

# Introducing Text Structures in Science Writing-6th Grd

## Summary

This activity helps students understand that science writing is organized in identifiable patterns called text structures. Understanding and using these different text structures help refine students' abilities to both read and write in science.

## Main Core Tie

English Language Arts Grade 6

[Writing Standard 2 a.](#)

## Additional Core Ties

English Language Arts Grade 6

[Writing Standard 2 c.](#)

English Language Arts Grade 6

[Writing Standard 2 d.](#)

English Language Arts Grade 7

[Reading: Informational Text Standard 5](#)

English Language Arts Grade 8

[Reading: Informational Text Standard 5](#)

## Group Size

Small Groups

## Materials

Classroom science textbooks

A variety of informational trade books

Text structure examples

- [Organizational Pattern Signals - Blank](#) (pdf)
- [Organizational Pattern Signals - Completed](#) (pdf)

## Additional Resources

- *Content Area Reading: Literacy and Learning Across Curriculum*  
, by Joanne and Richard Vacca (Pearson Allyn & Bacon, 7th edition, July 9, 2001); ISBN 0321088107
- *Physics of Sound (Bouncing Back)*  
, by Michael Burgan and Dona Smith (Delta Education, FOSS™ Science Stories); ISBN 0-87504-835-8
- *Hidden Worlds: Looking Through a Scientist's Microscope*  
, by Stephen Kramer (Houghton Mifflin Co., Boston); ISBN 0-618-05546-0
- *The Solar System (Exploring the Universe)*  
, by Robin Kerro (Raintree Steck-Vaughn); ISBN 0-7398-2817-7
- *Kids Discover--Solar System*  
, by Stella Stands, Mark Levin, 149th Fifth Avenue, New York, NY 10010. ISSN 1054-2868
- *The Mystery of Mars*  
, by Sally Ride and Tam E. O'Shaughnessy (Scholastic, Inc.); ISBN 0-439-18027-9
- *Seeing Earth from Space*  
, by Patricia Lauber (Scholastic Inc., 1990); ISBN 0-590-68691-7

- *Can You Hear A Shout in Space?*  
 , by Melvin and Gilda Berger (Scholastic Inc., 2000); ISBN 0-439-09582-4
- *Yuck!: A Big Book of Little Horrors*  
 , by Robert Snedden (Simon & Schuster, New York, 1996); ISBN 0-689-80676-0
- *Microorganisms, Fungi, and Plants*  
 , (Holt Science & Technology); ISBN 003064772X

### Background for Teachers

Informational text is written to tell, show, describe, or explain. A good reader looks for structure in text and can easily make a distinction between important ideas and unimportant ideas in informational text. As teachers, we should help students identify text patterns that help them make these distinctions. Five text patterns that seem to dominate informational text include:

- Description
- Problem/Solution
- Compare/Contrast
- Cause/Effect
- Sequencing

Informational writing is not written in neat, identifiable patterns. Most informational text is written with a descriptive text structure. Within text, the author may begin the passage with a problem, then go on to describe the events contributing to the problem. Or perhaps the author will compare or contrast the problem in relation to another problem. Throughout the text, the author may present the solution in a descriptive text pattern. These descriptions and explanations may be organized in a sequence pattern. Therefore it becomes difficult to analyze the text pattern.

However difficult it might be, students must learn how to recognize and use text patterns in informational text. When readers understand and interact with text organization, they are prepared to comprehend and remember the information.

### Intended Learning Outcomes

1. Use Science Process and Thinking Skills
4. Communicate Effectively Using Science Language and Reasoning

### Instructional Procedures

#### Invitation to Learn

Show a narrative and an informational text. Ask the students if they can identify any differences between the two types of writing. Encourage them to identify the text features that show differences. Some differences that may be discussed include: real photographs, table of contents, captions, indexes, glossary, informational charts, etc. These are all external text structures that are important for students to understand, however the internal text structures are more important to understand. Internal text structures are patterns of organization that show, tell, describe, or explain.

#### Instructional Procedures

How do you teach students about text structures in science?

- Teach explicitly.

- Model reading and writing the various structures.

