4th Grade Earth Science Resources

Next Generation Science Standards:

ESS1.C: The History of Planet Earth

Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)

ESS2.A: Earth Materials and Systems

Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1)

ESS2.B: Plate Tectonics and Large-Scale System Interactions

The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2)

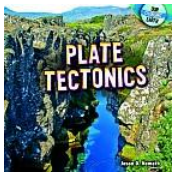
ESS2.E: Biogeology

Living things affect the physical characteristics of their regions. (4- ESS2-1)

Books:

Plate Tectonics by Jason Nemeth (2012)

Includes index. Explains what tectonics plate are, how they shift to create land formations, and how volcanoes and earthquakes are caused by shifting plates.

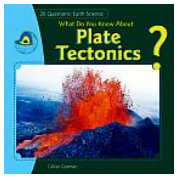


Guided Reading: Q

24 Pages

Plate Tectonics by Gillian Gosman (2014)

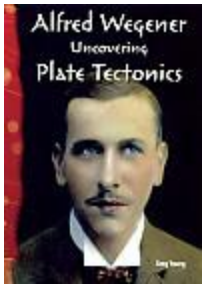
The plates that make up the Earth's surface are always on the move. The twenty questions posed and answered help explain the fundamentals of plate tectonics. Readers will learn about the layers that make up the Earth, how mountains and volcanoes form, and why earthquakes happen. This is a solid supplement to curricular explorations of earth science.



Guided Reading: U

24 Pages

Alfred Wegener: Uncovering Plate Tectonics by Greg Young (2007)
Includes index. Discusses the life of German scientist Alfred Wegener and his work with plate tectonics and includes brief profiles of other scientists as well as a related activity, and a glossary.

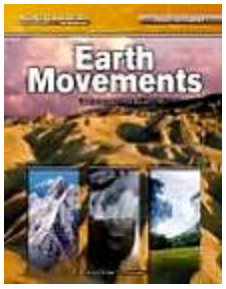


Guided Reading: S
32 Pages

A Changing Earth by Heather Miller (2009)
Includes bibliographical references (p. 31) and index. Changing landforms -- How mountains form -- Explosive volcanoes -- Drifting continents. Activities, exercises, and easy-to-follow text introduce children to the natural changes the earth is undergoing and what they might mean for the future.

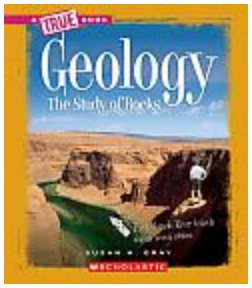
Guided Reading: Q
32 Pages

Earth Movements by Traci Steckel Pederson (2006)
Includes bibliographical references (p. 22) and index. Presents an introduction to the geology, in simple text with illustrations, providing information on how the Earth was formed, as well as plate tectonics, various land forms, erosion, and more.



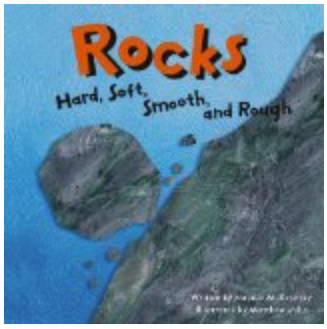
Guided Reading: S
24 Pages

Geology: The Study of Rocks by Susan Heinrichs Gray (2012)
Includes bibliographical references (p. 44-45) and index. Discusses glaciers, oceans, volcanoes, rocks, minerals, earthquakes, and the history of the Earth.



Guided Reading: S
48 Pages

Rocks: Hard, Soft, Smooth and Rough by Natalie M. Rosinsky (2003)
The rocks you see everyday can be grouped into different types, like igneous, sedimentary, or metamorphic. Some rocks are actually minerals, and you can even find fossils in some types of rocks.

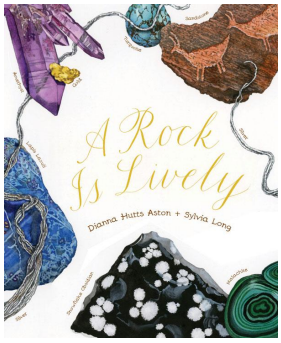


Guided Reading: N
24 Pages

Rockin' Rocks by Christine Peterson (2010)
An introduction to geology that uses full-color photographs and easy-to-read text to describe how rocks are formed, the main components of rocks, rock layers, and the rock cycle; and includes instructions for a related activity.

