the questions. (Teacher's guide is included behind this lesson)
   - Give students time to Think-Pair-Share before sharing out answers with the whole group.
   - Encourage students to support their responses with evidence from the video.

Day 2----------

***Shape it Up* Internet Activity**

http://sciencenetlinks.com/media/filer/2011/10/07/forces.swf

7. Play a few rounds of the game with students. Encourage discussion/debate.
8. To ensure that all students are participating, teacher may choose to use a strategy such as white boards or response cards.

One-Sided Multi-Flow/Cause and Effect Map

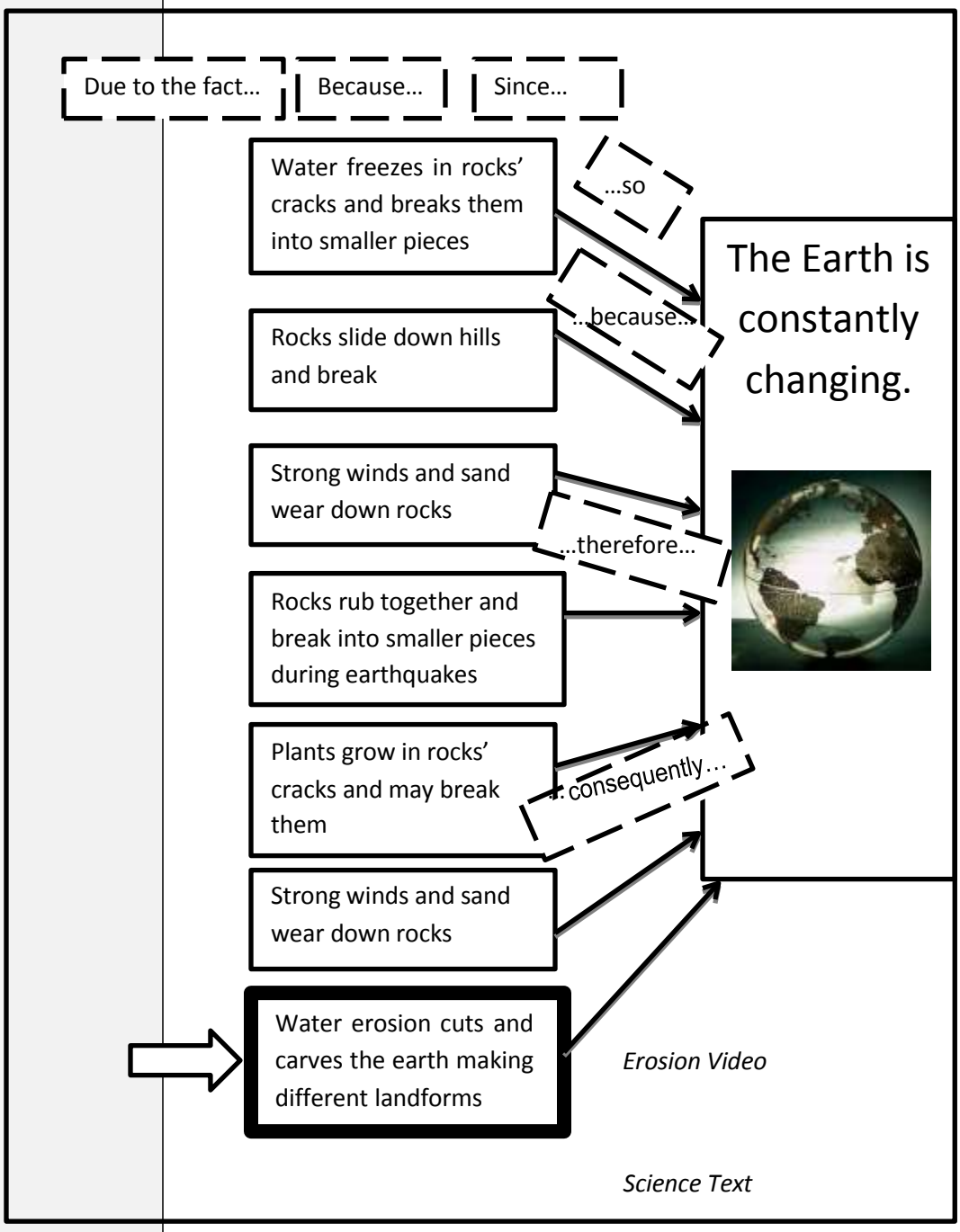
9. Revisit the class Cause and Effect Map. Add any new information. Add *Erosion PowerPoint* and *Erosion Video* to the frame of reference.

Differentiated Instruction:

English Learners:
Due to the fact.
Because_____,_____.
Since_____,_____.
_____, so_____.

Students Who Need Additional Support:
Differentiate according to a student's IEP. See Special Education Appendix.

Accelerated Learners:
Students can write more than one sentence describing how erosion changes the earth's surface.



Extending Understanding

10. **Collaborative Matching Game** (Learning Journal p.18-21): Students will work collaboratively to match "before" and "after" pictures of landforms that have been affected by erosion.
    - Call on pairs or groups to share one of their "sets" and explain their rationale for matching.

Lesson Reflection

Teacher Reflection	

Erosion

(sing to Row, Row, Row Your Boat)

Erosion slowly changes the land
By moving rocks and sand
Deposit them in another place
Changing Earth's face

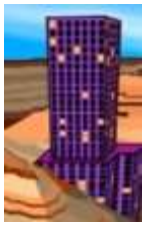
Moving water changes the land
It moves the soil and sand
Rivers carry the rocks down the course
Erosion is a force

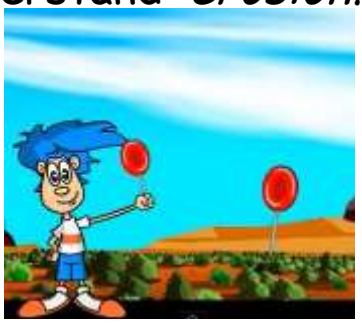
Rainfall pitter-patters the ground
It carries rocks around
Into rivers and streams rocks fall
Erosion changes it all

Moving wind changes the land
Making piles of sand
Wind builds sand dunes everywhere
Erosion happens there

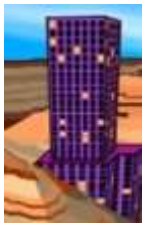
A **moving glacier** changes the land
A powerful sheet of ice
Moving rocks over the land
Isn't **erosion** grand?

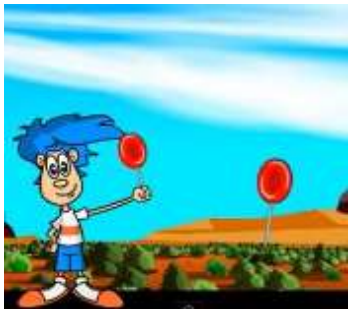
What is Erosion?
Note Taking Guide

Interesting Facts	Text Dependent Questions	Answers
	Circle the landforms.      How do you know something is a landform?	
	Water cuts and carves the earth to create different landforms. What is this process called? 	

Interesting Facts	Text Dependent Questions	Answers
	How does Billy's example of sucking on a lollipop help you understand *erosion*? 	
	What does mother nature use to change the surface of the Earth? 	
	How does water help a tiny piece of rock get all the way to the ocean? 	

What is Erosion?
Note Taking Guide

Interesting Facts	Text Dependent Questions	Answers
	Circle the landforms.      How do you know something is a landform?	*A landform is something made by nature.* STOP at 0:40
	Water cuts and carves the earth to create different landforms. What is this process called? 	*erosion* STOP at 1:25

Interesting Facts	Text Dependent Questions	Answers
	How does Billy's example of sucking on a lollipop help you understand *erosion*? 	Sucking on a lollipop makes tiny pieces slowly break off and changes the size/shape of the lollipop. Erosion does the same thing to earth's landforms.
	What does mother nature use to change the surface of the Earth? 	STOP at 1:52 *Rain, Wind, Ice* STOP at 2:20
	How does water help a tiny piece of rock get all the way to the ocean? 	*Water causes tiny pieces of rock to break off and rivers and streams carry the pieces to the oceans. This is erosion!* End of Video

Science Experiments Exploring Erosion

IV. How Do Wind and Water Change the Earth?

Materials:

- Plastic watering can or cup with a lip
- Baking sheet (with a rim)
- Plastic tub
- Newspaper to cover work area
- Scoop
- Pitcher or bottle of water
- Block of wood or brick
- Bucket (for dumping used soil)
- Supply of soil (must be fine, dry soil)
- Paper towels (clean-up)

What to do:

1. Fill the tray with soil.
2. Blow over the top of the soil and observe what happens
3. Pour water into the soil and see what happens
4. Repeat but this time put the block or brick into the tub and lay the tray against the brick diagonally like a slide.
5. Pour water on to top of the tray and observe what happens
6. Dump the soil into the bucket for clean up

What to think about:

- What happened when you blew across the soil?
- What causes soil to blow away outside?
- What happened when you poured water on the soil?
- What happened when you tilted the pan on the brick, and then poured water on the soil?
- How does water wash away soil outside?

What should have happened: The soil should have moved when you blew across it. The soil should have moved when you poured water onto it. At a slant, the soil should have moved more due to the added force of gravity. Wind blows sand and water from rain, rivers, oceans, wash soil away. The process of moving the soil is called erosion.

** You can also experiment using a fan or blow dryer to simulate a strong wind as opposed to a breeze (best to do outside, of course!)

V. Erosion: The Great Race

Materials

- Three aluminum pans (rectangular) labeled A, B, and
- Soil
- Water spray bottle
- Ice
- Straw

What to do:

1. Firmly pack soil on one side of the pan(up to top of pan like a hill-about 1/3 of the pan has the soil "mountain")
2. Once a day for the next three days, when students are out of the room do the following:
   -for Pan A, squirt the soil with five squirts of water
   -for Pan B, slide a piece of ice down the dirt pile five times
   -for Pan C, use a straw to blow across the soil five times
3. When the students return each day have them predict which type of erosion is causing the most damage to the "hill" and record their observations.
4. After the third day, have the students make their final observations and conclusions.

5. Reveal the type of erosion demonstrated in each pan (A-water, B-glacial, C-wind)

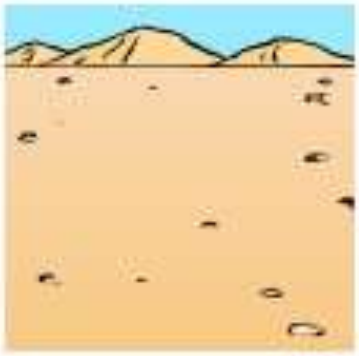
What to think about:

1. What is happening to the "hill" each day?
2. What is causing it to happen?
3. Which kind of erosion, wind, water, or glacial ice causes the biggest changes at the fastest rate? Why?

What should have happened: Depending on the soil type and temperature of the room, results may vary.

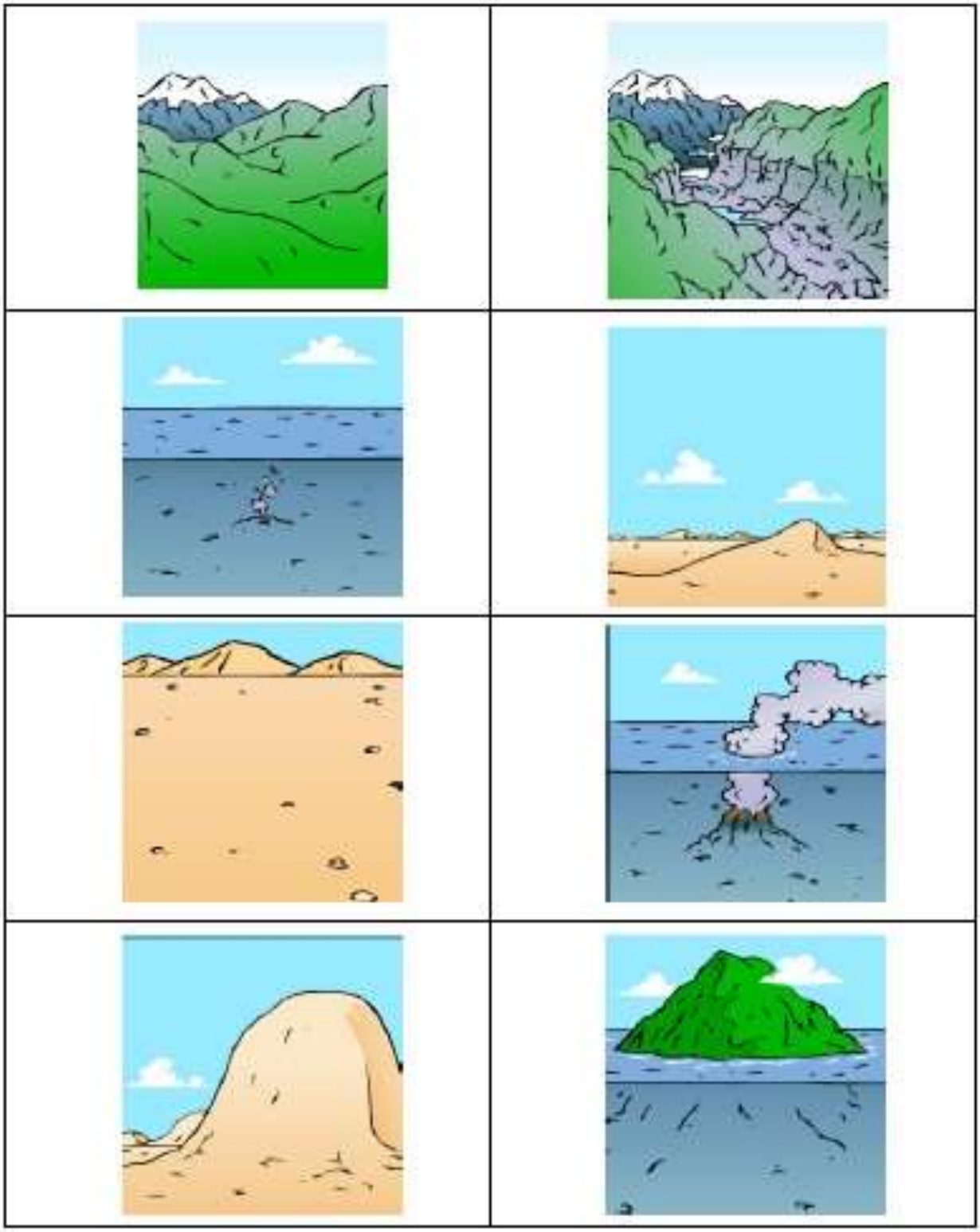
Collaborative Matching Game

Before and After Images of Erosion



Collaborative Matching Game

Before and After Images of Erosion



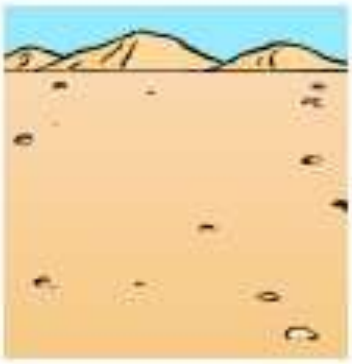
Erosion

Before	After

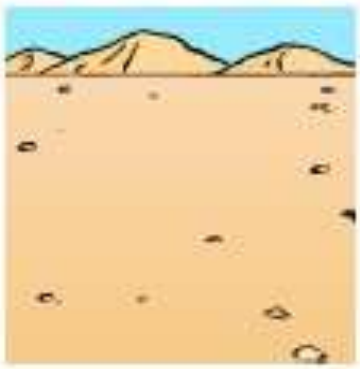
Erosion

Before	After

Answer Key

Before	After
	
	
	
