



Synopsis

Earth's Riches explores how valuable minerals are obtained and classified. The book discusses the properties and uses of a variety of minerals, gems, and crystals.



South Africa

At a Glance

- **Genre:** nonfiction—science
- **Science Content:** classifying materials, use of natural resources
- **Developing Comprehension:** understanding the format and purpose of the index
- **Developing Vocabulary and Language:** multi-function words. Highlighted words: *extinct, fuel, metal, mineral, ore, polish, vibrate*
- **Developing Fluency:** building background vocabulary
- **Developing Writing:** writing “Did You Know?” statements

Learning Outcomes

Students will

1. read text and interpret illustrations to make assumptions and answer questions (**LO 1**)
2. display an understanding of the format and purpose of the index (**LO 2**)
3. form and write “Did You Know?” statements using information from the book (**LO 3**)
4. generate and answer questions using a KWL chart (**LO 4**)

Visual Elements

- captioned photos and diagrams
- speech bubble
- location map
- cutaway diagrams

Focus on Fluency

Building Background Vocabulary

If students are spending time trying to recall the differences between rocks, crystals, and minerals as they are reading this book, their fluency may suffer. Take some time, prior to reading *Earth's Riches*, to thoroughly acquaint students with some of the terms they will come across in the book.

Read the text on page 5 to students. Help them understand the main differences between these substances. Then have students find, read, and discuss all the highlighted words throughout the text. Ensure students have a basic understanding of these terms before beginning the guided reading section.

Before Reading



Read the material on the back cover to students. Discuss the title and the entries on the Contents page. Ask, *What do you know about rocks and minerals? What would you like to find out?* Give students time to respond to these questions.

Hand out individual copies of the **KWL Chart**. Explain that KWL stands for *Know, Want, Learn*, as in “what I know,” “what I want to know,” and “what I have learned.” Explain each of the sections and then have students use the previous discussion to fill in the first two columns. Tell students that they will have the opportunity to complete the chart as they read the book and after they have finished. Work with students who need further support.

Other Books in the South Africa Set



Photo Essay



Fiction



Biography



Mathematics

During Reading



This lesson guide provides suggestions for teaching the various sections of the book. It suggests using a variety of teaching approaches based on text complexity, vocabulary, and students' background knowledge. Teachers should feel free to alter the approach based on the needs and competencies of their students.

Section	Read & Discuss	Focus on Visual & Text Features	Observe & Assess
pp. 4–5	Read these pages to students. Discuss some of the different minerals that are mined in South Africa.	Discuss the meaning of the highlighted word <i>mineral</i> . Have students talk about the impact of the illustrations on these pages.	Did students display an understanding of the nature of minerals, crystals, and rocks? (LO 1)
pp. 6–7	Ask, <i>How do people manage to get minerals out of the ground?</i> Have students respond; then have them read these pages and discuss them.	Help students interpret the diagram. Challenge them to suggest the sequence of events that results in the rail cars taking away the coal.	Were students able to form generalizations about how people were able to extract valuable minerals from under the ground? (LO 1)
pp. 8–11	Say, <i>Read to the end of page 11 and find out what happens once the minerals are taken out of the ground.</i> Then have students discuss their findings.	Talk about the meanings of the highlighted words <i>metal</i> and <i>ore</i> . Invite students to discuss how the diagrams on page 11 help explain the text.	Were students able to recall and discuss how some minerals, such as iron, are separated and extracted from ore? (LO 1)
pp. 12–15	Have students discuss what they know about gemstones. Ask, <i>Why are they so expensive?</i> Have students respond and then read these pages and discuss them.	Reread the Activity Zone! text on page 15. If appropriate, arrange to have these materials available for students to experiment with crystals.	Were students able to articulate how gemstones are formed and why they may be so expensive to buy? (LO 1)
pp. 16–17	Ask, <i>How do scientists recognize different types of minerals?</i> Invite responses and then have students read page 16 and discuss the method used.	Read page 17 to students. Help them understand the scale and how all minerals fit somewhere on it. Point out how the author has used text in circles to highlight interesting information.	Were students able to display an understanding of one of the ways scientists manage to distinguish between minerals that appear similar? (LO 1)
pp. 18–19	Have students read these pages and discuss the three main types of rock. Ask, <i>How are the making of sedimentary and metamorphic rocks similar?</i>	Help students understand that <i>sedimentary</i> comes from the word <i>sediment</i> . Students may also be familiar with the concept of <i>morphing</i> , meaning “to change.”	Did students understand that both types of rock were formed as a result of the application of great amounts of pressure? (LO 1)
pp. 20–21	Have students discuss what they know about fossils and how they are formed. Then have them read these pages and discuss them.	Discuss the meaning of the highlighted word <i>extinct</i> and the noun <i>extinction</i> . Ensure students understand the sequence of events on page 21.	Were students able to display an understanding of how fossils are formed and why they are important to our understanding of the past? (LO 1)
pp. 22–23	Invite students to read these pages and discuss the ways valuable minerals can be conserved.	Have students view the range of photographs on these pages. Ask, <i>Which idea do you think is the most sensible?</i>	Were students able to form and justify an opinion about the ways minerals could be conserved? (LO 1)
p. 24	See Extending Science .		

After Reading



Developing Comprehension

Understanding the Format and Purpose of the Index (LO 2)

Have students view the Index on page 24. Discuss some of the conventions used; in particular, the use of alphabetical order, commas to separate individual page numbers, and dashes to show larger sections of text.

Ask, *How do you think the author chose these particular words or subjects for the Index?* Have students respond. Ensure they understand that the Index contains references to material the reader is most likely to be interested in. Challenge students to state why they think the author chose not to include the word *mineral*. [It occurs on nearly every page.]

Developing Writing

Writing “Did You Know?” Statements (LO 3)

Invite students to find two or three examples of new or interesting information from the book. Talk about the way that authors sometimes write this type of information in the form of “Amazing Facts” or “Did You Know?” statements.

Discuss how these are written using expressive language and usually containing little-known or fascinating information. Hand out copies of the **Did You Know?** activity sheet. Read through the instructions with students before having them complete the task. Encourage students to share their responses and talk about why they chose those particular topics.

Developing Vocabulary

Multi-Function Words

Write the following words from page 6 on the board: *drill*, *mine*, *surface*. Explain to students that these words are special in that they can be used as nouns or verbs. Challenge students to generate sentences that use these words as both nouns and verbs, for example:

The miners will drill using a high-powered drill.

Invite students to search the rest of the text for other examples of multi-function words. Have them demonstrate using these as different parts of speech in a variety of sentences.

Extending Science

KWL Chart (LO 4)

Have students read and respond to the first question on page 24. Help them locate appropriate resources and assist them with their answer. Then have students suggest and justify ways Earth's minerals can be conserved. Make a list of things that can be done around school and at home.

Have individual students share what they have recorded on their **KWL Charts** thus far. Then have them complete the final column. Discuss the range of resources that are available for answering any remaining questions. Where necessary, work with students who need further support.