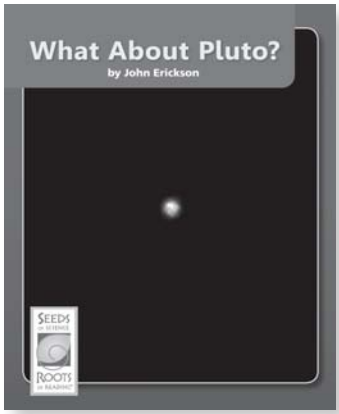
Strategy Guide

Using Discourse Circles

with *What About Pluto?* from *Seeds of Science/Roots of Reading*®



Introduction

This strategy guide introduces an approach for teaching students to discuss science ideas using a discourse circle. Discourse circles involve students in structured, evidence-based conversations around challenging statements. This guide includes an introductory section about discourse circles, a description of how to conduct a discourse circle in conjunction with many content-rich texts, and a plan for conducting a discourse circle with the *Seeds of Science/Roots of Reading*® book *What About Pluto?*

Book Summary

What About Pluto? provides students with important information about the classification of Solar System objects. In the book, Pluto is compared to other objects in our Solar System. Through reading these comparisons, readers learn how astronomers classify Solar System objects according to their characteristics. Rocky and gaseous planets, moons, comets, Kuiper Belt objects (icy bodies that orbit the Sun beyond Neptune), and asteroids are all compared and contrasted with Pluto. Readers discover that Pluto is no longer considered a planet since its reclassification in 2006. From this compelling example, readers learn that scientific knowledge can shift as new evidence becomes available.

About This Book

Reading Level
Guided Reading Level*: R

Key Vocabulary
classify, composition, orbit, planet, Solar System object

Text Features
bold print, bullets, captions, diagrams, glossary, headings, illustrations, labels, photographs, table of contents

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

Science Background

Throughout time, people have discovered many objects in our Solar System. In 1930, an object was discovered orbiting the Sun, beyond Neptune (which was the farthest-known planet at the time). Astronomers named this object Pluto and classified it as the ninth planet in our Solar System. In 2006, Pluto made headlines when the International Astronomical Union changed the way they define the word *planet*. This new definition declassified Pluto as a planet for several reasons. Pluto is different from the other eight planets in our Solar System in a number of ways. Pluto is composed of icy material, while the other planets are composed of either rock or gas. Pluto is also significantly smaller than any of the other planets. In fact, there are several moons in our Solar System, including Earth's Moon, that are bigger than Pluto! Pluto's orbit is unlike any of the other planets' orbits, as it is tilted and is much more of an oval shape. In addition, we now know that Pluto is part of a large belt of many thousands of objects that orbit beyond Neptune. This region is known as the Kuiper Belt, and it includes Pluto and Eris, another large object. As technology advances and new discoveries are made, astronomers adjust how they classify Solar System objects to reflect these new understandings.

About Discourse Circles

A discourse circle is a structured conversation designed to promote discussion based on evidence. Students are guided to gather evidence from a text to both support and refute a claim provided by the teacher. When preparing for a discourse circle, students gain critical practice in reading for a purpose and locating information in a text. During the discourse circle, students actively listen to evidence provided by others. A discourse circle is a valuable way to teach students that scientific explanations are based on evidence and that scientists often meet to discuss their ideas and present evidence they have gathered.

Using Discourse Circles

The following guidelines can be used to conduct discourse circles with many content-rich texts.

- Select a text(s) that provides evidence both for and against a statement or claim. In science, good choices include books about human impact on the environment or books that discuss debates about scientific ideas.
- Craft a claim for which students can find evidence to both support and refute the claim. When writing claims for use in a discourse circle, consider the following:
  - **a.** The claim should relate to important concepts in the text.
  - **b.** The text must provide evidence both for and against the claim.
  - **c.** The claim should not be obviously true or obviously false.
  - **d.** Students should be able to choose either position without developing misconceptions about the topic.
- Two examples of claims that can be used effectively in discourse circles are (1) Students like us can help prevent oil from spilling in the ocean, and (2) The stomach is the most important organ in the digestive system.
- Make a Discourse Circle Directions class chart that lists the steps for conducting a discourse circle. (See the box on this page.)
- Have students read the text(s) that you have selected, focusing on the content.

Discourse Circle Directions

A discourse circle is a group of four people.
It works like this:

1. One person presents her position and her evidence.
2. Other students who agree add their evidence.
3. Then, a student who disagrees says why and presents his evidence.
4. The group discusses the statements and evidence to see if they can come to an agreement.
5. If the group cannot agree, they can talk about all the reasons why they are convinced of their own positions.

- After reading, tell students that they will conduct a discussion called a discourse circle. Explain that this discussion will focus on evidence gathered from the text(s) they read.
- Tell students that a claim is a statement that is based on evidence. Present the claim you chose to the class. Explain that the evidence they will gather should support both sides of the claim.
- Have students reread the text(s), noting evidence to both support and refute the claim. You may wish to have students use the Preparing for a Discourse Circle copymaster (included in this guide) to record their evidence.
- Give students time to consider the evidence they have gathered and decide whether they agree or disagree with the claim. Form small groups composed of some students who agree with the claim and some who disagree.
- Go over the Discourse Circle Directions class chart with students to ensure that they understand the directions.
- Explain that scientists often change their ideas when they learn about new evidence, and that students may want to do the same. Remind students that the purpose of the discourse circle is not to decide whether the claim is right or wrong but to consider and discuss the available evidence carefully.
- Have students conduct discourse circles as described in the Discourse Circle Directions.
- Afterward, debrief the discussions as a class. Talk about how the discourse circles went, emphasizing how students used evidence from the text to support their ideas.

