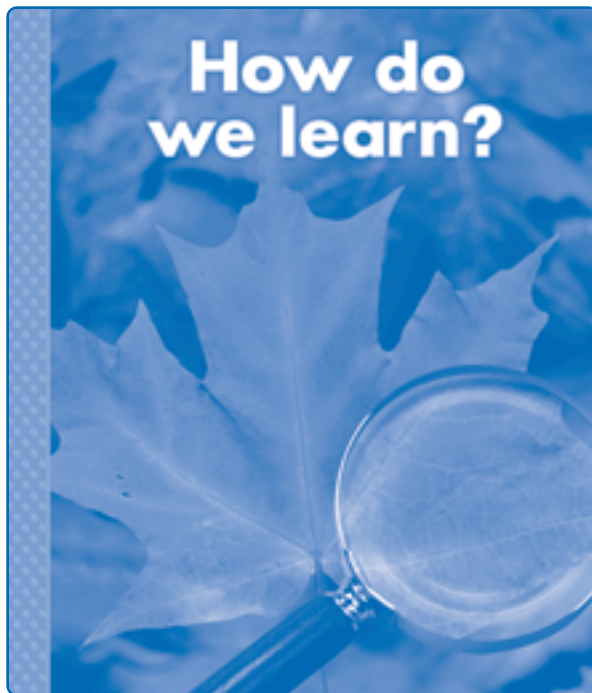


How do we learn?



Delta Science First Readers are nonfiction books that introduce basic science concepts and review key literacy skills and strategies. The ten titles in the program build a strong foundation for success in science and reading.

Be sure to preview the reader Overview Chart on page 15, the reader itself, and the teaching suggestions on the following pages. This information will help you determine how to plan your schedule for reader selections and activity sessions.

Reading for information is a key literacy skill. Use the following ideas as appropriate for your teaching style and the needs of your students. The After Reading section includes an assessment and writing links.

OVERVIEW

In the Delta Science First Reader *How do we learn?* students explore some of the many ways they can learn about the world around them. They are introduced to their five senses and learn about using tools. They discover how observing carefully, talking and listening, and reading and writing can help them gather and share information. The question-answer format of the book title and text reinforces inquiry science and supports the teaching of science process skills.

Students will

- ▶ identify the five senses
- ▶ explore methods of gathering information
- ▶ compare tools and their uses
- ▶ describe different ways of sharing information
- ▶ recognize parts of a book: title, front cover, and back cover
- ▶ discuss the function of a table of contents, headings, labels, and a glossary
- ▶ complete a concept web

READING IN THE CONTENT AREA SKILLS

- Read high-frequency words
- Recognize science words and their meanings
- Use phonics, context clues, and picture clues to decode words
- Compare and categorize objects
- Use background knowledge to support comprehension
- Make inferences from illustrations and photographs
- Use a graph and charts to draw conclusions
- Demonstrate critical thinking
- Summarize information

NONFICTION TEXT ELEMENTS

How do we learn? includes a title, a table of contents, headings, illustrations, photographs, boldfaced terms, labels, a graph, charts, and a glossary.

CONTENT VOCABULARY

The following terms are introduced in context and defined in the glossary: *compare, measure, observe, sort.*

Optional vocabulary: *learn, senses.*

BEFORE READING

Build Background

To access students' prior knowledge, ask, *Have you ever wondered about something or wanted to find out more about something? What have you wondered about?* Briefly discuss students' responses. Choose one topic and ask, *What are some ways that we could find out about this?*

As students respond, begin a class concept web by drawing a large question mark in a circle on the board or chart paper. Record their responses to the question "How do we

learn?" in circles connected with lines to the question mark. (read, ask questions, use our senses) Read aloud the words you have recorded and tell students, *These are all good ways to learn about something.* Encourage students to brainstorm other ways they learn about things.

Preview the Book

Ask students to look at the picture on the **front cover** of the book. Ask, *What do you see in this picture? When are leaves this color? Where do we find leaves? What is this round object with a handle? Have any of you used a tool like this before? What does a magnifier do?* Briefly discuss students' experiences.

Point to each word as you read aloud the title. Then have a volunteer come up and point to the question mark in the title. Explain that a question mark at the end of a sentence means that the sentence is asking something. Ask, *What is this sentence asking about?* (how we learn)

Flip through the book and briefly discuss a few of the **photographs**. To stimulate discussion, ask questions such as, *What are these children doing? How is this child learning about the flower? What do you think this child is learning about? What are these objects? Why do you think they are in a book about learning?*

Have students turn to the **table of contents** and read aloud the title and the word *Contents*. Explain that the table of contents is a list that tells what is written in the book. Ask, *What do you notice about this page?* Give students a few minutes to share their observations. Each line has been printed in a different color so they can easily be referred to and identified by both readers and nonreaders. Read aloud the first heading. Ask, *Where do you think you will find information about your senses in this book?* Point to the page numbers listed after each heading. Explain that each number tells the page on which students will find information about each heading. Then read the last two headings.

Preview the Vocabulary

You may wish to preview some of the vocabulary words before reading rather than waiting to introduce them in the context of the book. Possibilities include creating a word wall, vocabulary cards, sentence strips, or a concept web.

For example, you may wish to play a variation of the game Charades to review verbs introduced in the book. On the board or chart paper, write three words from the book, for example, *compare*, *observe*, and *measure*. Read the words aloud. Tell students that you are going to act out one of the words and they are to try to guess which word it is. Repeat the game using different sets of words and allowing volunteers to choose one to act out.

Set a Purpose

Discuss with students what they might expect to find out from the book, based on their preview. Use their comments and questions to set an overall purpose for reading.

GUIDE THE READING

Preview the book yourself to determine the amount of guidance you will need to give for each section. Depending on your schedule and the needs of your class, you may wish to consider the following options:

- **Read Aloud** Read the book aloud with the whole class. Encourage students to ask questions and make comments. Pause as necessary to clarify and assess understanding.
- **Shared Reading** Pair readers with nonreaders and have them read the book together. Pause students at appropriate stopping points to clarify as needed and to discuss any questions that arise or have been answered.
- **Independent Reading** Some students may be ready to read independently. Instruct them to pause at designated stopping

points and have them rejoin the class for discussion. Check understanding by asking students to explain in their own words what they read.

Tips for Reading

- Begin each text section by reading aloud the heading. Discuss what students expect to learn, based on the heading. Briefly discuss the photos in the section, and identify any unfamiliar objects.
- Show students how to use picture clues to figure out the meanings of the words in boldface type. Tell students that these are important science words and that they should ask an adult or other student for help if they cannot figure out what the word means. As appropriate, demonstrate how to look up a word in the glossary.
- As appropriate, model reading strategies students may find helpful for nonfiction: making personal and text-to-world connections, asking questions, visualizing, making inferences, and self-correcting.

