Educational consultant Stephanie Harvey has helped shape the instructional vision for this Teacher’s Guide. Her goal is to ensure you have the tools you need to enhance student understanding and engagement with nonfiction text.

Standards Supported
- Common Core State Standards (CCSS)
- Next Generation Science Standards (NGSS)
- C3 Framework for Social Studies State Standards (C3)

See each lesson for the specific standard covered.
RENEW FOR THE 2020-2021 SCHOOL YEAR!

Same great resource, now with exciting new bilingual digital features

• Now in Spanish! Students can access articles in English and Spanish in each edition of the digital version!

• New subscription option to get the digital-only version for your whole classroom for one low price! School discounts available.

READY TO RENEW?

EMAIL
ExplorerMag@ngs.org

CALL
844.601.5020

FAX
937.890.0221

MAIL
Explorer Magazine
PO BOX 291875
Kettering, OH 45429

Go to ExplorerMag.org to learn more and renew today!
BACKGROUND
Since 1888, the National Geographic Society has funded scientists and explorers and shared their findings with the world. To support educators who use our resources, we have created a Learning Framework, which lays out what we believe students should learn from their experiences with the Society.

PURPOSE
The Learning Framework was designed to convey the Society’s core beliefs and values. It is built around a set of attitudes, skills, and knowledge that embody the explorer mindset.

To determine the learning outcomes within the Learning Framework, we dug deep into national standards in key subject areas. We also sought advice from subject matter and child development experts, along with the combined expertise of NG instructional designers, researchers, and content developers. To learn more, go to: https://www.nationalgeographic.org/education/learningframework/.

IMPLEMENTATION
Each article in this magazine has a knowledge-based link to the Learning Framework.

INTRODUCTION

MINDSET OF AN EXPLORER: KEY FOCUS AREAS

Attitudes

CURIOSITY An explorer remains curious about how the world works throughout his or her life. An explorer is adventurous, seeking out new and challenging experiences.

RESPONSIBILITY An explorer has concern for the welfare of other people, cultural resources, and the natural world. An explorer is respectful, considers multiple perspectives, and honors others regardless of differences.

EMPOWERMENT An explorer acts on curiosity, respect, responsibility, and adventurousness and persists in the face of challenges.

Skills

OBSERVATION An explorer notices and documents the world around her or him and is able to make sense of those observations.

COMMUNICATION An explorer is a storyteller, communicating experiences and ideas effectively through language and media. An explorer has literacy skills, interpreting and creating new understanding from spoken language, writing, and a wide variety of visual and audio media.

COLLABORATION An explorer works effectively with others to achieve goals.

PROBLEM SOLVING An explorer is able to generate, evaluate, and implement solutions to problems. An explorer is a capable decision maker—able to identify alternatives and weigh trade-offs to make a well-reasoned decision.

Knowledge

THE HUMAN JOURNEY An explorer understands where we came from, how we live today, and where we may find ourselves tomorrow.

OUR CHANGING PLANET An explorer understands the amazing, intricate, and interconnected systems of the changing planet we live on.

WILDLIFE AND WILD PLACES An explorer reveals, celebrates, and helps to protect the amazing and diverse creatures we share our world with.
Synthesize the Big Idea from the Details

**CONNECT & ENGAGE** (5 minutes)

* Kids are in a group on the floor in front of you. Sit on a low chair and hold up pages 2–3.

Titles tell what an article is about, especially with nonfiction. In the title, writers try to give us a clue about what the big idea of the article is. Turn and talk about why you think writers do this.

* Kids turn and talk. They might mention that a title that gives readers a clue or a hint at the big idea can help readers know what they will be reading about. It might also help readers decide if they are interested in reading the article and learning more.

Let’s look at this title: “Caring for Wombats.” There is a picture of a wombat on page 3. Wombats are animals that live in Australia. You can see where Australia is on the map on page 2. Australia is far away from where we live in North America. Can you find both places on the map?

