

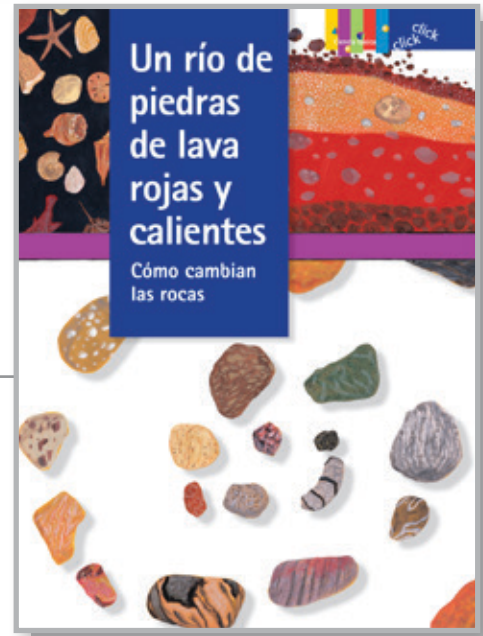


Lesson Plan and Activities Written in accordance with the Language Arts, Social Studies, and Science Standards

Un río de piedras de lava rojas y calientes

Author: **HYEON SO**

Illustrator: **EUN-JUNG MIN**



COMPLEXITY

F&P Guided Reading Level P / Lexile Level 730L

TEXT TYPE

Informational Text: Science

OBJECTIVES

- Read and understand a science text.
- Understand a text's graphic features.
- Paraphrase information.
- Determine the sequence of events.
- Identify the text's message or main idea.
- Use context clues to determine the meaning of unfamiliar words.
- Explore word relationships and use words learned through reading.
- Connect the ideas in the text to real-life situations.
- Present information.
- Write to explain a process.

INSTRUCTIONAL FOCUS:

Staircase of Complexity / Reading Rigor

INSTRUCTIONAL FOCUS:

Balancing Informational and Literary Text



Together we foster lifelong readers

MATERIALS

- index cards
- drawing materials: pencils, paper, markers, crayons, etc.
- *Secuencia de sucesos* (Graphic Organizer #28)*
- magnifying glass
- colored play dough or modeling clay (four colors)

SUMMARY

Everywhere you look there are rocks, and they all have a story to tell. This book follows the story of a pebble—from its beginnings as melted rock inside the Earth, and then through its long journey on the surface of the Earth battered by the wind, sun, and rain. But that is not the end of the story, because rocks, just like the Earth itself, are always moving and changing.

STANDARDS

SLAR CCSS RI 4.1, RI 4.2, RI 4.3, RI 4.4, RI 4.5, RI 4.7, RF 4.3.a, RF 4.4.c, W 4.2.a, W 4.2.b, W 4.2.d, W 4.5, W 4.8, SL 4.1.c, SL 4.2, SL 4.4, L 4.3, L 4.4.a, L 4.6

SLAR TEKS 4.1.A, 4.2.B, 4.9.A, 4.11.A, 4.13.B, 4.18.A, 4.20.A.(viii), 4.24.A.(ii), 4.24.A.(iii), 4.24.C, 4.25.A, 4.27.A

Science TEKS 4.7.B

NGSS 4-ESS1-1, 4-ESS2-1, 4-ESS2-2

VOCABULARY

INSTRUCTIONAL FOCUS:
Academic Vocabulary

acontecimiento – *suceso importante* / event
acumular – *amontonar, juntar* / to gather
ciclo – *serie de sucesos que se repiten* / cycle
comprimido – *apretado* / compressed
descomponerse – *podrirse* / to decompose
desgastar – *gastar algo poco a poco por el roce* / to wear away
desplazamiento – *movimiento de un lugar a otro* / shift
emerger – *surgir, salir* / to emerge
esparcir – *extender* / to scatter
fundido – *derretido* / molten
gradualmente – *poco a poco* / gradually
penetrar – *entrar una cosa en otra, introducirse* / to penetrate
serpentear – *moverse formando ondas como una serpiente* / to wiggle