	

Answer Key

Before	After
	
	
	
	

SAUSD Common Core Lesson Planner

<table>
<tr><td>Unit: The Changing Earth
Lesson: 6</td><td>Grade Level/Course:
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<tr><td>Materials/ Resources/ Lesson Preparation</td><td colspan="3">Changing Earth Chant
Learning Journal
Class one-sided Cause and Effect Map
Materials and directions for selected earthquake experiments
Earthquake text – one copy per student and one teacher copy</td></tr>
<tr><td>Objectives</td><td colspan="2">Content: Students will learn how earthquakes can change the earth’s surface.</td><td>Language: Students will read, discuss, and find evidence in the text to answer text dependent questions about earthquakes.</td></tr>
<tr><td>Depth of Knowledge Level</td><td colspan="3">☐ Level 1: Recall ☒ Level 2: Skill/Concept
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Academic Vocabulary (Tier II & Tier III)	**PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**
	STUDENTS FIGURE OUT THE MEANING		
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	

Lesson Delivery

Instructional Methods

Check method(s) used in the lesson:

☐ **Modeling** ☒ **Guided Practice** ☒ **Collaboration**

☐ **Independent Practice** ☒ Guided Inquiry ☐ Reflection

Lesson Continuum

Preparing the Learner

1. **Chant** – The Changing Earth (p22-23)
2. **Review Big Idea and Essential Questions**
   Big Idea: The Earth is constantly changing.
   Essential Questions:
   - What causes the Earth to change?
   - Do all of Earth's changes take the same amount of time to happen? Why or why not?
   - What clues from the past help us understand our Earth in the past and today?
3. **Earthquake Video:** *What makes the earth shake?*

Interacting with the Text/Concept

Inquiry Experiments/Observations

4. Purpose: for students to have hands-on experience with the concept of earthquakes prior to reading the text.
5. Select at least one of the Science Experiments Exploring Earthquakes to demonstrate for class. (Additional option following the lesson)

Option: Set up a few experiments in centers for students to rotate through.

Differentiated Instruction:

English Learners:
I think we will learn about_____because _____.
Earthquakes can _____.
Earthquakes change the earth's surface by _____.

How mountains are formed

As the tectonic plates move around on the slow-moving magma, they bump into each other. Different things happen because of this movement.

Fold Mountains

1. Lay four different colored towels down. Explain to the students that each towel represents a layer of the earth.
2. Explain that when two tectonic plates collide head on they push against each other.
3. The huge forces involved push the rock up.
4. It folds and creases as the plates continue to push together.

6. Have a brief discussion about the students' observations

Text: "Earthquakes" Learning Journal p 24-25

Identify Text Features

7. Review the text features
8. Direct partners to predict what they will learn in the text, based on the text features. *"I think we will learn about_____because _____."*

Unencumbered First Read:

9. Read the text with students or have students read independently.

Second Read:

10. Read and discuss **Earthquakes**. Chunk the text based on the text dependent questions.

a. Require students to annotate as they find evidence in the text to support their answers.
b. For each question, give students an opportunity to discuss with a partner and then share out. Emphasize that complete sentences should be used.

Introduction

a. What damage can earthquakes cause?

- *Earthquakes can_____.*
  - ** destroy buildings and roads*
  - ** cause injury to many people*

What Causes Earthquakes?

a. How are the earth's plates different from a jigsaw puzzle?

- *The difference is that the Earth's plates are constantly moving.*

b. What happens because the Earth's plates are constantly moving?

- *Since the Earth's plates are always moving they can slide past one another or crash into each other. This causes earthquakes!*

Students Who Need Additional Support: Differentiate according to a student's IEP. See Special Education Appendix.

Accelerated Learners: Students can write more than one sentence describing how earthquakes change the earth's surface.

	How Do Earthquakes Change the earth's Surface? **a. How does the author answer the question in the subtitle?** • *Earthquakes change the earth's surface by_____.* **creating new mountains* **causing landslides* **causing tsunamis* b. **Which of these changes to the earth's surface happen over time (slowly)? Which happen immediately?** • *Creating new mountains happens slowly (over time). However, landslides and tsunamis affect the earth's surface immediately.* c. **Author's Purpose: Why do you think the author wrote this selection? What did they want us to remember or learn?** • *The author wrote this text to teach us how earthquakes change the earth.* • *The author wrote this selection so we would learn how earthquakes change the earth's surface.* **Day 2----------** **One-Sided Multi-Flow/Cause and Effect Map** 11. Revisit the class Cause and Effect Map. Add any new information. If students are unable to add any information, have them refer back to the text. Add *Earthquake Text* to the frame of reference. (see sample included behind lesson)	
Extending Understanding	**Collaborative Academic Conversation** 12. The purpose of this lesson is to introduce whole group collaborative conversations. This lesson will focus on Talk Moves from Goal One*: Time to Think* and *Say More*. 13. Review the norms for Collaborative Academic Conversations with students (located in their Learning Journal p. 26). Guide students in a whole group academic conversation using the following prompt: *What causes the earth's surface to constantly change?* 14. Remind students to support their answers with evidence. Encourage them to refer to the class Cause and Effect Map. • Post the following sentence frames: *_____causes the earth to change because_____.* *_____therefore_____.* *Due to the fact_____, the earth is constantly changing.* 15. Give students time to think independently or Think-Pair-Share, then use the routine included below to guide students through a whole group conversation.	

Sample Routine for Whole Group Collaborative Conversations

- Teacher: pose the question.
- Teacher: "Take some time to think about…"
- Teacher: "Would anyone like to share?"
- Teacher: call on student (you may choose to use a talking stick or toss a soft ball, etc. to indicate whose turn it is to speak).
- Student shares.
- Teacher uses talk moves: "Can you tell me more about that?" or "Can you give me an example?" if needed.
- Student elaborates.
- Student asks, "Would anyone like to share?"
- Student calls on another student.
- Process repeats.

16. **Learning Journal:** Have students open to their learning journals p. 27. Students will be illustrating and writing one thing they learned today. Encourage students to share their learning with a partner and choose some students to share with the whole group.

Lesson Reflection

Teacher Reflection	

Due to the fact…

Because…

Since…

Water freezes in rocks' cracks and breaks them into smaller pieces

…so…

Rocks slide down hills and break

…because…

The Earth is constantly changing.

Strong winds and sand wear down rocks

…therefore…

Rocks rub together and break into smaller pieces during earthquakes

Plants grow in rocks' cracks and may break them

…consequently…

Strong winds and sand wear down rocks

Earthquakes can create new mountains over many years.

Earthquakes can cause landslides and tsunamis.

Earthquakes Video

Earthquakes Text

Erosion Video

Erosion PowerPoint

Science Text

The Changing Earth *(chanted to Military Cadence)*

We know Earth changes fast and slow
Weathering is a force you know
Changing the shapes and sizes of rocks
Slowly breaking, carving blocks

Sound off: **Weathering!**
Sound off: **Changing Earth!**

Water freezes in rocks' cracks
Breaking them apart, never going back
Waves eat away at rocks and land
Turning sea cliffs into beach sand

Sound off: **Weathering!**
Sound off: **Changing Earth!**

Wind blows sand and wears rocks too,
Like sandpaper, changing rough to smooth
The wind has such amazing power
It carves arches and rock towers

Sound off: **Weathering!**
Sound off: **Changing Earth!**

Earthquakes shake causing plates to collide
Mountains are formed, side by side
Volcanoes erupt and lava flows
That's how islands begin to grow

Sound off: **Earthquakes, Volcanoes!**
Sound off: **Changing Earth!**

Plants in rocks grow very long
Roots grow down, big and strong
The rock begins to crack and break
Soon one rock, two pieces make

Sound off: **Plants**
Sound off: **Changing Earth!**

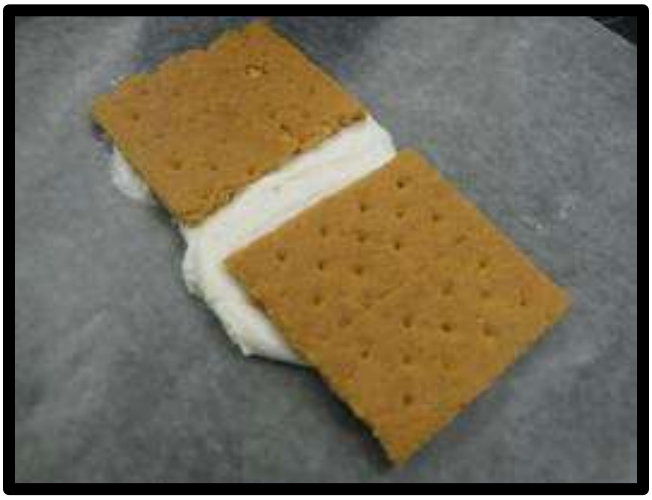
People walk and ride on a path
Wearing down the land, just do the math
Building roads, just you think
Causes land to change, quick as a wink

Sound off: **People!**
Sound off: **Changing Earth!**

Make Earthquakes with Graham Crackers and Frosting

Students can simulate tectonic plates with graham crackers right in your class. They can learn the movement of those plates on the surface of the earth, and the events those movements cause. They will see with their own eyes how events like earthquakes occur because of fault lines or cracks in the earth's crust.

1. Place a sheet of wax paper on the table.
2. Spread a little bit of frosting in the center of the wax paper (about ¼ inch thick).
3. Place the tectonic plates (pieces of the continent – graham crackers) on the soft mantle (magma – frosting).
4. In reality, gravity and pressure on the land masses causes the magma (melted rock) to heat up which causes the plates to move.



Making a fault line with graham crackers

1. Place two graham crackers side by side.
2. The large crack where two huge tectonic plates (graham crackers) collide and move against each other is a fault line. Fault lines are cracks in continents. This is where all the shaking, quaking and erupting happen.

Make an earthquake with graham crackers.

1. Place two graham crackers side by side (tectonic plates) on the mantle (magma – frosting).

2. Slide one graham cracker (tectonic plate) toward the upper edge of the frosting while sliding the other graham cracker (tectonic plate) down toward the bottom edge.
3. When the tectonic plates move past each other on earth they are banging into each other. Sometimes they can even get stuck temporarily.
4. When they move on, vibrations and shaking go through the earth's interior. This is an earthquake.

Make mountain ranges

1. Soften the edge of one graham cracker (tectonic plate) by dipping it into a little milk.
2. Put the second graham cracker (tectonic plate) next to it so they are side by side on wax paper.
3. Slowly push the graham crackers (tectonic plates) together.
4. As students are pushing the crackers (tectonic plates) together, they will see the softened edge of one cracker getting pushed up by the other cracker. This is just like two tectonic plates crumbling together. The irregular ridge sticking up, formed by the collision of two crackers, is like a mini mountain range.
5. The Himalyas were formed this way when India crashed into Asia.

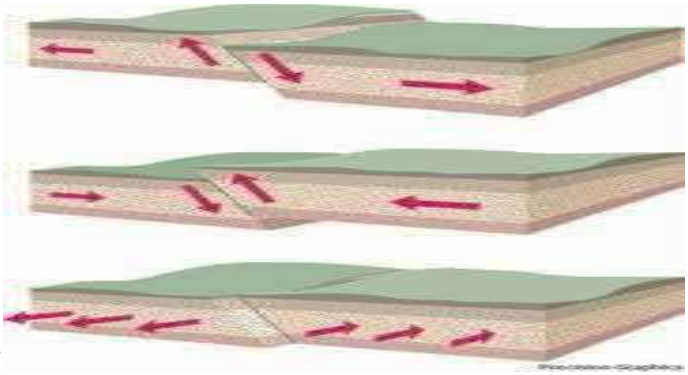
Earthquakes

Forces That Rock the Earth

Have you ever been busy doing something when the ground around you started shaking? Earthquakes destroy buildings and roads. They can also cause injury to many people. Scientists know what causes earthquakes, but they can't predict them fast enough to give people warning.

What causes earthquakes?

Earth's ***crust*** is made up of enormous pieces called ***plates***. These plates fit together just like pieces of a gigantic puzzle. The difference is that the earth's pieces are constantly moving.



This happens because they float on a layer of hot, soft rock. Sometimes plates can slide past one another. Other times, they can move away from each other or crash into each other. This movement causes earthquakes.

How do earthquakes change the earth's surface?

Earthquakes change the Earth's surface in many ways. The plates are always moving which causes slow earthquakes. These slow earthquakes can create new mountains over many, many, years. Stronger earthquakes can cause quicker changes, such as landslides.

This is a landslide caused by a 6.5 earthquake in Taiwan.

Also, the ground may split apart at the surface and the land may become uneven. When earthquakes occur in the ocean, they cause tsunamis which are

strong waves. Tsunamis also change the earth's surface when they crash into the land. Whether earthquakes change the earth quickly, or over long periods of time, they have an impact on earth's surface.

A tsunami in Japan.

San Francisco, 1989

Name_____

What did you learn today?