Pages 2–6 *We use our senses.*

- **Page 2** Point to each word as you read aloud the heading on page 2. Point to the word *senses* and read the word aloud. Ask, *Does anyone know what your senses are?* Confirm students' responses by telling them, *We use our senses to learn more about the world.* Tell students that they will learn more about their five senses as they read the next few pages.
- Read aloud the text on page 2 and have students look at the photograph. Ask, *What are these children looking at?* (a butterfly) *Look at this butterfly. What can you learn about this butterfly just by looking at it?* (It is yellow and black. It has wings. It can fly.)
- Ask, *What part of your body do you use when you look at or see something?*

(eyes) Have students point to their eyes. Tell students, *When you use your eyes to look at or see something, you are using your sense of sight.*

- **Page 3** Ask, *What is happening in this picture?* (A teacher is reading to her students.) *What are the children doing?* (looking at the book, listening to the teacher) Read aloud the text. Then ask, *What part of your body do you use when you listen to or hear something?* (your ears) Have students point to their ears. Tell them, *When you use your ears to listen to or hear something, you are using your sense of hearing.*
- **Page 4** Briefly discuss the photograph. Then ask, *What is the boy doing to learn about the starfish?* (Accept all reasonable answers.) Read aloud the text. Ask, *What part of his body is the boy using to touch the starfish?* (his hand, his fingers) Tell students that when they feel something, they are using their sense of *touch*. Ask, *What do you think the boy is learning about the starfish by touching it?* (Accept all reasonable answers.)
- **Page 5** Ask, *What is the girl doing in this picture?* (smelling a flower) Read the text, pausing to allow students to contribute the last word in the sentence. (*smell*) Ask, *What part of her body is she using to smell the flower?* (her nose) Have students point to their noses. *What is the girl learning by using her sense of smell?* (that the flower smells sweet)
- **Page 6** Ask, *What is this girl doing?* (eating a watermelon) Briefly discuss students' experiences with watermelon. Read aloud the text and ask, *What is she using to taste the watermelon?* Students will probably respond that the girl is using her mouth. Point out that the part of the mouth that tastes things is the *tongue*. Ask students to stick out their tongues. Ask, *How do you think the watermelon tastes?* (sweet, cold, watery) *What are some other things that taste sweet?* (Accept all reasonable responses.)

Safety Note: Tell students that even though the sense of taste helps them learn, they should never taste an object or put an object in their mouths in science class unless the teacher tells them to do so.

Pages 7–13 *We find out.*

- **Page 7** Read aloud the heading on page 7. Ask, *How do you find out about things?* (Accept all reasonable answers.) Briefly discuss the photograph and ask, *What do you think the boy and the firefighter are talking about?* Read the text at the bottom of the page. Point out that we ask questions to find out more about the world around us. Ask, *What questions do you think the boy might be asking? How might he find out the answers to his questions?* Students will probably answer that the firefighter will tell the boy the answers. Ask, *What are some other ways the boy could find out the answers to his questions?* (Answers may include reading or experimenting.)
- **Page 8** Briefly discuss the photograph on page 8 and read the text. Ask, *Have you ever found something out by reading?* Give students a chance to share their experiences. Remind students that they are reading right now. Ask, *What have you found out so far by reading this book?* (Accept all reasonable answers.)
- **Page 9** Discuss the photograph by asking questions such as, *Is it day or night in this picture? How do you know? What are the people doing?* (looking at the sky) *What do you think they see?* (moon, stars) Read aloud the text.
- Point to the word *observe* and ask students what they notice about the word. (It is in dark print.) Tell students that words printed in dark print are listed in the back of the book. Write the word *observe* on the board. Then have students turn to the glossary on the inside back cover of the book and point to *observe*. Read aloud the word and the definition. Tell students, *This list of words is called*

a glossary. A glossary gives the meanings of some important words in the book. If you see a word in dark print, you can find out what the word means by looking in the glossary.

- Ask students how they think the words *observe* and *look* are alike. (People use their eyes to observe and to look at things.) The words *look* and *observe* (as well as *see* and *watch*) are synonyms—they have similar meanings. In science, the word *observe* has a special meaning. Observing involves using all the senses, not just the eyes, to find out information. For example, meteorologists observe the weather. When scientists observe, they use all their senses and they often use measuring tools that extend their senses in order to gather as much information as possible.
- Point out to students that when we observe something, we often watch it over a period of time. Ask, *What might the people in the picture observe over a period of time?* (Accept all reasonable answers. Students may suggest that the light might change, clouds might come and cover the moon, the stars might change position in the sky, or the moon might change shape.)
- **Page 10** Have students look at the chart on page 10. Ask, *What do you think we will find out by looking at this chart?* (Accept all reasonable predictions.) Help students identify the objects in the chart. Then read aloud the text at the bottom of the page. Ask, *What does it mean when we compare two things?* If necessary, turn to the glossary and read the meaning of the word aloud.
- Point to the word *alike* in the top row of the chart and read it aloud. Ask, *How are these objects alike?* (They are both balls. They are both round. They are the same size.)
- Point to the word in the middle row and ask, *What do you think this word says?*

If necessary, have students compare the word to the one in the top row. Ask, *How are these two objects alike?* (They are both blue. They are both made of glass.)

- Point to the word *different* in the bottom row and ask, *Is this the same word as the ones in the first two rows? How do you know?* Read the word aloud. Ask, *How are these two objects different?* (Accept all reasonable answers.)
- **Page 11** Help students identify the objects in the chart on page 11. Then read aloud the text at the bottom of the page. Ask, *Have you ever helped your mom or dad sort the laundry or groceries or your toys? What did you do?* Tell students that they can sort objects into groups by thinking about how they are alike.
- Point to the left side of the top row. Ask, *How are these objects alike?* (They are both round.) Do the same for the objects on the right side of the top row. Point to the word *shape* and read it aloud. Tell students, *These objects have been sorted into groups that have the same shape.* Follow the same procedure for the objects in the two remaining rows.
- **Page 12** Help students identify the objects on page 12. Then read the text aloud. Point out that tools help people do work. Tools can help people fix things, make things, move things, and build things. Point to the pencil, the hammer, the paper clip, and the scissors. Ask about each item, *What might this tool help you make?*
- Next, point to the magnifier. Ask, *What does this tool help you do?* (see small things by making them appear larger) Explain that tools such as magnifiers help people learn more about the world by using their senses in more powerful ways. Ask students where they have seen another magnifier. (on the front cover of the book) Explain that scientists use magnifiers and many other types of tools in their work. For example, scientists use

microscopes to study tiny objects. They use telescopes, such as the one shown on page 9, to look at faraway objects. They use thermometers to find out how hot or cold something is.

- **Page 13** Have students look at page 13 as you read aloud the text. Ask, *Have you ever measured something or watched someone measure something? What are some tools that people use for measuring?* (Students may suggest measuring cups for cooking or scales for weighing.) Explain that the picture shows some different things people might use for measuring. Help students identify the objects being used to measure between the green (start) and red (stop) lines.
- Show students how to use each measuring tool shown on the page to measure between the green and red lines, and ask them to give the measure in footprints (more than 1), crayons (about 3), paper clips (about 5), centimeters (about 27), and inches (between 10 and 11). Ask, *What other ways might we measure between the lines?* If necessary, suggest several alternatives, such as handprints, connecting blocks, or string.

Pages 14–16 *We share.*

- **Page 14** Have students turn to page 14 and read the heading aloud. Ask, *What are some ways you can share what you learn?* (Accept all reasonable responses.) Tell students that they will find out about different ways to share information on the next few pages.
- Briefly discuss the photograph on page 14 and read aloud the text at the bottom of the page. Ask, *What do you think these children are talking about? Have you ever shared something you learned by talking about it?* Give students the opportunity to share their experiences. Elicit that a computer is a tool we can use to get information and learn. We can also use a computer to share information.

