

Synthesize information from several texts in order to come to a new understanding

5

Language Objectives

- Describe main ideas and key details.
- Evaluate author's word choice.
- Identify an author's purpose.
- Synthesize information from several related texts.

Building Literacy

Synthesizing texts will help students move beyond what is stated by an author by:

- making connections across texts.
- examining the author's choices about what information to include.
- identifying information that could be further explored.
- comparing and contrasting information from different sources.

Focus on Language

Display the following compound words that students will encounter in these texts. Have students use a three-column chart to identify the meaning of each word part and the meaning of the whole word.

- pinpoint
- handheld
- underwater
- wildlife
- shipwrecks
- worldwide



ENGLISH LANGUAGE LEARNERS

Provide your English learners with sticky notes to mark any unfamiliar vocabulary as they read. Have them translate the word to their native language or use a dictionary to write a simple definition in English. Then as students reread the text, they can refer to the sticky notes when they have questions about word meanings.

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show me

In this lesson, students will read texts about Antarctica and synthesize information to come to a new understanding about the continent and people's role in researching and protecting it.

Say: Today, you are going to read texts about the continent of Antarctica and people who visit and research it. Then, you will synthesize information to make new statements about the topic. Remember, when you **synthesize**, you combine information from different sources to develop a new idea. Synthesizing can help you gain a deeper understanding of a topic and remember what you have learned, so you may share that knowledge with others.

Have students turn and talk to a partner about the process of synthesizing. Ask them to share ideas about what they should look for in each text and what they should do to combine information. Encourage volunteers to share their thoughts with the class.



guide me

Use the **guide me** text to help students practice synthesizing information to create a new idea.

Have a volunteer read aloud the first paragraph and identify the main idea. Then, ask another volunteer to read aloud the second paragraph and say something about how the details add to those in the first paragraph.

Finally, have students turn and talk to a partner to synthesize ideas to complete the new idea statement. (The population of most stations on Antarctica increases during the summer months.)

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show me
How can synthesizing information help me come to a new understanding?

guide me

example


Synthesize, or combine, ideas from each paragraph to create a new idea.

from A Research Continent
by Deidre Havencamp

McMurdo Station is a United States research center in Antarctica. The United States also uses Palmer Station on Anvers Island and Amundson-Scott South Pole station on Ross Island. About forty other stations operate in Antarctica, too.

Scientists live at McMurdo Station all year, even during the sunless winter months of June and July. The station is home to most of the people in Antarctica. It is like a very small village with only 200 residents. In the summer, however, more than 1,200 researchers live there.

The population of most stations on Antarctica increases during the summer months.



COMPARING TEXTS 17

VISUAL LITERACY

Use the graphic features in a text to provide an entry point for visual learners and struggling readers. Have students work in small groups to discuss the picture on page 17. Then, have them draw a box around the words from the text that the picture shows. Ask a volunteer to share the answer.

**work time**

Introduce Vocabulary Write the following vocabulary words on the board: **pinpoint, handheld, underwater**. Then, have students name real-world examples for each word. For example, they might name things they can pinpoint, objects that are handheld, and animals that live underwater.

Read—Pause—Bookmark Use the following interactive strategy to promote a strategic reading of the text.

Have student pairs take turns reading “Explore with Science” aloud. After each student reads two paragraphs, have him or her complete a bookmark with a note about what was just read.

On the board, write a few ideas that students can use for each bookmark:

- an interesting fact
- an unfamiliar or confusing idea
- a domain-specific concept they would like to know more about
- a connection to the text on page 17

Analyze Author’s Craft and Style: Domain-Specific Vocabulary Discuss that many scientific texts include domain-specific terms that may be unfamiliar to readers. To help readers understand these words, authors often provide definitions, examples, and context clues.

Ask a volunteer to read aloud paragraph 3. Point out the word *sextant*. Discuss the information the author provides to help readers understand what the tool is and how Roald Amundsen used it. (The tool measures the angle between the horizon and an object in the sky. The measurement helps people find their location.)

Then, have students work in pairs to review paragraph 5. Have them identify information the author includes to help readers understand what *marine biologists* do and how and why they use a *hydrophone*.

check for understanding by having students complete the synthesis statement. (Possible response: I can synthesize information from this text and the text on page 17 to say that more stations operate in the summer months because the temperature isn’t as frigid as it is the rest of the year.)

