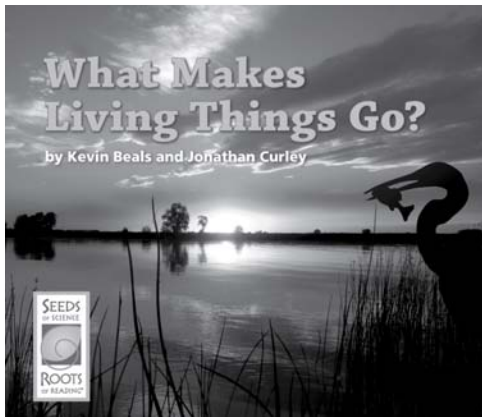


Teaching Concept Mapping

with *What Makes Living Things Go?*
from *Seeds of Science/Roots of Reading*®



Introduction

This strategy guide introduces an approach for teaching concept mapping to help students understand information presented in content-rich texts. Concept mapping supports students in making connections between known information and new information. By creating concept maps, students clarify their understanding of the topic and integrate new ideas into their thinking. This guide includes an introductory section about teaching concept mapping, a general overview of how to teach this strategy with many science texts, and a plan for teaching concept mapping with the *Seeds of Science/Roots of Reading*® book *What Makes Living Things Go?*

Book Summary

What Makes Living Things Go? is about how organisms get and use energy. The book explains that organisms can be classified in certain ways based on how they obtain energy. Readers learn that producers (plants and algae), have the ability to make their own food, while consumers (herbivores, carnivores, omnivores, and decomposers) cannot make their own food. Through vivid photographs and detailed explanations, readers learn that organisms get energy from food and that this energy is used for many things, such as movement, growth, and reproduction. Emphasis is placed on understanding that all energy can eventually be traced back to the Sun.

About This Book

Reading Level

Guided Reading Level*: R

Key Vocabulary

consumer, decomposer, ecologist, energy, producer

Text Features

bold print, captions, glossary, headings, photographs, subheadings, table of contents, tables

*Guided Reading Levels based on the text characteristics from Fountas and Pinnell, *Matching Books to Readers*.

Science Background

All organisms need energy to survive, and there are many different ways organisms obtain this energy. Organisms can be categorized into two main groups based on how they obtain their food: producers and consumers. Producers are organisms that can make food from simple inorganic materials, such as carbon dioxide and water. All plants are producers, and they make food through photosynthesis. In photosynthesis, a plant makes its own food by absorbing carbon dioxide and water and using energy from sunlight. Since producers are the only organisms that can make food from inorganic materials, they are the primary source of food for all organisms on the planet. Unlike producers, consumers get their nutrition from eating other organisms. All animals are consumers, and all consumers depend on producers. This means that almost all energy that organisms use can be traced back to sunlight—a fox eats a rabbit, a rabbit eats plants, plants get their energy from sunlight. Consumers can be divided into four categories. Herbivores are animals that eat mostly plants, carnivores eat mostly other animals, omnivores eat both plants and animals, and decomposers get their food from dead plants and animals as well as from animal wastes. All these types of organisms need energy to grow, move, and reproduce.

About Concept Mapping

Concept maps are a visual way to represent relationships among ideas. Creating concept maps helps students integrate new ideas with their existing knowledge and affords them a process for organizing information they learn from reading. Concept maps aid students in summarizing texts, identifying main ideas, and organizing ideas in preparation for writing. Concept maps can also provide teachers with a useful way to assess students' understanding of a topic. There are many ways to organize concept maps. The example used in this guide has a main topic on top and specific examples connected to it below the main topic. For examples of concept maps that organize ideas in different ways, please visit the *Seeds/Roots* Web site (www.seedsofscience.org/strategyguides.html).

