

Earthquakes

Before Reading

Motivation / Purpose

The purpose of this text is to explain how and why earthquakes occur (Explanation) and to retell the experience of a survivor of an earthquake (Recount). This text links with the *Social Studies* theme *Our World*.

Text Type

Draw students' attention to the:

- title
 - photographs and captions
 - illustrations, map and labels.
- Ask, "What type of text is this?" (Explanation/Recount). What information would you expect to find in this text?

Visual Literacy

Look at the front cover. What is happening here? Would you like to be in this photograph? Does it look safe? Why or why not? Look at the first few pages of the text. How does the page design tie in with the subject matter?

Background Knowledge

What is an earthquake? Where do they occur? Are some areas more likely to be struck than others? What happens when an earthquake hits? Discuss what people can do to help protect themselves.

Phonological Awareness

Ensure students know the following phonological patterns:

- /er/: Earthquake (p.4), surface (p.4), every (p.4), occur (p.4), layers (p.5)
- long o: ago (p.6), mostly (p.6), slowly (p.6), oceans (p.7), float (p.8)

Say one of the letter combinations above and give the students 60 seconds to write as many words as they can that include the same letters.

Write a word on the board with one of the above letter combinations missing. Ask students to complete the word and supply another word with the same letter combination.

High Frequency Words

always, brought, cannot, early, fast, high, know, move, occur, other, people, understand

Vocabulary

core, crust, detectable, devastating, faults, layers, Magnitude scale, mantle, Modified Mercalli scale, Richter scale, seismograph, seismologists, seismology, stress, survivors, tectonic plates



Divide each word into two parts (syllables where possible) and write each word part on a card. Have students take turns to turn over two cards, then try to match the pair to make a word.

Select a card that represents the beginning of a word. Ask students to add different endings to make new words, e.g. ear – earth, early, ears.

During Reading

Vocabulary in Context

Discuss the meaning of each vocabulary word.

Talk about the comparative and superlative adjectives: *thinnest, thicker, higher, bigger*. Explain that these words are used to compare objects: *-er* compares two items, while *-est* compares more than two.

Discuss the way the author has defined technical terms by including a definition in the text: *These huge pieces of rock are called tectonic plates.*

Checking for Meaning

Literal:

How many detectable earthquakes occur each year? (About 500 000 occur each year.)

What are the three main layers of the Earth called? (The layers are the core, the mantle and the crust.)

What decision did Mohammad's family make that helped save their lives? (They decided to sleep outside.)

Inferential:

Why would thinking that the Earth was solid make it difficult to understand how earthquakes happen?

Why would scientists name each of the tectonic plates?

Why would the city of Bam 'never be the same', even though people have started to rebuild their homes?

Response:

If you lived in an earthquake area, what type of house would you build and why?

Why do you think people choose to live in earthquake areas, rather than somewhere else?

Grammatical Patterns

Ensure students understand the following components of an explanation:

- Identifying statement about what is to be explained: *An earthquake is the shaking of the Earth's surface.* (p.4)
- Series of events known as the explanation sequence: (pp.4–11, 12–15, 16–17). Point out that pages 4–11 provide the most obvious explanation sequence. Note that this text explains three aspects of earthquakes in separate explanations.
- Concluding statement: *This is an earthquake, and it is why most earthquakes happen near the edge of tectonic plates.* (p.11)
- Use of general nouns: *seismologists* (p.5), *plates* (p.9), *information* (p.12), *city* (p.21)
- Use of action verbs: *study* (p.5), *surrounds* (p.6), *meet* (p.9), *spread* (p.11), *describe* (p.13)
- Use of the simple present tense: *Scientists use machines called seismographs* (p.12)
- Use of conjunctions of time and cause: *but* (p.6), *until* (p.9), *Over time* (p.11), *During an earthquake* (p.17), *If* (p.17)
- Use of noun groups: *the Earth's rocky shell* (p.4), *scientists who study earthquakes* (p.5)
- Use of abstract nouns: *stress* (p.11)
- Use of adverbial phrases: *on the lower part of the mantle* (p.8), *beneath the other* (p.9), *in all directions* (p.11)
- Use of complex sentences: *When the stress is too much for the rocks, they break suddenly along the fault.* (p.11)
- Use of technical terms: *seismology* (p.5), *seismologists* (p.5), *mantle* (p.6), *core* (p.6), *crust* (p.7), *tectonic plates* (p.8), *faults* (p.10), *Magnitude scale* (p.13), *Richter scale* (p.14), *Modified Mercalli scale* (p.15)
- Glossary and index (p.24)

Ensure students also understand the components of a recount, as detailed in the teacher notes on page 47 for *The Story of Alexander Fleming*.

Fluency / Punctuation Patterns

These punctuation patterns occur in the text:

- Use of an apostrophe to show possession: *Earth's rocky shell* (p.4)
- Use of numerals to represent numbers and years: *500 000* (p.4), *1960* (p.13), *6.6* (p.21)
- Use of capital letters for proper nouns: *Earth's* (p.4),

Richter scale (p.14), *Modified Mercalli scale* (p.15), *Japan* (p.17), *Mohammad* (p.18), *Bam* (p.18), *Iran* (p.18)

- Use of commas to separate phrases and dependent clauses from the main clause: *When the edges of the plates meet, the plates can spread apart, slide past each other, or push against each other ...* (p.9)

To help students read complex sentences fluently, read the clauses or phrases independently first, then read each sentence in its entirety, pausing at the breaks.

Critical Literacy

What facts are presented in both the explanation and the recount? Which text provides more information about why a volcano erupts? How is the explanation text different from the recount? Why do you think the author also included the recount in this book?

Linking Visual and Written

Explore the labelled illustrations on pages 6 and 7. How do they help to explain the text further? Are they effective? Look at the chart on page 15. How do you read charts like this?

After Reading

Search the Internet for information about other earthquakes. For each earthquake, list the date, the location, the number of lives lost and the magnitude. Rank these using different criteria. Is there any relationship between the number of deaths and the magnitude of the earthquake? Explain your answer.

Activities

Students will:

- correct false statements and sequence events from the text
- circle words spelt incorrectly and rewrite sentences using correct phonic elements
- make word families using given root words
- complete a flow diagram explaining how an earthquake occurs.

Comprehension (meaning) Vocabulary (structure) Phonics (visual) Writing (structure)