One thing I learned was ////////

////////////////////

////////////////////

////////////////////

SAUSD Common Core Lesson Planner

<table>
<tr><td>Unit: The Changing Earth
Lesson: 7</td><td>Grade Level/Course:
2nd</td><td colspan="2">Duration: Two Days</td></tr>
<tr><td colspan="4">Big Idea: The Earth is constantly changing.
Essential Questions:
1. What causes the Earth to change?
2. Do all of Earth’s changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?</td></tr>
<tr><td>Common Core and Content Standards</td><td colspan="3">Next Generation Science Standards:
2-ESS1-1.C Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.
CCSS/ELA:
RIT 2.1 Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text.
RIT 2.10 By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.
FS 2.4 Read with sufficient accuracy and fluency to support comprehension. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
W 2.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
SL 2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups.
SL 2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</td></tr>
<tr><td>Materials/ Resources/ Lesson Preparation</td><td colspan="3">*Changing Earth* Chant
Class one-sided Cause and Effect Map
Materials and directions for selected volcano experiments
Video: *Volcanoes 101*
Volcanoes text
Learning Journal</td></tr>
<tr><td>Objectives</td><td colspan="2">Content: Students will learn about volcanoes and how they change the earth’s surface.</td><td>Language: Students will read, discuss, and find evidence in the text to answer text dependent questions about volcanoes.</td></tr>
<tr><td>Depth of Knowledge Level</td><td colspan="3">☐ Level 1: Recall ☒ Level 2: Skill/Concept
☒ Level 3: Strategic Thinking ☐ Level 4: Extended Thinking</td></tr>
<tr><td>College and Career Ready Skills</td><td colspan="3">☐ 1. Demonstrating independence
☒ 2. Building strong content knowledge
☐ 3. Responding to varying demands of audience, task purpose, and discipline
☒ 4. Comprehending as well as critiquing
☒ 5. Valuing evidence
☐ 6. Using technology and digital media strategically and capably
☐ 7. Coming to understand other perspectives and culture</td></tr>
</table>

Common Core Instructional Shifts	☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☒ **Regular practice with complex text and its academic vocabulary**		
Academic Vocabulary (Tier II & Tier III) — **PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**	
	molten rock, produces, appearance, impact		
STUDENTS FIGURE OUT THE MEANING	magma, lava, form, erupts, texture		
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)	Continue teaching the foundational standards through the Open Court Reading.		

Lesson Delivery

Instructional Methods

Check method(s) used in the lesson:

☐ **Modeling** ☒ **Guided Practice** ☒ **Collaboration**
☒ **Independent Practice** ☒ Guided Inquiry ☐ Reflection

Lesson Continuum

Preparing the Learner

Chant – *The Changing Earth*
Review Big Idea and Essential Questions
Big Idea: The Earth is constantly changing.
Essential Questions:
- What causes the Earth to change?
- Do all of Earth's changes take the same amount of time to happen? Why or why not?
- What clues from the past help us understand our Earth in the past and today?

Video: *Volcanoes 101*

Interacting with the Text/Concept

Inquiry Experiments/Observations

1. Purpose: for students to have hands-on experience with the concept of volcanoes prior to reading the text.
2. Conduct the "Soda Bottle Volcano" experiment. Instructions follow the lesson.
3. Have a brief discussion about the students' observations.

Text: "Volcanoes" Learning Journal p 28-29
Identify Text Features

4. Review the text features using the Comprehension Text Features Bookmark.
5. Direct partners to predict what they will learn in the text, based on the text features. *"I think we will learn about because*

Option: Set up a few experiments in centers for students to rotate through.

Differentiated Instruction:

English Learners:
I think we will learn about_____because _____.

One way volcanoes change the earth's surface is _____.

.”

- *“I think we will learn about why volcanoes erupt because one of the sub-headings says, ‘Why do volcanoes erupt?’.*

Unencumbered First Read:

6. Read the text with students or have students read independently.

Second Read:

7. Read and discuss **Volcanoes**. Chunk the text based on the text dependent questions.

a. Require students to annotate as they find evidence in the text to support their answers.

b. For each question, give students an opportunity to discuss with a partner and then share out. Emphasize that complete sentences should be used.

What is a volcano?

a) **How is a volcano different than a mountain?**
   - *A volcano looks like a mountain; however, it is different because it is an opening in the earth’s crust.*

How are volcanoes formed?

b) **Explain the difference between magma and lava. Use evidence from your text.**
   - *Magma is under the earth’s surface. It is a hot liquid rock. When the magma reaches the earth’s surface it is called lava.*

c) **What causes volcanoes to continue to grow over time?**
   - *After each eruption, layers of lava and ash are left behind.*

Why do volcanoes erupt?

d) **How does the author define the word erupt? How do you know?**
   - *The author uses apposition: “erupts, or explodes”. This tells me that the word erupt means “to explode.”*

e) **What causes a volcano to erupt? What are the effects?**
   - *An earthquake erupts because there is pressure building inside. The effects are that lava, dust, ash, gas, and pieces of rock are blown out.*

How do volcanoes change the Earth’s surface?

f) **What is one way a volcano may change the Earth’s surface?**
   - *One way a volcano may change the Earth’s surface is _____.*

**by making the Earth’s surface rough and uneven*
**by burning down the forests*
**by creating mountains*
**by causing fires*

g) **Which of these changes happen slowly over time? Which happen immediately?**
   - *Making mountains happens slowly over time. Fires, landslides, and mudslides cause changes to happen immediately.*

h) **Author’s Purpose: Why did the author write this text? What did he or she want us to learn?**
   - *The author wrote this text to teach us about volcanoes and how they change the earth’s surface.*

Students Who Need Additional Support: Differentiate according to a student’s IEP. See Special Education Appendix.

Accelerated Learners: Students can write more than one sentence describing how volcanoes change the earth’s surface.

	Day 2---------- **One-sided Cause and Effect Map:** 8. Revisit the class Cause and Effect Map. Add any new information. If students are unable to add any information, have them refer back to the text. Add *Volcano Text and Volcano Video* to the frame of reference. (see sample included behind lesson)	
Extending Understanding	**Collaborative Academic Conversations:** 9.  This lesson will focus on Talk Moves from Goal One*: Time to Think* and *Say More*. If you choose, you may incorporate frames from Goal 3: *Asking for Evidence or Reasoning.* • Review the norms for Collaborative Academic Conversations with students. • Guide students in a whole group academic conversation using the following prompt: *If you had to experience one event that changes the earth's suface (earthquake or volcano), which would you choose? Support your position with evidence.* • Post the following sentence frames: *I would_____because_____*. OR *I would rather _____than_____because_____.* • If students do not include the "because"/evidence, (or if they give a personal opinion/unrelated) encourage students to use **evidence** from the text, video, or Cause and Effect Map. *Why do you think that? What is your evidence? Where in the text did it say that?* Sample Routine for Whole Group Collaborative Conversations • Teacher: pose the question. • Teacher: "Take some time to think about…" • Teacher: "Would anyone like to share?" • Teacher: call on student (you may choose to use a talking stick or toss a soft ball, etc. to indicate whose turn it is to speak) • Student shares. • Teacher uses talk moves: "Can you tell me more about that?" or "Can you give me an example?" if needed. • Student elaborates. • Student asks, "Would anyone like to share?" • Student calls on another student. • Process repeats. 10. **Learning Journal:** Have students open their Learning Journal p. 30. Students will draw a before and after picture of volcanoes. Then they will write a sentence identifying whether this change happened slowly or quickly.	
Lesson Reflection		
Teacher Reflection		

Due to the fact…

Because…

Since…

Water freezes in rocks' cracks and breaks them into smaller pieces

…so…

Rocks slide down hills and break

…because…

Strong winds and sand wear down rocks

…therefore…

Rocks rub together and break into smaller pieces during earthquakes

Plants grow in rocks' cracks and may break them

…consequently…

Strong winds and sand wear down rocks

Earthquakes can create new mountains over many years

Earthquakes can cause landslides and tsunamis

Cooled lava makes new solid rock

Volcanic rock makes the earth's surface look rough and uneven

Hot lava can start fires which burn down forests and communities

The Earth is constantly changing.

Volcanoes Text
Volcanoes Video
Earthquakes Video
Earthquakes Text
Erosion Video
Erosion PowerPoint
Experiments
Science Text

Soda Bottle Volcano

roll of mint Mentos (candy) 2-liter bottle of Diet Coke (take off the label)

1. Go outside to where you have a lot of room. This experiment is messy!
2. Open the bottle of soda carefully. Put the bottle on the ground so that it will not tip over. (Diet soda works better than regular soda. Plus, diet doesn't leave a sticky mess.)
3. Unwrap the roll of Mentos and drop the Mentos into the bottle at the same time. This can be tricky. One way is to roll a piece of paper into a tube big enough to hold the loose Mentos. Put a card under the roll and on top of the bottle top so you can pull the card and the candies will just drop in at once.
4. Drop all the Mentos into the bottle at the same time and move out of the way as quickly as possible.
5. Watch the eruption!

EXPLANATION:

Why does this happen? Water molecule attract to others linking together to form a tight mesh around each bubble of carbon dioxide gas in the soda. When you drop the Mentos in the soda, the gelatin and gum Arabic from the dissolving candy break the surface tension. Each Mentos candy has thousands of pits on the surface. These tiny pits are called nucleation sites, perfect places for the carbon dioxide bubbles to form. As soon as you drop the Mentos in the soda, bubbles form all over the surface of the candy. Added to this is the fact that the candies are heavy and sink to the bottom of the bottle. Now you are just asking for explosion. When all this gas is released, it literally pushes all the liquid up and out of the bottle in an amazing blast.

Volcanoes

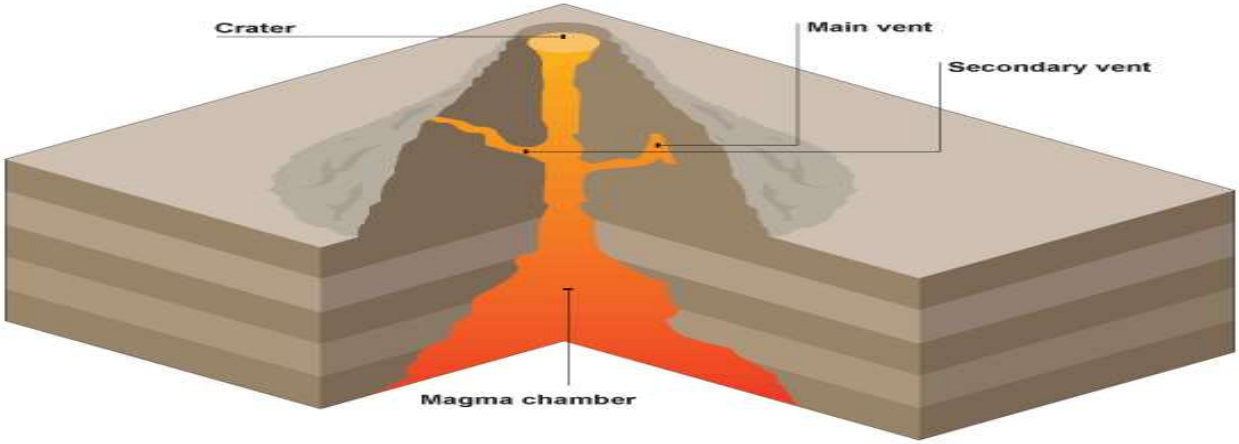
More Than Mountains

What is a volcano?

Have you ever wondered about volcanoes? A volcano is not just a mountain. A volcano is an opening in the Earth's crust.

How are volcanoes formed?

Volcanoes are formed when magma from inside the earth's mantle makes its way to the surface through an opening. Gases and a hot liquid rock called ***magma,*** flow through this opening. Magma is called **lava** when it reaches earth's surface. As the molten rock and ash cool, they form a volcano. Over time as the volcano continues to erupt, it will get bigger and bigger.



Why do volcanoes erupt?

The pressure inside a volcano causes a volcano to erupt. When a volcano erupts, or explodes, it sends out rocks, fire, and smoke into the sky. Some eruptions have the power to blast apart an entire island.

How do volcanoes change the earth's surface?

When volcanoes erupt, they change the Earth's surface. Lava flows from the volcano and cools as it touches the ground. This produces solid rock and makes the Earth's surface appear rough and uneven.

As these new materials build upon the Earth's surface, they create the cone-shape of volcanoes. This build-up of material can happen quickly or over long periods of time. The lava not only changes the appearance, but also the texture of the Earth's surface. In addition, the heat of the lava causes fires, which can change the surface of the Earth. These fires can destroy forests and communities.

There are other ways in which a volcanic eruption can impact the Earth's surface. Volcanoes can cause mudflows, avalanches, tsunamis, and cracks in the Earth's surface.

Whether volcanoes change the earth quickly or slowly, their impact has an effect on the earth's surface.

Name_____

Before	After

Did this change happen slowly or quickly?

//////////////////

//////////////////

//////////////////

//////////////////

SAUSD Common Core Lesson Planner

<table>
<tr><td>Unit: The Changing Earth
Lesson: 8</td><td>Grade Level/Course:
2nd</td><td colspan="2">Duration:
One Day</td></tr>
<tr><td colspan="4">Big Idea: The Earth is constantly changing.
Essential Questions:
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<tr><td>Materials/ Resources/ Lesson Preparation</td><td colspan="3">Class One-Sided Cause and Effect Map
Chants: Erosion, Our Changing Earth
Pocket Chart
Sentence Strips (Topic sentence pre-written)
Markers</td></tr>
<tr><td>Objectives</td><td>Content: Students will collaboratively write, revise, and edit a cause and effect paragraph.</td><td colspan="2">Language: Students will talk off the map and write sentences using cause and effect language.</td></tr>
<tr><td>Depth of Knowledge Level</td><td colspan="3">☒ Level 1: Recall ☒ Level 2: Skill/Concept
☒ Level 3: Strategic Thinking ☒ Level 4: Extended Thinking</td></tr>
<tr><td>College and Career Ready Skills</td><td colspan="3">☐ 1. Demonstrating independence
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</table>

Common Core Instructional Shifts		☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☒ **Regular practice with complex text and its academic vocabulary**	
Academic Vocabulary (Tier II & Tier III)	**PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING** n/a	**WORDS WORTH KNOWING**
	STUDENTS FIGURE OUT THE MEANING		
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	

Lesson Delivery

Lesson Continuum

Instructional Methods	**Check method(s) used in the lesson:** ☒ **Modeling** ☒ **Guided Practice** ☒ **Collaboration** ☐ **Independent Practice** ☐ Guided Inquiry ☐ Reflection	
Preparing the Learner	1. **Chants** – The Changing Earth and Erosion 2. **Review Big Idea and Essential Questions**	**Differentiated Instruction:** **English Learners:** Due to the fact. Because_____,_____. Since_____,_____. _____, so_____.
Interacting with the Text/Concept	**Co-Op Paragraph** 3. Talking off the Map: Revisit the Cause and Effect Map and guide students by talking off the map using the cause and effect linguistic patterns. For example: *Rocks slide down hills and break, therefore the earth is constantly changing.* Use choral response and echo talk to provide practice. 4. Place the topic sentence in the pocket chart. 5. Read the topic sentence *"The earth's surface is constantly changing."* 6. Tell students that each group will be responsible for creating one sentence in our paragraph. 7. Assign each group an event to add to the class paragraph. You may have more than one group work on a topic. • Wind • Water • Weathering • Erosion • Earthquakes • Volcanoes 8. Using the information from the Cause and Effect Map, students will work as a team to formulate a sentence orally.	**Students Who Need Additional Support:** Differentiate according to a student's IEP. See Special Education Appendix. **Accelerated Learners:** Students can write an additional paragraph using cause and effect language to describe how the earth's surface is constantly changing.