- **Page 15** Ask students what they see on page 15. If necessary, tell students that the drawing on page 15 is a chart. Help students identify the balance and explain that a balance helps us compare the weights of different objects.
- Read aloud the text at the bottom of the page. Tell students that the chart is how one student used drawing and writing to share what he or she learned from using the balance. Read aloud the labels *light* and *heavy* and discuss with students the information shown in the chart.
- **Page 16** Have students turn to page 16, and read aloud the text at the bottom of the page. Explain that the picture shows a graph. Read aloud the title and labels on the graph. Ask questions about the information shown in the graph—for example, *Do more people have cats or dogs? How many people have fish?* Point out that a graph is a good way to show information we gather. Discuss any other graphs you might have done previously in your class.

Back Cover

- Direct students' attention to the back cover and read the text. Ask questions to help spark discussion about the photograph. For example, ask, *What is the boy looking at? Where do you think the boy is? What questions do you think the boy has about the dinosaur? How might the boy learn more about the dinosaur? What could you do to learn more about dinosaurs?*

Comparing Covers

- Have students look again at the front cover of the book. Invite a volunteer to summarize what the photograph shows. (a leaf viewed through a magnifier) Have students open their books flat so they can see both front and back covers at the same time. Ask questions to lead students to discover similarities and differences between the information that is shown.

- Remind students of the title of the book. Ask, *What do the pictures on the covers show about how we learn?* (The front cover shows how we learn about a leaf and the back cover shows how we learn about a dinosaur.) Point out that this is one way the pictures are alike. They both show ways to learn about something. Then ask, *How are the pictures different? What differences do you see in the information shown in the two pictures?* (Possible answers: On the front cover, a tool is being used. On the back cover, the boy is using only his eyes. On the front cover, someone is looking at something small and on the back cover someone is looking at something very big. The leaf on the front cover is something we can see every day in our yards. The dinosaur on the back cover is found only in a museum. We can touch the leaf but we should not touch the dinosaur.)
- Elicit that science learning is all around us. We can learn about science by using our senses and finding out about everyday objects. (This is called “backyard science.”) We also can learn about science by going to special places that have unusual objects and helpful tools, such as museums, planetariums, aquariums, zoos, parks, weather bureaus, and other local resources. (This is called “community science.”)

AFTER READING

Summarize

Flip through the book one more time. Use the headings, photographs, and boldfaced terms to help students summarize the information in each section.

Review the concept web you began on the board before reading *How do we learn?* Ask students what new ideas and words they would like to add to the web about how we learn. Review the web together as a way to summarize what students have learned.

Review/Assess

Use the questions that follow as the basis for a discussion of the book or for an oral assessment.

1. *We have five senses. What are the five things we can do with our senses?* (look, listen, touch, smell, and taste) *What do our senses help us do?* (Our senses help us find out about the world around us.)
2. *What are some other ways we can find out about the world around us?* (ask questions, read, observe, compare, sort, use tools, measure)
3. *Suppose you were walking along the beach and you found a strange object. What are some ways you could learn about the object?* (use your senses, ask questions, look it up in a book, measure it, and so on)
4. *What are two different ways you can share what you learn?* (talk about it, write or draw about it)

Writing Links/Critical Thinking

Present the following as drawing or writing assignments. Provide help as needed.

1. On chart paper, begin a collaborative story titled “How We Learn.” Have students dictate words to complete the sentence pattern telling how they learn about the world around them. For example,

How We Learn

_____ learns about _____ by _____.

Ms. Lopez learns about our goldfish by observing them.

Kelsie learns about soccer by listening to her coach.

Sam learns about earthquakes by reading about them.

When everyone has had a chance to contribute to the story, have each student

copy and illustrate the sentence he or she contributed. Bind the illustrations together to make a class book.

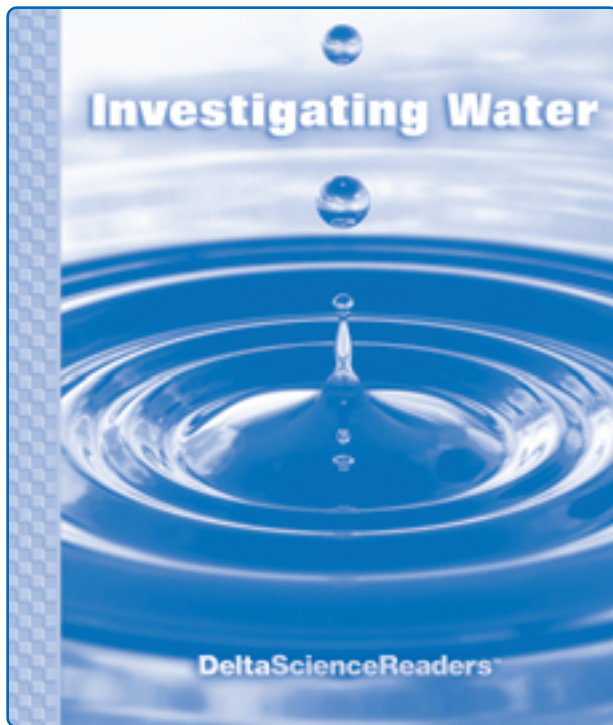
2. Pretend you are an astronaut who has landed on a planet where no one has ever been before. Draw a picture and write words telling how you would learn and gather information about the planet you discovered.

Science Journals: You may wish to have students keep the writing and drawing activities related to the Delta Science First Reader in their science journals.

References and Resources

For trade book suggestions, see the References and Resources section of this teacher's guide.

Investigating Water



Delta Science Readers are nonfiction student books that provide science background and support the experiences of hands-on activities. Every **Delta Science Reader** has three main sections: *Think About . . .*, *People in Science*, and *Did You Know?*

Be sure to preview the reader Overview Chart on page 16, the reader itself, and the teaching suggestions on the following pages. This information will help you determine how to plan your schedule for reader selections and activity sessions.

Reading for information is a key literacy skill. Use the following ideas as appropriate for your teaching style and the needs of your students. The After Reading section includes an assessment and writing link.

OVERVIEW

In the Delta Science Reader *Investigating Water*, students read about the properties of water. They learn that water can exist as a solid, a liquid, or a gas and find out how water changes from one state to another. They observe that objects either sink or float in water and that some substances dissolve in water. They also read about scientists who study glaciers in Antarctica. Finally, students discuss the importance of water to living things and ways to conserve water.

Students will

- ▶ identify properties of water
- ▶ observe water in different states
- ▶ predict how water changes when it is cooled or heated
- ▶ predict and observe whether objects sink or float in water
- ▶ observe and describe what happens when a substance dissolves in water
- ▶ examine nonfiction text elements such as table of contents, headings, and glossary
- ▶ interpret photographs and illustrations to answer questions

READING IN THE CONTENT AREA SKILLS

- Cause and effect
- Make predictions
- Classify and categorize
- Draw conclusions
- Critical thinking
- Interpret graphic devices
- Summarize

NONFICTION TEXT ELEMENTS

Investigating Water includes a table of contents, headings, photographs, illustrations, boldfaced terms, and a glossary.

