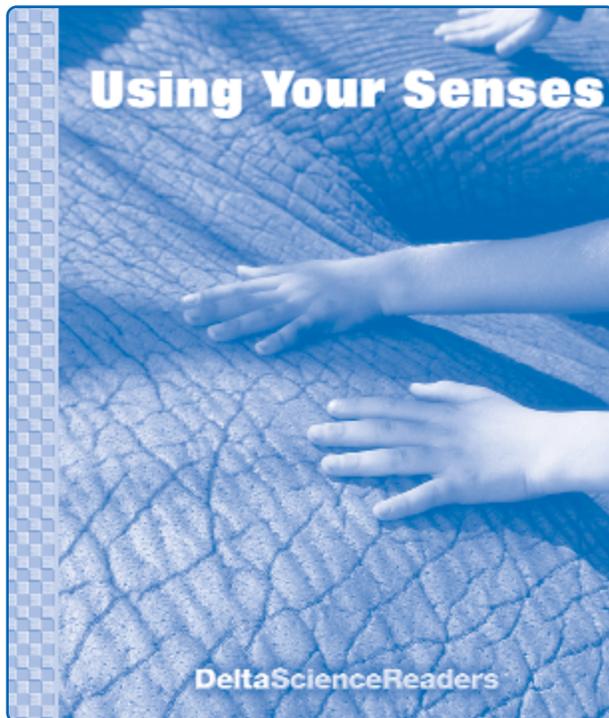


Using Your Senses



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 4, 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 Reader *Using Your Senses*, students read about how our five senses—sight, hearing, touch, smell, and taste—take information from our surroundings and transmit it to the brain. They find out about the different sense organs and how they work. The book also describes some of the ways a veterinarian uses her senses in her work. In addition, students explore the communication systems of Braille and American Sign Language.

Students will

- ▶ discover facts about the five senses
- ▶ learn about and discuss how the senses work
- ▶ discuss the function of a table of contents, headings, and a glossary
- ▶ interpret photographs and graphics—diagrams and a chart—to answer questions
- ▶ complete a KWL chart
- ▶ organize information in different ways

READING IN THE CONTENT AREA SKILLS

- Draw conclusions about the senses and how they work
- Categorize tools that help our senses
- Recognize cause and effect relationships having to do with the senses
- Demonstrate critical thinking
- Interpret graphic devices
- Summarize

NONFICTION TEXT ELEMENTS

Using Your Senses includes a table of contents, headings, photographs, captions and labels, diagrams, a chart, boldfaced terms, and a glossary.

CONTENT VOCABULARY

The following terms are introduced in context and defined in the glossary: *auditory nerve, brain, ear canal, eardrum, ear flap, hearing, inner ear, iris, lens, nasal cavity, nerve, nostrils, olfactory nerve, optic nerve, pitch, pupil, retina, senses, sight, smell, sound, taste, taste buds, texture, touch, vibrate, volume.*

BEFORE READING

Build Background

Ask students to name the five senses. (sight, hearing, touch, smell, taste) Access students' prior knowledge of the senses by displaying the cover, reading the title aloud, and inviting students to share what they know about the topic from their personal experiences and hands-on explorations in science.

To stimulate discussion, ask questions such as these: *Was it warm or cold when you stepped outside this morning? How could you tell? Which of your senses told you? What else did your senses tell you?*

Begin a class KWL chart by recording facts students know about the senses in the K column. You may wish to copy the KWL chart and ask students to maintain their own charts as they read.

K What I Know	W What I Want to Know	L What I Learned	+ What I Want to Explore Further

Preview the Book

Take a few minutes to have students look through the book. Remind them of the steps involved in previewing nonfiction: read and think about the title; think of what they already know about the topic; read the table of contents, headings, and boldfaced words; and examine photographs, diagrams, charts, and other illustrations.

Call attention to the various nonfiction text elements and explain how they can help students understand and organize what they read. Point out that the table of contents shows that after a general introduction to the five senses on pages 2 and 3, each of the senses is discussed separately. Ask a volunteer to read the names of the senses listed in the table of contents. Then point to the diagram of the eye on page 5 and ask, *What does this diagram show you? How do you think it will help you understand the sense of sight?* Explain that the words in boldface type on the same page are important words related to the senses. Remind students that these words are defined in the glossary. Ask a volunteer to pick one of the boldfaced words on page 5 and read its definition from the glossary.