* What do you think the big idea of “Caring for Wombats” might be? Think about the title, and then turn and talk.

* Kids turn and talk.

**MODEL** (10 minutes)

* Kids sit in a group on the floor, with you in a low chair in front of them.

Nonfiction articles like the one we’re reading are often packed with lots of information. Because of that, we need to slow down, read closely, and pay attention to the details. The details tell us more about the topic, and if we pay careful attention, these bits of information can help us discover the big idea.

* Watch and listen as I show you how I do this. I’m going to write down the details. Next, I’ll look again at all of the details and think about how they fit together. I’m also not forgetting that we said the title can often be a clue to the big idea, so I’m going to keep that in mind, too.

Read aloud page 2. Then write down on sticky notes or on the board what the details are. Be sure to “think aloud” so students can understand how you are sorting through and processing the information. The details are a little different in Scout and Voyager [see below]. You can write down the details exactly as they are written in the article or paraphrase them a bit, as shown below.

**What You Will Need**

* “Caring for Wombats” (Young Explorer, pages 2–7)
* Think Sheet (Teacher’s Edition, page 7)
* Clipboards
* Pencils

**Scout Details**

* A baby wombat is called a joey.
* The joey pictured in the article was lost.
* People took the joey to a safe place.

**Voyager Details**

* A baby wombat is called a joey.
* The joey pictured in the article was lost and alone.
* Some people found the lost joey.
* They brought the joey to a safe place.

One of the details lets me know that a baby wombat is called a joey. I’m worried about the little lost joey, but another detail let me know that the joey was going to a safe place. And I’m thinking about the title, which is “Caring for Wombats,” and what the big idea might be. I’m guessing that at that safe place they might be able to care for the joey. What do you think? Turn and talk about that and about what you noticed me doing.

* Let students turn and talk and then share out.

**Kindergarten Standard Supported**

* CCSS Reading Informational Text: With prompting and support, identify the main topic and retell key details of a text. (K-2)

**First Grade Standard Supported**

* CCSS Reading Informational Text: Identify the main topic and retell key details of a text. (1-2)
GUIDE (10 minutes)

Hand out the Think Sheets attached to clipboards. Kids remain grouped in front of you on the floor.

Let’s keep reading. I’ll read some more text aloud, and you can read along, too. Write down the details you hear on the Think Sheet squares.

Read aloud pages 4–5. Kids should note the details on their Think Sheet squares.

Scout Details
- The safe place is a shelter.
- People help joeys there.
- They feed joeys.
- They wrap the joeys in blankets to keep them warm.
- The joeys feel safe.

Voyager Details
- The safe place is a home for animals, a wildlife shelter.
- People help joeys that need a mother.
- They feed the joeys with bottles.
- They wrap the joeys in a soft pouch to keep them warm.
- This makes the joeys feel safe.

Okay, what details did we have on these pages? Do they support what we’ve been thinking might be the big idea? How could we state the big idea, based on the details we’ve seen so far? Turn and talk about that, and then you can share out.

Encourage kids to think about how to synthesize the details and come up with a few different ways of stating the big idea. Remind them that the title gives us a good clue, but we might want to word the big idea a little differently. Some suggestions kids might have include the following:

- A shelter is a place where people care for joeys that need help.
- A shelter keeps lost joeys warm and fed.
- People at shelters take good care of joeys.

Let kids know that as they read more and find out more information through details, they can continue to refine their thinking about what the big idea is.

COLLABORATE (25 minutes)

Now it’s your turn. Find a partner and read the rest of the article together. Write down the details on your Think Sheet squares and keep talking about how they support the big idea. You should also keep talking about what you think the big idea is. With more details, you might have some different thoughts about what the big idea is.

While you are working together, I’m going to walk around the room to see if you need any help or have any questions.

Kids read, write down details, and talk about them and the big idea. Move around the room, conferring with partners.

Scout Details
- Each joey gets a buddy, and they learn from each other.
- The joeys grow up.
- They go back to the wild, which is the best home for them.