Teaching Concept Mapping

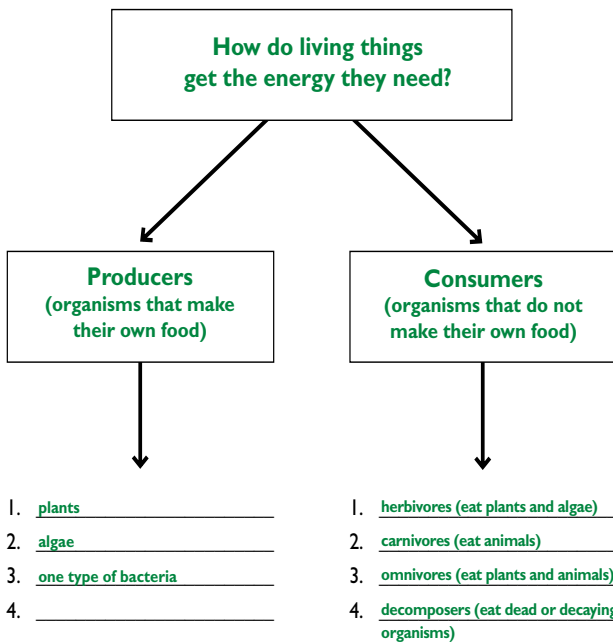
The following guidelines can be used to teach concept mapping with many content-rich texts.

- Select a text with concepts related to your curriculum. Good texts for teaching concept mapping have a clearly focused main topic or idea along with examples that further explain the main topic.
 - Think about which type of concept map best represents the information you want your students to consider. (You can use the Concept Map copymaster included in this guide or create one of your own.)
 - Create a planning copy of the concept map for your own reference. Fill in notes about relevant information from the text. You will use this planning copy to help guide discussion as you teach the lesson.
 - Before class, draw a large, blank version of the concept map on the board or on a piece of chart paper. Write the main topic that students will be reading about on the concept map.
 - Explain to the class that a concept map is a tool that readers construct to help them determine and organize important ideas from a text.
 - To activate background knowledge, introduce the text that students will be reading and briefly discuss the topic.
- As students read, have them locate examples that further explain the main idea you wrote on the concept map. You may want to ask them to flag these examples in the text using sticky notes.
 - As students read, prompt them to reflect on how the examples relate to, illustrate, or further explain the main idea. This will help them synthesize important ideas from what they read.
 - Have students share relevant examples they identified during reading. Record these on the concept map using short phrases. Ask students to suggest where to place their responses in relation to the other examples on the concept map and to explain their reasoning.
 - To extend the activity, construct a paragraph with students' help. Organize ideas according to the structure of the concept map. Model turning the main topic into a main idea sentence. Ask students to transform examples into sentences that support the main idea.
 - Continue helping students learn about concept mapping by providing another text for them to read. This time, provide students with their own copy of a blank concept map. Have students read and record the main idea(s) and examples from the text. After reading, discuss the main idea(s) and clarify understanding.
 - Concept maps can be a flexible way to organize ideas for writing or for reviewing central concepts from a unit of study. Have students work individually or with partners to complete their concept maps. Have students extend their ideas into well-organized paragraphs.
 - Continue to use concept mapping in science as well as other subject areas. Once students begin to internalize this strategy, encourage them to create different forms of concept maps to organize ideas in any way they choose.

Teaching Concept Mapping with *What Makes Living Things Go?*

Getting Ready

1. Make a copy of the Concept Map copymaster for each student.



2. Draw a large concept map on the board or on chart paper. Write “How do living things get the energy they need?” in the top box, as shown in the illustration above. You will fill in the rest of the concept map with students during class; sample student responses are in green.

During Class

1. Introduce *What Makes Living Things Go?* and read page 4 aloud. Ask students to examine the photographs of the different organisms on pages 4–5. Discuss what students already know about how some of the organisms in the photographs get their food.
2. Have students read the book in a way that is consistent with your classroom routines, giving students as much independence as possible.
3. Introduce the concept map you made and direct students’ attention to the question in the top box—*How do living things get the energy they need?* Explain that a concept map is a tool that will help students reflect on and organize important ideas from reading.
4. Distribute the Concept Map student sheets. Explain to students that they will use the concept map to record information about the different groups of organisms they learned about from the book.
5. Have students reread page 11, which explains that ecologists group organisms according to

how the organisms get the energy they need. Then, invite students to identify the two main groups that ecologists use to classify organisms. [Producers and consumers.]

6. Point out that the concept map has two boxes under the question box. Record one group name in each box and ask students to do the same on their student sheets. Then ask students to use the text or the glossary to provide a brief definition of each group. Have students record the definitions as well.
7. Explain that the lines below each of the two boxes are for recording examples of organisms in each group. Instruct students to work individually or in pairs to locate categories of producers and consumers in the text. Remind students to use the subheadings in the book to guide their search.
8. After several minutes, discuss the examples that students found. Invite students to add a brief definition for the terms *herbivores*, *carnivores*, *omnivores*, and *decomposers* to their concept maps.
9. Ask students to turn to pages 20–21 in their books. Have students work in pairs or small groups to discuss each organism shown on the pages. Using their concept maps as a reference, encourage students to decide which group each organism belongs in and to cite reasons for their decisions.
10. Debrief by leading a class discussion about how students classified the organisms. Point out to students how the concept map was helpful as a tool for organizing information according to categories.
11. To extend the activity, have students use their concept maps as a guide to help you construct a shared paragraph about how to group living things based on how they get energy.