	9. When all team members agree on a sentence, they will raise their hand to share their sentence with the teacher. 10. Teacher will give students a sentence strip and a colored marker after approving the sentence and verifying that the sentence has not already been used. Note: marker color allows you to identify the group. 11. One student from each group places the sentence strip in the pocket chart. Note: The sentences should be in random order. 12. If possible, pull students to the floor in front of process grid. Close proximity is helpful when revising and editing. 13. Begin with revising by having the students orally read the entire paragraph. 14. Reread the paragraph aloud. 15. Ask students to identify academic language. Highlight these words. 16. Next, the teacher indents the first line of the paragraph, tears extra space off of the sentence strips, and arranges the strips to look like a paragraph. 17. Solicit possible revisions (changing the order of the sentences, combining sentences, adding more details, substituting more descriptive words, substituting pronouns for nouns, etc.) Note: have extra sentences strips on hand and a black marker to make necessary revisions. 18. Each time revisions are made, the class reads the paragraph again. 19. Solicit possible ideas for editing, including spelling, grammar, and punctuation. 20. Generate a concluding sentence with the whole class. 21. Finally, direct students' attention to the writing checklist. Explain that a rubric helps us to be sure that we are writing proficiently. Review the rubric and check off each box as it is reviewed. 22. *Recommendation*: Type the final version of the paragraph for an example of model writing and fluency practice. 23. Students may also take the typed version of the paragraph home to share with family.	
Extending Understanding	24. Review the big idea and essential questions. **Big Idea**: The Earth is constantly changing. **Essential Questions**: 1. What causes the Earth to change? 2. Do all of Earth's changes take the same amount of time to happen? Why or why not? 3. What clues from the past help us understand our Earth in the past and today?	
Lesson Reflection		
Teacher Reflection Evidenced by Student Learning/ Outcomes		

Due to the fact…

Because…

Since…

Water freezes in rocks' cracks and breaks them into smaller pieces

…so…

Rocks slide down hills and break

…because…

Strong winds and sand wear down rocks

…therefore…

Rocks rub together and break into smaller pieces during

Plants grow in rocks' cracks and may break them

…consequently…

Strong winds and sand wear down rocks

Earthquakes can create new mountains over many years

Earthquakes can cause landslides and tsunamis

Cooled lava makes new solid rock

Volcanic rock makes the earth's surface look rough and uneven

Hot lava can start fires which burn down forests and communities

The Earth is constantly changing.

Volcanoes Text
Volcanoes Video
Earthquakes Video
Earthquakes Text
Erosion Video
Erosion PowerPoint
Experiments
Science Text

SAUSD Common Core Lesson Planner

<table>
<tr><td>Unit: The Changing Earth
Lesson: 9</td><td>Grade Level/Course:
2nd</td><td colspan="2">Duration: Two Days</td></tr>
<tr><td colspan="4">Big Idea: The Earth is constantly changing.
Essential Questions:
1. What causes the Earth to change?
2. Do all of Earth’s changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?</td></tr>
<tr><td>Common Core and Content Standards</td><td colspan="3">Next Generation Science Standards:
2-ESS1-1.C Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.
CCSS/ELA:
RIT 2.1 Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text.
RIT 2.10 By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.
FS 2.4 Read with sufficient accuracy and fluency to support comprehension. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
W 2.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
SL 2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups.
SL 2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</td></tr>
<tr><td>Materials/ Resources/ Lesson Preparation</td><td colspan="3">Learning Journal
Chart paper
Markers
OCR Fossils Tell of Long Ago
Materials for Imprint experiment
Optional Activity – Make Edible Amber Fossils</td></tr>
<tr><td>Objectives</td><td colspan="2">Content: Students will read a text and create a visual representation showing how an object becomes a fossil.</td><td>Language: Students will read a text and collaboratively discuss and create a visual representation showing how an object becomes a fossil.</td></tr>
<tr><td>Depth of Knowledge Level</td><td colspan="3">☒ Level 1: Recall ☒ Level 2: Skill/Concept
☒ Level 3: Strategic Thinking ☒ Level 4: Extended Thinking</td></tr>
<tr><td>College and Career Ready Skills</td><td colspan="3">☒ 1. Demonstrating independence
☒ 2. Building strong content knowledge
☒ 3. Responding to varying demands of audience, task purpose, and discipline
☐ 4. Comprehending as well as critiquing
☒ 5. Valuing evidence
☐ 6. Using technology and digital media strategically and capably
☐ 7. Coming to understand other perspectives and culture</td></tr>
</table>

Common Core Instructional Shifts		☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☒ **Regular practice with complex text and its academic vocabulary**	
Academic Vocabulary (Tier II & Tier III)	**PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**
	STUDENTS FIGURE OUT THE MEANING		
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	

Lesson Delivery

Instructional Methods

Check method(s) used in the lesson:

☐ **Modeling** ☐ **Guided Practice** ☒ **Collaboration**

☒ **Independent Practice** ☐ Guided Inquiry ☐ Reflection

Lesson Continuum

Preparing the Learner

1. **Fossil Bugaloo Learning Journal p. 31:** Introduce the Fossil Bugaloo following the routine for teaching a chant.
2. **Review the Big Idea and Essential Questions**

Interacting with the Text/Concept

Text: "Fossils Tell of Long Ago" pages 14-19

Unencumbered First Read

3. Read the text (pages 14-19) with students or have students read independently.

2nd Read – Collaborative Poster Project

4. Students will work in their collaborative groups. Before beginning, review the norms for collaboration.

- They will select from the fish, the fern, or the dinosaur tracks.
- Each group will be given a poster/chart paper.
- Each student will choose one color marker to demonstrate their participation.
- Students will make a poster to visually represent the process of how their object became a fossil. (*This allows students to show their creativity. They may choose a Flow Map, or they may choose an alternative.)*

- Remind students to use the text to find evidence.

5. Gallery Walk: When students complete their posters, have them nominate one student from the group to be the "docent" and stand by their poster displayed in the room. Other students will do a gallery walk. Encourage students to ask questions of the docents.

Differentiated Instruction:

English Learners:
Fossils_____because _____.

We know _____ because fossils_____.

Students Who Need Additional Support:
Differentiate according to a student's IEP. See Special Education Appendix.

Accelerated Learners:
Students can write more than one sentence describing how fossils help us learn about our changing Earth.

	Day 2---------- **Text: "Fossils Tell of Long Ago" pages 20-27** **Unencumbered First Read** 6. Read the text (pages 20-27) with students or have students read independently. **2nd Read – One-Sided Multi-Flow/Cause and Effect Map** 7. Revisit the class Cause and Effect Map. Guide students as you make the connection between fossils and the Earth changing. Add any new information and encourage students to return back to the text to find evidence. Add *Fossils Tell of Long Ago* to the frame of reference. (see sample included behind lesson)	
Extending Understanding	**Inquiry Experiments/Observations** 8. As a class, read the experiment "Make your own Imprints". (Learning Journal p. 32) Discuss materials needed, sequence of steps, etc. Model making your own imprint for class. 9. Have students create their own imprint. 10. Have a brief discussion about the students' observations. **Optional activity provided at the end of the lesson "Make Edible Amber Fossils"* **Collaborative Academic Conversations:** 11. This lesson will focus on Talk Moves from Goal One*: Time to Think* and *Say More*. If you choose, you may incorporate frames from Goal 3: *Asking for Evidence or Reasoning.* a. Review the norms for Collaborative Academic Conversations with students. b. Guide students in a whole OR small group academic conversation using the following prompt: *How do fossils help us learn about our changing Earth?* *What have we learned because of fossils?* c. Post the following sentence frames: *Fossils_____because_____.* *We know_____because fossils _____.* d. If students do not include the "because"/evidence, (or if they give a personal opinion/unrelated) encourage students to use **evidence** from the text or Cause and Effect Map. *Why do you think that? What is your* Sample Routine for Whole Group Collaborative Conversations • Teacher: pose the question. • Teacher: "Take some time to think about…" • Teacher: "Would anyone like to share?" • Teacher: call on student (you may choose to use a talking stick or toss a soft ball, etc. to indicate whose turn it is to speak) • Student shares. • Teacher uses talk moves: "Can you tell me more about that?" or "Can you give me an example?" if needed. • Student elaborates. • Student asks, "Would anyone like to share?" • Student calls on another student. • Process repeats.	

	12. **Learning Journal:** Have students open their Learning Journal p. 33. Students will write about how fossils help us learn about our changing Earth. 13. Review Big Idea and Essential Questions **Big Idea**: The Earth is constantly changing. **Essential Questions**: 1. What causes the Earth to change? 2. Do all of Earth's changes take the same amount of time to happen? Why or why not? 3. What clues from the past help us understand our Earth in the past and today?	
Lesson Reflection		
Teacher Reflection Evidenced by Student Learning/ Outcomes		

Fossil Bugaloo

I'm a paleontologist and I'm here to say
I love to dig for fossils everyday
Sometimes I find a skeleton with lots of bones
Or just a small leaf that's turned to stone

Dinosaur eggs, animal bone, hardened tracks too
Looking for fossils, Bugaloo.

Fossils can be found all around
In rocks or mountains in the ground
They tell about life long ago
How things lived so now we know

Hardened shells, footprints, skeletons too
Looking for fossils, Bugaloo.

Due to the fact…

Because…

Since…

Water freezes in rocks' cracks and breaks them into smaller pieces

…so…

Rocks slide down hills and break

…because…

Strong winds and sand wear down rocks

…therefore…

Rocks rub together and break into smaller pieces during earthquakes

Plants grow in rocks' cracks and may break them

…consequently…

Strong winds and sand wear down rocks

Earthquakes can create new mountains over many years

Earthquakes can cause landslides and tsunamis

Cooled lava makes new solid rock

Volcanic rock makes the earth's surface look rough and uneven

Hot lava can start fires which burn down forests and communities

The place a fossil is found does not always match where it would have lived

The Earth is constantly changing.

Volcanoes Text
Volcanoes Video
Earthquakes Video
Earthquakes Text
Erosion Video
Erosion PowerPoint
Experiments
Science Text

Name _____ Date _____

Make Your Own Imprints

It's easy to make your own imprints. When you're finished, have your classmates guess what the imprints are from.

What You Need

Poster paint

Paper Towels

White Paper

Different Objects – sponge, leaf, button, small towel, cotton ball, shell

What to Do

1. Dip an object into the paint.
2. Dab the object on a paper towel to remove the extra paint.
3. Press the object onto your paper.
4. Do this with each of your objects.

SAUSD Common Core Lesson Planner

Unit: The Changing Earth **Lesson:** 10	**Grade Level/Course:** 2nd	**Duration:** One Day

Big Idea: The Earth is constantly changing.

Essential Questions:

1. What causes the Earth to change?
2. Do all of Earth's changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?

Common Core and Content Standards	Next Generation Science Standards: **2-ESS1-1.C** Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe CCSS/ELA: **RIT 2.1** Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text. **RIT 2.10** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range. **W 2.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **SL 2.1** Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups.
Materials/ Resources/ Lesson Preparation	Learning Journal Video: *How are Fossils Formed?* Construction Paper for Sequencing Map

Objectives	**Content:** Students will understand how fossils are formed.	**Language:** Students will watch a video, discuss, take notes, and provide evidence to answer text dependent questions about how fossils are formed.

Depth of Knowledge Level	☒ **Level 1: Recall** ☒ **Level 2: Skill/Concept** ☒ **Level 3: Strategic Thinking** ☐ **Level 4: Extended Thinking**
College and Career Ready Skills	☒ **1. Demonstrating independence** ☒ **2. Building strong content knowledge** ☐ **3. Responding to varying demands of audience, task purpose, and discipline** ☐ **4. Comprehending as well as critiquing** ☒ **5. Valuing evidence** ☒ **6. Using technology and digital media strategically and capably** ☐ **7. Coming to understand other perspectives and culture**
Common Core Instructional Shifts	☒ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☐ **Regular practice with complex text and its academic vocabulary**

Academic Vocabulary (Tier II & Tier III)	**PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**
	STUDENTS FIGURE OUT THE MEANING		
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)		Continue teaching the foundational standards through the Open Court Reading.	
Lesson Delivery			
Instructional Methods		**Check method(s) used in the lesson:** ☒ **Modeling** ☒ **Guided Practice** ☒ **Collaboration** ☐ **Independent Practice** ☐ Guided Inquiry ☐ Reflection	
Preparing the Learner		Tell students that today they will be viewing a video.	**Differentiated Instruction:**
Interacting with the Text/Concept		**Video *How are fossils formed?*** 1. **First Viewing: Unencumbered view** • Have students open to their Learning Journals p. 34-35/Note Taking Guide • Tell students that the first time they watch the video they are going to listen for interesting facts. • After viewing the video, give students time to Think-Write-Pair-Share their interesting facts. (If students do not write anything, you may choose to add more information after the second viewing). 2. **Second Viewing: Text Dependent Questions** • Read the Text Dependent Questions with students.  • As you watch the video, pause and reread the questions. (Teacher's guide is included behind this lesson) • Give students time to Think-Pair-Share before sharing out answers with the whole group. • Encourage students to support their responses with evidence from the video.	**English Learners:** Refer to sentence frames for using academic language. First,_____. Next,_____. After that,_____. Finally,_____. **Students Who Need Additional Support:** Differentiate according to student's IEP**.** See Special Education Appendix. **Accelerated Learners:** Students can write more than one sentence about how fossils are formed.

Lesson Continuum

Extending Understanding	3. **Collaborative Sequencing/ Flow Map:**  • Have students open their Learning Journals to p. 36, How Body Fossils are Formed. • Remind students that the video explained how body fossils are made. There are many things that have to happen in a certain order before we can discover these fossils. • Tell students that the pictures in their Learning Journals of how body fossils are formed are in the wrong order! We need to correctly order the steps. • Have students work with a partner to cut the pictures and correctly order them in a sequencing map on a piece of construction paper. • **Talk off the map:** After students have completed their maps, have them take turns talking off the map and explaining the steps in the process. Remind students to use transition words while explaining the steps. 4. **Learning Journal:** Students should open their Learning Journals to p.37. Today they are going to take on the role of geologists and do a "case study." The goal is for students to make the connection to the Big Idea: The Earth is constantly changing. How do fossils provide evidence for this?	
Lesson Reflection		
Teacher Reflection Evidenced by Student Learning/ Outcomes		

How are fossils made?