Advanced Vocabulary

colisión – *choque violento entre dos cuerpos* / collision
conglomerado – *masa formada por pedacitos de rocas y minerales* / conglomerate
espesor – *el grosor de un sólido* / thickness
estrato – *cada una de las capas que forman las rocas sedimentarias* / stratum
grumo – *porción de un líquido que se endureció* / lump
guijarro – *piedra pequeña, redondeada y lisa que el agua ha desgastado* / pebble
montículo – *una pila de piedras o de tierra* / mound
placa – *cada una de las capas de roca que forman la corteza de la Tierra* / plate
magma – *roca fundida* / magma
sedimentario – *que se acumula en el fondo de un líquido* / sedimentary

* To download the Spanish Graphic Organizers in this lesson go to: santillanausa.com/spanishliteracy



VOCABULARY DEVELOPMENT

- Introduce vocabulary by providing a description, explanation, or example of all the words presented in the vocabulary section and any additional vocabulary you may wish to discuss prior to the reading activities. Consider using pictures (from magazines, books, or the Internet), sketches, and/or pantomime to explain the meaning of each word. You may also tell a story to integrate some of the terms.
- Make sure students understand all the vocabulary needed to complete the activities (e.g., *antónimo, diagrama, gráfico, secuencia, orden*) and instruction words, such as *cita, explica, justifica, ordena, parafrasea*.
- Organize a Think-Pair-Share activity for the vocabulary words. Have students think about each word for a moment. Then ask them to write about their understanding of the word on an index card (one card for each word). Next, have students get together with a classmate to compare their understanding of the word. Finally, have students share their knowledge of the word by creating a visual representation (on the back of the card) in order to teach it to others.
- Remind students that analyzing context clues will help them figure out the meaning of words. Sometimes the author provides examples, definitions, explanations, or synonyms to clarify the meaning. For example: *falla* ➤ “*cuando las placas chocan, se forma una falla*” (p. 23). Have students use the context clues to explain the meaning of these terms from p. 7: *corteza, magma, manto, núcleo externo, and núcleo interno*. Then ask students to draw the Earth’s interior and label it with these terms.
- To expand students’ word knowledge, go over the concept of antonyms and point out these antonym pairs in the vocabulary list: *acumular – esparcir, emerger – penetrar*. Then have them look for antonyms of the following words in the text (answers are in parentheses): *calentarse (enfriarse, p. 6)*; *flotar (hundirse, p. 18)*; *gradualmente (rápidamente, p. 10)*; *interno (externo, p. 7)*. Next, ask student pairs to write sentences with these antonyms, and then share their sentences with their classmates.
- Form several teams to play vocabulary charades. Write the vocabulary terms on strips of paper and place them in a bag. Students draw a word from the bag and act it out.

READING

PRE-READING

- ▶ Discuss the different types of rocks students are familiar with. Ask: *¿De qué formas y colores son las rocas que hay en los alrededores de la escuela?* (What shapes and colors are the rocks around our school?) *¿Qué otros tipos de rocas conocen? ¿Cómo son? ¿Dónde están?* (What other types of rock do you know? What do they look like? Where do you find them?)
- ▶ Have students read the title and look at the photos and graphic features. Then ask: *¿De qué creen que trata el libro?* (What do you think the book is about?) *¿Qué tipo de texto creen que es? ¿Por qué?* (What type of text do you think this is? Why?)
- ▶ Have students set a purpose for reading. Ask: *¿Qué esperan aprender al leer este libro?* (What do you expect to learn by reading this book?)