Voyager Details
- Each joey has a buddy, and they play and bond with each other.
- They learn from each other how to be wombats.
- A wombat grows up and can take care of itself.
- It can be taken back to the wild, which is the best place for it.

Work with kids to come up with a big idea that is something like this: “People at animal shelters take care of wombats and help them so they can return to the wild.”
SHARE THE LEARNING (10 minutes)

Kids join a sharing circle.

Who would like to share any interesting details or surprising information you learned that support the big idea? Remember to share using respectful language. First, tell what you want to share, and when you are finished, ask if there are any questions or comments. Then politely call on someone else who would like to share with the class.

Allow time for kids to share.

Paying close attention to the details and seeing how they all relate to one another and the big idea takes some real brain power. Great work today, everyone!
Write or draw the details in the squares. Write the big idea on the line at the bottom.

Big idea:
LESSON FRAME Synthesize the Big Idea from the Details

This frame is a template of the language arts lesson. It has the instructional moves and language of the lesson, but the specific content has been removed. This way you can use the Lesson Frame for the other articles in the issue or for any nonfiction text you might be teaching.

What You Will Need
• Nonfiction text  • Think Sheet template  • Clipboards  • Pencils

CONNECT & ENGAGE (5 minutes)

Kids are in a group on the floor in front of you. Sit on a low chair and hold up the article.

Titles tell what an article is about, especially with nonfiction. In the title, writers try to give us a clue about what the big idea of the article is. Turn and talk about why you think writers do this.

Kids turn and talk. They might mention that a title that gives readers a clue or a hint at the big idea can help readers know what they will be reading about. It might also help readers decide if they are interested in reading the article and learning more.

Let’s look at this title: ____________________.
What do you think the big idea of this article might be? Think about the title, and then turn and talk.

Kids turn and talk.

MODEL (10 minutes)

Kids sit in a group on the floor, with you in a low chair in front of them.

Nonfiction articles like the one we’re reading are often packed with lots of information. Because of that, we need to slow down, read closely, and pay attention to the details. The details tell us more about the topic, and if we pay careful attention, these bits of information can help us discover the big idea.

Watch and listen as I show you how I do this. I’m going to write down the details. Next, I’ll look again at all of the details and think about how they fit together. I’m also not forgetting that we said the title can often be a clue to the big idea, so I’m going to keep that in mind, too.

Read aloud page(s) _____. Then write down on sticky notes or on the board what the details are. Be sure to “think aloud” so students can understand how you are sorting through and processing the information.

The details on these pages certainly support that ___________________. These details tell ____________. What do you think? Turn and talk about that and about what you noticed me doing.

Let students turn and talk and then share out.
GUIDE (10 minutes)

Hand out the Think Sheets attached to clipboards. Kids remain grouped in front of you on the floor.

Let’s keep reading. I’ll read some more text aloud, and you can read along, too. Write down the details you hear on the Think Sheet squares.

Read aloud page(s) ______. Kids should note on their Think Sheet squares a few more details.

Okay, what details did we have? Do they support what we’ve been thinking might be the big idea? How could we state the big idea, based on the details we’ve seen so far? Turn and talk about that, and then you can share out.

Encourage kids to think about how to synthesize the details and come up with a few different ways of stating the big idea. Remind them to keep the title in mind, if it is useful for thinking about the big idea. Let kids know that as they read more and find out more information through details, they can continue to refine their thinking about what the big idea is.

SHARE THE LEARNING (10 minutes)

Kids join a sharing circle.

Who would like to share any interesting details or surprising information you learned that support the big idea? Remember to share using respectful language. First, tell what you want to share, and when you are finished, ask if there are any questions or comments. Then politely call on someone else who would like to share with the class.

Allow time for kids to share.

Paying close attention to the details and seeing how they all relate to one another and the big idea takes some real brain power. Great work today, everyone!