CONTENT VOCABULARY

The following terms are introduced in context and defined in the glossary: *dissolve, evaporate, float, flow, freeze, gas, liquid, melt, sink, solid, water, water vapor, wet.*

Optional vocabulary: *temperature*

BEFORE READING

Build Background

Access students' prior knowledge of water by holding up a clear glass of water. Ask, *What is this? What can you tell me about the water in this glass?*

Invite students to share what they know about water from their personal experiences and hands-on explorations in science. If necessary, ask specific questions to guide students' observations, for example, *How does water feel? Does water have a color? What would the water do if I tipped this glass over?*

Begin a vocabulary diagram by drawing a large drop of water on the board or chart paper and labeling it *Water Words*. Inside the

drop, list words that students have used to describe the properties of water, for example, *wet, no color, and pours easily.*

Point to the individual words as you read the title of the book aloud. Tell students that to *investigate* something means to study it closely and gather information about it. Ask, *What kinds of things might you do to investigate water?* (Students may suggest that they might look at it, touch it, taste it, stir it, and so on.)

Preview the Book

Tell students that one way to find out what a book is about is to preview the book. Explain that they can preview a book they are about to read by looking at its cover, chapter titles, pictures, and other important parts.

To preview the book with students, flip through the pages and briefly discuss the photographs and illustrations. Ask questions such as, *What do you see in this picture? What do you think the words on this page tell about? What are some words that you think we might find in this book?* (Accept all reasonable answers at this time.)

Have students turn to the table of contents. Explain that the table of contents is a list that tells what is written in the book. Ask, *What do you notice about this page?* Read aloud the headings and point to the page numbers listed after each heading. Explain that each number tells the page on which they will find information about each heading.

Point to and read aloud the word *Glossary* at the bottom of the page. Tell students that a glossary is a list of words and their meanings. Explain that the words in the glossary are important words they will need to know in order to understand the information in the book. Ask, *What words do you think you might find in the glossary of this book?* Have students turn to the glossary at the back of the book. Tell them, *In the book, these words are printed in dark print. The dark print tells you that you can find out what the word means by looking in the glossary.* Choose one word and model how to find its definition in the glossary.

Preview the Vocabulary

You may wish to preview some of the vocabulary words before reading rather than waiting to introduce them in the context of the book. Possibilities include creating a word wall, vocabulary cards, sentence strips, or a concept web.

For example, you might create word cards for each vocabulary word. As you preview the book, ask volunteers to find and match the word cards to words in the book. Have students look at the picture on the page where each word is found and ask, for example, *What do you see happening in this picture? What do you think the word melt means?* Confirm students' predictions by reading aloud the words' definitions listed in the glossary.

Set a Purpose

Discuss with students what they might expect to find out from the book, based on their preview. Ask, *Do you have any questions about water that you would like this book to answer? What are they?* Use students' questions and predictions to set an overall purpose for reading.

GUIDE THE READING

Preview the book yourself to determine the amount of guidance you will need to give for each section. Depending on your schedule and the needs of your class, you may wish to consider the following options:

- **Whole Group Reading** Read the book aloud with a group or the whole class. Encourage students to ask questions and make comments. Pause as necessary to clarify and assess understanding.
- **Shared Reading** Have students work in pairs or small groups to read the book together. Ask students to pause after each text section. Clarify as needed and discuss any questions that arise or have been answered.

- **Independent Reading** Some students may be ready to read independently. Have them rejoin the class for discussion of the book. Check understanding by asking students to explain in their own words what they have read.

Tips for Reading

- If you spread out the reading over several days, begin each session by reviewing the previous day's reading and previewing what will be read in the upcoming session.
- Begin each text section by reading or having a volunteer read aloud the heading. Have students examine any illustrations or graphics and read accompanying captions and labels. Discuss what students expect to learn, based on the heading, illustrations, and captions.
- Help students locate context clues to the meanings of words in boldface type. Remind them that these words are defined in the glossary. Provide help with words that may be difficult to pronounce.
- As appropriate, model reading strategies students may find helpful for nonfiction: adjust reading rate, ask questions, paraphrase, reread, visualize.

Think About . . . (pages 2–13)

Pages 2, 3 *What Is Water?*

- Have students study the photograph on page 2. Ask, *What is happening in this picture?* (Someone is filling a glass with water.) *What do you think the person is going to do with the water?* (drink it) *Where do you get the water you drink?* (Students may say their water comes from a faucet, from bottles, or from a drinking fountain.) *What else do you use water for?* (washing, watering plants, swimming or playing in, cooking)
- Read aloud page 2. Point to the words *water*, *wet*, and *flow* and ask students what they notice about the words. (They

are in dark print.) Remind students that they can find the meanings of these words in the glossary in the back of the book. Ask, *What do you think the word flow means?* Have students turn to the glossary and find the word *flow* on the page. Read aloud the definition.

- Ask students to look at the photographs on page 3. Ask, *How are these pictures alike?* (They all show water.) *How are they different?* (One shows a puddle. The others show larger bodies of water.)
- Read aloud the text on page 3. Ask, *Where else can you find water?* (Students may mention lakes, streams, swimming pools, and so on.) *Where does rain come from?* (clouds in the sky) *Where does the water in rivers, lakes, and oceans come from?* (rain)

As appropriate, explain that nearly three-quarters of Earth's surface is covered with water. Point out that every living thing needs water to stay alive. In the United States, the average person requires almost 100 gallons (379 liters) of water a day. (To help students understand this volume, tell them that it equals about two full bathtubs!) Most of the water we consume comes from rivers, lakes, and wells (groundwater).

- Refer students to the vocabulary diagram on the board. Ask, *What new words might we add to our list of water words?* Record students' suggestions on the diagram.

Pages 4, 5 *Water Can Change*

- Ask students to describe what they see in the picture on page 4. (a glass of water) Read aloud the text beneath the picture.
- Ask students to name other liquids they know, such as milk, juice, and honey. Ask, *Have you ever spilled a glass of water? What happened? Did the water keep its glass shape, or did it spread out all over the table or floor?* Explain that

liquids take the shape of the container they are in and flow when they are poured.

- Ask students to describe what they see in the first picture on page 5. (an ice cube) Then read the text aloud. Point out that a solid has its own shape. Ask, *What shape is this ice?* (a cube or block shape) Hold up a book and ask, *Is this book a solid or a liquid?* (solid) *What other solids do you see around this room?* Guide students to conclude that nearly all of the objects in the room are solids.
- Ask students to describe what is happening in the second picture on page 5. Elicit that heating water causes it to boil. Tell students that the water in the kettle is going to change to water vapor. Water vapor is a gas. Explain that the air that we breathe is made of gases like water vapor.
- Point to the words *liquid*, *solid*, and *gas*. Ask, *What is special about these words?* (They are in dark print and listed in the glossary.) Have students find each word in the glossary and follow along as you read the definition aloud.

Pages 6, 7 *Water Can Freeze*

- Direct students' attention to the pictures of water and ice on pages 4 and 5. Ask, *How do you think water changes from a liquid to a solid?* (Accept all answers at this time.) Tell students that they will find out by reading the next two pages.
- Have students look at the photograph on page 6. Ask, *What is the girl doing?* (putting an ice cube tray in the freezer) *Is it hot or cold inside a freezer?* (very cold) *What do you think will happen to the water?* Read pages 6 and 7 to confirm students' predictions.
- Ask, *Have you ever seen ice? Where?* Briefly discuss students' experiences with ice. Explain that *temperature* tells how hot or cold something is. Ask questions such

as, *Does the lake freeze in the summer or winter? In the wintertime, is the temperature outside usually hot or cold?* Lead students to conclude that water will freeze only under very cold temperatures.