READING

- ▶ Familiarize students with the text and graphic features of this book (e.g., use of speech bubbles, diagrams and labels, photos and captions). Then do a choral reading of pp. 2–6 to model pronunciation and intonation. Next, give students time to read these pages silently. After this second reading, ask: *¿Cómo era la Tierra cuando “nació”?* *¿Y qué le ocurrió después?* (What was the Earth like when it was “born”? And what happened next?) *¿Qué edad tiene la Tierra? ¿Cómo lo saben los científicos?* (How old is the Earth? How do scientists know this?) *¿Qué era al principio la piedra de la que habla el texto? ¿Dónde estaba?* (What was the rock the text is referring to originally? Where was it?)
- ▶ Explain to students that this text presents the rock cycle; that is, how rocks change over time into different types of rocks: igneous (volcanic), metamorphic, and sedimentary. Distribute four index cards to each student and, as they read, have students draw a stage of the rock cycle on each card. Guide students to complete the first card—the rock as part of the magma. Then assist and support students as they read the text independently and complete the rest of their cards. Have students number their cards in sequence.
- ▶ Emphasize the importance of interpreting the text’s graphic features. Ask students these or similar questions to assess their comprehension of the diagrams and pictures in the text: *Según el diagrama en la página 7, ¿qué capa tiene mayor espesor: el manto o el núcleo interno?* (According to the diagram on page 7, which layer is thicker: the mantle or the inner core?) *Fíjense en la página 23. ¿En qué dirección se mueve una falla de desplazamiento horizontal?* (Look at page 23. In which direction does a horizontal fault move?) *Fíjense en la página 25. ¿Qué rocas metamórficas se muestran?* (Look at page 25. Which metamorphic rocks are shown?)
- ▶ To bring the text together, conduct a read aloud of the *Nota del profesor* on pp. 30–31. This text summarizes the rock cycle. As you read, you may want to have students observe the rock cycle diagram on p. 27 (*El ciclo de la roca*), and point out with their fingers the part of the process you are describing at each stage of your reading. Pause frequently to monitor students’ understanding and to clarify questions they might have. Then have them paraphrase the information in each of the paragraphs.

INSTRUCTIONAL FOCUS:

Text-based Answers / Critical Analysis



DIFFERENTIATED INSTRUCTION

BELOW-LEVEL STUDENTS

- Have students answer these or similar comprehension questions with short phrases or incomplete sentences. Ask: *¿Qué es el magma? ¿Cómo emerge a la superficie?* (What is magma? How does it surface?) *¿Qué les ocurre a las rocas con la acción del sol, la lluvia y el viento?* (What happens to rocks with the effects of the sun, rain, and wind?) *¿Cómo se forman los fósiles?* (How do fossils form?)

AT-LEVEL STUDENTS

- Encourage students to make inferences and predictions based on the text, using short sentences. Ask: *¿Qué determina que una roca tenga muchos o pocos agujeros?* (What causes a rock to have many holes or just a few?) *Di dos cosas que pueden suceder cuando las placas de la Tierra se desplazan. ¿Por qué sucede eso?* (Tell two things that can happen when the Earth's tectonic plates move. Why does that happen?)

ABOVE-LEVEL STUDENTS

- Encourage students to analyze and evaluate the text, using complete and elaborate answers. Ask: *¿Por qué cambian las propiedades y la forma de las rocas al penetrar en la Tierra?* (Why do rocks' properties and shapes change when they sink beneath the Earth's surface?) *¿Qué quiere decir la autora cuando afirma: "Emprender un viaje con un guijarro te será muy útil para descubrir la historia de la Tierra"?* *Da ejemplos del texto.* (What does the author mean by "Traveling with a pebble will help you learn about the Earth's history"? Give examples from the text.)

POST-READING

- ▶ Explain that it is important to know the sequence, or order, of events to understand what we read. For example: *"Al principio, la piedra era magma [...]. Luego, cuando el volcán hizo erupción, salió a la superficie"* (p. 9). Point out the words that indicate sequence. Then discuss with students the sequence of events in the rock cycle: Ask: *¿Qué ocurre primero: la piedra emerge en una erupción o la piedra es parte del magma?* (What happens first: the rock emerges in an eruption or the rock is part of the magma?) *Lean la página 15. ¿Qué le sucede a la piedra? ¿Es este el final de la piedra? ¿Qué pasa después (p. 17)?* (Read page 15. What happens to the rock? Is this the rock's end? What happens next (p. 17)?)
- ▶ Distribute a sequence of events chart (Graphic Organizer #28) to each student and have them use their cards from the activity suggested in the Reading section and the book to write a description of the different stages in the rock cycle. Then have students get together with a classmate and compare and contrast their charts. Finally, ask student pairs to explain to each other how the rock changes as it moves through the cycle. ✓
- ▶ Revisit the question *¿Qué esperan aprender al leer este libro?* (What do you expect to learn by reading this book?) from the Pre-reading section, and ask: *¿Qué aprendieron al leer este libro?* (What did you learn by reading this book?) *¿Cuál es el mensaje o idea principal del libro? Citen del texto para justificar su respuesta.* (What is the book's main message or idea? Quote from the text to justify your answer.)