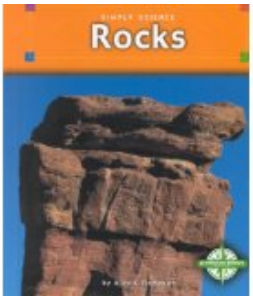
Guided Reading: N
32 Pages

A Rock is Lively by Dianne Hutts Aston (2012)
Introduces young readers to rocks and minerals.



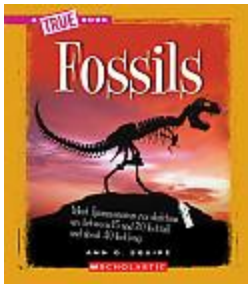
Guided Reading: n/a
40 Pages

Simply Science: Rocks by Alice K. Flanagan (2001)
A brief introduction to types of rocks on earth and how they are formed.



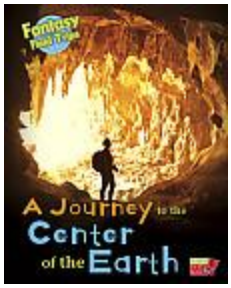
Guided Reading: N
32 Pages

Fossils by Ann Squire (2013)
Includes bibliographical references (p. 45) and index.;Clues from the past -- What are fossils? -- Preserved in stone -- How are fossils created? -- A sticky situation -- Are all fossils bones? -- Here, there and everywhere -- Where are fossils found? -- Burst -- The big truth -- Mary Anning, fossil hunter -- Learning from fossils -- What can fossils tell us about the past? -- True statistics.
An introduction to fossils, discussing the different types, where they are found, and how they are made.



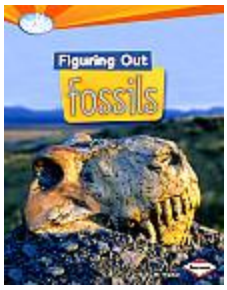
Guided Reading: U
48 Pages

A Journey to the Center of the Earth by Claire Throp (2014)
Includes bibliographical references (page 31) and index. Let's take a trip through Earth! -- Earth's layers -- Crust -- Drilling through the crust -- Upper mantle -- Lower mantle -- Outer core -- Inner core -- How do we know? -- Amazing Earth. Explores the layers of Earth.



Guided Reading: P
32 Pages

Figuring Out Fossils by Sally M. Walker (2013)
Fossils give us a window to the past. Water, sediments, and pressure work together over time to preserve the shape of things that lived long ago. Studying these ancient plants and animals tells us more about our own existence. Have you ever searched for fossils? Unearth some in this book.



Guided Reading: Q
40 Pages

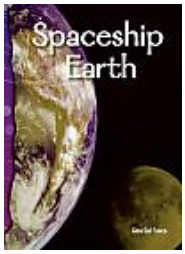
Investigating Landforms by Lynn Van Gorp (2007)
Includes index. An introduction to different types of landforms for young readers that discusses the two major forces responsible for altering the Earth's surface--earthquakes and volcanic eruptions--and also discusses erosion.

Guided Reading: R
32 Pages

Investigating Storms by Debra Housel (2007)
Includes index. Water and wind -- Thunderstorms -- Tornadoes and waterspouts -- Hurricanes - Blizzards -- Jet streams and ocean currents -- Lab: How raindrops form. An introduction to stormy weather for young readers that discusses thunderstorms, tornadoes, hurricanes, blizzards, as well as jet streams and ocean currents; and includes photographs, satellite imagery, and illustrations.

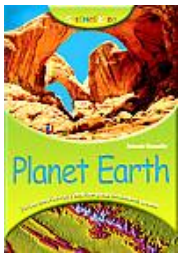
Guided Reading: Q
32 Pages

Spaceship Earth by Gina Dal Fuoco (2007)
Includes index. An introduction to the Earth for younger readers that discusses three basic parts to the Earth--the atmosphere, the hydrosphere, and the geosphere--and describes the importance of preserving the natural resources found on Earth, and other related topics. Includes laboratory activity.



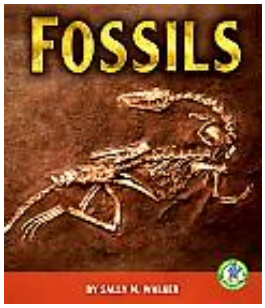
Guided Reading: P
32 Pages

Planet Earth by Deborah Chancellor (2006)
Includes index. Presents an introduction to planet Earth, in simple text with illustrations, providing information on the water cycle, weather and climate, oceans, earthquakes, volcanoes, deserts, forests, and more. Includes activity projects.



