

Taking Notes Based on Observations

with *Observing the Moon*
from *Seeds of Science/Roots of Reading*®



Introduction

This strategy guide introduces an approach for teaching students to take notes based on observations. Making observations and recording them in a systematic way is a very important part of the scientific process. This guide includes an introductory section about taking notes based on observations, a general overview of how to teach this strategy with many science texts, and a plan for teaching students to take notes based on observations with the *Seeds of Science/Roots of Reading*® book *Observing the Moon*.

Book Summary

Observing the Moon invites students to observe and analyze the phases of the Moon to look for predictable patterns. The book reports actual observations as a narrator watches the Moon over a period of one month. The left-hand pages provide photographs of the Moon's shape as it appears in the sky, along with the date, time of day, lunar phase, and a description of the Moon in that phase. The right-hand pages provide images of the Moon as seen through a telescope, along with diagrams of the Moon at each phase and information about the Moon. Observing the images and examining the diagrams enable readers to understand how the Moon appears to change in a regular pattern.

Science Background

The Moon appears to change shape over the course of one month, from a full circle to nothing at all. These shapes that we see from Earth are called lunar phases. The phases of the Moon result from the relative positions of Earth, the Moon, and the Sun, all of which change in a regular pattern as the Moon orbits Earth. Contrary to what students may think, the Moon does not make any light of its own, nor are the Moon phases caused by Earth's shadow. At any given time, half of the Moon is illuminated by the Sun, and half is dark. When we see the Moon from Earth, we see different portions of the light side and the dark side, depending on where the Moon is in its orbit around Earth. Lunar phases have different names, depending on their shapes. When the Moon looks like a full circle, it is called a full Moon. When it looks like a half circle, it is called a quarter Moon. When we cannot see the Moon in the sky, it is called a new Moon. The phase between a full Moon and a quarter Moon is called a gibbous Moon, and the phase between a quarter Moon and a new Moon is called a crescent Moon. The same side of the Moon is always facing Earth. This is because as the Moon orbits Earth, the Moon is also slowly rotating. It takes about one month for the Moon to make a full rotation and a full orbit around Earth.

About This Book

Reading Level

Guided Reading Level*: Q

Key Vocabulary

crater, lunar phase, observe, waning, waxing

Text Features

bold print, captions, diagrams, glossary, labels, photographs, tables, text boxes

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

About Taking Notes Based on Observations

The ability to observe carefully is critical in science. When students learn how to observe carefully, they use one or more of their senses to take in information about their surroundings. Recording observations involves detailed note taking, which documents the observations for later analysis. Note taking is used to record descriptions of objects and phenomena in the world. Scientists record their observations in a number of ways, including making lists, describing, creating drawings with labels, and taking photographs. These notes can be shared with others as a means of learning more about something. Implementing a note-taking strategy across the curriculum provides students with multiple opportunities to learn how to carefully observe and record their observations. Repeated use of this strategy also helps students improve their ability to use descriptive language.

Teaching How to Take Notes Based on Observations

- Select a natural object for students to observe, such as a rock, a pinecone, or a leaf. In addition, select a text that includes detailed illustrations or photographs. This text should prompt rich observations and lend itself well to making detailed notes.
- Tell students that taking notes based on observations is something that scientists do to keep track of what they observe. Explain that observing means paying attention carefully and using all your senses to focus on details.
- Model how to make careful observations by recording your observations about the object you selected while thinking aloud. You can show students some of the different forms that notes take, including narrative descriptions, tables, measurements, labeled drawings, or any combination of these forms. As you model recording observations, point out that notes are not always written in complete sentences.
- As a class, brainstorm guidelines for taking notes based on observations, using the process you modeled. (The box on this page lists ideas you may want to include.)

Taking Notes Based on Observations

1. Focus your attention on what you are observing.
 2. Use as many of your senses as possible to observe (sight, hearing, touch, smell).
 3. Write down only what you observe, not what you imagine.
 4. Use scientific language (e.g., *thorax* instead of *body*).
 5. Be specific and detailed in order to create a picture with words.
 6. Include the date and time of your observations and any measurements you took.
 7. If possible, draw a detailed picture of what you observe and include labels.
- Invite students to observe an object they choose from around the room. Emphasize that they should use more than one sense while observing. Brainstorm a list of relevant words that describe texture, color, odor, size, shape, and so on. You may want to use the Observation Notes copymaster (included in this guide) for students to record their observations using words, sketches, or labeled diagrams.
 - After students have observed an object, point out that making careful observations can help readers learn about things in the world that are not present in the classroom. Explain that science texts often include photographs, illustrations, or diagrams of real things that may not be directly observable.
 - Have students read the text you selected and observe a particular photograph or illustration carefully. Invite students to share what they observed.
 - As students become more familiar with taking notes based on observations, discuss additional examples. Choose student-generated work that includes narrative notes as well as pictures, extract examples from science texts, or create your own examples. Discuss how the examples reflect the guidelines. You might also find or generate examples that do not follow the guidelines and have students critique them.
 - Becoming an expert at observation and note taking requires ongoing practice. Incorporate as many opportunities as possible for students to apply this strategy across many different instructional contexts.

Teaching How to Take Notes Based on Observations with *Observing the Moon*

Observing the Moon models the process of taking notes based on observations. Students can practice this strategy by observing the photographs in the book.

Getting Ready

1. Make a copy of the Observation Notes copymaster for each student.
2. Create a Guidelines for Taking Notes Based on Observations class chart on the board or on chart paper. (The box on the previous page lists ideas you may want to include.)