COLLABORATE (25 Minutes)

Now it’s your turn. Find a partner and read the rest of the article together. Write down the details on your Think Sheet squares and keep talking about how they support the big idea. You should also keep talking about what you think the big idea is. With more details, you might have some different thoughts about what the big idea is.

While you are working together, I’m going to walk around the room to see if you need any help or have any questions.

Kids read, write down details, and talk about them and the big idea. Move around the room, conferring with partners.
Caring for Wombats

SCIENCE

Kindergarten Standard Supported
- NGSS LS1.C: Organization for Matter and Energy Flow in Organisms: All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

First Grade Standard Supported
- NGSS LS1.B: Growth and Development of Organisms: Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)

What You Will Need
- Projectable PDF or interactive digital magazine
- Animals in Australia poster (Teacher’s edition)
- Marsupials poster (Teacher’s edition)
- Science Master (page 11)

Engage
Poll the class to see if any students have ever seen a wombat in real life. If so, invite volunteers to describe what the wombat looked like. If not, provide photos for students to see. Invite students to describe the animals and share what they know about wombats.

Explore
Display the “Caring for Wombats” article with the projectable PDF or the interactive digital magazine. Read aloud the headline and text on the opening pages. Brainstorm ideas about how people could take care of baby wombats. Then read the article aloud or have students read it in groups, with a partner, or on their own.

Explain
After reading, remind students that wombats are wild animals that live in Australia. Ask: Why do people need to take care of the baby wombats in the article? (They are lost and alone.) Have students turn and talk to identify everything people do for the baby wombats. (bring them to a safe place, feed them, wrap them up to keep them warm, pair them with a buddy so they can learn how to act, return them to the wild when they are ready) Ask: What would happen to the baby wombats if people didn’t help them? (They would probably die.) As a class, discuss when a baby wombat would likely be ready to return to the wild. Then discuss reasons why it is important for people to return the wombats to their natural habitats.

Elaborate
Display and review the Animals in Australia poster. Challenge students to identify where wombats live in Australia and the type of habitats they live in. Encourage students to identify the other animals and where they live, too. Then display and review the Marsupials poster. Discuss what a marsupial is. Challenge students to compare and contrast wombats with other marsupials that live in Australia.

Evaluate
Have students complete the Science Master for this lesson. Encourage them to share and compare their results in small groups or with a partner.

Science Background

Wombats are large marsupials, or pouch animals, that live in Australia and on nearby islands, including Tasmania. They grow up to 47 inches (119 cm) long and weigh up to 80 pounds (36 kg).

Like other marsupials, wombats give birth to tiny, undeveloped babies. The babies crawl into their mothers’ pouches and remain there for about five months. Then they emerge. The babies stay with their mothers for about two more months, retreating into her pouch when they need to nurse or feel threatened. At about seven months, the baby is able to take care of itself.

If the baby is separated from its mother too soon, it may not survive. Unfortunately, more than 500,000 animals are killed on Tasmania’s roads on average each year. If a wombat mother is killed, volunteers at Bonorong Wildlife Rescue step in. They provide food, shelter, and care until the babies are old enough to survive on their own.
SCIENCE: Caring for Wombats

Draw pictures to show four ways people help baby wombats.

Write about each picture.
Village in the Sky

SOCIAL STUDIES

Kindergarten and First Grade Standards Supported
• C3: Geography: Human-Environment Interaction: Place, Regions, and Culture: Explain how weather, climate, and other environmental characteristics affect people’s lives in a place or region. (D2.Geo.4.K-2)
• C3: Geography: Human-Environment Interaction: Place, Regions, and Culture: Identify some cultural and environmental characteristics of specific places. (D2.Geo.6.K-2)

What You Will Need
• Projectable PDF or interactive digital magazine
• Social Studies Master (page 13)

ENGAGE
Explain to students that people often live together in one area. And we use different words to describe different types of places where they live. For example, a town is small and a city is big. Encourage students to share what they know about each type of place. Then ask: What is a village? Invite volunteers to share what they know about villages and how they compare to other types of places where people live.