After the preview, ask: *What questions do you have about the five senses that you hope this book will answer?* Record students' responses in the second column

of the KWL chart. Explain that they will complete the chart after they finish reading.

CONTENT 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, develop a chart categorizing the words according to sense. The chart might resemble the following:

Sight	Hearing	Touch	Smell	Taste
iris	vibrates	nerves	nostrils	taste buds

Set a Purpose

Discuss with students what they might expect to find out from the book, based on their preview. Encourage them to use the questions they suggested for the KWL chart to set their own 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 form pairs or small groups and read the book together. Pause students after each text section 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. 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. Discuss what students expect to learn, based on the heading. Have students examine any illustrations or graphics and read accompanying captions and labels.
- 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 2–12)

Pages 2, 3 *Our Amazing Senses*

- After students read the heading and the body text, write several incomplete sentences on the board and ask students to complete each with the name of the correct sense. For example, *My _____ tells me that your shoes are red.* (sight) *My _____ tells me that the cocoa is sweet.* (taste) *My _____ tells me that the wood is rough.* (touch) *My _____ tells me that the music is loud.* (hearing) Ask students to name some other kinds of information they get through their senses.
- Refer students back to the heading on the page. Ask them why they think the senses are called amazing.

- After students look at the photograph, say: *I see lots of fruits and vegetables in this picture. Where do you think this is? Have you ever been to a place like this? What did you see there?*
- Ask students to take turns naming one thing they could see, hear, touch, taste, or smell if they were in the place shown in the photograph.

Pages 4, 5 *Sight*

- Have students read the text on page 4 to learn about sight. Ask: *What information do your eyes give you that tells you whether it's safe to cross the street?* (They tell you if any cars or other vehicles are coming, how far away they are, and how fast they're going, what signal the traffic light is giving.)
- Ask students to look at the photograph on page 4. Invite a volunteer to read the caption aloud. Ask: *How would you answer the questions? How would your sense of sight help you decide?* (Answers will vary.)
- Point out that students know from their own lives that the eyes need light to see. Ask: *What do you do when it's dark and you want to read?* (turn on the light) *What are some ways that people get light to see by?* (lamps, flashlights, candles)
- Have students read page 5 to learn about the eye. Discuss the diagram of the eye and read the labels.
- If necessary, provide help with the pronunciation of *retina* (RET-uhn-uh) and *optic* (OP-tik). Encourage them to look at each other's eyes and describe the color of the iris. Ask: *What about the pupil? Is it different in different people? What color is it?* (black)
- Remind students that the pupil lets in light so that the eye can see. Ask: *Do*

you think the pupil gets bigger or smaller as it gets dark out? (bigger) *Why?* (So it can let in more light to see by.)

- Extend the learning by having partners take turns shading and unshading their eyes to show how the pupil gets larger and smaller.
- Encourage students to speculate on what the brain might do with the information it gets from the eye. As an example, ask: *What if you want to cross the street, but your eyes tell your brain that a car is coming. What do you think your brain will do?* (It will tell you not to cross the street.)

Pages 6, 7 *Hearing*

- Have students read the text on page 6 to find out about the sense of hearing. Draw their attention to the leaping whale in the photograph. Ask: *If you were at the marine park, what sound would you be about to hear?* (a splash) *What other sounds might you hear?* (clapping, talking, squeals of people being splashed, the trainer talking to the whale)
- Point out the description of the different sounds (footsteps and traffic) named in the text on page 6. Ask volunteers to tell what sounds they hear when they are in school.
- Have students read page 7 to find out about sound and the ear. If necessary, direct students to the glossary to find out what the word *vibrates* means. Have them put their fingers on their windpipes as they speak softly to themselves to feel the vibration.
- Discuss the diagram on page 7 and read the labels. Ask: *How does the diagram help you understand how the ear works?* (It shows exactly what the ear parts look like and how they are

arranged in the ear to receive sound.)
If necessary, provide help with the pronunciation of *auditory* (AW-di-tor-ee).