During Class

1. Tell students that in *Observing the Moon*, they will read about a person who observes the Moon as it appears to change over one month. Each observation includes a photograph with a matching description, as well as the date, time of day, and lunar phase.
2. Activate prior knowledge by inviting students to describe experiences they have had observing the Moon. Ask them to describe what they observed (e.g., the Moon's shape).
3. Read *Observing the Moon* in a way that is consistent with your classroom routines, giving students as much independence as possible.
4. Lead a class discussion about the types of observations the narrator collected. Point out how these notes are presented in the book using the following examples:
 - Have students turn to pages 4–5 and reread the text. Tell students that observations can be recorded in multiple forms, including descriptions, illustrations, and photographs. Explain that scientists document their notes for later analysis by recording dates and times that observations were made.
 - Have students turn to pages 6–7 and reread the text. Point out the different kinds of observations, including the phase the Moon was in, the distance from Earth to the Moon, and the position of the Moon in relation to Earth and the Sun.
 - Have students turn to page 10 and observe the photograph. Explain that as students share ideas, you will record notes about what they observe. Allow a few minutes for students to observe and then discuss with a partner. Ask volunteers to share their observations. Record ideas on the board in the form of notes.
5. Point out the Guidelines for Taking Notes Based on Observations chart that you posted before class. Ask students to find detailed observations from the book that show examples of these guidelines. For example, have them look for instances where the narrator was particularly precise.
6. Distribute the Observation Notes student sheets. Have students go back to the beginning of the book and begin flipping through the pages, like a flipbook. Have students focus on the photos in the bottom right-hand corner and observe the changing phases of the Moon. Have them record notes about what they observe. Direct them to use words and drawings to record what they notice.
7. Have a few students share their observations with the class. Then, focus students' attention on the three ways that information is organized on pages 22–23. (These are a timeline showing the Moon as it goes through phases, a table that gives approximate times the Moon rises and sets, and a diagram that shows the position of the Moon in relation to Earth and the Sun.) Explain that these resources can be used to interpret the pattern of how the Moon's shape appears to change. Have students think about and discuss what they notice about the pattern as seen through observations in the book.

Independent Extension

Have students choose one of the close-up photographs of the Moon on the odd-numbered pages of *Observing the Moon*. Students should work with a partner to describe in detail, either orally or in writing, what they observe in the photograph.

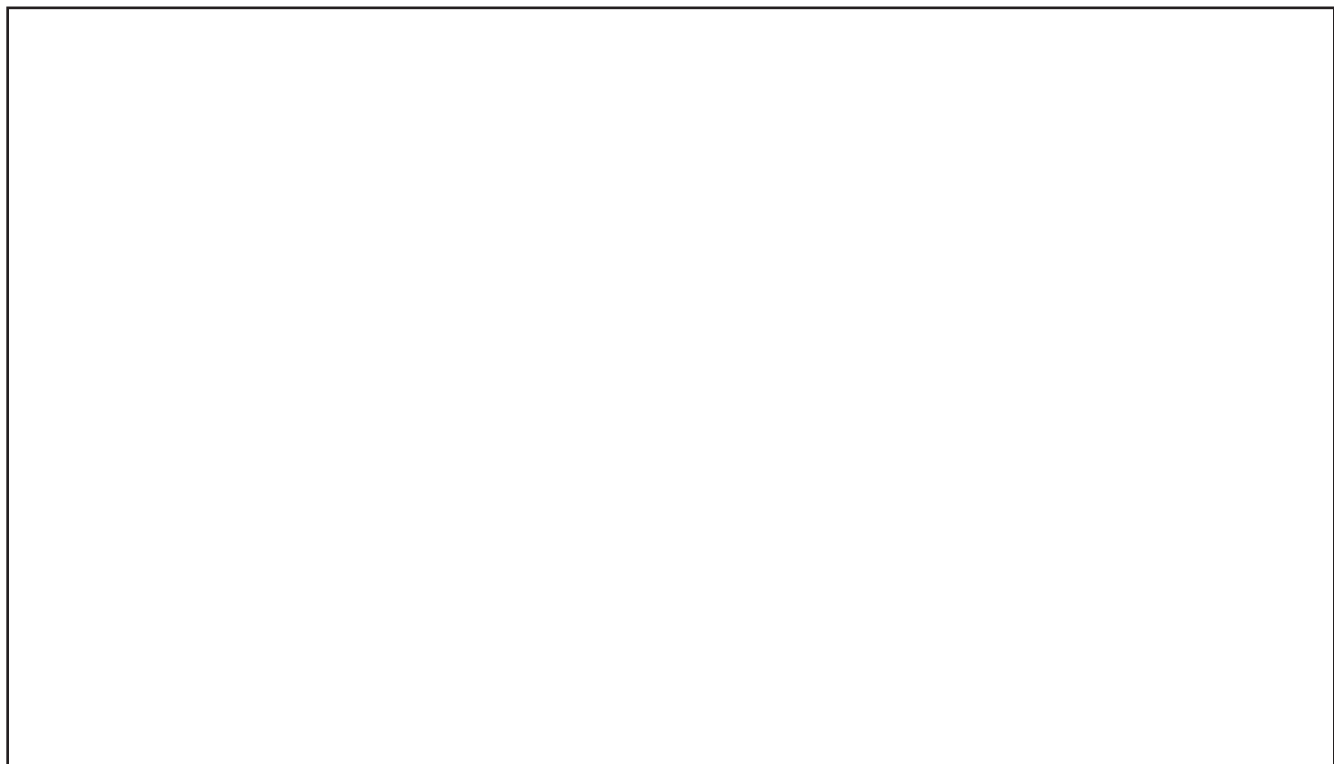
Name _____ Date _____

Observation Notes

Title of book: _____

Write notes about your observations.

Draw and label one of your observations.



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.

<i>Planets and Moons</i>	
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>
<i>Chemical Changes</i>	
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>
<i>Models of Matter</i>	
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.seedsofscience.org



Planets and Moons 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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