EXPLORE
Display the “Village in the Sky” article with the projectable PDF or the interactive digital magazine. Read aloud the headline and text on the opening pages. Have students examine the photo. Ask: Why does the title call this a village in the sky? Encourage students to share their ideas. Then read the article aloud or have students read it in groups, with a partner, or on their own to find out.

EXPLAIN
After reading, explain to students that the place where people live affects many parts of their lives. Say: Tashi lives in a small village in tall mountains. A big city would not fit here. Because her village is so small, it doesn’t have streets. There are no cars here, either. A car could not drive up the mountain. But people don’t need cars here. They use yaks to carry things. This is a good place for yaks to live. Have students turn and talk as they identify other ways the environment affects how Tashi lives, such as what her home is made of, what she wears, what she eats, and even what she does for fun. Encourage the class to identify ways Tashi’s life is the same as or different from their own.

ELABORATE
Point out to students that culture also has a big impact on how people live. For example, Tashi’s family hangs prayer flags above their home. The flags are pretty, they are also an important religious symbol. Tashi’s family believes the flags will carry their prayers through the wind so they will be answered. Invite students to share examples and celebrate the many ways culture affects their own lives.

EVALUATE
Have students complete the Science Master for this lesson. Encourage them to share and compare their results in small groups or with a partner.

Social Studies Background
Phortse is a small, remote village of a little under 400 people in the Khumbu region of Nepal. It is a farming community, with potatoes and buckwheat being its main crops.

Nestled in the foothills of Mount Everest, Phortse is located 12,959 feet (3,950 meters) above sea level in the Himalaya. The people who live here have close ties to the world’s tallest peak.

Many Sherpa climbers come from Phortse, and the settlement has developed into a modern ecotourism village. Along with a primary school, medical post, and Buddhist Temple, there are also several tea houses and lodges. Visitors can even stay as guests in some homes, where they get a close-up look at village culture and daily life.
SOCIAL STUDIES: Village in the Sky

Think about your home.

Think about Tashi’s home in the mountains.

Write or draw to tell how they are alike and different.
Mathematics Background
One cubic foot may not seem like a very large space, but when photographer David Liittschwager focused his camera on plots this size, he found an amazing number of living things.

Curious to find out how diverse habitats really are, Liittschwager built one-foot-square metal cubes and placed them in a variety of different ecosystems around the world, including mussel beds, rivers, trees, and coral reefs. For a few weeks, he took photos of everything that passed through each cube.

The results were astounding. After adding everything up, Liittschwager discovered nearly a hundred different species in every sample—and he didn’t even photograph everything that passed through the cubes!

ENGAGE
Take the class outside, or have them imagine that they are outside standing in a park. Tell them to look down (not up or around!)—or imagine that they are. Make a list of everything they see.

EXPLORE
Display the “Life in a Box” article with the projectable PDF or the interactive digital magazine. Read aloud the headline and text on the opening pages. As a class, brainstorm ideas about where David Liittschwager went to find the answer to his question, what he did, and what he found. Then read the article aloud or have students read it in groups, with a partner, or on their own.

EXPLAIN
After reading, have students turn and talk with a partner to discuss what David Liittschwager did to find the answer to his question: What can you find in a small space?

- He built a special box with open sides.
- He put it in a park.
- He took pictures of plants and animals.
- He counted them.

Display the pages that show some of David’s pictures. Have students identify and count the living things they see. Then have students complete the activity at the end of the article. Encourage students to share what they learned about plants and animals in a park. Then challenge them to describe how the results would have been different if David had set up his box somewhere else, like a beach.

ELABORATE
Take students to a play area or park and divide the class into small groups. Give each group a long piece of yarn. Have groups arrange their yarn into a circle on the ground. Then give them time to observe. Instruct students to record and keep a tally of all the living things they see. Provide assistance as needed. Return to the classroom and invite groups to share and compare their results.