- Add the words *freeze* and *ice* to the vocabulary diagram on the board.

Pages 8, 9 Water Can Melt

- Ask students to think about the tray of ice cubes on page 7. Ask, *Suppose you left this tray of ice cubes out in the hot sun for a while. What do you think would happen to the ice?* Suggest that students read the next two pages to find out if their predictions are correct.
- Have students look at the pictures on pages 8 and 9 as you read aloud the text. Ask, *Is ice a solid or a liquid?* (a solid) *What happens to ice when it gets warm?* (It melts.) *After ice melts, is it a solid or a liquid?* (a liquid) *Do you know any other things that melt?* (Students may suggest ice cream, snowballs, or juice pops.)
- Have students look at the pictures again. Ask, *Do you think the pictures show a hot day or a cold day? How can you tell?* Guide students to infer that heat from the sun makes ice melt. Explain that the warmer the temperature is, the faster the ice will melt.
- Add the word *melt* to the vocabulary diagram on the board.

Pages 10, 11 Water Can Evaporate

- Write the word *evaporate* on the board and track the letters with your finger as you sound the word out. Ask, *What do you think this big word means?* (Accept all answers at this time.)
- Ask, *Have you ever seen puddles on the street or sidewalk? When do you see them? Are they always there? What happens to them?* Have students look at

the picture on page 10. Ask, *What kind of day does this picture show?* (a warm, sunny day) *What do you think is going to happen to this puddle?* (Students may predict that the puddle will dry up.)

- Read aloud pages 10 and 11. Ask, *Look at the water in the puddle. Is it a liquid, solid, or gas?* (a liquid) *What happens to the water when it gets warm?* (It evaporates.) *After the water evaporates, is it a liquid, a solid, or a gas?* (a gas) *Can we see the gas that the water has become?* (no) *Where do you think it is?* (Students may say that it disappeared or that it went into the air.)
- Ask, *Have you ever hung a wet towel or swimsuit out to dry? What do you think happens to the water that is in the towel or the swimsuit?* Help students conclude that the water in the towel or swimsuit evaporates into the air as the towel or swimsuit dries.
- Add the word *evaporate* to the vocabulary diagram on the board.

Page 12 What Sinks? What Floats?

- Read aloud the heading and the first sentence on page 12. Point to the word *float* and ask, *What do you think this word means?* (to stay on top of a liquid) Have students find the word in the glossary to confirm their definitions.
- Read aloud the second sentence and use the same procedure to confirm the meaning of the word *sink*.
- Read the questions on the page, and help students identify the objects pictured. (key, coins, rubber duck, toy boat, life-saver ring) Ask, *Which of these objects do you think will sink in water?* (the key and coins) *Which do you think will float on water?* (rubber duck, toy boat, and life-saver ring) *What are some other things that float on water?* (Students may suggest a raft, a leaf, a beach ball, or a feather.)

- Ask, *What could you do to find out if an object sinks or floats?* (place it in water) *What do you think makes an object sink?* (Accept all ideas. Students may suggest that heavy objects sink and light objects float.)

If appropriate, explain that when an object is put in water, the object and the water push against each other. If the water pushes harder than the object is pushing, the object floats. If the object pushes harder than the water is pushing, the object sinks.

- Add the words *sink* and *float* to the vocabulary diagram on the board.

Page 13 *What Dissolves in Water?*

- Ask students if they have ever used a drink mix to make lemonade or other drink. Ask, *What happened to the drink mix when you stirred it into water?* Briefly discuss students' experiences.
- Write the word *dissolves* on the board and track the letters as you sound out the word. Tell students they will find out the meaning of the word as they read the next page.
- Read aloud page 13. Ask, *What happens when something dissolves in water?* (Students may say that it disappears or that it mixes with the water.)
- Tell students that when a substance seems to disappear when it is stirred into water, we say that the substance *dissolves* in the water. Explain that the substance does not actually disappear but rather breaks up into tiny bits that are too small for our eyes to see.
- Help students brainstorm other substances that will dissolve in water, such as sugar and salt. Point to the coins on page 12. Ask, *Do you think these coins would dissolve in water?* (no) Help students conclude that while some substances dissolve in water, many others do not.

- Write the word *dissolve* in the vocabulary diagram on the board.

People in Science (page 14)

Ice Scientists

- Direct students' attention to the photograph on page 14. Ask, *What do you see in this picture?* (Accept all answers at this time.)
- Explain that the large white masses in the picture are made of ice. Ask, *Where do you think these people might be?* Suggest that students find out by reading the page.
- Read aloud page 14. Ask, *What are the people in the picture doing?* (studying the ice)
- If possible, point out Antarctica on a map or globe. Explain that Antarctica is the continent at the South Pole—one of the coldest places on Earth. More than 95 percent of Antarctica is covered with large sheets of ice. Scientists study the ice to find out about climate changes, to learn about the geological history of the world, and to predict the movement of icebergs—giant pieces of ice that break off glaciers and float out to sea.

Further Facts

- The Antarctic ice sheet contains 70 percent of Earth's fresh water and more than 90 percent of Earth's ice.
- Antarctica is the coldest, driest, windiest, and highest continent on Earth.
- Most of the animal life in Antarctica, including seals, whales, and penguins, lives in or near the coastal waters.
- Scientists who study ice are called glaciologists. Other scientists doing research in Antarctica include geologists, biologists, meteorologists, and oceanographers.

- Scientists live at international research stations. The length of a scientist’s stay can range from a few weeks to up to 2½ years.

Did You Know? (page 15)

We Need Water

- Read aloud the heading and text on page 15. Ask, *Why do animals need water?* (for drinking, for washing) *Why do plants need water?* (to grow, to make food) *Why do people need water?* (for drinking, washing, brushing teeth, preparing meals, growing plants) Record students’ responses in a list on the board.
- Ask, *What would happen if we ran out of clean water?* Help students draw the conclusion that all living things need water to survive.
- Ask, *What are some things we can do to save water or to keep water clean?* If necessary, mention one or two of the following water-saving ideas to help students get started. Record students’ suggestions on the board.
 - ▶ Take shorter showers or only fill the bathtub half full.
 - ▶ Don’t leave the water running when you brush your teeth.
 - ▶ Turn faucets off tightly.
 - ▶ Don’t use detergents or other substances that contain harmful chemicals.
- If appropriate, review the other needs of plants and animals besides water. Animals also need air, food, and shelter. Plants also need air, light, space, and nutrients.

Further Facts

- Less than 1 percent of the water in the world is available for drinking. The rest is salt water or frozen in glaciers.

- People can survive about a month without food but only 5 or 6 days without water.
- Each person in the U.S. uses an average of 100 gallons (379 liters) of water each day.
- A 5-minute shower uses between 25 and 50 gallons (95 to 189 liters) of water.
- Even a small drip can waste as much as 20 gallons (76 liters) of water a day—enough for a shower or 80 quarts of lemonade.
- On average, people use 2 gallons of water each time they brush their teeth. Turning the faucet off while brushing reduces this amount significantly.
- Two-thirds of the water a family consumes is used in the bathroom.
- The human body is about two-thirds water.