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work time

Explore with Science

by Donna Longo

- 1 Antarctica has been called a desert of ice, the last frontier, the frozen continent, and the unknown land. With its bitterly cold weather and hurricane-force winds, it may be the planet’s most uninviting place.
- 2 Massive icebergs crowd its waters and gigantic glaciers move across its land. Summer temperatures in coastal areas are a chilly 50° Fahrenheit. The continent’s interior boasts the world’s lowest recorded temperature, a bone-chilling –128.6° Fahrenheit.
- 3 In the 1800’s, explorers sailed along the coast of Antarctica. It was not until 1911 that people finally explored the interior. Roald Amundsen was the first to reach the South Pole on December 14th, 1911. He located the pole using a tool called a sextant. To use a sextant, a person finds the angle between the horizon and an object in the sky, such as a star. Then this measurement is compared to the exact time of day. This information helps explorers determine their location.
- 4 In the 1950s, Richard Byrd of the U.S. Navy explored the continent by air. Soon, a flurry of scientists headed for Antarctica. By 1959, twelve nations had signed the Antarctic Treaty. This agreement stated that the continent would be used for research.
- 5 Scientists have many tools that were not available to the earliest explorers. For example, they do not have to use sextants to pinpoint locations. Instead, they use handheld GPS devices. Marine biologists, who study ocean life, can listen to killer whales by dropping a hydrophone in the water. A hydrophone picks up sounds that pass through water and changes them into electromagnetic waves. This information helps scientists learn how marine mammals communicate underwater.
- 6 These tools and many others enable scientists to learn more about Antarctica every day. Imagine what we will have learned in another hundred years! Would you like to explore this amazing place?

check for understanding I can synthesize information from the text on page 17 to say that more stations operate in the summer months because _____.

18 COMPARING TEXTS

CRITICAL LITERACY

One way to help students think critically is to have them question which details are missing from a text. For example, the author does not provide any details about how Roald Amundsen, Richard Byrd, or modern scientists felt about exploring and working in Antarctica. Ask students to discuss how these firsthand details could add to the text and help readers better understand the conditions of Antarctica from people who have directly experienced them.



work time

Introduce Vocabulary Write the following vocabulary words on the board: **wildlife, shipwreck, worldwide.** Then, have students use each word in a sentence to demonstrate their understanding of its meaning.

Read—Pause—Discuss Use the following interactive strategy to promote a strategic reading of the text.

Have student pairs take turns reading “Are People Ruining Antarctica?” aloud. After each student reads two paragraphs, have him or her pause to ask his or her partner questions about what was just read. Have them continue this process until they finish reading.

Analyze Author’s Craft and Style: Author’s Purpose

Review that an author’s purpose is why they write a text—to entertain, to inform, to persuade, or a combination of these reasons.

Discuss that the author’s main purpose in this text is to persuade. Call attention to paragraph 1 and point out the author’s statement that “human activity has had an impact on Antarctica and its wildlife.” Explain that to support this idea, the author presents problems associated with people’s presence on Antarctica and their related effects.

Have partners review paragraphs 2 through 4 to identify three problems and effects the author presents (burning garbage polluting the clean air; tourists’ cruise ships wrecking and leaking oil; tourists disturbing wildlife and affecting birds’ ability to raise their young). Then, ask volunteers to tell if they think the authors’ presentation of this information is effective in persuading readers.

check for understanding by having students answer the question about the author’s claim. (Possible response: The author makes the claim that Antarctica is an amazing place to visit and explore, and people should to what they can to protect it from harm.)

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work time

Are People Ruining Antarctica?

by Jun Ueno

1 In the last 100 years, more and more people have traveled to Antarctica. It is the most isolated region on Earth. Some are scientists who stay for months to do research. Others are tourists whose visits last mere hours. Naturally, all this human activity has had an impact on Antarctica and its wildlife.

2 Consider the basic problem presented by garbage. For many years, scientists living at the research stations disposed of waste by either burning their trash or throwing it in the ocean. Burning trash, however, produced smoke, which polluted Antarctica's clean, cold air. And trash dumped in the ocean hurt or killed whales, seals, and other marine animals. The solution they came up with was to carry their trash off the continent.

3 Tourists bring a different set of problems to the continent. Most tourists travel by cruise ship. They then go ashore in small boats. Ice and rough seas, however, can cause shipwrecks and oil spills. At least

one ship has already sunk off the coast of Antarctica, leaking oil that poisoned many animals.

4 Scientists also worry that tourists may disturb the animal populations. Worldwide, tourists are often guilty of approaching or disturbing wildlife in order to get a closer look or the perfect photograph. In Antarctica, curious tourists might get too close to penguins and other seabirds that are breeding or nesting. This can affect the birds' ability to reproduce and raise their young.