- Students must interact with various text structures (e.g., textbooks, trade books, Internet, etc.).

- Teach only one structure at a time.

- Reinforce structures all year long.

- Allow time for students to practice and apply the skills they have learned.

- Use time in the literacy block to teach literacy ideas using science texts.

Teachers need to use examples of content text to teach text structures. Text structures represent

different types of connections among important and unimportant ideas in nonfiction text. Begin by defining each text structure. As students understand and can identify the text structures, they can begin to incorporate them into their own writing.

#### Description

*Definition:* "Providing information about a topic, concept, event, object, person, idea, and so on (facts, characteristics, traits, features,) usually qualifying the listing by criteria such as size or importance. This pattern connects ideas through description by listing the important characteristics or attributes of the topic, under consideration. The author describes a topic by listing characteristics, features, and examples" ( *Content Area Reading*).

*Description Example:* "All living things fit into one of six kingdoms: Protista, Plantae, Fungi, Animalia, Eubacteria, or Archaeobacteria. Bacteria make up the kingdoms Eubacteria (YOO bak TIR ee uh) and Archaeobacteria (AHR kee bak TIR ee uh). These two kingdoms contain the oldest forms of life on Earth. All bacteria are single-celled organisms. Bacteria are usually one of three main shapes: bacilli, cocci, or spirilla" ( *Microorganisms, Fungi, and Plants*).

*Multiple Examples:* Like living things, viruses contain protein and genetic material. But viruses don't act like living things. They can't eat, grow, break down food, or use oxygen. In fact, a virus cannot function on its own. A virus can reproduce only inside a living cell that serves as a host. A host is a living thing that a virus or parasite lives on or in. Using a host's cell as a tiny factory, the virus forces the host to make viruses rather than healthy new cells" ( *Microorganism, Fungi, and Plants*).

#### Problem/Solution

*Definition:* "Showing the development of a problem and one or more solutions to the problem. The author states a problem and lists one or more solutions for the problem. A variation of this pattern is the question-and-answer format in which the author poses a question and then answers it" ( *Content Area Reading*).

*Problem/Solution Example:* "Although human eyes cannot sense infrared, there are ways of detecting it. One is to use film that senses infrared. There are also electronic sensors that detect infrared. They are carried on satellites-the Landsat series launched by the United States and satellites launched by other countries. The sensors scan the earth beneath them. They measure the light reflected by the earth, both the wavelengths we see and the infrared. The sensors are another kind of remote sensing" ( *Seeing Earth From Space*).

*Multiple Examples:* "What was the most famous repair job in space? Fixing the Hubble Space Telescope. It didn't work perfectly at first. One of its mirrors was a bit too flat. This blurred the images. Also, there was a slight wobble as the satellite traveled in orbit. In 1993, NASA sent astronauts up in a shuttle to repair the Hubble. They caught the telescope with a 50-foot (15.2 m) robot arm and pulled it into the shuttle's open cargo bay. Working in space suits, they replaced some parts, added new instruments, and launched it back into orbit. Four years later, NASA scientists improved the Hubble even more by attaching several advanced pieces of equipment to the telescope" ( *Can You Hear a Shout in Space?*).

#### Compare/Contrast

*Definition:* "Pointing out likenesses (comparison) and/or differences (contrast) among facts, people, events, concepts, and so on. The author explains how two or more things are alike and/or how they are different" ( *Content Area Reading*).

*Compare/Contrast Example:* "The Sun dominates our location in space. It is quite different from the planets and all the other bodies in the solar system. The Sun is a star, just like the stars we see in the night sky, but much closer to Earth. It is a great ball of very hot gas that gives out vast amounts of energy as light and heat. In contrast, the other bodies in the solar system are made of rock, ice, or cold gas. And they give out no light of their own. We see them shining in the night sky only because they reflect light given off by the Sun" ( *Kids Discover Magazine--Solar System*).