Independent Extension

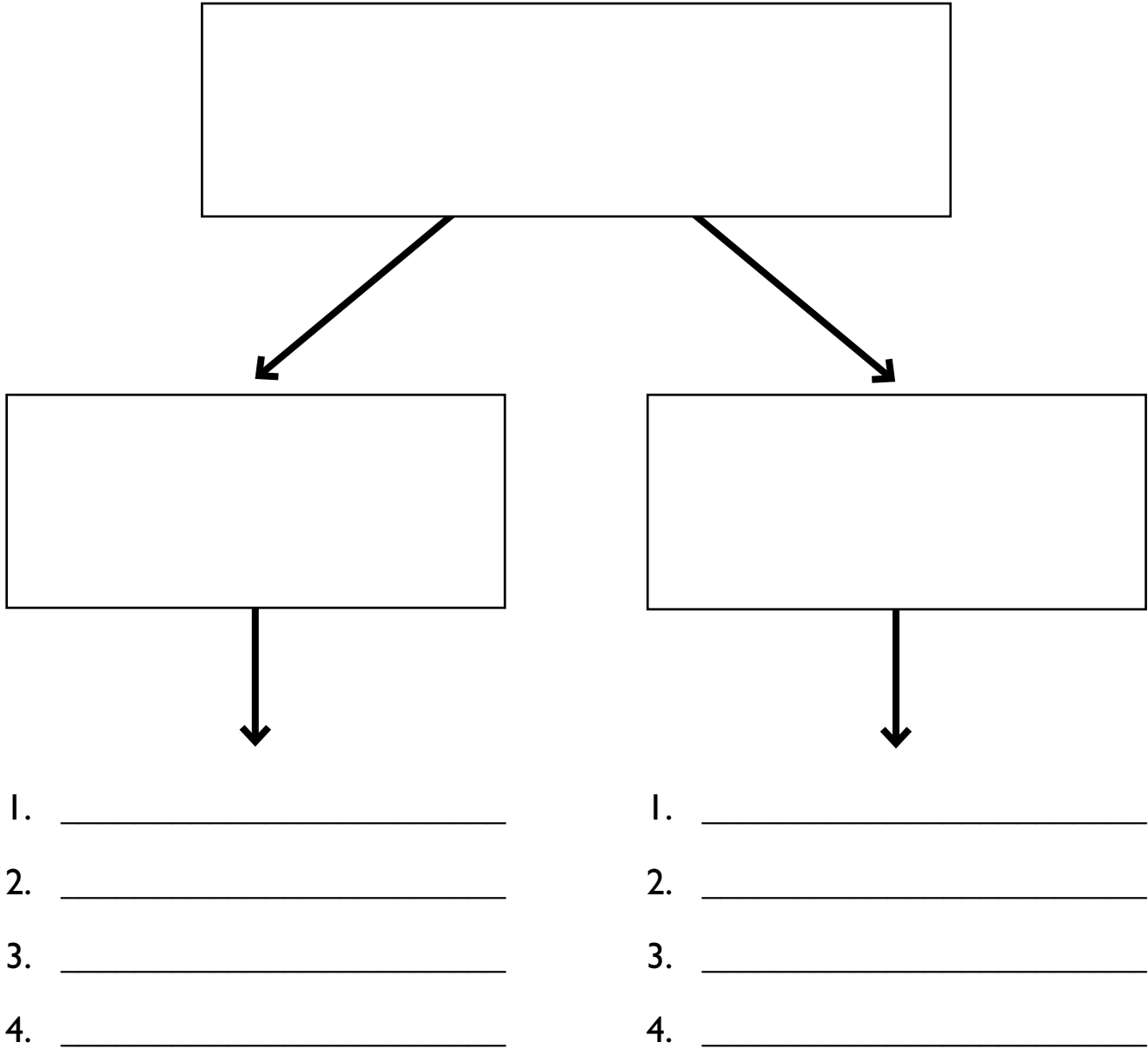
On a separate sheet of paper, have students use their concept maps to write their own paragraphs about producers and consumers. Students can also create an illustration with a caption to accompany their writing.