5 Antarctica is a place of natural beauty and mystery. It is not surprising that people want to visit nor is it practical to keep them away. Tourism is a big business, and it can help raise public awareness of the region.

6 If the past is any indication, the future will likely bring even more people to Antarctica. If that is the case, we must find ways to avoid harming the very place we find so amazing.

check for understanding

What claim is the author making about Antarctica?

COMPARING TEXTS 19

VISUAL LITERACY

To demonstrate understanding of how graphic features can clarify and enhance the ideas in a text, have students work in small groups to describe an illustration or photograph the author might add to show one of the problems detailed in the text. Ask volunteers to explain how the graphic might help to convince readers that the author’s claim is valid.

check for understanding

Analyze Author’s Craft and Style Have students work with a partner to answer the **check for understanding** questions.

If students struggle to synthesize ideas, use a Think Aloud to model how a critical thinker would approach the texts.

Think Aloud First, I will reread the sections of text the question mentions. I will think about the main ideas and how I can connect them. In “A Research Continent,” the author mentions that only 200 or so scientists live at McMurdo Station during the winter months, but that number increases by about 1,000 during the summer. In paragraphs 2 and 3 of “Are People Ruining Antarctica?”, the author discusses the problem of what people visiting Antarctica should do with their garbage. I can synthesize the ideas from the two texts to understand that these garbage problems are likely much greater for McMurdo Station during the summer months since there are many more people living there during that time.

Synthesize Information To help students synthesize information to write a new idea, have them read each detail in the chart carefully. Guide them to recognize that if June and July are winter months in Antarctica, then December is a summer month. (Possible new idea: Roald Amundsen reached the South Pole of Antarctica during the summer month of December.)

reflect

Have partners work together to synthesize other information from the texts and write at least two additional new ideas. To help students develop their ideas, encourage them to complete graphic organizers that show the connections between relevant details from different passages. Then ask volunteers to share their ideas with the class.

5 Synthesize information from several texts in order to come to a new understanding

check for understanding

1 If you were the author of “Are People Ruining Antarctica?” what recommendation would you make to protect the continent?
Possible response: I would limit the number of tourists that could visit each year and keep the continent largely for research.

2 The author of “Explore with Science” mentions the Antarctica Treaty. Why do you think such a treaty was necessary?
Possible response: The treaty ensures that no one country can claim the continent. The treaty opens up the continent to all scientists.

3 Reread “A Research Continent” on page 17 and paragraphs 2 and 3 of “Are People Ruining Antarctica?” Synthesize the text to create a new idea.
Possible response: The amount of trash McMurdo Station generates is six times greater in the summer months.

4 What structure does the author use in “Are People Ruining Antarctica?” Is this structure effective for an argument?
The author uses a problem-solution structure to state the argument, which is a good one to show the problems people cause for the continent.

5 Synthesize the information below to create a new idea.

A Research Continent Scientists live at McMurdo Station even during the winter months of June and July.	+	Explore with Science Roald Amundsen reached the South Pole on December 14, 1911.
New Idea: Roald Amundsen reached the South Pole of Antarctica during the summer month of December.		

reflect

Work with a partner. Synthesize information from the texts to create a new idea.

20 COMPARING TEXTS

CRITICAL LITERACY

Good critical thinkers are able to think beyond the words of a text and consider how the author’s views and biases affect how he or she presents the information. They are also able to consider how another author might present an alternate or opposing view just as convincingly.

Have students use details from the passages to write a paragraph from each of the following viewpoints:

- a scientist who argues that Antarctica should be closed to tourists because tourists present too much of a threat to wildlife
- a cruise ship operator who wants to persuade people to sail aboard his ship to see the beauty of Antarctica

Then have students work in small groups to compare and contrast viewpoints across texts and discuss their own viewpoints on tourism in Antarctica.

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➤ show me

How can synthesizing information help me come to a new understanding?

➤ guide me

example

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The population of most stations on Antarctica _____ during _____.



work time

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➤ **work time**

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➤ **check for understanding** What claim is the author making about Antarctica?

➞ check for understanding

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- 2 The author of “Explore with Science” mentions the Antarctica Treaty. Why do you think such a treaty was necessary?
- 3 Reread “A Research Continent” on page 17 and paragraphs 2 and 3 of “Are People Ruining Antarctica?” Synthesize the text to create a new idea.
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New Idea:		

➞ reflect

Work with a partner. Synthesize information from the texts to create a new idea.