

# Teaching Resource Early Titles



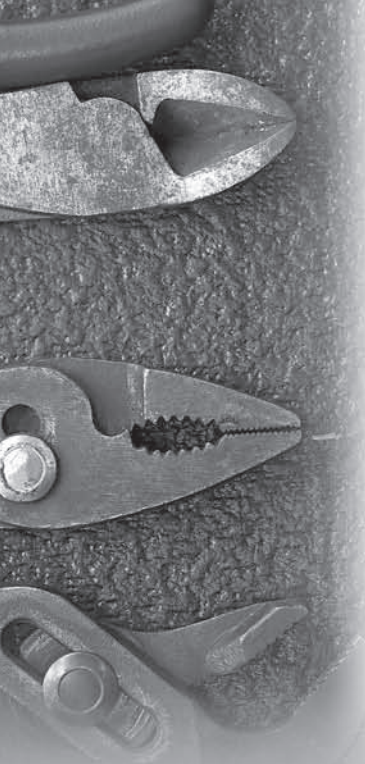
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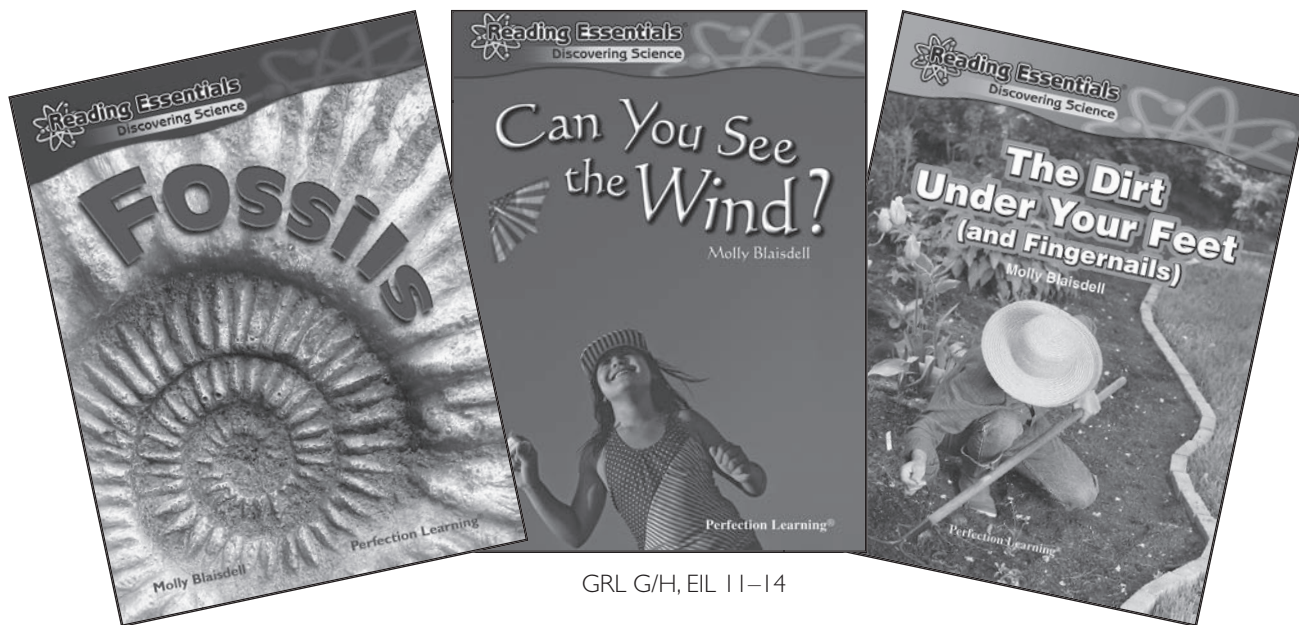
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## Earth and Space Science



GRL F/G, EIL 9–12

GRL G/H, EIL 11–14

GRL I/J, EIL 15–18

The three titles in this category address these National Science Education Standards concepts:  
Properties of Earth Materials and Changes in the Earth and Sky.

The National Science Education Standards for students in grades K–4 indicate the following information as necessary for developing student understanding of the concepts referenced above.