AFTER READING

Summarize

Review the words listed in the vocabulary diagram on the board. Help students sort the words into categories, for example: *Words That Describe Water, Where We Find Water, How Water Changes.*

Have students think about the questions they had before they read the book. Ask, *Did the book answer any of your questions? Which ones? Do you still have questions? What are they?* List students’ outstanding questions on the board or chart paper. Then ask, *Where do you think we might find the answers to these questions?* (Students may suggest books, magazines, computers, or people who know about water.)

Flip through the book one more time. Use the headings, photographs, and boldfaced terms to help students use the vocabulary and summarize their learning,

Review/Assess

Use the questions that follow as the basis for a discussion of the book or for a written or oral assessment.

1. What does water feel like? What does it look like? (Water is wet. It has no color. It changes shape depending on the container it is in.)
2. Where might you find water as a liquid? (rain, rivers, lakes, oceans; also from water faucets, drinking fountains, and hoses) Where might you find water as a solid? (ice cubes, ice on puddles or lakes, Antarctica) Where might you find water as a gas? (above boiling water, water vapor in the air)
3. Look at the pictures of water on pages 4 and 5. Which picture shows a liquid? Which shows a solid? Which shows a gas?
4. What happens if you freeze water? (It becomes ice.)
5. What would happen if you put an ice cube in the hot sun? (It would melt and become a liquid.) What happens when water gets very hot? (It evaporates, or changes into a gas.)
6. How could you find out if something dissolves in water? (Stir it into water and see if it seems to disappear.) How could you find out if something sinks or floats? (Place it in a container of water and see if it stays on top or drops to the bottom.)

Writing Links/Critical Thinking

Present the following as writing assignments. Provide help as needed.

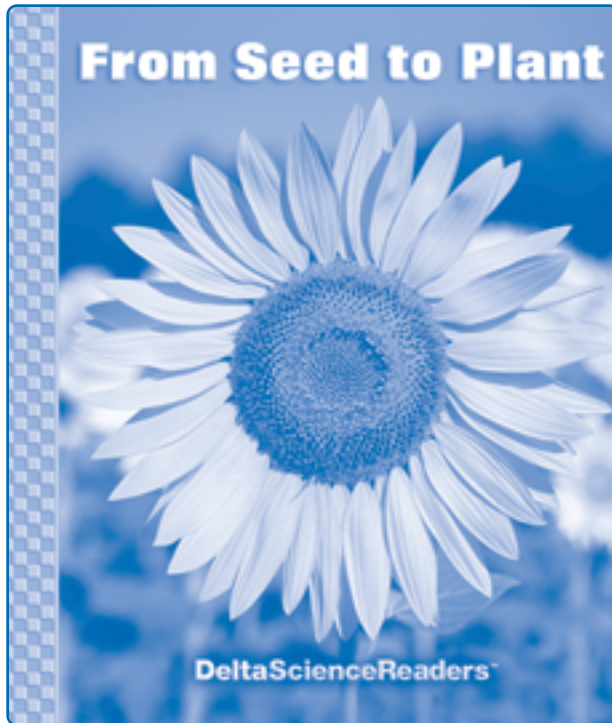
1. Create a predictable class story using the sentence pattern, *I use water when I . . .*. Encourage each student to contribute a sentence telling how he or she uses water throughout the day, for example:
 - Mr. Price uses water when he waters his lawn.
 - Grace uses water when she takes a bath.
 - Michael uses water when he brushes his teeth.
 - Alisha uses water when she makes lemonade.
2. Suggest that students make posters showing why we need water and what we can do to save it.
3. Have students draw or cut out magazine pictures of water in its various forms. Help them mount and label the pictures on squares of poster board. Encourage students to sort the cards into the categories *liquid*, *solid*, and *gas*. Or use the pictures to create a bulletin board labeled *Water, Water, Everywhere*.

Science Journals: You may wish to have students keep the writing activities related to the Delta Science Reader in their science journals.

References and Resources

For trade book suggestions and Internet sites, see the References and Resources section of this teacher's guide.

From Seed to Plant



Delta Science Readers are nonfiction student books that provide science background and support the experiences of hands-on activities. Every **Delta Science Reader** has three main sections: *Think About . . .*, *People in Science*, and *Did You Know?*

Be sure to preview the reader Overview Chart on page 17, the reader itself, and the teaching suggestions on the following pages. This information will help you determine how to plan your schedule for reader selections and activity sessions.

Reading for information is a key literacy skill. Use the following ideas as appropriate for your teaching style and the needs of your students. The After Reading section includes an assessment and writing links.

OVERVIEW

The Delta Science Reader *From Seed to Plant* introduces students to the life cycle of a plant. Students read about the different parts of seeds and how seeds develop into plants. They explore the functions of different plant parts and see what a plant needs to grow. Students find out about gardeners and why the plants they grow are important. They also discover the fascinating ways seeds travel from place to place.

Students will

- ▶ compare characteristics of seeds
- ▶ discuss the different parts of seeds and plants
- ▶ find out what plants need to grow
- ▶ identify the stages in the life cycle of a plant
- ▶ interpret photographs and diagrams
- ▶ recognize parts of a book
- ▶ discuss the functions of a table of contents, headings, and a glossary
- ▶ organize information

READING IN THE CONTENT AREA SKILLS

- Recognize cause-effect relationships
- Compare and contrast the different functions of plant parts
- Draw conclusions about what plants need to grow
- Ask questions to improve comprehension
- Complete a two-column chart
- Demonstrate critical thinking
- Summarize information

NONFICTION TEXT ELEMENTS

From Seed to Plant includes a table of contents, headings, photographs, diagrams, labels, boldfaced terms, and a glossary.

CONTENT VOCABULARY

The following terms are introduced in context and defined in the glossary: *flower, fruit, leaves, life cycle, new plant, roots, seed, seed coat, seed food, seedling, shoot, sprout, stem.*

BEFORE READING

Build Background

Access students' prior knowledge by discussing seeds that students are familiar with, such as apple seeds, sunflower seeds, acorns, beans, and so on. Ask, *Where might you find seeds?* (in the grocery store, inside some foods, on the ground)

To stimulate additional discussion, ask questions such as these: *Have you ever planted a seed? What happened?*

Ask, *Have you ever wondered what makes a plant grow? What else have you wondered about plants or seeds?* On the

board or chart paper, draw a two-column chart labeled *Questions* and *Answers*. As students raise questions about the subject, write them in the column labeled *Questions*. Tell students that the book they are about to read will probably answer some of their questions. Tell them, *As we read, raise your hand if you hear the answer to one of these questions or if you think of a new question you would like to add to our chart.*

?	!
Questions	Answers

Preview the Book

Ask students to look at the picture on the front cover of the book. Ask, *What do you see in this picture?* (a sunflower) Point to the word *Seed* in the book's title. Ask, *What letter does this word start with? What sound does that letter make? What word have we been talking about that starts with the /s/ sound?* Do the same for the word *Plant*, and then read the book title aloud. Ask, *What do you think this book will be about?* (how a seed grows into a plant)

Flip through the book and briefly discuss the photographs. Ask, *Have any of these pictures made you think of any other questions we could add to our chart?* Record any additional questions on the chart.

Have students turn to the table of contents. Explain that the table of contents is a list that tells what is written in the book. Ask, *What do you notice about this page?* Give students a few minutes to share their observations. Point to the first three headings in boldface type and explain that the book is divided into three parts: Think About . . . , People in Science, and Did You Know? Read aloud the headings listed in the Think About . . . section and note that

they are in the form of questions. Ask, *Where do you think you might find the answers to these questions?* Point to the page numbers listed after each heading. Explain that each number tells the page on which they will find information about each question.