Guided Reading: R
47 Pages

Fossils by Sally M. Walker (2007)
Includes bibliographical references (p. 45) and index. What is a fossil? -- How do fossils form? -- Do bones really turn into stone? -- Finding fossils -- Why do we study fossils? Explains what fossils are, how they form, and how they are found and studied, and presents pictures of several examples.

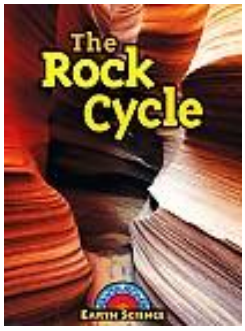


Guided Reading: O
48 Pages

What Is a Landform by Louise Spilsbury (2013)
Includes bibliographical references (page 31) and index. An introduction to the characteristics of plains, plateaus, mountains, canyons, and other landforms.

Guided Reading: S
32 Pages

The Rock Cycle by Melanie Ostopowich (2011)
Includes index. An introduction to the rock cycle that discusses types of rocks, how it works, weathering, erosion, sediment, fossils, the work of geologists, and other related topics.

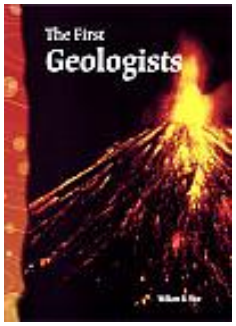


Guided Reading: S
24 Pages

Investigating Plate Tectonics by Greg Young (2007)
Includes index. An introduction to plate tectonics for young readers that discusses Alfred Wegener's theory of continental drift, evidence of plate tectonics, the Ring of Fire, and other related topics.

Guided Reading: S
32 Pages

The First Geologists by William B. Rice (2007)
Includes index. Profiles some of the world's first, and most influential, geologists and explains how their work has influenced the way people study and understand the planet.



Guided Reading: S
32 Pages

Hands-On Projects about Rocks, Minerals, and Fossils by Krista West (2002)
Includes index. Presents color-illustrated, step-by-step instructions for eight projects that teach about rocks, minerals, and fossils, including making "igneous rock" candy, starting a batch of coal, and going on a fossil hunt.

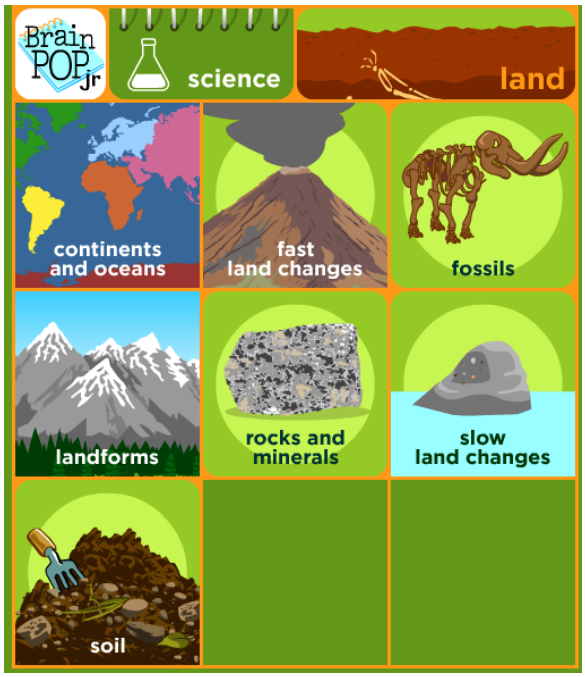
Guided Reading: S
24 Pages

Digital Resources

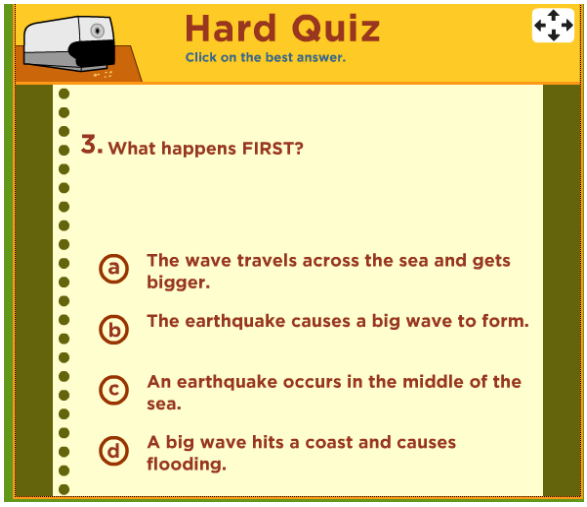
Databases: (To access these databases remotely, ask your librarian for your school's username and password.)