*Young children are naturally interested in everything they see around them—soil, rocks, streams, rain, snow, clouds, rainbows, sun, moon, and stars. During the first years of school, they should be encouraged to observe closely the objects and materials in their environment, note their properties, distinguish one from another and develop their own explanations of how things become the way they are.*

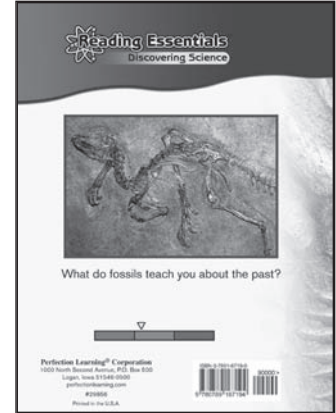
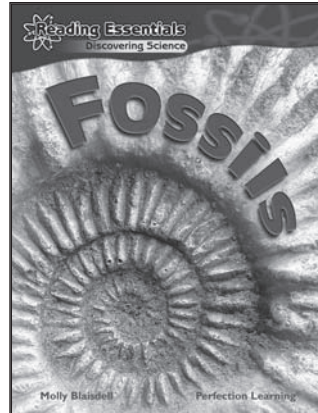
*Children come to school aware that earth's surface is composed of rocks, soils, water, and living organisms, but a closer look will help them identify many additional properties of earth materials. By carefully observing and describing the properties of many rocks, children will begin to see that some rocks are made of a single substance, but most are made of several substances. In later grades, the substances can be identified as minerals. Understanding rocks and minerals should not be extended to the study of the source of the rocks, such as sedimentary, igneous, and metamorphic, because the origin of rocks and minerals has little meaning to young children.*

*Playgrounds and nearby vacant lots and parks are convenient study sites to observe a variety of earth materials. As students collect rocks and observe vegetation, they will become aware that soil varies from place to place in its color, texture, and reaction to water. By planting seeds in a variety of soil samples, they can compare the effect of different soils on plant growth. If they revisit study sites regularly, children will develop an understanding that earth's surface is constantly changing. They also can simulate some changes, such as erosion, in a small tray of soil or a stream table and compare their observations with photographs of similar, but larger scale, changes.*

*Emphasis in grades K–4 should be on developing observation and description skills and the explanations based on observations. Younger children should be encouraged to talk about and draw what they see and think.*

# Fossils

by Molly Blaisdell



## Literacy Essentials

### Early

**Guided Reading Level:** F/G

**Early Intervention Level:** 9–12

**Word Count:** 186

### Vocabulary

- **High-Frequency Words:** a, about, all, and, are, at, become, called, deep, do, find, found, how, if, in, is, it, know, life, like, lived, long, many, maybe, most, near, now, of, often, old, on, out, part, past, right, show, some, special, story, take, tell, the, these, they, things, this, to, tree, us, use, what, where, with, year
- **Content Words:** common fossils, dinosaurs, fossils, instruments, petrified wood, rare fossils, remains, scientists, sedimentary rock, shells, trace fossils

### Language Arts Skills:

- uses prior knowledge, illustration, and text to make predictions
- uses knowledge of individual words in unknown compound words to predict meaning
- responds to who, what, when, where, and how questions
- knows the main idea and supporting details
- uses specific details and information from text to answer questions
- identifies the title and author
- reads aloud with fluency in a manner that sounds like natural speech

## Content Essentials

**Text Type:** Question and Answer, Description

**Text Features:** Picture Glossary, Labels, Photographs, Captions, Table of Contents, Chapter Titles

**National Science Education Standards**

### Earth/Space Science:

CONTENT STANDARD D

### Properties of Earth Materials

- Fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.

### Science Concepts

- Some kinds of organisms that once lived on Earth have completely disappeared, although they were something like others that are alive today.
- All fossils are very old.
- Sedimentary rock has layers.
- Scientists are able to date fossils and learn about the past.



## A Little Background

Fossils are the preserved remains of animals and plants. Although scientists have found fossils of feathers and skin, the majority of fossils are the remains of hard parts of animals: teeth, bones, and shells. Other common fossils include footprints, leaves, seeds, parts of tree trunks or branches, and animal droppings.

Fossils have been found on every continent. They are almost always found in sedimentary rock, which is made up of hardened layers of clay, mud, silt, and sand. Sedimentary rocks such as limestone, sandstone, clay, and chalk are most likely to form in or near lakes, swamps, and oceans. Because of this, the best places to find fossils are near or in the water. Other good places to look for fossils are cliffs, rivers, and rock quarries because there the rocks have been exposed.

There are various ways that scientists date fossils. One way is stratigraphy, which studies how deeply a fossil is buried in the sedimentary rock. The deeper a fossil is buried, the older it usually is. Another way to date a fossil is to study the index, or common, fossils in the rock near the fossil. The most recent way to date a fossil is radioisotope-dating, which uses radioactive elements in the rock to date the fossil. Certain radioactive elements, such as carbon, lead, uranium, and potassium, decay at a constant rate. By extracting pieces of the elements from the rock and measuring how much is left, scientists can determine how old the rock is. They then can infer the age of the fossil.



## Discovering Fossils

### Preview the Book

- Ask children if they know what a fossil is. Explain that a fossil is what is left of a plant or animal that lived a long time ago.

### Jump Start (ELL & Struggling Readers)

The content vocabulary and concepts will most likely be new to all students and are more effectively taught as they are presented in context when children read the book and during after-reading discussions. Classroom discussion, while helpful to all students, is so beneficial for those students at a disadvantage due to their limited English proficiency or below-grade-level literacy skills.