CONNECTION WITH CONTENT AREAS: SCIENCE

INSTRUCTIONAL FOCUS:

Building Knowledge in the Content Areas

- ▶ Ask students to select a sample of rocks from the schoolyard (or from their neighborhood if the schoolyard is not a suitable source) and bring them to class. In the classroom, ask students to spread their rocks out on a table and observe them. Give students magnifying lenses to allow for a closer inspection. Then have students classify their rocks (i.e., igneous, sedimentary, metamorphic) and label them accordingly. If necessary, provide students with reference books they can consult to help them identify the rocks. Organize a classroom exhibit and invite students to explain the stage of the rock cycle each rock is in. Encourage them to use the earth science vocabulary they have learned. ✓
- ▶ Distribute play dough (or modeling clay) in four colors to small groups of students and tell them that they are going to make a model of the Earth. Using the diagram on page 7 as a guide, have students begin by shaping a small ball for the inner core (*núcleo interno*). Next, they should add a thick layer in a different color for the outer core (*núcleo externo*) and so on until their “earth” is complete. Then, have students cut (with a ruler or plastic knife) their earth in half so that they can see the layers inside. Ask them to name and describe the different layers.

WRITING

INSTRUCTIONAL FOCUS:

Writing from Sources / Research Strand

Have students write a three-paragraph explanation of one of the Earth’s processes described in the book (e.g., how an eruption takes place, how fossils are formed, how mountains are formed). Encourage students to create a sequence of events chart before they begin writing to help them organize their explanations. Emphasize the importance of writing clear explanations and of supporting them with details and images. In addition to using their charts, note cards, and the book, have students consult other sources to verify the accuracy of the information. Remind them to provide a list of sources at the end of their writing. Encourage students to include illustrations or images that help the reader understand the explanations. Guide and assist students through the writing process. As students revise and edit their work, have them pay attention to the conventions of Spanish grammar and punctuation. ✓



Informal Assessment

You may wish to assess a student’s progress as he or she completes comprehension and production activities. Suggested activities are identified with the icon.



Nombre _____

Vocabulario

A Completa las oraciones con la palabra correcta.

acontecimiento

descomponen

desgastan

desplazamientos

emerge

1. Las piedras se desgastan con la lluvia, el sol y el viento.
2. En una erupción, el magma emerge a través de grietas.
3. Algunos huesos y conchas se descomponen y dejan su huella en las rocas.
4. Las erupciones volcánicas son un acontecimiento importante.
5. En las fallas hay desplazamientos de las placas de la Tierra.

B Une cada palabra con su antónimo.

- | | | |
|-----------------|------------------|----------------|
| 1. gradualmente | _____ | a. esparcir |
| 2. comprimido | _____ | b. emerger |
| 3. penetrar | _____ | c. endurecido |
| 4. fundido | _____ | d. rápidamente |
| 5. acumular | _____ | e. suelto |

C Ilustra estas palabras.

1. serpentear

2. ciclo

Answers will vary, but must show:
 1. something (e.g., a river) that wiggles or winds.

2. a circle or similar representation of repetition.



Nombre _____

Comprensión lectora

A Ordena en una secuencia los siguientes sucesos del ciclo de las rocas.

- se convierten en sedimento y este en rocas sedimentarias
- roca fundida o magma
- cambian a rocas metamórficas
- se forman rocas volcánicas

