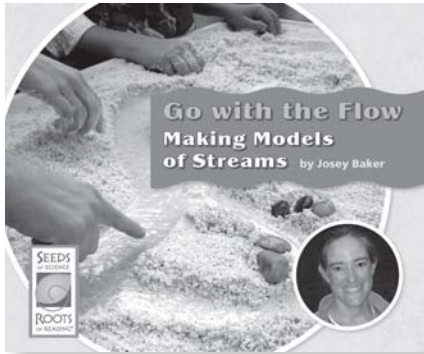


Connecting Science Words and Everyday Words

with *Go with the Flow: Making Models of Streams*
from *Seeds of Science/Roots of Reading*[®]



Introduction

This strategy guide introduces an approach for helping students learn to use the language of science—the specialized language that scientists use to communicate about ideas and processes. Teaching students to connect scientific words with everyday words is one way to help them acquire this important academic discourse. This guide includes an introductory section about the differences between scientific words and everyday words, a description of how to use a science/everyday words strategy with many science texts, and a plan for using this strategy with the *Seeds of Science/Roots of Reading*[®] book *Go with the Flow: Making Models of Streams*.

Book Summary

Go with the Flow: Making Models of Streams is about a hydrologist named Chris Cianfrani. Cianfrani studies water that flows across the ground as runoff; she also studies the ways in which water flows in streams. Cianfrani uses both physical and computer models to understand how streams flow. Through reading about Cianfrani's work, readers learn that models help scientists understand something complicated by making it easier to observe, and that different kinds of models are useful for different purposes. Readers also see Cianfrani working with students to help them understand streams by using models and taking measurements. The book also emphasizes Cianfrani's lifelong love of the outdoors and how this led her to a career in science.

About This Book

Reading Level

Guided Reading Level*: P

Key Vocabulary

data, hydrologist, model, observe, predict, runoff

Text Features

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

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

Science Background

Runoff

Runoff is the movement of water over the surface of Earth. This water may come from precipitation or from melting snow or ice. Runoff usually begins as small rivulets of water that eventually join to become streams that then feed into rivers. Runoff is an important part of the water cycle. Streams and rivers are habitats for many organisms, so understanding the flow of water in streams and rivers is important to understanding and protecting these ecosystems.

Models

Creating, evaluating, and revising models is an important part of science. Models are used to represent real objects, phenomena, or processes; they are always simplified versions of the real thing. Scientists use models to represent their ideas about how things work; they then test those ideas by making predictions and comparing them with observations of the real world. The materials used to create a physical model are often different from the materials that make up the thing it represents. Scientists make models using materials that behave in similar ways to materials in the real world. Not all models are physical; a model can also be a diagram, a set of equations, or a computer program.

About Connecting Science Words and Everyday Words

Different disciplines involve different ways of communicating, which include specialized vocabulary and ways of organizing explanations and arguments. In particular, scientists have ways of speaking and writing that characterize the work of the scientific community. Learning academic discourse is key to success in school. While one discourse is not *better* than another, different contexts do call for particular types and uses of language. It is important to teach these distinctions to students and help them recognize when and how to use academic discourse effectively.

The discourse of science includes words that are similar to commonly used words, but have a more specific and nuanced meaning in science (e.g., *observe* as opposed to *look*). The science/everyday words strategy involves students in building a chart that associates scientific terms with their everyday counterparts. This activity aids students in recognizing differences between speaking and writing in science and in other situations, which focuses their attention on the use of specialized language. The science/everyday words strategy draws upon and validates what students already know; it also aids students in using this knowledge as a bridge to learning new ideas. This strategy is effective for all students and may be especially helpful for English Language Learners.

Teaching How to Connect Science Words and Everyday Words

Many content-rich texts provide opportunities for students to associate academic vocabulary with everyday terms. The following guidelines can be used to teach students the science/everyday words strategy with any science text.

- Choose a text that is related to your curriculum. Locate a few science terms in the text that have everyday counterparts (note that not every scientific word has an everyday counterpart). Choose words associated with concepts that may be familiar to students. For example, students may know the word *look*, but may not know the word *observe*.
- Make a class chart with two columns—one labeled “Science words” and the other labeled “Everyday words.” On the chart, record the words that you have selected from the text. Leave the “Everyday words” column blank; you will fill this in with students during class. You may also want to make a copy of the Science/Everyday Words copymaster (included in this guide) for students so they can keep a list of words for themselves.
- Before reading the text, talk with your students about different ways of speaking in different situations. For example, students will likely recognize that they speak differently to their teachers than to their friends. Give examples of these differences and ask students to provide examples from their own lives. Make it clear that one way of communicating is not better than another—they are just different. Knowing about these differences will help students learn to speak and write in the way that is most appropriate to each situation.
- Explain that scientists have a distinct way of speaking and writing and that they use particular words. These words are often similar in meaning to words we use every day, but the words have a more specialized meaning in science.
- Using one word as an example, explain or demonstrate how a science word can have a comparable everyday word (e.g., *represent*, *show*). Be sure to highlight the differences in meanings between the two words.
- During or after reading, ask students if they can identify words they already know that are similar in meaning to the scientific words listed on the class chart. Write these everyday approximations for the science words in the “Everyday words” column. Lead discussions about how each everyday word and science word is similar and different in meaning. Students may also suggest additional science words to add to the class chart.
- Use the completed class chart as a resource. After reading additional science texts or throughout a unit of study, add science words and their everyday approximations to the class chart. Encourage students to use the scientific words when talking or writing about science.