Name _____

Date _____

Concept Map

Title of book: _____



About Strategy Guides

A six-page strategy guide is available for each *Seeds of Science / Roots of Reading*® student book. These strategies support students in becoming better readers and writers. They help students read science texts with greater understanding, learn and use new vocabulary, and discuss important ideas about the natural world and the nature of science. Many of these strategies can be used with multiple titles in the *Seeds / Roots* series. For more information, as well as for additional instructional resources, visit the *Seeds / Roots* Web site (www.seedsofscience.org/strategyguides.html).

Student Books for Grades 4–5

Twenty-seven engaging student books are available, each with a corresponding strategy guide. The books are part of the *Seeds of Science / Roots of Reading*® curriculum program described on page 6.

Aquatic Ecosystems	
Strategy	Student Book
Teaching Scientific Description Writing	<i>Visit to a Pond</i>
Gathering Information from Science Texts	<i>Tabletop Pond Guide</i>
Interpreting Visual Representations	<i>Investigating Crayfish</i>
Using Roundtable Discussions	<i>Dragonfly Explanations</i>
Making Sense of Data in Science Texts	<i>Eat and Be Eaten: How an Ecologist Uses Food Webs</i>
Teaching Concept Mapping	<i>What Makes Living Things Go?</i>
Teaching Scientific Comparison Writing	<i>Ecosystems Around the World</i>
Teaching Text Structure	<i>Ecosystem News</i>
Teaching Vocabulary with Science Texts	<i>Making a Difference</i>
Planets and Moons	
Strategy	Student Book
Connecting Science Words and Everyday Words	<i>Exploring Planets and Moons</i>
Using Science Text to Visualize	<i>Spinning Through Space</i>
Taking Notes Based on Observations	<i>Observing the Moon</i>
Using the Cognates Strategy	<i>How Big Is Big? How Far Is Far?</i>
Teaching Scientific Comparison Writing	<i>Handbook of Planets and Moons</i>
Using Discourse Circles	<i>What About Pluto?</i>
Teaching About How Scientists Use Models	<i>Planetary Scientist</i>
Using Anticipation Guides	<i>Tomato Landers</i>
Promoting Word Consciousness	<i>Technology for Exploration</i>
Chemical Changes	
Strategy	Student Book
Teaching Scientific Explanation Writing	<i>Chemical Reactions Everywhere</i>
Posing Investigation Questions	<i>Handbook of Chemical Investigations</i>
Teaching Text Structure	<i>What Happens to the Atoms?</i>
Teaching Procedural Writing	<i>Bursting Bubbles: The Story of an Improved Investigation</i>
Promoting Word Consciousness	<i>Communicating Chemistry</i>
Models of Matter	
Strategy	Student Book
Teaching Summary Writing	<i>Made of Matter</i>
Using Roundtable Discussions	<i>Break It Down: How Scientists Separate Mixtures</i>
Interpreting Visual Representations	<i>Phase Change at Extremes</i>
Teaching About How Scientists Make Inferences	<i>Science You Can't See</i>

Extend Learning with *Seeds of Science/Roots of Reading*®

The strategy featured in this guide is drawn from the *Seeds of Science/Roots of Reading*® curriculum program. *Seeds/Roots* is an innovative, fully integrated science and literacy program.

The program employs a multimodal instructional model called “Do-it, Talk-it, Read-it, Write-it.” This approach provides rich and varied opportunities for students to learn science as they *investigate* through firsthand inquiry, *talk* with others about their investigations, *read* content-rich books, and *write* to record and reflect on their learning.

Take advantage of the natural synergies between science and literacy instruction.

- Improve students’ abilities to read and write in the context of science.
- Excite students with active hands-on investigation.
- Optimize instructional time by addressing goals in two subject areas at the same time.

To learn more about *Seeds of Science/Roots of Reading*® products, pricing, and purchasing information, visit www.deltaeducation.com



Aquatic Ecosystems Science and Literacy Kit



Developed at Lawrence Hall of Science and the Graduate School of Education at the University of California at Berkeley.

Seeds of Science/Roots of Reading® is a collaboration of a science team led by **Jacqueline Barber** and a literacy team led by **P. David Pearson** and **Gina Cervetti**.

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