EVALUATE
Have students complete the Mathematics Master for this lesson. Encourage them to share and compare their results in small groups or with a partner.
MATHEMATICS: Life in a Box

Count the frogs. Count the dragonflies. Count the lily pads.

Make a tally mark for each living thing you counted.

Show your answers in a bar graph.

<table>
<thead>
<tr>
<th>Tally marks: How many?</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>frogs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dragonflies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lily pads</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bar graph: How many?</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>
Adding Insects

MATHEMATICS

Note:
- This lesson was developed in association with Out Teach, an organization that empowers teachers to use outdoor instruction as a way to create unforgettable learning experiences. www.out-teach.org

Kindergarten Standard Supported
- CCSS: Mathematics: Operations & Algebraic Thinking: Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. [CCSS.Math.Content.K.OA.A.1]

First Grade Standard Supported
- CCSS: Mathematics: Operations & Algebraic Thinking: Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. [CCSS.Math.Content.1.OA.A.1]

What You Will Need
- journals, data sheets (created prior to conducting the experiment), pencils, whiteboard or chart paper, access to insects

Mathematics Background

An ecosystem is a biological community filled with living and nonliving things. Many factors—such as soil type, amount of sunshine or rainfall, and topography—determine which type of plants and animals live in an ecosystem.

Insects are an important part of many ecosystems. In addition to pollinating crops, they are an important food source for many birds, mammals, and fish—even humans. Insects also help disperse seeds and decompose plant and animal matter. And while some insects are pests, others are a natural way to control other pest species.

ENGAGE
Inform the class that different types of insects are found in different types of places. For example, dragonflies live near water. Crickets live under rocks or in the ground. As a class, create a list of insects. Brainstorm ideas about where each type of insects might live.

EXPLORE
Prior to conducting this activity, select three flower beds or gardening sites that are nearby and safe for students to explore. Also create a data sheet for students to use as they record their results. This can be as simple as a three-column table for recording total number of insects in each area. Or, it can be a bit more challenging, with three tables that have multiple columns for counting different types of insects in each place. Inform students that they are going to go outside to search for and count insects in three places. Give each student a data sheet and review how to use it. Emphasize to students that when observing insects they are to look but not touch. Some insects will bite or sting if they feel threatened. Divide the class into pairs. Have partners search each site, keep a tally, and count up their results for each column. As they observe, encourage students to also record in their journals where they found insects, the types of insects they saw, and any other characteristics that you want them to notice.

EXPLAIN
Rejoin as a class and have pairs share their results. Ask students how they could find the total number of insects the class had seen. Guide them to recognize that they need to add. Have partners add their column tallies to find the total number of insects they saw. Combine two pairs and have them add their results. Keep joining two groups at a time until you have a final tally for the class.

ELABORATE
Invite students to share the observations they recorded in their journals while conducting the experiment. Brainstorm ideas about how they could add up this information to learn more about the insects they found.

EVALUATE
Draw three rectangles on a whiteboard or chart paper. Write numbers in each one telling students the total number of insects in each place. Have students independently add the numbers. Check their answers.
**Language Arts**

**Think Sheet, page 7**
Students should write or draw details from a nonfiction text in the squares. Write the big idea on the line at the bottom.

**Caring for Wombats**

**Science: page 11**
Students should draw pictures and write about four ways people help wombats. Options from the article include: rescuing lost wombat babies in the wild, taking them to a safe place, feeding them, wrapping them in blankets to keep them warm, pairing them with a buddy so they can learn and play, and returning them to the wild.

**Village in the Sky**

**Social Studies: page 13**
Answers will vary depending on where students live and who they live with. However, students should note similarities and differences in landscape, houses, customs, and other aspects of their lives based on what they see and read in the text.

**Live in a Box**

**Mathematics: page 15**
Both tally marks and bar graphs should reflect that there are two frog, seven dragonflies, and six lily pads in the illustration.

**Words to Explore**

**Back Page**
1. mountain
2. mammal
3. wildlife shelter
4. bar graph