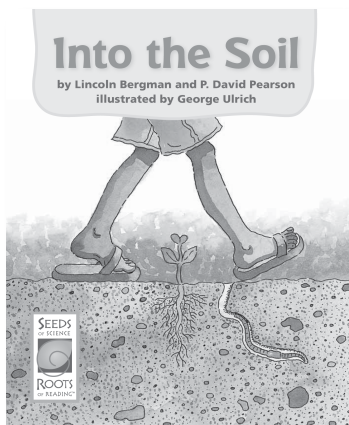


Using Discourse Routines with Science Texts

with *Into the Soil*

from *Seeds of Science/Roots of Reading*[™]



Introduction

This strategy guide introduces an approach for teaching students to discuss ideas presented in science texts using discourse routines. Discourse routines help students learn to use the language of science to discuss important content. They are powerful ways for students to share knowledge and communicate about their ideas. This guide includes an introductory section about discourse in science, a description of how to use three different discourse routines with many science texts, and a plan for using one of these discourse routines with the *Seeds of Science/Roots of Reading*[™] book, *Into the Soil*.

Book Summary

Into the Soil invites readers to think about the importance of soil through a series of riddles. The book encourages readers to think carefully about this ubiquitous substance that covers Earth. They learn that soil is all around us, even though we may not notice its presence. Readers are also introduced to some of the many organisms that live in the soil, such as earthworms, moles, isopods, and insects. They read about the different types of soil and how soil provides the nutrients plants need to grow roots, stems, and leaves. Through the playful text and illustrations, readers of *Into the Soil* come to understand the interdependency of people, plants, and animals and the importance of soil to all living things.

About This Book

Reading Level

Guided Reading Level*: J

Text Features

book description, glossary, bulleted lists, about the author, bold print, illustrations

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

Science Background

Soil is critical for life on Earth. It is the growth medium for much of life on land. Soil can have a wide variety of compositions, colors, and textures—from rich and dark to dry and pale. Soils are classified by the size of the mineral particles of which they are composed. Clay soil has microscopic particles. Silt has larger particles and drains better than clay. Sandy soil has the largest particles and drains well, but it dries up quickly. Loam soils contain all three types of mineral particles. Organisms that do not depend directly on soil depend on other organisms that depend on soil. This essential earth material is a mixture of mineral particles, air, water, and living as well as dead organisms. Soil provides a habitat for an incredible number of living things. Bacteria are the most numerous of these living things, with a spoonful of rich soil containing many millions of these microscopic organisms. Living things interact with the soil by creating tunnels for water and air, mixing around particles, and recycling nutrients. Organisms such as moles, earthworms, isopods (sow bugs and pill bugs), bacteria, and fungi help to decompose dead plants and animals. Nutrients from the decomposing materials are left in the soil where they are used by growing plants. Animals, in turn, eat the plants, and the cycle continues.

About Discourse in Science

Learning academic discourse, the specialized way in which people talk and write about content areas, is important for students' success in school. Particularly in science, students need opportunities to use new vocabulary in context, talk about new concepts, and practice communicating their thoughts effectively. The discourse routines described in this guide offer ways to provide all students with the chance to participate actively in an academic conversation.

Teaching Discourse Routines with Science Texts

This section describes three routines: Shared Listening, Thought Swap, and Think-Pair-Share. These routines can be used to activate prior knowledge before reading or to discuss important ideas after reading. Introduce one of these routines at a time with different content-rich texts using the following guidelines.

- As you familiarize yourself with a text that you plan to use, decide whether you want to use a discourse routine before or after reading. Choose one of the three discourse routines to introduce in your lesson.
- Prepare two to four questions to pose during the routine. Develop questions that will encourage students to reflect on central ideas of the text. The questions should be broad enough to require an elaborated response.
- Make a class chart that lists the expectations for respectful listening and clear speaking. See the box on this page for ideas, or use guidelines that you have established for your class.
- Before or after reading, tell students they will learn a new procedure for sharing their ideas about the text. Give an overview of what students will do during the routine.
- Set expectations for the discussion. Point out and discuss the Listening and Speaking Guidelines chart. Depending on the needs of your class, you may wish to ask students to focus on just one or two guidelines at first and add new guidelines over time.

Listening and Speaking Guidelines

Listening Guidelines

- Look at the speaker.
- Do not interrupt the speaker.
- Think carefully about everything the speaker says.
- When the speaker has finished, make a polite comment or ask a question.

Speaking Guidelines

- Look at the listener.
- Speak clearly and loudly enough for the listener to hear you.
- Explain as much as you can about what you are thinking.

- Model the routine. Read, explain, and role-play each step of the directions for the class. As you model, point out how you are following each of the listening/speaking guidelines.
- Conduct the discourse routine using *one* of the following sets of directions.

Shared Listening

1. Pair students with a partner. Designate one student as partner A and the other as B.
2. Pose a question for partner A and allow time for students to think about their response.
3. Partner A tells partner B the answer to the question.
4. Partner B repeats back what she heard partner A say. Partner A confirms that partner B remembered all the relevant points.
5. Repeat steps 2–4 with a new question. Reverse roles (partner B speaks and partner A repeats).

Thought Swap

1. The class forms two lines so that each person is standing face to face with a partner.
2. Pose a question and allow time for students to think about their response.
3. Partners discuss the question. Both partners should have a chance to speak.
4. One line of students moves one step to the right, so that everyone has a new partner.
5. Repeat steps 2–4 for two or three more questions.