- Help students understand the concepts of volume and pitch. Make a Volume chart with two headings: *Loud Sounds* and *Soft Sounds*. Invite students to suggest sounds to put in each column, such as thunder (loud) and cat's purr (soft).
- Then make a Pitch chart with two headings: *High Sounds* and *Low Sounds*. Encourage them to think of examples of each sound, such as a siren, a fire alarm, a bird's song for high sounds; the bark of a big dog, a foghorn, a tuba or bassoon for low sounds.
- Encourage students to think about ways the brain acts on information it gets through the ears. As an example, ask: *Suppose you hear the school fire alarm. What does your brain tell you to do?* (leave the school)

Pages 8, 9 *Touch*

- Have students read page 8 to find out about touch. Have them answer the first two questions in the first paragraph. Ask them to name some things that they like to touch.
- Point out the photograph of the girl with the feather. Have students read the caption and answer the question. (It feels soft. It tickles.)
- Ask: *What if you touch something with your fingers and it's very hot? What do you do?* (Take your hand away.) *What part of your body tells you to take your hand away?* (the brain) *How does this help keep you safe?* (It keeps you from being badly burned.)
- Encourage students to discuss other ways the senses keep us safe. Ask: *What do we call the sensation when something hurts our skin or another one of our senses?* (pain) *What message do you think pain*

gives us? Put it into words. (Stop doing what you're doing! It's bad for you!)

- Have students read page 9 to find out about the skin. Encourage them to look at the diagram and read the labels. Ask: *Why do you think places like our hands, face, and feet feel touches better than other parts of our bodies?* (Our hands, face, and feet have the most contact with the world around us. We need the information we get from them. Students may suggest that the skin on these parts of the body have more nerve endings.)
- You may wish to introduce the word *receptor* (ri-SEP-tuhr) to describe the nerves in the skin that sense touches. Different kinds of touch receptors are sensitive to heat, cold, pain, and pressure. All of the sense organs have receptors. The eye has receptors that receive information about sight, the nose has receptors that receive information about smells, and so on.
- On the chalkboard help students create a texture web around the phrase *When you touch something, it can feel . . .* Write their suggestions, including *hot, cold, wet, dry, soft, fuzzy, bumpy, slimy, gooey, sticky, furry, silky, sharp, rough, smooth, soft, hard,* and so on.

Pages 10, 11 *Smell*

- Have students read page 10 to find out about the sense of smell. Ask students to name some of their favorite and least favorite smells. Invite volunteers who have been to a bakery to tell what smells they remember.
- Have students name the animal in the picture. Ask: *How do you think the skunk's bad smell helps the skunk?* (It protects the skunk because animals that might harm it don't like the smell and stay away.)
- Point out that the child in the picture likes the smell of the flower. Ask: *How do you*

think the flower's good smell helps it? (If necessary, explain that the flower's nice smell attracts insects, such as bees, that spread pollen.)

- Have students read page 11. Ask: *Why do you think a dog's sense of smell is better than a person's?* (Students may observe that dogs' noses are much bigger than people's noses.) *What do dogs use their sense of smell for?* (Dogs, even pets, are hunters. They use their sense of smell to help them find food.) The sense of smell is the dog's primary sense. A dog even recognizes its home and its owner more by smell than by sight.
- Have students look at the diagram of the nose on page 11 and read the labels. If necessary, provide help with the pronunciation of *nasal cavity* (NAY-zuhl KAV-uh-tee) and *olfactory* (ohl-FAK-tor-ee). Then draw students' attention to the photograph and the caption. Ask: *Why do you think it is hard to smell when you have a cold? Use the diagram of the nose to help you answer.* (Mucus in the nasal cavity covers up the areas that pick up smells.)
- Lead students in a discussion of how their sense of smell helps them. For example, ask: *What do your mom and dad do when they smell something burning in the kitchen?* (They run to take it off the stove.) *What would happen if they couldn't smell?* (There might be a bad fire.)
- Point out that there are many words that mean almost the same as *smell*. Ask: *What are some words that we use to name a good smell?* (aroma, fragrance, scent) *What are some words that we use to name a bad smell?* (odor, stink, stench)

Page 12 Taste

- Have students read page 12 to find out about taste. Have them take turns

answering the questions in the first paragraph.