Using a Discourse Circle with *What About Pluto?*

What About Pluto? prompts students to think about the characteristics that make a planet a planet.

Getting Ready

1. Write the claim "Pluto should be classified as a planet" on the Preparing for a Discourse Circle copymaster. Make a copy for each student.
2. Make a Discourse Circle Directions class chart. (See the chart on the previous page.)

During Class

1. Read *What About Pluto?* in a way that is consistent with your classroom routines, giving students as much independence as possible. Have students stop reading after page 21. Briefly discuss the main ideas presented in the text with a specific focus on two ideas: a) how scientists classify planets, and b) the specific characteristics of what makes a planet a planet.
2. Tell students that they will conduct a discussion called a discourse circle that will help them talk about evidence as scientists do.
3. Distribute the Preparing for a Discourse Circle student sheets and read the claim aloud. Explain that students should record evidence from the text that supports the claim as well as evidence that refutes the claim.
4. Give an example of evidence that supports the claim and tells what makes a planet a planet. [Pluto, like the planets, is spherical and orbits the Sun, page 7.] Then, ask students to find evidence from the text that refutes the claim and gives a reason why Pluto is not a planet. [Pluto is composed of icy material, page 9.]
5. Have students look back through the text and record additional evidence for both sides of the claim on their Preparing for a Discourse Circle student sheets.
6. Ask students to carefully examine the evidence they gathered and decide whether they agree or disagree with the claim.
7. Form small groups of about four students, ideally comprised of an equal mix of students who agree and disagree with the claim.
8. Review the Discourse Circle Directions. Write the following sentence starters on the board to help guide the discussion: "A Solar System object is a planet if...." and "A Solar System object is not a planet if...." Have students state their evidence using this format.
9. Give groups time to conduct their discourse circles. Remind them that they should refer to their evidence and listen carefully to other group members' evidence. Emphasize that students may change their minds if they hear evidence that is more convincing than their own evidence.
10. Debrief the discourse circles by bringing the class back together. Ask a few students to present their positions using evidence from the text. Invite other students to agree or disagree and present their evidence.
11. Have students read pages 22–23. Ask them to compare their findings with those of the International Astronomical Union. Discuss whether students think the right conclusion about Pluto was reached and why. Encourage students to provide evidence to support their positions.
12. To conclude, reflect on how the discourse circles went, focusing on the ways students used evidence from the text to support their ideas. Explain to students that this is how scientists discuss ideas—they consider all the available evidence and try to come to a conclusion.

Independent Extension

Have students make a T-chart or Venn diagram comparing Pluto to one of the other types of Solar System objects discussed in *What About Pluto?* Students should select a section of the text to reread and then record similarities and differences between Pluto and the other type of Solar System object they chose.

Name _____ **Date** _____

Preparing for a Discourse Circle

Title of book: _____

Claim: _____

_____

_____

Evidence FOR: _____

_____

_____

_____

_____

_____

_____

_____

Evidence AGAINST: _____

_____

_____

_____

_____

_____

_____

_____

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**).

Available Student Books for Grades 4–5

Eighteen 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. Nine *Aquatic Ecosystems* student books and strategy guides will be available in summer 2010.

Planets and Moons	
Strategy	**Student Book**
Connecting Science Words and Everyday Words	*Exploring Planets and Moons*
Using Science Text to Visualize	*Spinning Through Space*
Taking Notes Based on Observations	*Observing the Moon*
Using the Cognates Strategy	*How Big Is Big? How Far Is Far?*
Teaching Scientific Comparison Writing	*Handbook of Planets and Moons*
Using Discourse Circles	*What About Pluto?*
Teaching About How Scientists Use Models	*Planetary Scientist*
Using Anticipation Guides	*Tomato Landers*
Promoting Word Consciousness	*Technology for Exploration*
Chemical Changes	
Strategy	**Student Book**
Teaching Scientific Explanation Writing	*Chemical Reactions Everywhere*
Posing Investigation Questions	*Handbook of Chemical Investigations*
Teaching Text Structure	*What Happens to the Atoms?*
Teaching Procedural Writing	*Bursting Bubbles: The Story of an Improved Investigation*
Promoting Word Consciousness	*Communicating Chemistry*
Models of Matter	
Strategy	**Student Book**
Teaching Summary Writing	*Made of Matter*
Using Roundtable Discussions	*Break It Down: How Scientists Separate Mixtures*
Interpreting Visual Representations	*Phase Change at Extremes*
Teaching About How Scientists Make Inferences	*Science You Can't See*

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**

***Planets and Moons* Science and Literacy Kit**

SEEDS OF SCIENCE / ROOTS OF READING®

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.

Published and Distributed by wireless generation®