Brainpop Jr.: *Brainpop, Jr. is a database that provides a 3-6 minute video on informational topics followed by a comprehension quiz. The database includes activities and lesson plans as well. It is geared towards grades K-3, but can be used in 4th and 5th grades as well.*

These are the videos offered by Brainpop Jr. that support Next Generation Science Standards on Earth Science for 4th Grade.



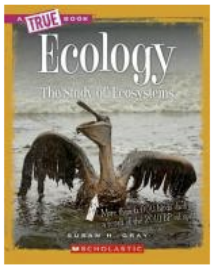
Two different online quizzes are offered after each video to check for understanding. They are entitled "Easy" and "Hard" with 5 questions each.

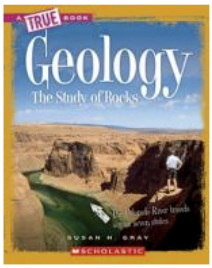


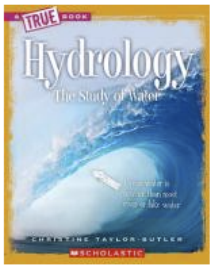
TrueFlix: *Trueflix is a database that includes non-fiction electronic books. Within each selected book you will find a 3-6 minute informational video on the subject, and a list of recommended websites.*

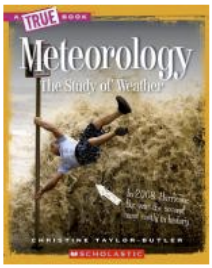
Trueflix contains these books which support the Next Generation Science Standards on Earth Science for 4th Grade. The books are 48 pages long, and include a "Read-Along" button which highlights each word as it is read aloud.