- Name some foods and ask students to categorize them according to whether they are sweet, sour, salty, or bitter. For example, cake, corn, and cherries are sweet; unsweetened chocolate and some medicines are bitter; limes and spoiled milk are sour; potato chips and saltwater are salty.
- Point out that the tongue is bumpy. Ask: *What do you think the bumps are?* (groups of taste buds) Have pairs of students stick out their tongues so they can see these bumps. Remind them that there are about 200 taste buds within each bump.
- Reread the last paragraph with students. Ask: *What do you think happens to the sense of taste when we have a cold?* (It doesn't work as well.) *Why?* (Because we can't smell as well as we can when we don't have a cold.) Discuss the last question on the page. Let students share their ideas about how all the senses help us enjoy favorite foods.

People in Science (page 13)

A Veterinarian

- Before they read, ask students what a veterinarian does. Invite them to share their experiences with taking a pet to the vet. Ask: *What are some things the veterinarian did when examining your pet?*
- Have students read the text on page 13. If necessary, provide help with the pronunciation of *otoscope* (OH-tuh-skope) and *stethoscope* (STETH-uh-skope).
- Ask students to think of other tools that extend our senses. Ask: *What are some tools that help us see better?* (eyeglasses, telescopes, magnifying glasses, binoculars, microscopes)

What are some tools that help us hear better? (hearing aids, headphones, microphones)

Did You Know? (pages 14–15)

Page 14 *About Braille*

- Have students read page 14 to find out about the Braille alphabet. If necessary, provide help with the pronunciation of *Braille* (braile).
- Have students look at the photograph and read the caption. Ask: *Do you think the Braille alphabet would be easy or hard to learn?* Point out that just as it takes practice to learn to read written words, it takes practice to learn Braille.
- Ask students to think of some public places where they have seen Braille. For example, in elevators, the buttons showing the floors are expressed in Braille as well as in numerals. Signs in restaurants indicating men’s and women’s restrooms may also be written in Braille. Encourage students to touch any Braille signs they see. If possible, lead students to a Braille sign in the school. Help them read the Braille letters.

Page 15 *About American Sign Language*

- Have students read page 15 to find out about American Sign Language. Ask: *How is this language different from a spoken language?* (It is a language you need to see to understand; you need to hear a spoken language.)
- Have students use the chart to silently practice spelling out their names. If time allows, let them work with a partner to practice spelling out simple words for each other to guess.

Further Facts

- Braille is read from left to right using the index fingers on one or both hands.

- Every Braille symbol is made from a numbered six-dot pattern, two across and three down. There are signs for punctuation marks and capital letters.
- The average Braille reader can read 125 words per minute.
- American Sign Language is the fourth most common language used in the United States.
- The American Sign Language Dictionary includes not only the alphabet and the numbers 1–10, but also over 1,270 words.
- Both facial expression and body language are important to ASL, just as they are to spoken languages.

AFTER READING

Summarize

Have students summarize the book by completing the KWL chart they began before reading. Help them write in the L column the answers to the questions they wrote in the W column. Then ask volunteers to summarize the information in each section, referring to the book if necessary.

Discuss with students how using the KWL strategy helped them understand and appreciate the book. Invite them to share any other reading strategies that helped them understand what they read.

Direct students’ attention to the fourth column on the chart. Ask: *What questions do you still have about the senses and how they work? What would you like to know more about?* Record students’ responses. Then ask: *Where do you think you might find answers to your questions?* (an encyclopedia, a magazine article, science books, the Internet) Encourage students to conduct further research.

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 are the five senses? What makes the senses so important to us? (The five senses are sight, hearing, touch, smell, and taste. We receive information about the world through our senses. The information goes to our brains. Our brains tell us how to act on the information.)
2. Pick your favorite place. Describe it using all five senses. How does it look, sound, and smell? What could you touch and taste while you are there? (Accept all reasonable responses.)
3. Explain how our senses help keep us safe. Give examples. (Our senses help keep us safe by warning us of things that could harm us. For example, if our hand touches something that feels hot, we take our hand away before we get burned. If we see a red light, we know it's dangerous to cross the street.)

Writing Links/Critical Thinking

Present the following as a writing assignment.

1. Think of three round things that are all the same size. One is a rubber ball, one is a marble, and one is a berry. Describe them to someone who is close enough to see how they are alike but too far away to see how they are different. Include information from all five senses. (Accept all reasonable answers.)
2. Describe something without naming it. Use information from as many senses as possible. Give your description to a partner. Can the partner guess what it is?

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.