Point to the word *Glossary* at the bottom of the page and read it aloud. Tell students that a glossary is a list of words and their meanings. Have students turn to the glossary at the back of the book. Explain that the words in the glossary are important words that they will need to learn in order to understand the information in the book. Tell them, *In the book, these words are printed in dark print. The dark print tells you that you can find out what the word means by looking in the glossary.* Suggest that students look for these words as they read the book *From Seed to Plant*.

Preview the Vocabulary

You may wish to preview specific vocabulary words before reading rather than waiting to introduce them in the context of the book. To discover students' prior knowledge of these vocabulary words, read aloud each word and ask, *What does this word make you think of?* Briefly discuss the connections that students make. You may also need to point out that some words, such as *shoot*, have more than one meaning. Explain that students will learn more about each word as they read the book.

Other possibilities for previewing vocabulary include creating a word wall, vocabulary or picture cards, sentence strips, or a concept web.

For example, you might encourage students to cut pictures from seed catalogs or magazines to illustrate their own sets of word cards. They can use their cards to quiz each other on the word meanings or to play sorting or matching games.

Set a Purpose

Tell students to think about what they have seen and talked about as they have previewed the book's cover, pictures, table of contents, and vocabulary words. Ask, *What kinds of things do you think you will learn about as you read this book?* Use students' predictions to set an overall purpose for reading.

GUIDE THE READING

Preview the book yourself to determine the amount of guidance you will need to give for each section. Depending on your schedule and the needs of your class, you may wish to consider the following options:

- **Whole Group Reading** Read the book aloud with a group or the whole class. Encourage students to ask questions and make comments. Pause as necessary to clarify and assess understanding. Encourage students to find the answers to the questions on the two-column chart and to add new questions as they arise.
- **Shared Reading** Pair readers with nonreaders and have them read the book together. Ask students to pause after each text section. Clarify the text as needed. Discuss any questions that arise or have been answered.
- **Independent Reading** Some students may be ready to read independently. Instruct them to pause at designated stopping points, and have them rejoin the class for discussion. Check understanding by asking students to explain in their own words what they read.

Tips for Reading

- If you spread out the reading over several days, begin each session by reviewing the previous day's reading and previewing what will be read in the upcoming session.
- Begin each text section by reading aloud the heading. Discuss what students expect

to learn, based on the heading. Briefly discuss the photographs and diagrams in the section, and read aloud the labels.

- Help students use context and picture clues to figure out the meanings of words in boldface type. Demonstrate how to look up the words in the glossary and help students read their meanings.
- As appropriate, model reading strategies students may find helpful for nonfiction: making personal connections, asking questions, visualizing, making inferences, self-correcting.

Think About . . . (pages 2–12)

Pages 2, 3 *What Is a Seed?*

- Have students look at the photographs on page 2. Point to the photograph of the trees and ask, *What are these?* (trees; if necessary, point out that a tree is a very large plant) Do the same for the photograph of the acorns. Ask, *Why do you think there is a picture of acorns next to the picture of the trees?* (Students may suggest that the trees grew from acorns.) Follow the same procedure for the photographs of dandelions and their seeds.
- Read aloud the heading. Ask, *Who knows what a seed is?* (Accept all reasonable ideas.) Tell students to listen to find out if their ideas are right.
- Read aloud the text on page 2. Tell students that the acorns and the dandelion seeds are different kinds of seeds. Ask, *Is an acorn the same size as a dandelion seed? Is it the same shape or color?* (Encourage students to share all their observations from the photographs and personal experience.) Briefly discuss other seeds that have different sizes, shapes, or colors.
- Tell students that they will find out more about seeds as they keep reading. Read aloud page 3.

- Point to the words *seed coat* and read the words aloud. Ask, *Where else on this page do you see these words?* Have a volunteer point to the label on the diagram. Ask, *What does the seed coat do?* (keeps the seed safe) *Do you wear a coat in the wintertime? Why?* (Students may suggest that their coats keep them warm and dry.) *How do you think your coat is like the seed coat?* (Accept all answers.)
- Point to the words *new plant* and read the words aloud. Ask, *Do you see these words somewhere else on the page?* Have a volunteer point to the label. Ask, *What do you think the new plant will do?* (grow into a large plant)
- Point to the label *seed food*. Ask, *Do you recognize either of these words?* Encourage students to read the words aloud. Ask, *What do you think the seed food does?* If necessary, explain that all living things need food in order to grow. The new plant will live on the seed food until it grows big enough to make its own food.
- Point out that the words *seed*, *seed coat*, *new plant*, and *seed food* are printed in dark print. Ask, *Do you remember what is special about the words that are printed in dark print?* Have students turn to the glossary and find the words. Read aloud the meaning for each term.
- Review the questions you listed on the two-column chart before reading. Ask, *Think about what we have read so far. Can you answer any of these questions now? Do you have any new questions?* Record students' responses in the chart.

Pages 4, 5 *How Do Seeds Grow?*

- Direct students' attention to the first photograph on page 4. Ask, *What do you think this is?* (a seed) Ask, *What do you think this seed will grow into?* (a plant)

- Have students look at the four pictures on pages 4 and 5. Ask, *What is happening in these pictures?* (A seed is changing into a small plant.) *When a seed starts to grow into a plant, we say that it sprouts.*
- Point out that the *root* is the part of the plant that grows underground and the *shoot* is the part that grows above ground. *Look at the pictures. Who can find the root? Who can find the shoot?* Have a volunteer point out each part.
- Confirm students' guesses by having them listen as you read pages 4 and 5 aloud.
- Ask, *Why do you think the roots grow downward? Why do you think the shoots grow upward?* Tell students that they will find out the answers to these questions as they read ahead.
- Add answers and new questions to the two-column chart on the board, as appropriate.

Pages 6, 7 What Are the Parts of a Plant?

- Ask, *Have you ever seen the roots of a plant? When?* Briefly discuss students' experiences.
- Looking at page 6, ask, *What are the people in this picture holding?* (a plant with roots) Help students identify the roots in the root ball. Ask, *Why do you think that plants have roots?* Tell students that they will find out as you read the page.
- Ask, *What do you think will happen to these roots as the plant grows bigger?* (They will grow, too.) Point out that the larger a plant grows, the more roots it needs to take in water and help it stand up.
- Help students identify the pictures on page 7. Point out that each picture shows the stem of a different plant. Ask, *What do you think the stem does for a plant?* Then read aloud page 7.

Pages 8, 9

- Have students look at pages 8 and 9. Have a volunteer point to the words in dark print. (*leaves* and *flowers*) Ask, *What do you remember about words that are in dark print?* (They are listed with their meanings in the glossary.) Remind students that the words in the glossary are important words that students need to know to understand the information in the book. Ask, *Why do you think leaves and flowers are important?* Briefly discuss students' ideas.
- Read page 8. Ask, *What job do leaves do for a plant?* (make food) *What do leaves need to make food?* (sunlight) You may wish to explain that leaves also need water and food from the soil to make food for the plant.

(Leaves contain a green substance called chlorophyll. Chlorophyll absorbs sunlight. Plants use energy from sunlight to combine water and carbon dioxide to make food for the plant. The plant gives off oxygen. This process is called photosynthesis.)