Note Taking Guide

Interesting Facts	Text Dependent Questions	Answers
	What are fossils? 	Fossils are the remains of ancient _____and _____. They are at least _____years old. They are found in the_____.
	What can we learn from studying trace fossils? 	By studying trace fossils we can learn how it _____ and cared _____.

Interesting Facts	Text Dependent Questions	Answers
	Franny tells us there are three types of fossils. What are they?  	The three types of fossils are: 1._____ 2._____ 3._____
	Dinosaur fossils remain hidden for millions of years. What causes the bones to be exposed? 	1. _____ 2. _____ 3. _____ _____ _____ _____ _____

How are fossils made?

Note Taking Guide

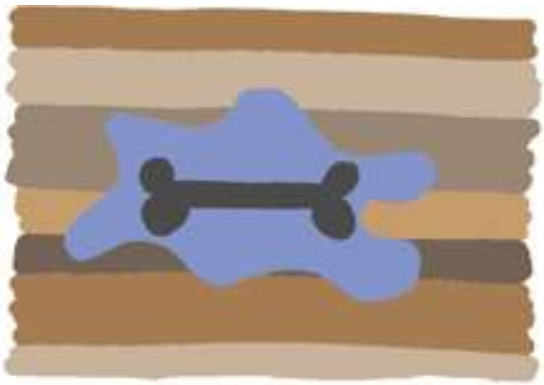
Answer Key

Interesting Facts	Text Dependent Questions	Answers
	What are fossils?  Stop at: 00.25	Fossils are the remains of ancient plants and animals. They are at least 3000 years old. They are found in the ground.
	What can we learn from studying trace fossils?  Stop at: 00.42	By studying trace fossils we can learn how it lived and cared for its young.

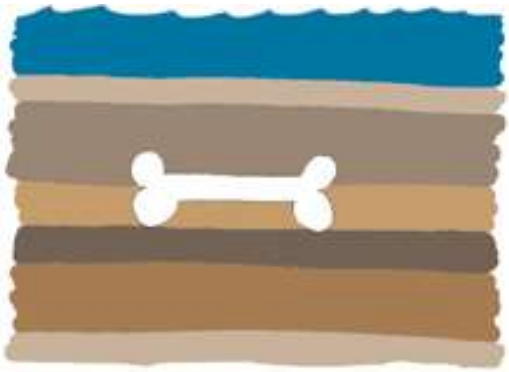
Interesting Facts	Text Dependent Questions	Answers
	Franny tells us there are three types of fossils. What are they?  Stop at: 1:19	The three types of fossils are: 1.mold fossil 2.resin fossil 3.body fossil
	Dinosaur fossils remain hidden for millions of years. What causes the bones to be exposed?  Stop at: 2:09	4. Wind 5. Rain 6. Ice All of these wear down layers of the earth.

How Body Fossils are Formed

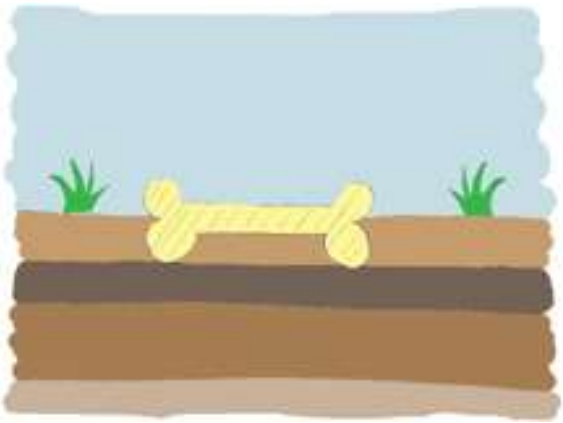
Millions of years go by covering the fossil with dirt and mud.



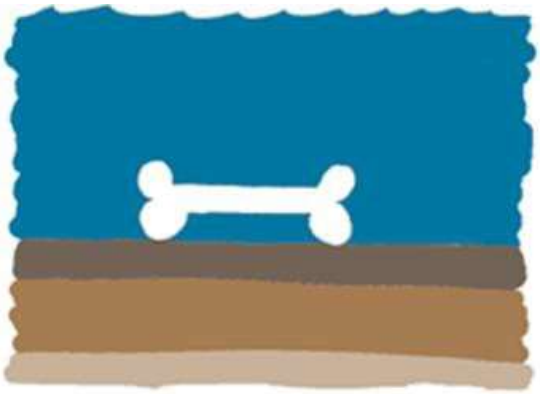
Mud covers the bones.



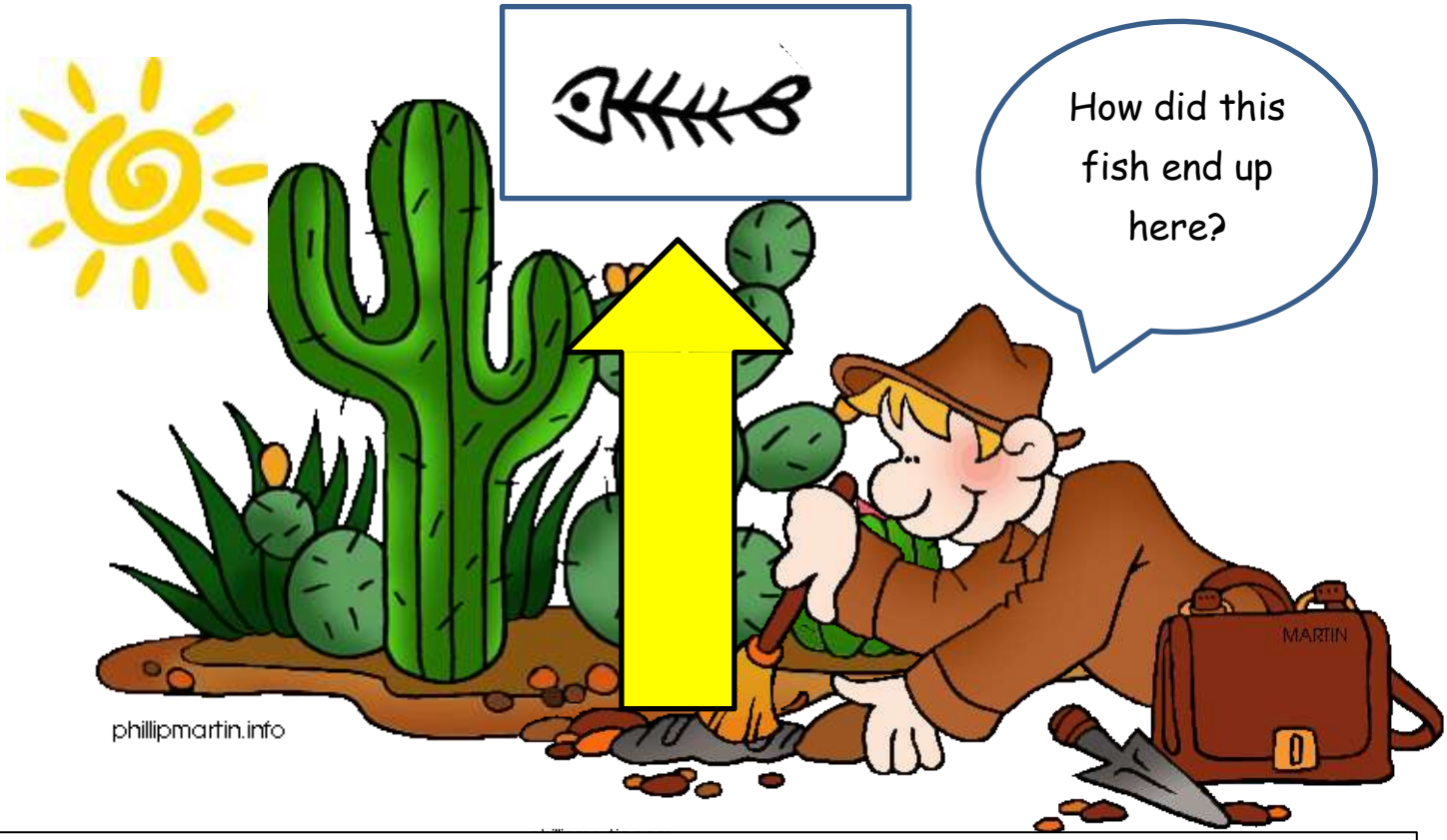
Rain, wind, and ice expose the bones.



An animal dies near water.



Case Study



Pretend you are a geologist working out in the hot desert sun. You uncover a fish fossil. Explain how this fish ended up in the middle of the desert. What caused this to happen?

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Make Edible Amber Fossils

Fossils are clues that scientists use to gather knowledge about prehistoric life. One type of fossil comes from hardened tree sap. When creatures became trapped in the sap, they were well-preserved. Today, these fossils, called "amber," provide scientists with an amazing look at creatures from long ago.

What You Need:

- 1 package lemon-flavored gelatin
- Red food coloring
- 1 ¼ cups of boiling water
- Empty egg carton
- Cooking spray
- Plastic eggs (bottom halves only; be sure there are no holes in them!)
- Small gummy candies in various shapes: insects, fish, spiders, worms, etc.

What You Do:

1. Separate the plastic eggs. Wash and dry, and have your child place the bottom half of each egg in the egg carton. Let your child spray each with a light layer of cooking spray.
2. Mix the gelatin with the boiling water. Stir until completely dissolved. Add a drop of red food coloring, and stir.
3. Carefully pour the gelatin in the eggs so they are about 3/4 full. Place the carton in the refrigerator.
4. When the surface is almost set, have your child gently press a gummy candy into each of the eggs. Make sure she pushes the candy in only part-way, so that it looks suspended in the gelatin, rather than sunken down at the bottom. Because the gelatin is not completely set at this point, the whole from where the gummy was pushed in should close up and disappear.
5. Refrigerate the fossils for several more hours until completely firm.
6. Once firm, invert each egg onto a plate. Ask your child what she sees in the "amber."
7. Now tell her it's time to make like a fossil hunter, and DIG IN!

When you and your child have finished making your fossils, discuss with her how this edible model is similar to real amber fossils. The amber takes on the shape of its mold, just as the gelatin took on the shape of the egg molds. The creature caught in the tree resin becomes suspended in the center of the amber as it fossilizes, and the creature remains preserved and relatively unchanged just as the gummy did. The amber is mostly transparent (like the gelatin) making it easy to see the piece of preserved, prehistoric life.& As it hardens, amber becomes so strong that it can preserve the creatures suspended inside for thousands of years! Amazing!

Adapted from http://www.education.com/activity/article/edible-amber-fossils/

SAUSD Common Core Lesson Planner

Unit: The Changing Earth **Lesson:** 11	**Grade Level/Course:** 2nd	**Duration:** Two Days

Big Idea: The Earth is constantly changing.

Essential Questions:

1. What causes the Earth to change?
2. Do all of Earth's changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?

Common Core and Content Standards	Next Generation Science Standards: **2-ESS1-1.C** Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. **2-ESS2-1.B** Wind and water can change the shape of the land CCSS/ELA: **RIT 2.1** Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text. **RIT 2.10** By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range. **FS 2.4** Read with sufficient accuracy and fluency to support comprehension. Use context to confirm or self-correct word recognition and understanding, rereading as necessary. **W 2.10** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **SL 2.1** Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups. **SL 2.2** Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
Materials/ Resources/ Lesson Preparation	Learning Journal Completed one-sided cause and effect map Video, "*Earth 100 million Years Ago"*
Objectives	**Content:** Students will demonstrate their knowledge of what causes the earth's surface to change. **Language:** Students will work collaboratively to create a museum artifact and orally present to their classmates.
Depth of Knowledge Level	☒ **Level 1: Recall** ☒ **Level 2: Skill/Concept** ☐ **Level 3: Strategic Thinking** ☐ **Level 4: Extended Thinking**
College and Career Ready Skills	☐ **1. Demonstrating independence** ☒ **2. Building strong content knowledge** ☒ **3. Responding to varying demands of audience, task purpose, and discipline** ☒ **4. Comprehending as well as critiquing** ☒ **5. Valuing evidence** ☐ **6. Using technology and digital media strategically and capably** ☐ **7. Coming to understand other perspectives and culture**
Common Core Instructional Shifts	☐ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☐ **Regular practice with complex text and its academic vocabulary**

		KEY WORDS ESSENTIAL TO UNDERSTANDING	WORDS WORTH KNOWING
Academic Vocabulary (Tier II & Tier III)	PROVIDES TEACHER SIMPLE EXPLANATION	n/a	
	STUDENTS FIGURE OUT THE MEANING		

Pre-teaching Considerations	
CCSS Foundational Standards (K-5 only)	Continue teaching the foundational standards through the Open Court Reading.

Lesson Delivery

Instructional Methods

Check method(s) used in the lesson:

☒ **Modeling** ☐ **Guided Practice** ☒ **Collaboration**

☐ **Independent Practice** ☐ Guided Inquiry ☐ Reflection

Lesson Continuum

Preparing the Learner

1. Review the Big Idea and Essential Questions.
2. Review the class Cause and Effect Map. Guide students as you "talk off the map."
3. Show students the video: *"Earth 100 Million Years Ago".* Discuss with students how this video demonstrates that the Earth is constantly changing.

Interacting with the Text/Concept

Performance Task: Collaborative Presentation

4. Tell students that they will be working in collaborative groups (2 or 4). Review the norms for collaboration.
5. Have students open their Learning Journals to p. 38 to review the directions for the Collaborative Presentation.
6. Allow students to form groups, and assign each member a role.
7. Review the rubric on p. 39 with students. Use the sample poster included behind the lesson as a model (Learning Journal p. 40)
8. Give students time to work in their groups to create their "artifacts" for the museum exhibit (posters). Remind students to use their Learning Journals and the class Cause and Effect Map to find evidence and identify the cause of their before and after pictures.

Day 2

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9. Review the sample outline with students in the Learning Journal p. 41-42. Discuss the important pieces of their presentation, referring back to the rubric.

Differentiated Instruction:

English Learners:

Use sentence frames from previous lessons.

Students Who Need Additional Support:
Differentiate according to student's IEP. See Special Education Appendix.

Provide additional time if necessary.

Accelerated Learners:

Encourage students to add more sentences to their posters.