### Let's Read Before Reading

- Introduce the book by asking a volunteer to read aloud the title and the author.

*What do you think the picture on the front cover shows? (a fossil—probably of a shell)*

- Discuss the back cover photo.

*What kind of fossil is shown on the back cover? (a dinosaur fossil)*

- Ask a volunteer to read the question. Encourage responses but don't confirm or deny.
- Challenge children as they read *Fossils* independently to discover what fossils teach us about the past.

continued

### After Reading

- Arrange children in pairs to reread the book. Then ask children to share what fossils tell us about the past.

### Comprehension

- Use the following questions to discuss what children have read.
  1. All fossils are at least how many years old? (10,000 years old)
  2. Where are fossils usually found? (in sedimentary rocks)
  3. What is the name for fossils of tree remains? (petrified wood)
  4. What are trace fossils? (the remains of eggs, nests, and footprints)
  5. Would a shallow fossil be older or younger than a deep fossil? (younger)

### Word Study

- Point out the word *footprints* on page 9. Explain that this is a compound word because it consists of two whole words, *foot* and *prints*, joined together. Point out that while compound words are long words that may look hard to read, thinking about them as two separate words is a good reading strategy. List a few compound words and challenge children to point out the two separate words. (*bedroom, cowboy, cupcake, football, hilltop, redwood, snowman*)

Share the meanings of *foot* (the end part of a leg) and *prints* (marks or stamps made by pressure). Explain that these two whole words will keep their meanings when they are joined to form a compound word (*footprints* are marks made by pressure from the end part of a leg). Explain that using this strategy can help readers determine the meanings of compound words as they read.

*Does this vocabulary strategy work with the word copycat? (No, a copycat doesn't have anything to do with an imitation of a cat.)*

Explain to children that while this vocabulary strategy won't always work, it is still something they should try.

### Think Like a Scientist

- Have children make their own fossils. Give each child a piece of clay to mold into the shape of a "rock." Hand out objects (leaves, shells, coins, etc.) for them to press into their clay that will leave an imprint. Let the clay dry. Have students exchange "fossils" and guess what object made the imprint.
- Create a Fossil Words display. Encourage children to select one of the following content words, draw a picture to represent the word, and use the word in a sentence. (*dinosaur, fossil, petrified wood, sedimentary rock, shells, trace fossils*)

### Fluency Practice

The text from *Fossils* is provided on page 88 of this resource for fluency practice.



	Words Read/Miscues	
Fossils are the remains of living things.	7	_____
The hardest parts of living things become fossils.	15	_____
This takes many years.	19	_____
All fossils are at least 10,000 years old.	27	_____
Some fossils are millions of years old.	34	_____
Most fossils are found in a special rock with layers.	44	_____
It is called <i>sedimentary rock</i> .	49	_____
Many fossils are the remains of shells.	56	_____
Some fossils are the remains of dinosaurs.	63	_____
Tree remains are special fossils called <i>petrified wood</i> .	71	_____
Trace fossils are the remains of things	78	_____
like eggs, nests, and footprints.	83	_____
Fossils tell the story of life.	89	_____
They tell us what kinds of things lived long ago.	99	_____
Fossils show us how living things have changed.	107	_____
Scientists use instruments to measure	112	_____
special material in rocks.	116	_____
This material shows the age of fossils.	123	_____
Scientists study how deep fossils are buried.	130	_____
If fossils are deep, they are old.	137	_____
If fossils are shallow, they are younger.	144	_____
Scientists know the age of many common fossils.	152	_____
Common fossils are often found near rare fossils.	160	_____
This helps scientists date rare fossils.	166	_____
Learning about fossils is learning about the past.	174	_____
Maybe you're standing on a fossil right now!	182	_____