- Read page 9. Ask, *What do flowers do?* (Flowers help plants by making seeds.)
(Fruits and seed pods can also grow from flowers. Seed pods are actually hollow fruits, or seed cases, that contain seeds. A plant's seeds can be contained in flowers, fruits, or seed pods. The seeds of evergreen trees are found in cones.)
- Point out that seeds grow in different forms on different plants. List several familiar plants, such as apple trees, pea plants, corn, dandelions, and sunflowers. Ask, for example, *Where do you think the seeds grow on an apple tree?* (inside the apples) *Where do you think the seeds grow on a corn plant?* (on the ear of corn) *Where do you think the seeds grow on a sunflower plant?* (in the middle of the flower) For sunflower seeds, you may wish to direct students to the photograph on the cover of the book.

- Review the questions you listed on the two-column chart before reading. Ask, *Think about what we have read so far. Can you answer any of these questions now? Do you have any new questions?* Record students' responses in the chart.

Pages 10, 11 *What Is a Plant Life Cycle?*

- Read aloud page 10 and have students look at the diagram on pages 10 and 11. Ask students why they think there are arrows connecting the pictures. (Students may know that the arrows show the order in which things happen.) Have them trace the direction of the arrows around the circle of pictures.
- Have students put their fingers on the picture of the seed, and read aloud the label. Then have them follow the arrow to the next picture. Ask, *What is happening to the seed in this picture?* Read aloud the picture label. Follow the same procedure for each picture in the cycle diagram. If necessary remind students of the meanings of the terms *root, shoot, sprout, stem, leaves*, and so on. They may use these and other vocabulary words to describe the pictures.
- Tell students that the diagram shows the life cycle of a plant. Point to the picture showing the plant with seeds. Ask, *Where are the seeds on this plant?* (inside the seed pods) *If this was an apple tree, where do you think the seeds would be?* (inside the apples)

Page 12 *What Do Plants Need to Grow?*

- Before turning to page 12, ask, *Have any of you ever grown a plant in a flower pot or a garden?* Briefly discuss students' prior knowledge about growing plants.

- On the board or chart paper, draw a simple flower in a flower pot. Ask, *What do you think plants need to grow?* Write students' suggestions around the picture of the plant.
- Read aloud page 12. Ask, *What does a plant need to grow?* Revise or add to the list on the board as necessary. Students should understand that plants need sunlight, soil, and water in order to grow. (In addition, plants need food, or nutrients, from the soil. They also need some of the gases in air.)

People in Science

Page 13 *Gardeners*

- Direct students' attention to the photograph on page 13. Ask, *What is this boy doing?* (watering a garden)
- Read aloud page 13. Ask, *Have you ever worked in a garden like this? What did you do? What kinds of plants did you grow?* Allow ample opportunity for students to share their experiences.
- Ask, *What kinds of plants grow in gardens?* (flowers, fruits, vegetables) Invite students to tell about their favorite kinds of flowers, fruits, and vegetables. Ask, *Why are the plants that grow in gardens important?* (Accept all reasonable ideas. The food from garden plants is good to eat. Fruits and vegetables help you grow strong and healthy. Flowers are pretty to look at.) Students may also know that trees provide wood for buildings and furniture, and that paper is made from wood.
- Ask, *What jobs does a gardener need to do?* (Students' suggestions might include preparing the soil, planting the seeds, watering, weeding, harvesting, and so on.) *What is the boy in the photograph using to water his garden?* (a hose) *What other kinds of tools might a gardener need?* (From

personal experience, students may suggest a shovel, a hoe, a rake, a trowel, a watering can, and so on.)

Did You Know?

Pages 14, 15 *How Seeds Travel*

- Refer students back to the photograph of the garden on page 13. Ask, *How did the plant seeds get into this garden?* (The boy or someone else planted them there.) Point out that not all seeds are planted by people.
- Help students identify the photographs on pages 14 and 15. (dandelion seeds, a coconut floating in the water, a squirrel eating an acorn, a bird eating a berry) Point out that the pictures show different ways that seeds travel to the places where they will grow into plants.
- Read the title and first sentence (*Some fly in the air.*). Ask, *What is attached to these seeds?* (fluff) Explain that the fluff acts like little parachutes that help the seeds float in the wind.
- Read the second sentence. Point out that the coconut is one of the largest seeds on Earth. Explain that seeds that fall into lakes, rivers, or the ocean can travel far distances before reaching the land (soil) in which they will grow.
- Read aloud the third sentence and discuss the photograph. Ask, *Have you ever seen a squirrel eating, burying, or digging up a nut?* Have students look at the fourth picture. Ask, *What other animals might spread seeds?* (Accept all reasonable ideas. Students may suggest that birds or larger animals like raccoons or deer sometimes spread the seeds.)
(Some of these animals eat fruits and pass the seeds in their waste.)
- Tell students that people, too, help seeds travel from one place to another. Ask, *What kinds of seeds are in foods that*

you eat? Have you ever thrown away the core of an apple or the seeds of an orange? What do you think happens to those seeds? Point out that people can spread seeds by carrying fruits and vegetables from one place to another.

- You might also wish to point out that some seeds, such as burrs, have tiny hooks on them that cling to animals' fur and people's clothing. Ask, *Have you ever found a seed stuck to your sock or pant leg?*
- Invite students to think of other ways that a seed might travel from the plant where it was made to the place where it will grow into another plant.

AFTER READING

Summarize

Read aloud any unanswered questions on the two-column chart you began before reading. Ask students to think about what they have read and answer the questions if they can. Ask, *Has reading this book made you think of other questions?* Record additional questions on the chart. Then ask, *Where do you think we might find the answers to the questions that we still haven't answered?* (Students may suggest books, magazines, the computer, or people who know about seeds and plants.)

Flip through the book one more time. Use the graphics on pages 3, 4–5, and 10–11 to help students summarize the information in each section.

Review/Assess

Use the questions that follow as the basis for a discussion of the book or for an oral assessment.

1. What is a seed? (what grows into a plant) If you split open a seed, what would you find inside? (seed food and a new plant)
2. When a seed begins to grow, we say that it sprouts. What happens when a seed

sprouts? (Roots grow down into the soil and a shoot grows up toward the sunlight.)

3. What do the roots of a plant do? (take in water and help the plant stand up) What does the stem do? (brings water up from the roots to the leaves) What do the leaves do? (make food for the plant) What do the flowers do? (help the plant grow new seeds)
4. What does a plant need to grow? (A plant needs soil, sunlight, and water. Some students may also mention food and air.)

Writing Links/Critical Thinking

Assign the following as writing assignments. Provide help as necessary.

1. Write the following words on the board: *roots, stem, leaves, flower*. Have students draw their favorite flower or other plant, including each part that is listed on the board. Help students label the parts on their drawings.
2. Bring in several seed packets, and discuss the information given on the envelope. Give students blank envelopes (8 in. × 10 in. or larger, if possible), and let them create their own seed packets. On the front of the envelope, have them draw a picture of the full-grown plant. On the back, help them draw and label pictures showing the seed, how to plant it, and what the plant will need in order to grow.

Science Journals: You may wish to have students keep the writing activities related to the reader in their science journals.

References and Resources

For trade book suggestions and Internet sites, see the References and Resources section of this teacher's guide.