	10. Tell students that their task today is to work on how they will present their projects to the class. Students may choose to divide up the sample outline so that each student participates in the presentation. 11. Give students time to practice/rehearse their presentations. Remind them to be sure to include everything from the rubric!	
Extending Understanding	12. Allow time for each group to present to the class. After each group presents, encourage students to provide feedback based on the rubric. * You may choose to use a process such as "3 Stars and a Wish" where students provide 3 positives/ "stars", and 1 piece of constructive feedback, or "a wish".  • I like how you visually showed us how earthquakes cause the earth's surface to change. • I like how you all kept eye contact with the audience. • Your description of how quickly these changes can occur was excellent. o However, I wish you could have told us more about… 13. Learning Journal: Have students open to p. 43. Based on what students learned today, and throughout the unit. They need to answer each of the Essential Questions. Have students share out their responses.	
Lesson Reflection		
Teacher Reflection Evidenced by Student Learning/ Outcomes		

Our Changing Earth

Collaborative Presentation Directions

Your team of geologists has been asked by a local museum to design an exhibit entitled, "The Earth is Constantly Changing."

Your job is to create an artifact, or poster, that identifies the following:

1. A "before and after" picture of a change in the Earth's surface.
2. What caused this change?
3. Did this change happen quickly or slowly? About how long did it take?
4. Are there any clues from the past that help us understand this change?

Work with your team of geologists to create a colorful, detailed, and interesting artifact that includes all of the important information. Create something you would be proud to display at the museum! Have fun!

Collaborative Presentation Rubric

Geologists:_____

Content: The Artifact/Poster

#		Yes ☺	No ☹
1.	The artifact, or poster, includes a **title.**		
2.	There is a "**before" picture.**		
3.	There is an "**after" picture.**		
4.	The **cause** of the change is identified.		
5.	The artifact shows whether this happened **quickly or slowly.**		
6.	The artifact is **neat and colorful**.		

Delivery: The Presentation

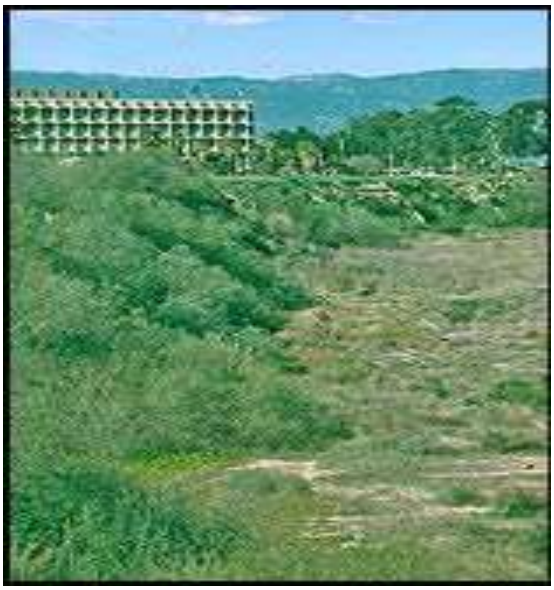
#		Yes ☺	No ☹
1.	The geologists made **eye contact.** 		
2.	The geologists spoke **loudly and clearly.**		
3.	The geologists **introduced themselves.**		
4.	The geologists **described their artifact/poster**.		
5.	The geologists had a **conclusion.**		

Sample Poster

(Title)

Our Changing Earth

"Before" Drawing



"After" Drawing

Cause

The land eroded, or was swept away, by the wind, water, and waves of the ocean.

Time

This kind of change to the earth happened very slowly. It would take thousands of years.

Collaborative Project: Our Changing Earth

Outline

- ✓ Greetings and Introductions
  - ❖ Hi. My name is_____. This is _____,_____, and _____.
  - ❖ We're here today to talk about our changing Earth.
- ✓ Tell about what your "before" picture shows.
  - ❖ Before, the Earth may have looked like this…(*describe picture*)
- ✓ Tell people about what caused the Earth to change.
  - ❖ The Earth changed because_____. (*volcano, wind, rain, ice, erosion, weathering, earthquake, etc.)*

- ❖ Something like this might happen _____(where?). (*In the desert, near the water, by a volcano, etc.*)

✓ Tell about what your "after" picture shows.

- ❖ After the_____, the Earth may look like this…(*describe picture*)

✓ Tell how long a change like this might take to happen.

- ❖ *This kind of change takes*_____.

✓ <u>Conclusion</u>

- ❖ Thank you for listening. We hope you enjoyed learning more about_____.

SAUSD Common Core Lesson Planner

<table>
<tr><td>Unit: The Changing Earth
Lesson: 12</td><td>Grade Level/Course:
2nd</td><td colspan="2">Duration: One Day</td></tr>
<tr><td colspan="4">Big Idea: The Earth is constantly changing.
Essential Questions:
1. What causes the Earth to change?
2. Do all Earth’s changes take the same amount of time to happen? Why or why not?
3. What clues from the past help us understand our Earth in the past and today?</td></tr>
<tr><td>Common Core and Content Standards</td><td colspan="3">Next Generation Science Standards:
2-ESS1-1.C Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.
2-ESS2-1.B Wind and water can change the shape of the land
CCSS/ELA:
RIT 2.1 Ask and answer such questions as who, what, where, why, and how to demonstrate understanding of key details in a text.
RIT 2.10 By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.
FS 2.4 Read with sufficient accuracy and fluency to support comprehension. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
W 2.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
SL 2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and text with peers and adults in small and larger groups.
SL 2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</td></tr>
<tr><td>Materials/ Resources/ Lesson Preparation</td><td colspan="3">Student Learning Journal</td></tr>
<tr><td>Objectives</td><td colspan="2">Content: Students will demonstrate knowledge of how the earth is constantly changing.</td><td>Language: Students will collaboratively discuss photographs and create a cause and effect map. Students will independently write a paragraph to explain how the photographs show the earth has changed.</td></tr>
<tr><td>Depth of Knowledge Level</td><td colspan="3">☒ Level 1: Recall ☒ Level 2: Skill/Concept
☒ Level 3: Strategic Thinking ☒ Level 4: Extended Thinking</td></tr>
<tr><td>College and Career Ready Skills</td><td colspan="3">☒ 1. Demonstrating independence
☒ 2. Building strong content knowledge
☒ 3. Responding to varying demands of audience, task purpose, and discipline
☒ 4. Comprehending as well as critiquing
☒ 5. Valuing evidence
☐ 6. Using technology and digital media strategically and capably
☐ 7. Coming to understand other perspectives and culture</td></tr>
</table>

Common Core Instructional Shifts	☐ **Building knowledge through content-rich nonfiction texts** ☒ **Reading and writing grounded from text** ☐ **Regular practice with complex text and its academic vocabulary**		
Academic Vocabulary (Tier II & Tier III) — **PROVIDES TEACHER SIMPLE EXPLANATION**	**KEY WORDS ESSENTIAL TO UNDERSTANDING**	**WORDS WORTH KNOWING**	
	N/A	N/A	
STUDENTS FIGURE OUT THE MEANING	N/A	N/A	
Pre-teaching Considerations			
CCSS Foundational Standards (K-5 only)	Continue teaching the foundational standards through the Open Court Reading.		
Lesson Delivery			
Instructional Methods	**Check method(s) used in the lesson:** ☐ **Modeling** ☐ **Guided Practice** ☒ **Collaboration** ☒ **Independent Practice** ☐ Guided Inquiry ☒ Reflection		
Preparing the Learner	Tell students that they will have the opportunity to show what they have learned about our changing Earth. Explain that they will be working in their groups, or with a partner for the first part of the lesson (collaborative activity), then they will work on their own for the second part of the lesson (independent writing activity).	**Differentiated Instruction:** **English Learners:** Use sentence frames from previous lessons. **Students Who Need Additional Support:** Differentiate according to the student's IEP. See Special Education Appendix**.** **Accelerated Learners:** Encourage students to provide more details about the changing Earth.	
Interacting with the Text/Concept	1. **Collaborative Activity** • Direct students to turn to the Summative Assessment page in their Learning Journal p 44-46. • In their groups or with a partner, allow students time to view the photographs, discuss, answer the questions, and then complete the Thinking Map.		
Extending Understanding	2. **Independent Writing Activity** • Review the "Checklist for Revising and Editing" p. 47 with students. • Direct students to independently write a paragraph as directed. 3. **Unit Closure** • Once everyone has completed their assignments, ask a few students to share out their ideas with the class. • Review the Big Idea and have the students orally answer the Essential Questions describing how the Earth is constantly changing.		
Lesson Reflection			
Teacher Reflection			

Lesson Continuum

Name_____ Date _____

Summative-Assessment

Study and discuss the photographs with a partner. Use the questions in the box below.

Before

After

- How did the earth change?
- What might have caused the change?
- How long did the change take?
- What might happen in the future?

With your partner, complete the one-sided cause and effect map to show what might have caused the change.

After

On your own, write a paragraph to explain what happened to the earth. Make sure to answer these questions.

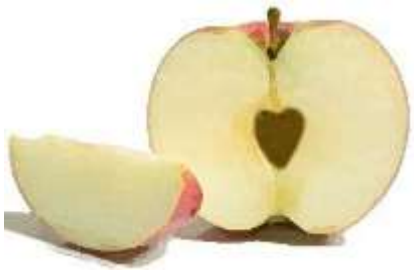
- How did the earth change?
- What might have caused the change?
- Was the change fast or slow?
- What might happen in the future?

Name_____ Date_____

_____

Checklist for Revising and Editing

Revising	
	My topic sentence tells how the earth changed.
	I have at least two causes for the change.
	I told if the change was fast or slow.
	I used cause and effect language.
	My concluding sentence told what might happen in the future.
Editing	
	I capitalized the beginning word in each sentence.
	I wrote complete sentences.
	I ended each sentence with punctuation.
	I checked my spelling.



Getting to the Core

Special Education Appendix

Special Education Development of Appendices

CCSS Application to Students with Disabilities

Students with Disabilities-students eligible under the Individuals with Disabilities Act (IDEA) must be challenged to excel within the general curriculum and be prepared for success in their post school lives, including college and/or careers.

In order for students to meet high academic standards and to fully demonstrate their conceptual and procedural knowledge and skills in mathematics, reading, writing, speaking, and listening (English language arts), their instruction must incorporate supports and accommodations.
-Orange County Department of Education, 2012

The Santa Ana Unified School District, in the foundation that ALL students will be college and career ready, is creating a compilation of resources including scaffolds, strategies, accommodations, and modifications. These supports will ensure that students with disabilities, a majority of whom are English learners, will have the access and support necessary to be college and career ready.

Superior Standards | Supportive School Climate | Successful

Students

2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 1- Pre-Assessment

The lesson objective is for students to inquire and make predictions about what changes lead to the before and after effects of the pictures provided. This is a whole group teacher lead activity.

Possible accommodations/modifications include:

- None

Introduce Cause and Effect

- Powerpoint to introduce the concept of cause and effect
- Teacher models each completed sentence frame, students echo the sentence frame, then turn to an elbow partner to practice it a third time.

A **cause** is what makes something happens. To find the cause, you need to ask yourself, **“What happened first?”**

An **effect** is what happens because of something else (the cause). To find the effect, you need to ask yourself, **“What happened second?”**

Linguistic Frames for Cause and Effect

_____ because _____.

Since _____, _____.

Due to the fact _____, _____.

_____, so _____.

_____, consequently _____.

_____, therefore _____.

2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 2- Our Earth

The lesson objective is for students to work in collaborative groups observe and discuss the properties of rocks using linguistic patterns for language support.

Possible accommodations/modifications include:

- Discussion Questions and Answer Frames (group work)
- Power Point: The Properties of Rocks

Do you think all rocks are the same?

Why or why not?

I think all rocks are _____

because _____.

What is one comparison, or example, of how two rocks are similar or different?

_____ and _____ are similar because _____.

_____ and _____ are different because _____.

2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 3- Rocks

The lesson objective is for students to read, discuss, and find evidence in the text to answer text dependent questions.

Possible accommodations/modifications include:

- Rock Powerpoint
- Rock Words – words and definitions
- Companion text for fluency practice
  (This should not replace the complex text. The intended purpose is to provide fluency practice and allow students to access the content of the complex text though leveled reading passages.)
- Text dependent questions for companion text
- Linguistic patterns for group discussion
- Text features chart
- Student may listen to an animated summary of the Science Book Chapter 3, Lesson 1 at http://activities.macmillanmh.com/science/ca/grade2 . Go to Chapter 3 – Earth's Materials. They may do this independently in a center, before the lesson to build background, or after the text to review.

Rock Words: There are many common names for rocks and the usually give you an idea of how big the rock is. Here are a few:

mountain - huge, giant hunk of rock that is still attached to the earth's crust, doesn't move, tall

boulder - large, taller than a person

rock - large, you could get your arms around it or a bit smaller but it is usually jagged,
broken off a bigger piece of rock

river rock - round rocks that are along the edge & at the bottom of fast-flowing rivers

stone - medium, you could hold it in two hands

pebble - small, you can hold it with two fingers, could get stuck in your shoe, usually rounded

sand - made up of tiny pieces of rock, grains of sand

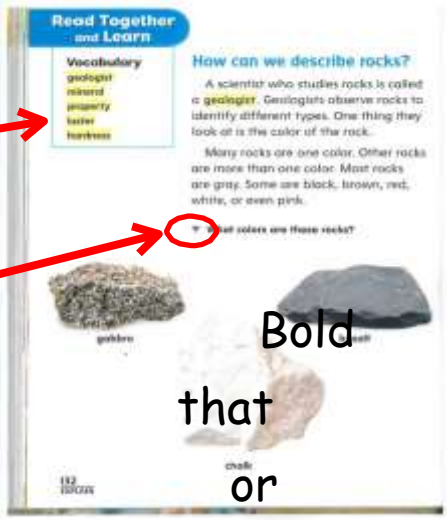
dust - really fine powder that is mixed in with sand or soil

speck - as in a speck of dirt

TEXT FEATURES IN THE SCIENCE BOOK

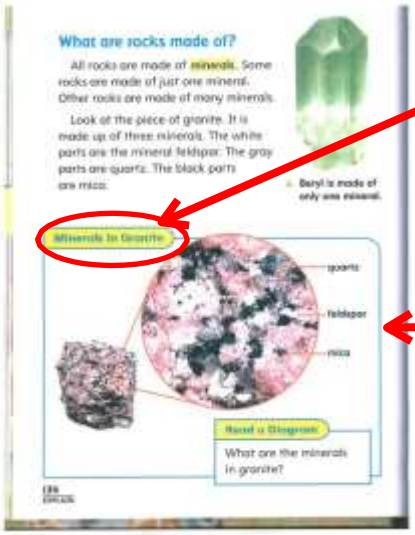
White Title – This is the topic we are reading about

Blue Sub Titles – Always in the form of a question and provide a purpose for reading (to answer the question)



Yellow Highlighted Vocabulary – Important academic language

Triangles to show Captions – Bold words, phrases, and sentences that provide explanation of illustration or picture



Yellow Sub Titles – Labels a diagram and includes a question about the diagram

Diagrams – Illustrations and pictures to clarify concepts

ROCKS

A geologist studies rocks. They look at the color of the rock. Many rocks are more than one color. Most rocks are gray. Some are black, brown, red, white, or pink.