*Multiple Examples:* "Earth is surrounded by an atmosphere that protects all the plants and animals on

the planet from the extreme conditions in space. It shields us from the sun's radiation, helps us keep our planet warm, and contains the oxygen that many of Earth's creatures need to survive. Mars, too, has an atmosphere, but it is very different from Earth's. The Martian atmosphere is very, very thin and is made up almost entirely of carbon dioxide. Fine red Martian dust fills the thin air and creates a pink sky all year round" ( *The Mystery of Mars*).

#### Cause/Effect

**Definition:** "Showing how facts, events, or concepts (effects) happen or come into being because of other facts, events, or concepts (causes). The author lists one or more causes and the resulting effect or effects" ( *Content Area Reading*).

**Cause/Effect Example:** "When sound waves hit an object, some of them bounce back toward their source. This bounce is an echo. Some animals use this echo effect to help them survive. They send out sounds that bounce off objects and other animals. (Many of these sounds are too high-pitched for humans to hear.) The echoes of the sounds then bounce back to the source animal. This is called echolocation. The bouncing sounds help the animals "see." Echolocation helps them find food and move around without bumping into things" ( *Physics of Sound*).

**Multiple Examples:** "If you spot some dust around your house you probably think, Time for a clean up! But wait a second; is it just dust that you're getting rid of? Would you believe that you're disturbing a dust mite and maybe a few thousand more like it? Now this doesn't look like something you would want to upset, does it? Except that there's more here than meets the ordinary eye. We're going down the microscope into a dusty world because of a little dust..." ( *Yuck!*).

#### Sequencing

**Definition:** "Putting facts, events, or concepts in order. The author traces the development of the topic or gives the steps in the process. Time reference may be explicit or implicit, but a sequence is evident in the pattern. The author lists items or events in chronological order" ( *Content Area Reading*).

**Sequence Example:** "Dennis lowered collecting bottles on ropes. The bottles had triggers so Dennis could open them at different depths. This allowed him to collect some water samples from near the surface and others from deep in the lakes. The first water samples the scientist collected showed that some of the lakes were completely dead. Nothing had survived the heat, gases, and choking ash of the eruption. Just a few weeks later, Dennis used microscopes to look at new water samples he had collected from the same lakes. He was amazed to see algae, protozoan, and bacteria living in the water. Within several months, small crustaceans--animals that feed on algae and bacteria--began to reappear in some of the lakes ( *Hidden Worlds: Looking Through a Scientist's Microscope*).

**Multiple Examples:** "The Planet closest to the Sun is Mercury, then comes Venus, and next is Earth. We are number three. That should be an Earthling's loudest cheer. Because of Earth's distance from the Sun, it alone has the right temperature for liquid water--vital to life. Just look at Venus. At 900 degrees Fahrenheit, water turns to vapor. And on Mars, the next planet after Earth from the Sun, all the water is frozen at the poles" ( *Kids Discover Magazine--Solar System*).

#### Activity

With your group, make a list of the signal words in the texts that helped you identify the text structure.

Provide a variety of textbooks, trade books, Internet pages, etc. to help students identify the different text structures.

Distribute blank *Organizational Pattern Signals*. See completed *Organizational Pattern Signals*. Have students list signal words found in the sample texts.

#### Extensions

Can you get the paper circles in your tray to move, using only your balloon, without touching the circles or using any air? Describe what you did to make your paper circles move. (cause/effect)

Using the tools provided, make observations of your ice hand every ten minutes and record your

observations in a log. Describe how your ice hand changed over time. (time sequencing)  
Create a model of the solar system using food. Your model should be accurate in terms of relative size, distance, and color. Explain how your model compares to the actual solar system. (compare/contrast)  
Create a microorganism museum. Your group will create a model of your assigned microorganism and write a description for museum guests. (description)

### Assessment Plan

Once a text structure is thoroughly understood, students can use curriculum content and the Organizational Pattern Signals to write their understanding of each content concept. Informal assessment determines if they understand the text structure.

Write expository compositions (e.g., description, explanation, compare/contrast, and/or problem/solution) that:

- State the thesis or purpose.

- Explain the situation.

- Follow an organizational pattern appropriate to the type of composition (e.g., if problem/solution, then paired).

- Offer persuasive evidence for the validity of the description, proposed solutions, etc.

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