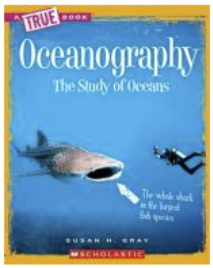
Earth Science

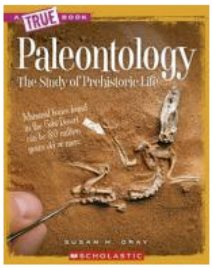




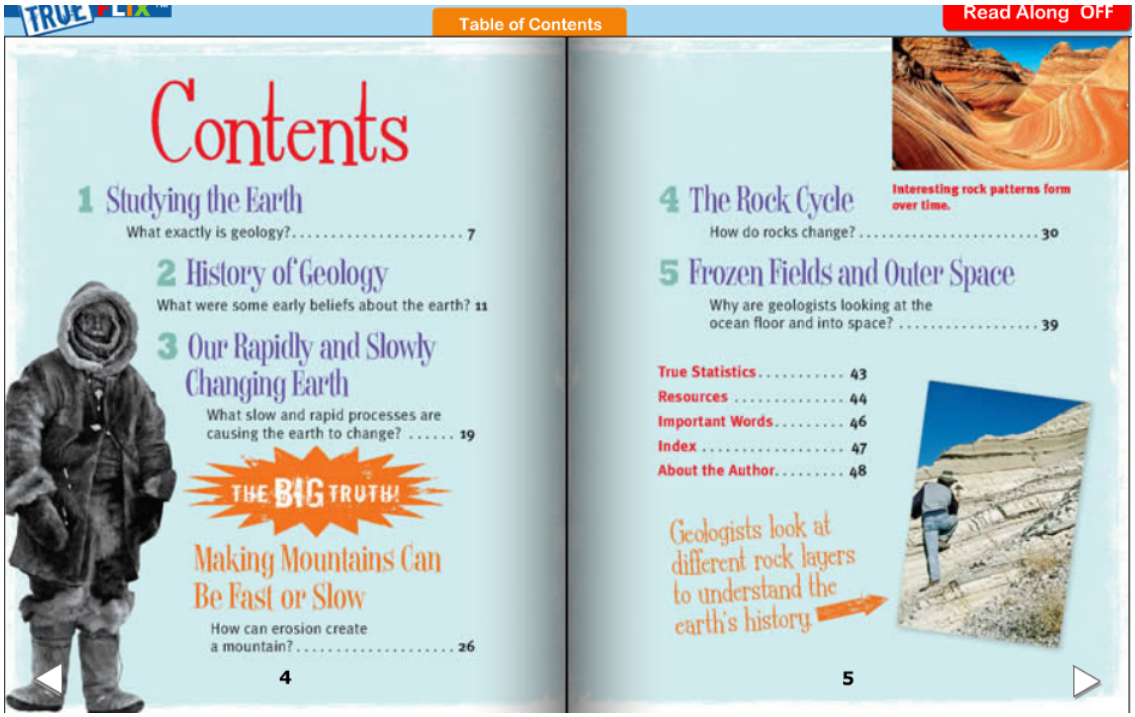




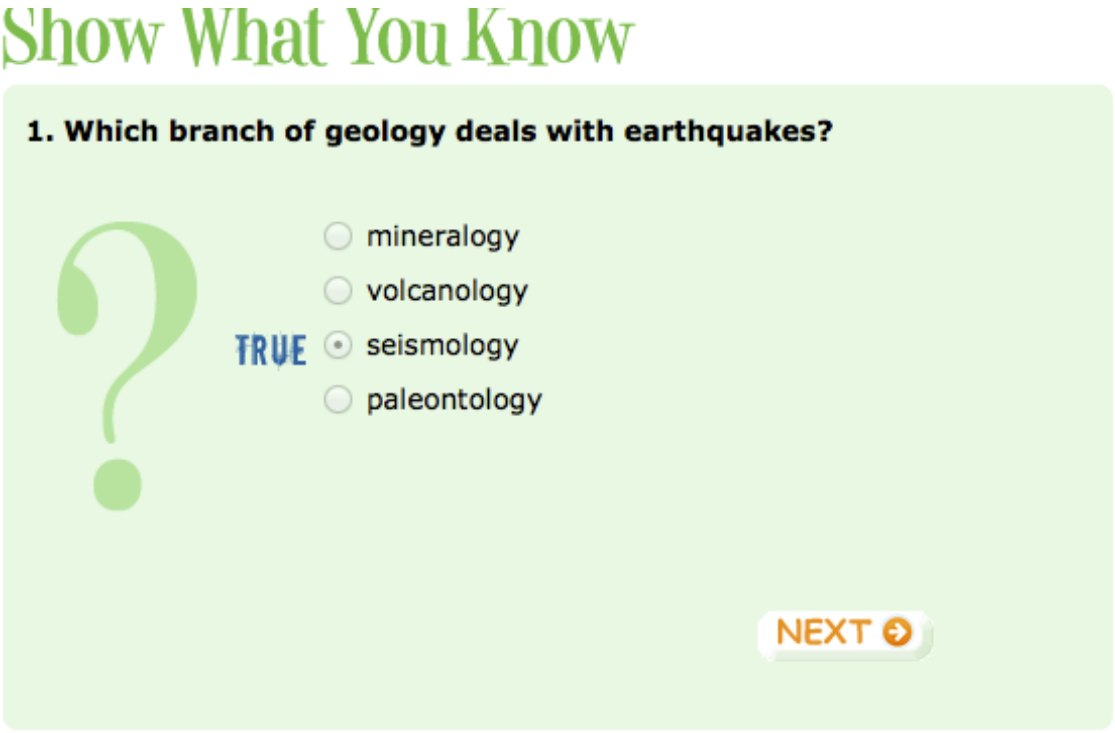




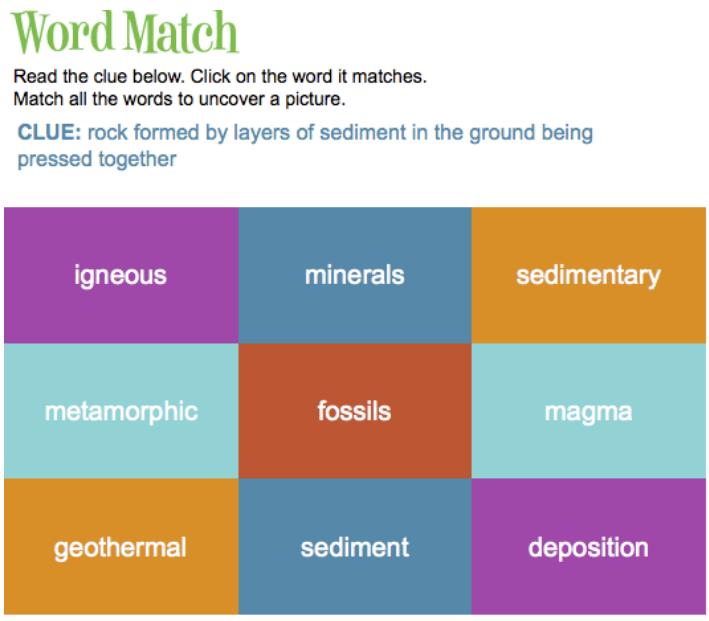
Here is the contents page for *Geology: The Study of Rocks*:



Each subject in *Trueflix* has a part called “Show What You Know.” This is a ten question quiz that can be used to check understanding from the text.