They also look at the size of a rock. Rocks that are the same size may not weigh the same.

All rocks are made of minerals. Some rocks are made of one mineral. Others are made of many minerals. Granite is a rock. It is made of three minerals. The white part is feldspar. The gray parts are quartz. The black parts are mica.

We use minerals every day. Your pencil lead is made of the mineral graphite. Plants use the minerals in soil to grow. People get minerals from the food we eat.

Minerals have properties. A property tells something about an object. Color is one property of a mineral. Luster is another. Luster tells how a mineral looks when light shines on it. Another property is hardness. Hardness is how tough a rock is. Talc is so soft that you can scratch it with you fingernail. Diamond is so hard that it can only be cut by another diamond.

Text Annotation Symbols

This is the main idea. This

!

surprised me.

- *I don't understand this word or phrase.*

I have a question or this part confused me.

?

This is an important detail.

- *This made me predict, infer, or draw a conclusion.*

*

Rocks

Text Dependent Questions for Companion Text

Find the evidence for each answer in your text. Underline the evidence in the text with a different colored crayon for each question before writing your answer.

1. How do geologists describe rocks? _____

_____

2. What are rocks made of? _____

_____

3. Do living things need rocks? Why or Why not?_____

_____

4. What are some properties geologists use to describe minerals?

_____

_____

Some rocks might be similar because _____ and _____.

Some rocks might be different because _____ and _____.

I think _____ might have caused _____ and _____ to _____ because _____.

2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 4- Rocks Change

The lesson objective is for students to use cause and effect language to discuss the fact that rocks change the Earth.

Possible accommodations/modifications include:

- Prediction sentence frame
- Companion text for fluency practice
  (This should not replace the complex text. The intended purpose is to provide fluency practice and allow students to access the content of the complex text though leveled reading passages.)
- Text dependent questions for companion text
- Student may listen to an animated summary of the Science Book Chapter 3, Lesson 2 at http://activities.macmillanmh.com/science/ca/grade2 . Go to Chapter 3 – Earth's Materials.
- Also at the same website above students may watch "Science In Motion – Beach Rocks" for a short animated video which discusses weathering and how rocks change.
- One-side multi-flow map

Prediction Sentence Frame

I think we will learn about

_____ because _____.

Rocks Change

Although most rocks are hard, they can change shape and size. Water and wind can change rocks. This is called weathering. When water freezes in the cracks of rocks, it can push against the rocks. The cracks get bigger until the rocks break.

When rocks slide down a hill, they break. These smaller rocks break down into sand. Tiny rocks become part of the soil. Strong winds can blow sand against rocks. Wind and sand can make an arch in a rock.

Other things can also change rocks. Earthquakes can change rocks. When the earth shakes, rocks rub against each other. They break into smaller rocks.

Plants can change rocks. Plants can grow in the cracks of rocks. The strong roots can cause the rocks to break.

Rocks are made of minerals. Water can cause some minerals to change. Water causes copper in rocks to turn green. Rocks with iron will rust in water. It will turn red and brown.

Rocks Change

Text Dependent Questions for Companion Text

Find the evidence for each answer in your text. Underline the evidence in the text with a different colored crayon for each question before writing your answer.

1. What is weathering? _____

_____

2. How do rocks become part of the soil? _____

_____

3. Other things can cause the shape and size of rocks to change. Give at least two examples from the text.

_____

_____

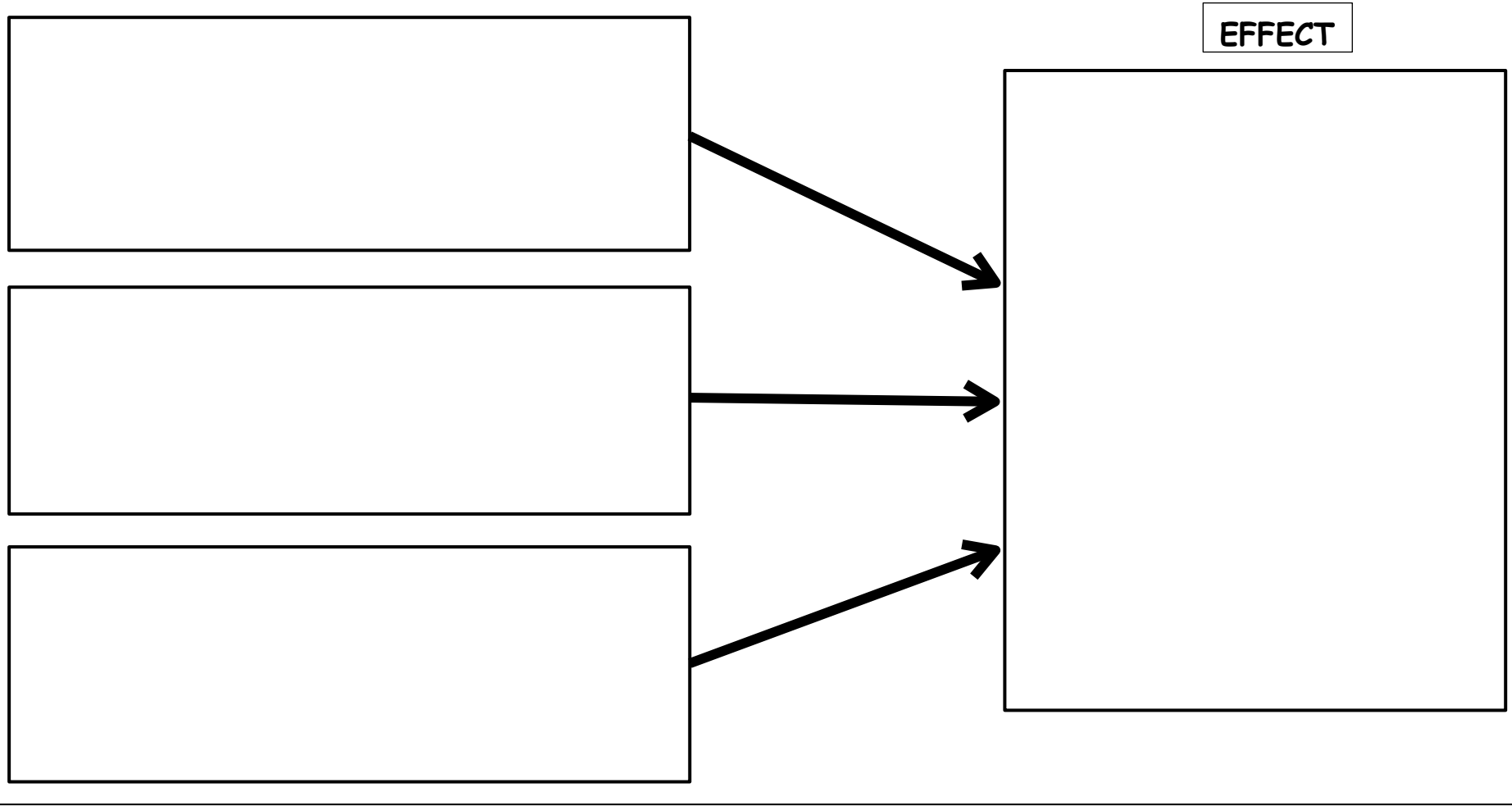
4. What causes some rocks to change color? _____

_____

Rocks Change

CAUSES

EFFECT



2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 5- Erosion

The lesson objective is for students to watch a video, read, discuss, and find evidence in the text to answer text dependent questions about erosion.

Possible accommodations/modifications include:

- Companion text for fluency practice
  (This should not replace the complex text. The intended purpose is to provide fluency practice and allow students to access the content of the complex text though leveled reading passages.)
- Text dependent questions for companion text
- One-side multi-flow map
- Erosion power point to illustrate the concept

The Causes of Erosion

Erosion is the carrying away of weathered rocks and soil. It is the wearing down of the Earth. It can be caused by water, wind, ice and waves. These four things are called natural forces.

Water erosion happens when it rains. Rocks are washed down a mountain or a stream. Rain makes the soil soft. The soft soil can be washed away.

Wind erosion happens almost always in deserts. It can cause the formation of sand dunes. The wind can change the shape of rocks. It can move sand to other places.

Ice can cause erosion too. Glaciers, or huge blocks of ice, can cause erosion. Water enters the cracks under the glacier. When the water freezes, it breaks off pieces of the rock.

Erosion also can be caused by **waves**. Waves cause erosion along the shore. Waves can be very powerful. It can wear down the rocks along the coastline.

Erosion can change the surface of the Earth. It may change immediately or slowly over time.

Erosion

Text Dependent Questions for Companion Text

Find the evidence for each answer in your text. Underline the evidence in the text with a different colored crayon for each question before writing your answer.

1. What is erosion? _____

_____

2. What are the four natural forces that contribute to erosion?

_____

_____

3. Give an example of water erosion. _____

_____

4. Give an example of wind erosion. _____

_____

5. Give an example of ice erosion. _____

_____

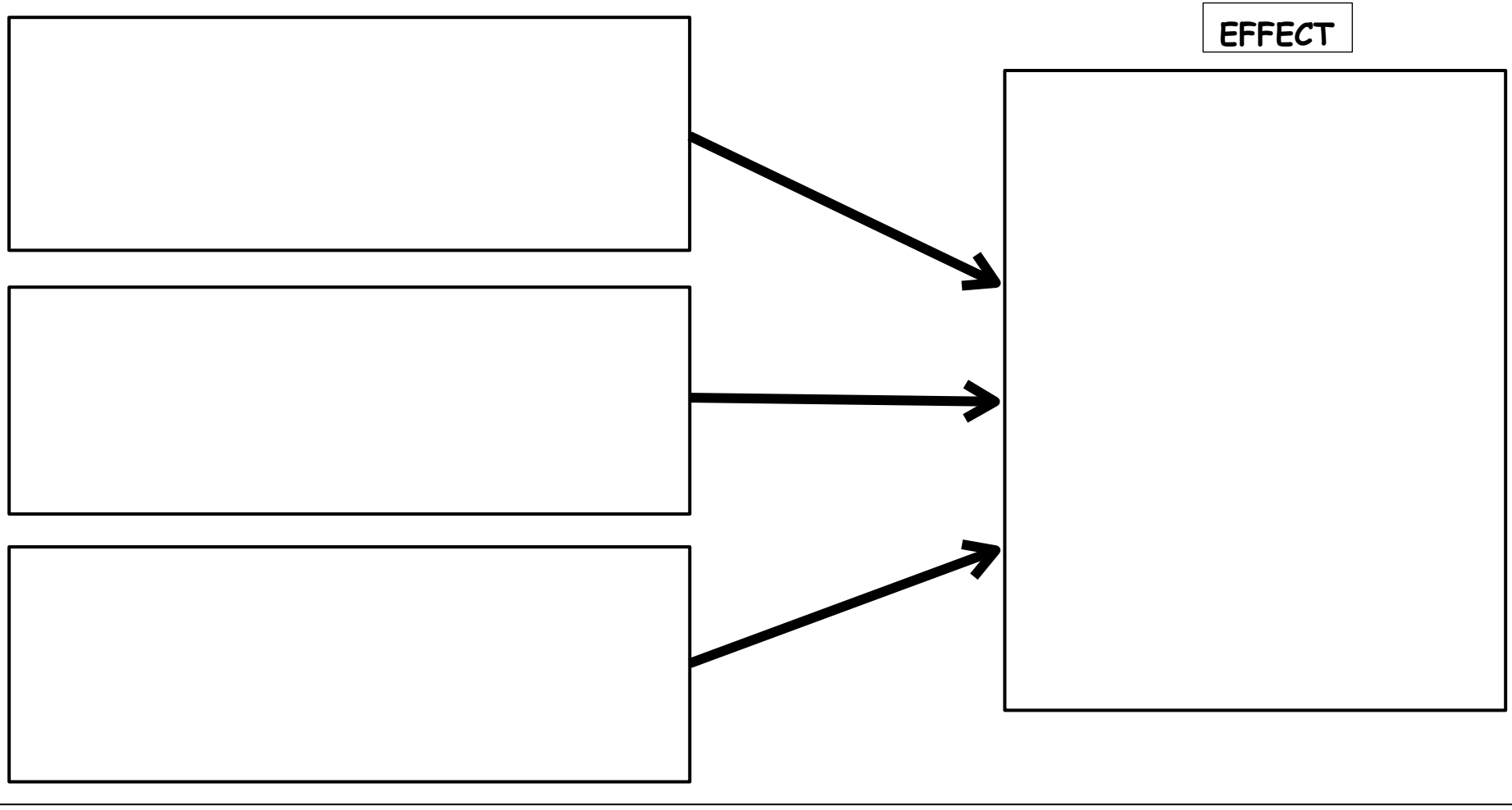
6. Given an example of wave erosion. _____

_____

Erosion

CAUSES

EFFECT



2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 6- Earthquakes

The lesson objective is for students to watch a video, read, discuss, and find evidence in the text to answer text dependent questions about erosion.

Possible accommodations/modifications include:

- Companion text for fluency practice
  (This should not replace the complex text. The intended purpose is to provide fluency practice and allow students to access the content of the complex text though leveled reading passages.)
- Text dependent questions for companion text
- One-side multi-flow map
- Earthquakes power point to illustrate the concept

Earthquakes

Companion Text

What are Earthquakes

Have you ever felt the ground start to shake? You may have felt an earthquake. Earthquakes destroy buildings and roads. Earthquakes can hurt many people. Scientists know what causes earthquakes but they can't predict them.

Causes of Earthquakes

The Earth's crust is made of huge plates. These plates fit together like a puzzle. Only the earth's plates are moving all of the time. The plates float on a layer of hot, soft rock. The plates can slide past on another. The plates also can move away from each other. The plates can crash into each other.

Changing the Earth's Surface

Earthquakes change the Earth's surface in many ways. The plates are always moving. This is a slow earthquake. It can make new mountains over a long time. A strong earthquake can cause a quick change. It can cause a landslide. The ground may split apart so the land becomes uneven.

Some earthquakes happen in the ocean. They cause tsunamis. This changes the earth's surface when the giant wave crashes into the land. No matter the type of earthquake, it can change the earth's surface.

Earthquakes

Text Dependent Questions with Sentence Frames

Find the evidence for each answer in your text. Underline the evidence in the text with a different colored crayon for each question before writing your answer.

1. **What causes the Earth's plates to constantly move?**

   The Earth's plates constantly move because_____.

   _____so the Earth's plates constantly move.

2. **What happens because the Earth's plates are constantly moving?**

   Since the Earth's plates are always moving_____.

   The Earth's plates constantly move_____.