Primero: roca fundida o magma



Luego: se forman rocas volcánicas



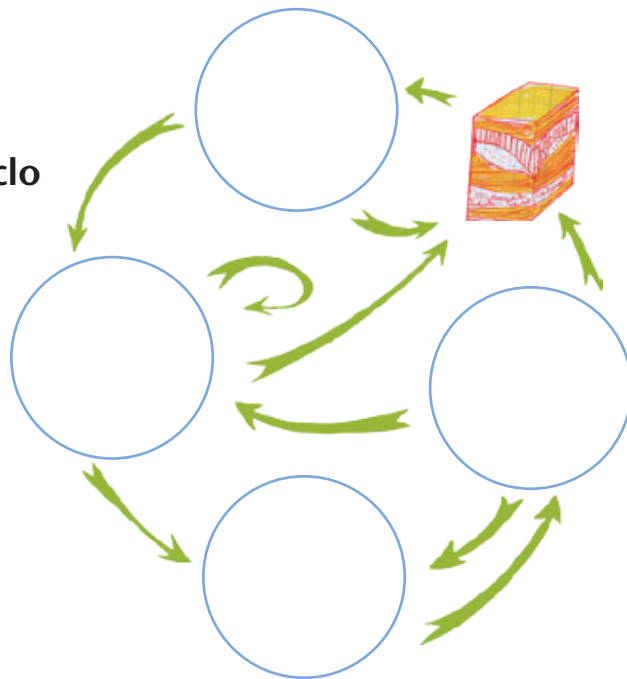
Después: se convierten en sedimento y este en rocas sedimentarias



Al final: cambian a rocas metamórficas

B Completa el diagrama del ciclo de la roca. Dibuja las rocas de cada etapa y rotula el diagrama.

Answers will vary, but must include the four stages: magma, roca volcánica, roca sedimentaria, roca metamórfica. Drawings of each type of rock should show understanding of the main characteristics of the rock.



C Cita dos evidencias del texto para apoyar esta oración: “Las rocas continuarán viajando” (pág. 28).

Answers will vary, but must include examples of the rock cycle and an understanding that the cycle keeps repeating.



Nombre _____

Vocabulario

A Completa las oraciones con la palabra correcta.

acontecimiento

descomponen

desgastan

desplazamientos

emerge

1. Las piedras se _____ con la lluvia, el sol y el viento.
2. En una erupción, el magma _____ a través de grietas.
3. Algunos huesos y conchas se _____ y dejan su huella en las rocas.
4. Las erupciones volcánicas son un _____ importante.
5. En las fallas hay _____ de las placas de la Tierra.

B Une cada palabra con su antónimo.

- | | |
|-----------------|----------------|
| 1. gradualmente | a. esparcir |
| 2. comprimido | b. emerger |
| 3. penetrar | c. endurecido |
| 4. fundido | d. rápidamente |
| 5. acumular | e. suelto |

C Ilustra estas palabras.

1. serpentear

2. ciclo



Nombre _____

Comprensión lectora

A Ordena en una secuencia los siguientes sucesos del ciclo de las rocas.

- se convierten en sedimento y este en rocas sedimentarias
- roca fundida o magma
- cambian a rocas metamórficas
- se forman rocas volcánicas

Primero:



Luego:

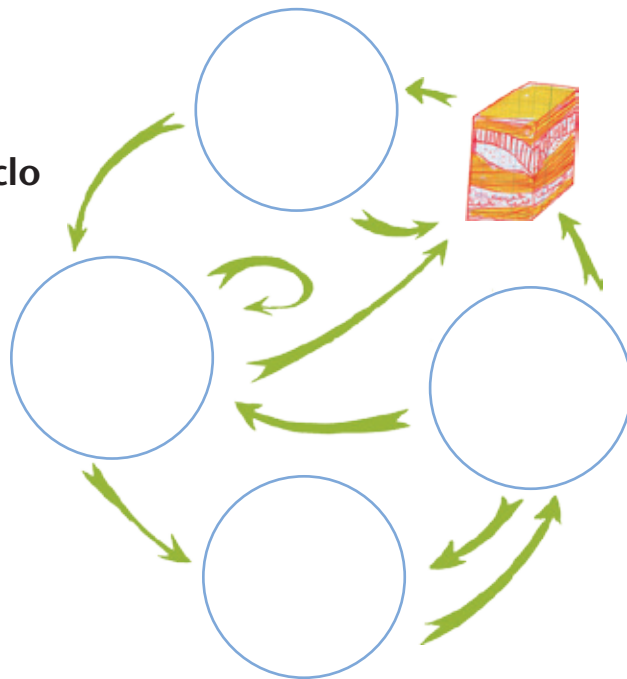


Después:



Al final:

B Completa el diagrama del ciclo de la roca. Dibuja las rocas de cada etapa y rotula el diagrama.



C Cita dos evidencias del texto para apoyar esta oración: "Las rocas continuarán viajando" (pág. 28).