Trueflix also offers word match activity that can be done online. Word match gives a clue that can then be matched with a keyword from the text. As you can see from the toolbar on the left, there are project ideas for the classroom, a list of other non-fiction resources on the same topic in “Explore More,” related websites that have been tested and recommended, and a 3-6 minute video in “Watch the Video.”



Pebble Go!: *Pebble Go is a database that includes non-fiction books, videos and activities. The target audience for Pebble Go is Kindergarten through 3rd grade, however Pebble Go can be a great way to pique interest in a topic for 4th and 5th graders. Each book is 5 pages long and includes a read-aloud button that highlights each word as it reads aloud. There are often one or two very short videos on the topic embedded within each book.*

Pebble Go offers these subjects on Earth Science which support Next Generation Science Standards for 4th grade earth science. You can find these subjects by Clicking on “Earth and Space,” and then “Earth Science.”

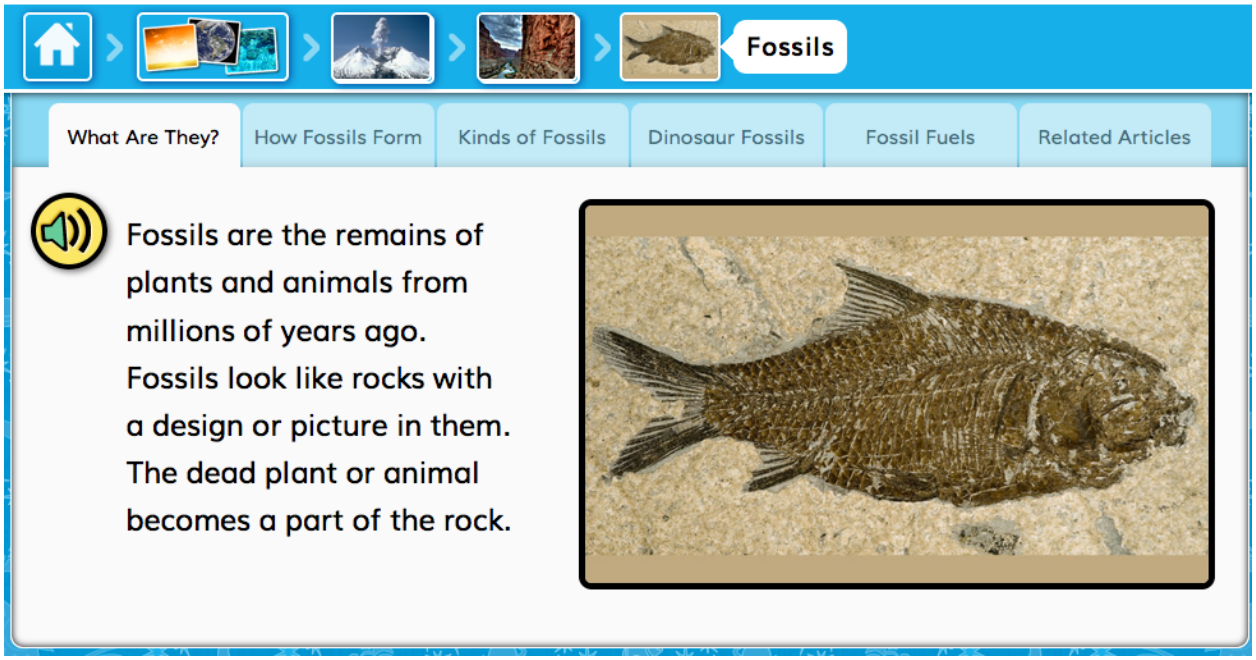
The Earth Features section includes these titles:

These two books on Earth Scientists also apply:

These 3 titles are in the landforms section:

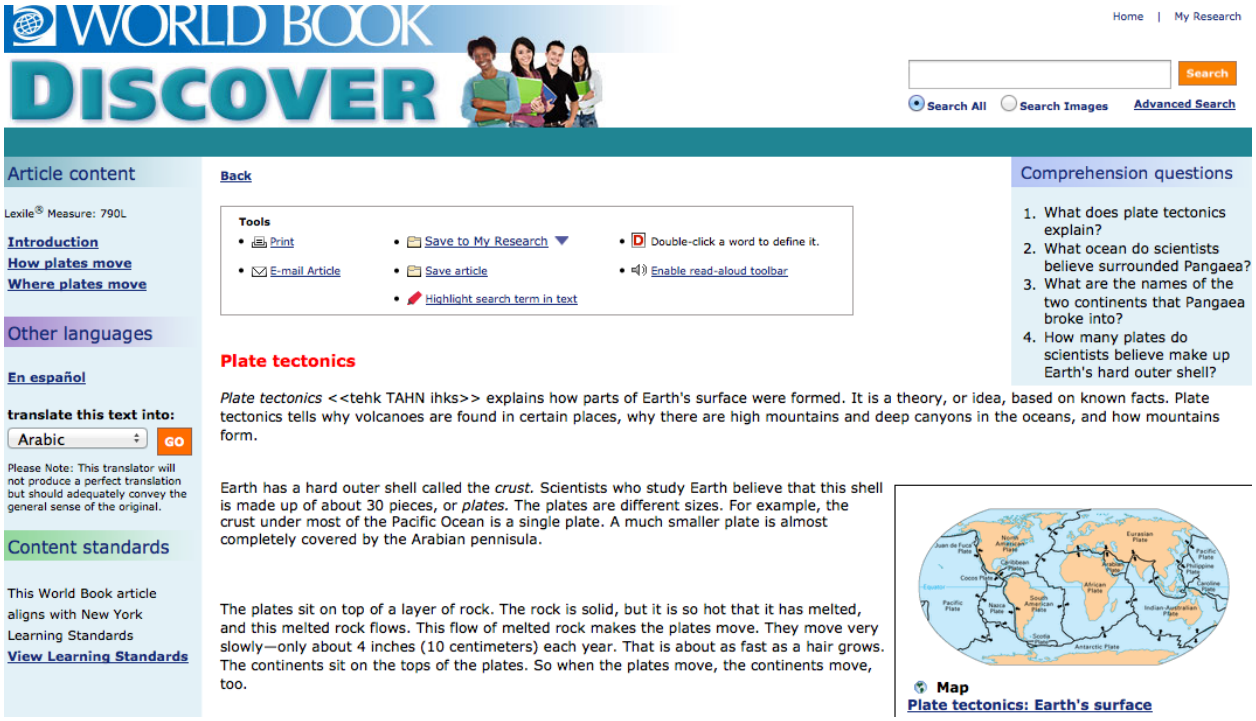
These 5 titles are in the “Earth in Action” section:

Here’s an example of the book on Fossils:



World Book Web:
The World Book Web is a suite of online research tools that includes encyclopedia articles, primary source collections, educator tools, student activities, pictures, audio, and video, complemented by current periodicals and related Web sites. Most all of these World Book Web research tools include options where text can be read aloud to the user. All Ithaca elementary school libraries currently subscribe to ***World Book Kids****,* ***World Book Student****,* ***World Book Discover****,* ***World Book Timelines*** *and* ***World Book Classroom: Early World of Learning****. For specific training in how to use these amazing tools consult Worldbook's training website or ask your school's librarian.* http://www.worldbookonline.com/training/

World Book Discover has an article called "plate tectonics" which aligns with Next Generation Science Standards for 4th Grade. You can use this link to access the article on day and night: http://www.worldbookonline.com/wbdiscover/article?id=ar831781&st=plate+tectonics OR you can simply type "plate tectonics" in World Book Discover and choose the first article.



For more information, see these other articles in World Book Discover by typing in the keyword in the search bar at the top:

For more information, see these articles:
Continent
Core
Crust
Earthquake
Island
Mountain
Ocean
Volcano

World Book Kids has several articles which align with Next Generation Science Standards for 4th Grade on Earth Science. You can simply type a landform of your interest like: “Mountain,” “Valley” “Canyon” “Plain” or “Peninsula” into World Book Kids and choose the article to examine. The Mountain article for example, discusses how mountains are formed.