Science words	Everyday words
data	information
precipitation	rain, snow, or sleet
evidence	clues
observe	look
represent	show
affect	change
predict	guess
accurate	correct
survive	live

Teaching How to Connect Science Words and Everyday Words with *Go with the Flow: Making Models of Streams*

Getting Ready

- Using the model above as a guide, write the science words on the Science/Everyday Words copymaster. Leave the “Everyday words” and “Page number” columns blank. Make a copy for each student.
- Create the Science/Everyday Words chart on the board or on a piece of chart paper using the model above. Fill in only the “Science words” column; you will fill in the “Everyday words” column with students during class. (Suggested student responses are in green.)

Before Reading

- Explain to students that people have different ways of speaking depending on what they are discussing and to whom they are speaking. Ask students for examples of ways they talk differently with people in different situations.
- Tell students that scientists have a particular way of talking that helps them explain science ideas. Explain that scientists often use words that can be similar, but not identical, to words one might use in other situations. Provide an example: *A student might describe the water falling from the sky as rain. However, if she were studying the weather as a scientist does, she would refer to the water as precipitation.*
- Distribute a Science/Everyday Words student sheet to each student and have them read the list of words. Tell them that as they read

Go with the Flow: Making Models of Streams, they should notice how these words are used to explain important ideas in the book.

During Reading

- Provide an example of a science/everyday word pair by reading pages 6–7 aloud. Point out the word *evidence* on page 7 and ask students to suggest a word (or words) they already know that has the same meaning. [Clues.] Show students how to record the everyday word and the page number on their student sheets. Tell students that scientists use the scientific term *evidence* because it means more than just clues—it also refers to data or observations that help explain something or answer a question.
- Read the book in a way that is consistent with your classroom routines, giving students as much independence as possible. As they read, ask students to record everyday words across from the corresponding science words on their student sheets. Tell students they should write down as many everyday words as they can, and they should use the context of the book to help them figure out what the science words mean.

After Reading

- Have students share their everyday approximations of the science words with the class. Record the everyday words across from the science words on the board. Lead a brief discussion about the differences in meaning of each science/everyday word pair.
- To encourage students to use science words in a discussion, have the class help you write a shared summary of the book on the board. Encourage students to use science words from their Science/Everyday Words student sheets as they discuss the ideas from the text.

Independent Extension

Have students choose a science word from the “Science words” column of their Science/Everyday Words student sheets and write a few sentences explaining what the word means. Encourage students to use examples from *Go with the Flow* to help clarify the word’s meaning. They can also add a realistic illustration to their writing.

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 3–4

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.

Digestion and Body Systems	
Strategy	Student Book
Analyzing Part-to-Whole Relationships	<i>Systems</i>
Teaching About the Nature and Practices of Science	<i>Secrets of the Stomach</i>
Teaching Process Description Writing	<i>Voyage of a Cracker</i>
Searching for Information in Science Texts	<i>Handbook of Body Systems</i>
Making Sense of Data in Science Texts	<i>What's the Diagnosis?</i>
Variation and Adaptation	
Strategy	Student Book
Teaching Scientific Comparison Writing	<i>Blue Whales and Buttercups</i>
Using Discourse Circles	<i>The Code</i>
Using Visual Evidence to Make Inferences	<i>Mystery Mouths</i>
Teaching About the Nature and Practices of Science	<i>Evidence from the Past</i>
Weather and Water	
Strategy	Student Book
Teaching About the Nature and Practices of Science	<i>Tornado! A Meteorologist and Her Prediction</i>
Teaching About Multiple Meaning Words	<i>Falling Through the Atmosphere</i>
Gathering Information from Science Texts	<i>Weather Encyclopedia</i>
Teaching Text Structure	<i>Water in the Desert</i>
Using the Cognates Strategy	<i>Drinking Cleopatra's Tears</i>
Connecting Science Words and Everyday Words	<i>Go with the Flow: Making Models of Streams</i>
Taking Notes Based on Observations	<i>Sky Notebook</i>
Teaching Text Features	<i>Wet Weather Handbook</i>
Making Sense of Data in Science Texts	<i>What's Going on with the Weather?</i>
Light Energy	
Strategy	Student Book
Teaching About Idioms	<i>Can You See in the Dark?</i>
Teaching Summary Writing	<i>The Speed of Light</i>
Teaching About the Nature and Practices of Science	<i>Why Do Scientists Disagree?</i>
Using Discourse Routines with Science Texts	<i>I See What You Mean</i>
Searching for Information in Science Texts	<i>Handbook of Light Interactions</i>
Teaching Scientific Explanation Writing	<i>Light Strikes!</i>
Teaching Vocabulary with Science Texts	<i>Cameras, Eyes, and Glasses</i>
Teaching Concept Mapping	<i>It's All Energy</i>
Interpreting Visual Representations	<i>Sunlight and Showers</i>

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

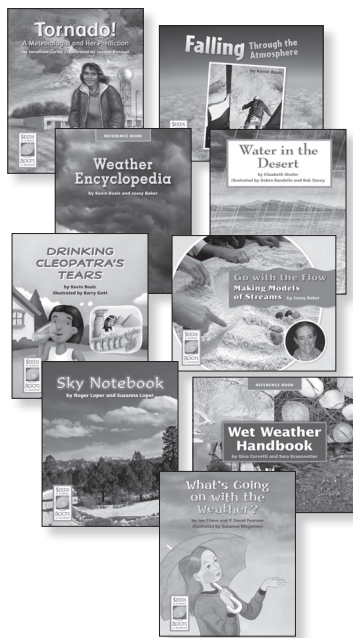
The strategy featured in this guide is drawn from the *Seeds of Science / Roots of Reading*® curriculum program. *Seeds / Roots* is an innovative, fully integrated science and literacy program.

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



Weather and Water 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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