Think-Pair-Share

1. Put students into groups of four (two pairs).
 2. Pose a question and say, “Think.” Allow time for students to think about their response.
 3. Direct students to share their responses with the person next to them by saying, “Pair.” Both partners should share their ideas.
 4. Say, “Share.” Allow time for all four students in the group to discuss the question.
 5. Repeat steps 2–4 for one or more additional questions.
- Continue the discussion by asking the class to discuss what they learned. You could also ask students to reflect in writing using the Discussion Reflections copymaster. In addition to reflecting on the content of the discussion, ask students to evaluate how well they listened and spoke during the routine. Ask students to think about one thing they did especially well and one thing they would like to improve upon next time.
 - Use the routine again to discuss other science texts. When students are comfortable with one routine, introduce a new routine and practice it in the same manner. The routines should become a resource that you can use to encourage discussion in your classroom.

Using a Discourse Routine with *Into the Soil*

Into the Soil offers students the opportunity to discuss the importance of soil. Conducting a Thought Swap is a way to help students share ideas and synthesize what they learn about soil through reading.

Getting Ready

1. Make a copy of the Discussion Reflections copymaster for each student.
2. Prepare a class chart that lists the guidelines for listening and speaking. (See the box on the previous page for ideas.)

During Class

1. Read pages 3–6 in a way that is consistent with your classroom routines, giving students as much independence as possible.

2. Reread page 7 as a class. Help students activate prior knowledge about the topic by conducting a brief class discussion about soil. Ask students what they already know about this important earth material. You may wish to record student responses on the board.
3. Ask students to read the remainder of the book.
4. After reading, guide students in conducting the Thought Swap routine.
 - Ask students to form two lines so that each person is facing a partner. (If you have an odd number of students, form a group of three.)
 - Pose the first question: “Where, in the area we live, could you find soil?” Allow a moment for students to think. Then, indicate that partners should discuss the question.
 - Regain the class’s attention. Indicate that students will now get a new partner by having one line move one step to the right. Ask the student at the end of this line to walk to the opposite end of the same line. Everyone should now have a new partner.
 - Pose the second question: “How would you describe soil that you have seen?” After students have discussed this question, move the line down as in the above step.
 - Pose the third question: “Why is soil important?” Ask partners to discuss this question, then indicate that students can return to their seats.
5. Debrief the Thought Swap by asking students to share something they heard a partner say about soil. You may wish to record this new information on the board.
6. Distribute the Discussion Reflections student sheet to each student. Ask students to reflect on the discussion by responding to each question briefly in writing.

Independent Extension

Ask students to work with a partner to reread pages 10–14 of *Into the Soil*. Pose the question “Who needs soil?” Students should talk over their responses with their partners, then write a few sentences answering this question.

Name _____ Date _____

Discussion Reflections

Title of book _____

1. Write one idea that you shared with someone else during the discussion.

2. What part of the book helped you think of this idea?

3. Write one idea that you heard from someone else during the discussion.

4. Write one thing that you thought you did well during the discussion.

5. Write one thing you would like to improve the next time you participate in a discussion.

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* website (<http://www.seedsofscience.org/strategyguides.html>).

Available Student Books for Grades 2–3

Twenty-three engaging student books are now 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. Four *Gravity and Magnetism* student books and strategy guides will be available in 2009.

Soil Habitats	
Strategy	Student Book
Using Discourse Routines with Science Texts	<i>Into the Soil</i>
Using the Cognates Strategy	<i>Walk in the Woods</i>
Connecting Science Words and Everyday Words	<i>What Are Roots?</i>
Teaching About the Nature of Science	<i>Talking with a Habitat Scientist</i>
Teaching Text Structure	<i>Handbook of Forest Floor Animals</i>
Using Text Features	<i>Earthworms Underground</i>
Taking Notes Based on Observations	<i>My Nature Notebook</i>
Making Sense of Data in Science Texts	<i>Snail Investigations</i>
Using Discourse Circles	<i>Without Soil</i>
Shoreline Science	
Strategy	Student Book
Teaching Vocabulary with Science Texts	<i>Beach Postcards</i>
Teaching Concept Mapping	<i>What Belongs on a Beach?</i>
Teaching Scientific Explanations	<i>Gary's Sand Journal</i>
Interpreting Visual Representations	<i>What's Stronger? The Forces That Cause Erosion</i>
Using Text Features	<i>What Lives on a Sandy Beach?</i>
Teaching About Multiple Meaning Words	<i>My Sea Otter Report</i>
Searching for Information in Science Texts	<i>Handbook of Sandy Beach Organisms</i>
Teaching Text Structure	<i>The Black Tide</i>
Teaching About the Nature of Science	<i>Shoreline Scientist</i>
Designing Mixtures	
Strategy	Student Book
Using Discourse Circles	<i>What If Rain Boots Were Made of Paper?</i>
Using Anticipation Guides	<i>Solving Dissolving</i>
Teaching Scientific Explanations	<i>Handbook of Interesting Ingredients</i>
Teaching Text Structure	<i>Jelly Bean Scientist</i>
Teaching About the Nature of Science	<i>Jess Makes Hair Gel</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.seedsofscience.org



Soil Habitats 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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