Mountain

Mountains are parts of the land that stand much higher than the land around them. Mountains usually have steep slopes, or sides, and sharp or slightly rounded peaks. Some mountains stand alone and others are part of a group of mountains called a range. A group of mountain ranges forms a mountain system.

Mountains are found in the ocean as well as on land. Many islands are really the tops of mountains that rise from the ocean floor.

Map
Mountain

How mountains form

Picture

Mountains form over long periods of time. They are made by great forces inside Earth. Scientists believe that Earth's outer shell is made up of about 30 huge plates, or pieces, of land and ocean floor. These plates are different sizes. They are always moving, but they move very slowly. Most mountains build up along the edges of these plates, where two plates may rub together or crash into each other or pull apart.

There are five kinds of mountains: *volcanic* <<vahl KAN ihk>> mountains, fold mountains, fault-block mountains, dome mountains, and *erosion* <<ih ROH zhuhn>> mountains.

World Book Kids also includes a game in the “Games” section called “Learning About Landforms.”

Learning About Landforms

Multiple Choice Questions

Q Which of the following words best describes the picture?

Choose the best answer. When you're done, click **Submit**.

- 1. Volcano
- 2. River
- 3. Valley
- 4. Ocean

Websites:

Layers of the Earth and Plate Tectonics: E-learning
http://www.e-learningforkids.org/science/lesson/layers-of-the-earth-and-plate-tectonics
Join Jaime on an exciting trip to discover the wonders of the Earth's surface.

Volcanoes: E-learning
http://www.e-learningforkids.org/science/lesson/volcanoes/
Take a trip with Larry Lava to learn more about volcanoes in different parts of the world.

Shaping the Earth's Surface: E-learning
http://www.e-learningforkids.org/science/lesson/shaping-the-earths-surface/
Take a journey with Oliver and his computer Lucy to discover how natural disasters have shaped the earth's surface.

Fossil Facts and Finds
http://www.fossils-facts-and-finds.com/
This Web site inspires teachers, homeschoolers, and students to find out about fossils, the remains of extinct animals and plants. It offers teaching tips and lesson plans, articles, definitions, fun activities, tips on collecting fossils, and resources

Kids Love Rocks
This educational site is a resource for young rock and mineral collectors and hobbyists. Learn about rocks, minerals, and everything related to the earth.
http://www.kidsloverocks.com

Earth's Continental Plates: Enchanted Learning
http://www.enchantedlearning.com/subjects/astronomy/planets/earth/Continents.shtml
Includes maps, information, and quizzes about Earth's plates and the continental drift.

National Geographic: Plate Tectonics
http://education.nationalgeographic.com/education/media/plate-tectonics/?ar_a=1
A six minute video on plate tectonics and the changing shape of the earth.

A Science Odyssey: Plate Tectonics PBS
http://www.pbs.org/wgbh/aso/tryit/tectonics/
A hands-on exercise about *plate tectonics* and earthquakes from PBS. Requires Shockwave plug-in.

Building Pangea lesson plan and activity
http://www.explorelearning.com/index.cfm?method=cResource.dspDetail&ResourceID=633
Create your own version of Pangaea by fitting Earth's landmasses together like puzzle pieces. Use evidence from fossils, rocks, and glaciers to refine your map.

iPad apps:

Puzzling Plates - by Tasa Graphic Arts, INC.
Cost: $2.99
Learn how tectonic plates fit together by moving them into position like a jigsaw puzzle. See where earthquakes and volcanoes form on Earth's surface and explore Earth's interior. See how plate boundaries collide and split apart.

Ancient Earth: Assembly of Pangea - by Thomas L. Moore
Cost: $9.99
Watch mountain ranges rise and fall, old ocean basins close, landmasses be uplifted and polar ice caps wax and wane. A great historical picture of Earth's systems and land masses.

easyLearn Rocks and Minerals - by Anu Vasuki
Cost: $2.99
An interactive app for kids to learn about various rocks and minerals found on Earth. Real photographs, simple facts and quizzes.

Rocks HD - by Sprout Labs, LLC
Cost: $2.99
A multi-sensory exploration of topics such as the rock cycle, various types of rocks and their geology, minerals and excavation, soil types and horizons, weathering and erosion, formation of fossils and various types of fossils.

Dino Digger - by TegTap, LLC
Cost: $1.99
Dig up dinosaur bones, build them into interactive 3D skeletons and even bring your dino bones to life. Includes 18 different dinosaur skeletons to dig up with facts and info about each dinosaur.