3. **Describe one way earthquakes change the Earth's surface over time?**

   One way they change the Earth's surface over time is _____. They change it over time by_____.

4. **Describe one way earthquakes might immediately change the Earth's surface ?**

   One way earthquakes might quickly change the Earth's surface is_____.

   Earthquakes might quickly change it by_____.

5. **How might earthquakes effect the surrounding community? Immediately or over time?**

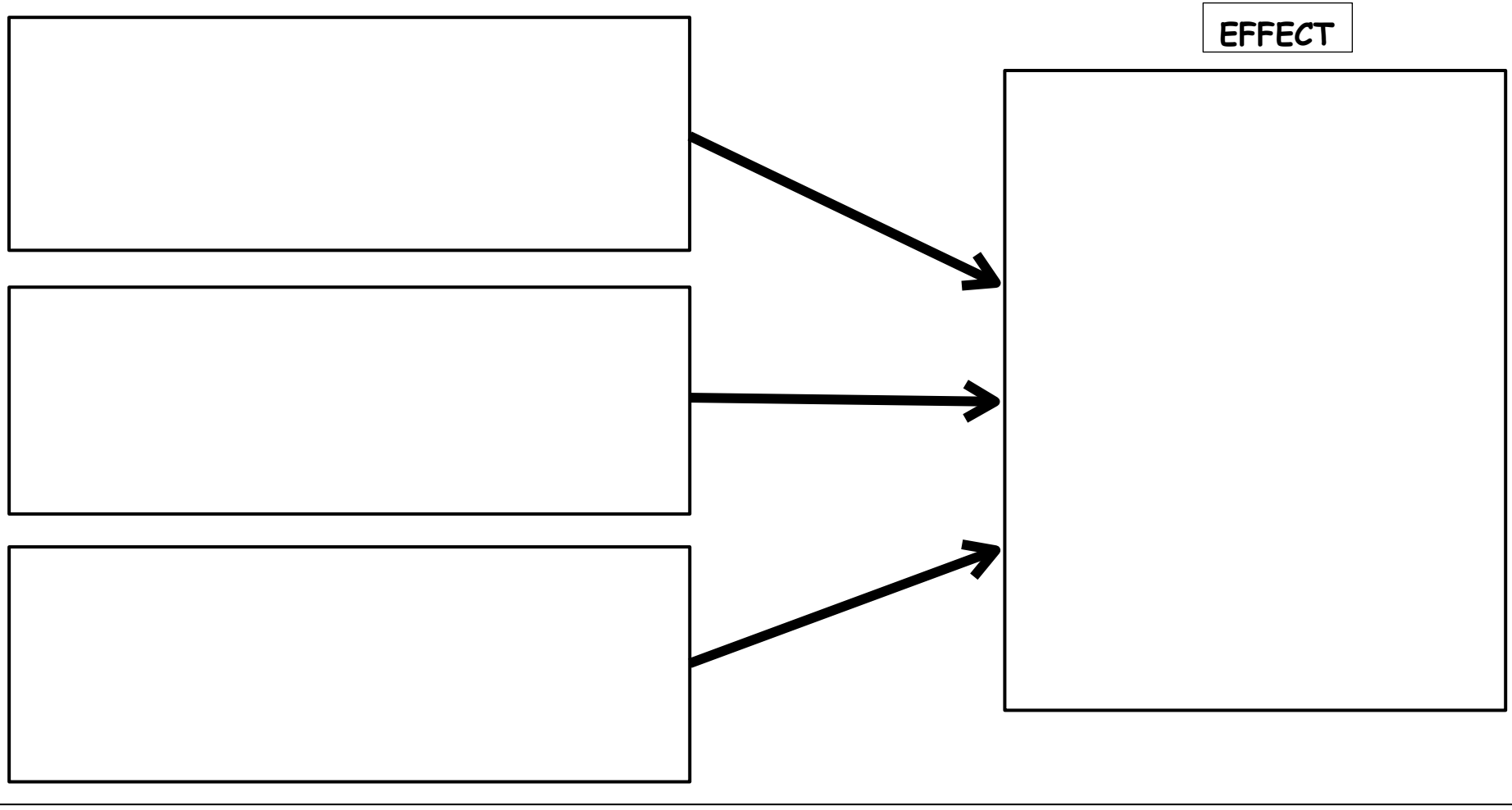
   Earthquakes might immediately impact a community by _____.

   Earthquakes might impact a community over time by _____.

Earthquakes

CAUSES

EFFECT



2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 7- Volcanoes

The lesson objective is for students to watch a video, read, discuss, and find evidence in the text to answer text dependent questions about volcanoes.

Possible accommodations/modifications include:

- Companion text for fluency practice
  (This should not replace the complex text. The intended purpose is to provide fluency practice and allow students to access the content of the complex text though leveled reading passages.)
- Text dependent questions for companion text
- One-side multi-flow map

Volcanoes

What is a volcano?

A volcano is an opening in the Earth's crust. Gases escape from this opening. A hot liquid rock called ***magma*** flows through this opening. Magma is called ***lava*** when it reaches Earth's surface.

How are volcanoes formed?

Hot ***molten*** rock and ashes spill out from an opening in the Earth's surface. As the molten rock and ash cool, they form a volcano.

Why do volcanoes erupt?

A volcano can erupt or explode. It sends out rocks, fire, and smoke into the sky. A volcano erupts because of pressure inside it. Lava, dust, ash, gas, and pieces of rock are forced out. Some eruptions are very powerful. They have the power to blast apart an entire island.

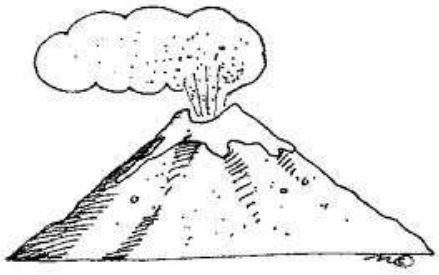
How do volcanoes change the earth's surface?

When volcanoes erupt, they change the Earth's surface. Lava flows from the volcano and cools as it touches the ground. This produces solid rock. It makes the Earth's surface appear rough and uneven. These materials build up on the surface of the Earth. The cone-shape of a volcano is created. The heat of the lava can also cause fires. Forests and communities are often destroyed. Volcanoes can cause mudflows and avalanches. They also can cause tsunamis and cracks in the Earth's surface. Volcanoes have an effect of the Earth's surface.

Volcanoes

Text Dependent Questions for Companion Text

Find the evidence for each answer in your text. Underline the evidence in the text with a different colored crayon for each question before writing your answer.



1. What does a volcano do when it erupts?

When a volcano erupts, it_____.

2. What causes volcanoes to erupt?

Volcanoes erupt because_____.

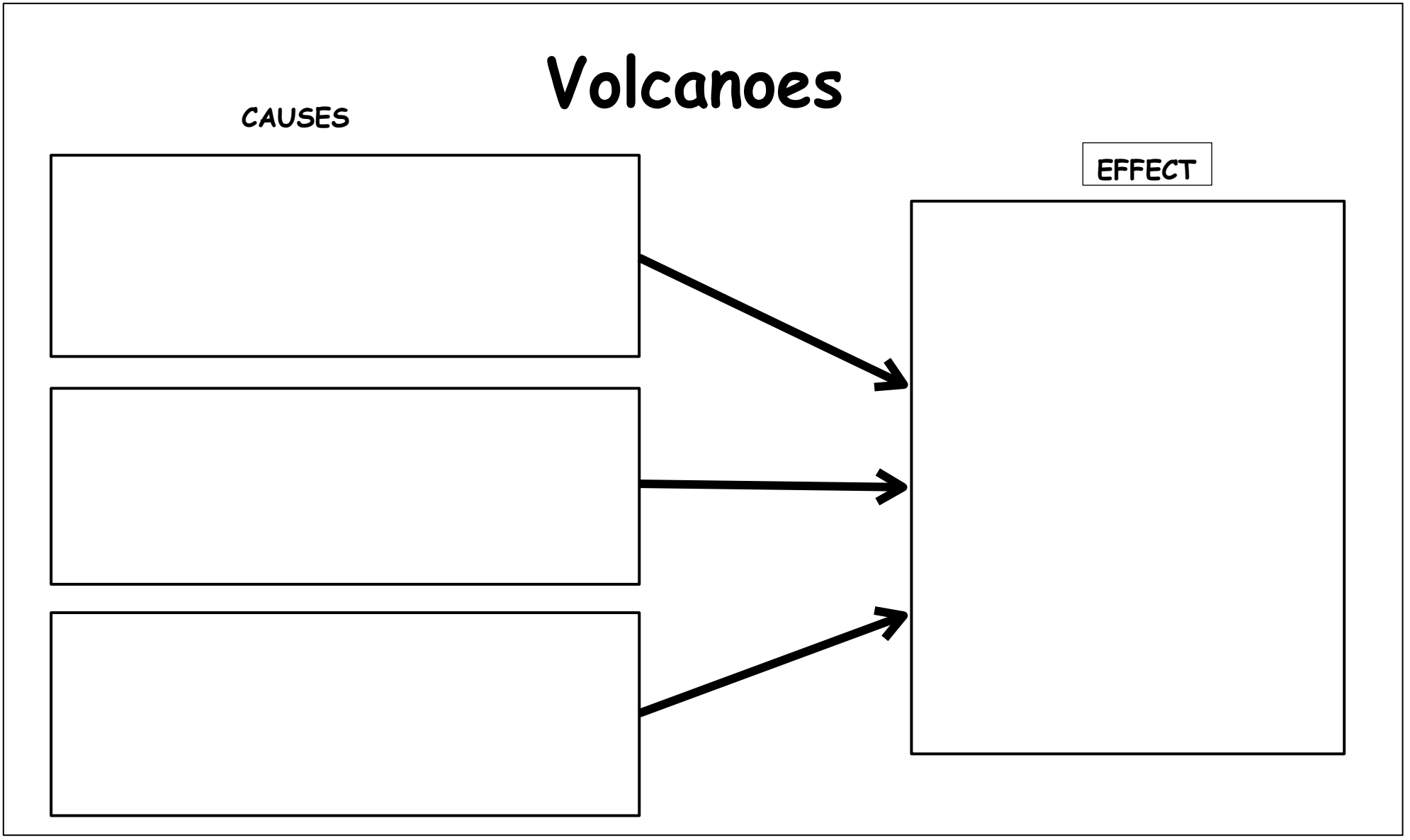
3. How do volcanoes change the Earth's surface?

Volcanoes change the Earth's surface by_____.

Volcanoes

CAUSES

EFFECT



2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 8- Co-op Paragraph- Cause and Effect Language

The lesson objective is for students to talk of the class cause and effect map and write sentences using cause and effect language.

Possible accommodations/modifications include:

- Students will be using the information they have gathered to create of cooperative paragraph.
- Students will be grouped and asked to create one sentence on a given topic for the cooperative paragraph.
- Then the whole class will negotiate the entire paragraph.
- This lesson is supported through peer group collaboration or the teacher.

2nd Grade Unit of Study
The Changing Earth

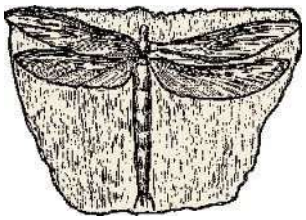
Teacher Talk

Lesson 9/10- Fossils Tell of Long Ago

The lesson objective is for students to read a text and collaboratively discuss and create a visual representation showing how an object becomes a fossil, and then watch a video, discuss, take notes, and provide evidence to answer text dependent questions about how fossils are formed.

Possible accommodations/modifications include:

- Text Dependent Questions with Sentence Frames (Part 1, 2, & 3)
- Sequencing Cards and frame for sentence writing
- May be done whole group or else students can work in pairs, or groups of 4 to cut and sequence the steps detailing how body fossils are formed.
- Guide Students in talking off the map using linguistic patterns or sentence frames.



Fossils Tell of Long Ago

Text Dependent Questions – Part 1

Find the evidence for each answer in your text. Underline the evidence in the text with a different colored crayon for each question before writing your answer.

1. What happened to the fish after it sank into the mud?

After the fish sank into the mud, _____

_____

2. What was left of the fish after it rotted away?

After the fish rotted away, _____

_____

3. What caused the fish to turn into rock?

The fish turned into rock **because** _____

_____

4. How did the fish become a fossil?

First, _____

Next, _____

After that, _____

Finally, _____

When the big fish died, _____

Thousands of years went by, _____

Slowly, _____

After a very long time, _____

Fossils Tell of Long Ago
Text Dependent Questions – Part 2

1. What happened after the peat with the imprint of the leaf hardened?

After it hardened,_____.

2. How did the fernlike leaf become a fossil over time?

First,_____. After that,

_____. Finally,_____.

3. What happened after the sand filled the footprints in the mud?

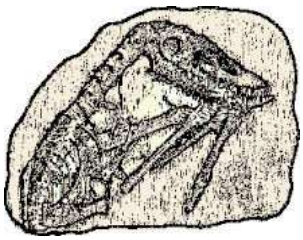
After the sand filled the footprints,_____.

4. How did the dinosaur track become a fossil?

First,_____. After that,

_____. Finally,

_____.



Fossils Tell of Long Ago

Text Dependent Questions – Part 3

1. What do fossils tell us? Give at least 3 examples.

Fossils tell us _____

_____

_____

_____

_____

2. Why do you think the author wrote this selection?

_____

_____

3. What do you think the author wanted us to remember about the Earth's surface? _____

_____

5. How did the leaf fossil differ from the fish fossil?

The leaf fossil is **different** from the fish fossil because the

_____ _____and the

_____ _____.

6. Are all fossils found in stone?

_____are

_____ **because**

_____.

7. What happened to the fly?

The fly became a_____ **because**

_____.

8. Describe two ways fossils are formed due to the Earth changing over time.

One way_____ **because**

_____.

Another example is_____.

How Fossils Are Made

1. A raptor dies. It is buried in mud, sand or clay.	2. The soft part of the raptor rot away.
3. Minerals replace the bones and teeth. They harden into rock.	4. Millions of years later, the fossil is found.

Cut the pictures and glue them with the correct sentence on page 1. See page 178-179 in the Science book for help.

Lesson 10 Sentence Frames for Sequencing

First, _____.

Next, _____.

After that, _____.

Finally, _____.

2nd Grade Unit of Study
The Changing Earth

Teacher Talk

Lesson 11/12- Collaborative Project/Summative Assessment

The lesson objective is for students to use the information they learned about the changing Earth to design a visual representation.

Possible accommodations/modifications include:

- Depending of the needs of your students, you may want to allow additional time for the visual representation, rehearsal, and presentation.
- Non-writers could be paired up with a writer.