Words Read \_\_\_\_\_

Total Errors — \_\_\_\_\_

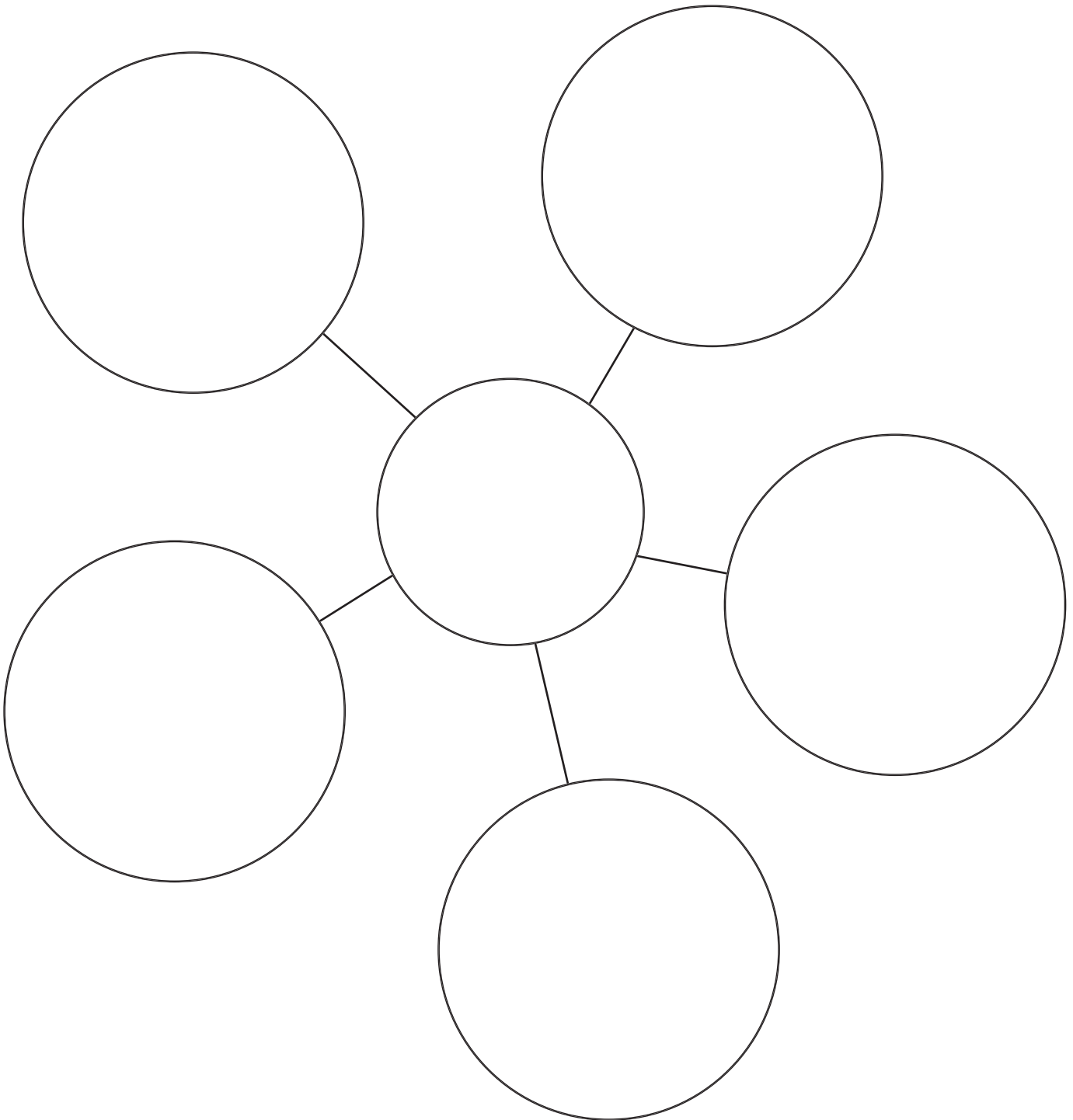
WPM Score \_\_\_\_\_

Name \_\_\_\_\_

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## Concept Web Graphic Organizer



# Differentiated Instruction

The rich and diverse nature of our society brings children to the same classroom from a variety of cultural, ethnic, academic, and socioeconomic backgrounds. Meeting individual needs, while always a concern, continues to become more challenging for today's classroom teacher. Differentiated instruction means equity in education, maximum learning for all children.

No one instructional program, no matter how varied, will answer the needs of every child. Likewise, individual instructional programs for each child is not possible or practical. However, classroom teachers can adjust the curriculum and presentation of information to better meet the needs, address the interests, and build on the strengths of the diverse learners within their classrooms.

## The First Step

The first step in implementing differentiated instruction in the classroom is to assess each child's readiness, interests, abilities, and learning preferences. Continue to build on this information throughout the year as you grow to better understand the children. Consider every activity, discussion, and lesson as an assessment opportunity. Use assessment information to create a flexible learning environment that maximizes each child's growth and individual success. Assessing background knowledge before beginning each new topic of study can also help to guide instruction so that it meets the needs of individual children.

## Strategies for Differentiating Instruction

**Frontloading**—Spend more time preteaching vocabulary and in prereading discussions to build background knowledge for those children who demonstrate a lack of prior knowledge. Use those children who show interest or exceptional knowledge in the area of study as resident experts.

**Scaffolded Instruction**—Adjust your level of involvement and the child's level of independence, providing guidance where needed and allowing more independence for stronger readers.

**Flexible Grouping**—Group children with like readiness and abilities to move through the material. Change these groups as children's needs change. Vary groupings often.

**Peer Teaching**—Pair better readers with others who need extra help. This allows struggling readers more one-on-one instruction and gives the better readers a feeling of self-worth and valuable reading practice.