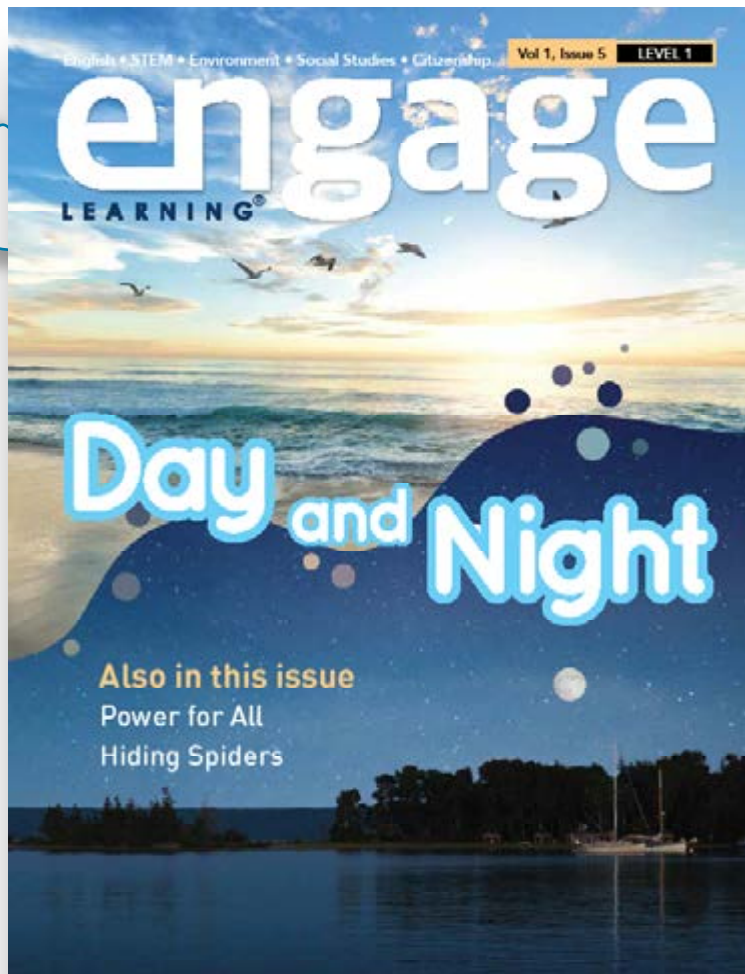


English • STEM • Environment • Social Studies • Citizenship

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LEARNING



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TEACHING GUIDE

Vol 1 • Issue 5 • Level 1

Age 3–6 years

Dear Educator,

Happy New Year! We are delighted to bring you the January 2018 issue of **Engage Learning** magazine. We are dedicated to offering you the best in educational value. With this issue, we continue to update our teaching guide by making it more activity-based, integrating science and literacy. We will continue to make **Engage Learning** and all our resources increasingly project-based.

Through the magazine, we have given students unparalleled depth in content, exposure to real scientists doing real science and connections to the real world. As important as reading about science is, it is not doing science. We also use our science content to help you teach vital language arts skills.

In this issue, you will find three new stories. The first story explores the cycles of day and night. The young readers can link what they read to patterns that they observe in the sky. They will understand how to document observable changes as they see different patterns emerging.

The second story builds on the first one, and explores energy and how it can be converted from one form into another. Students will have a chance to look at one kind of renewable source, namely solar energy in depth.

The third story is about tiny creatures all around us – spiders. Are spiders scary? This will be an opportunity for the class to take a fresh look at spiders, clear some misconceptions and perhaps change opinions about these fascinating and diverse little creatures.

Note: There are three teaching guides, one each for Level 1 and Level 2, and a combined guide for Levels 3 and 4. You may look at all of them for more ideas and activities, which you can adapt for the class level you are teaching. You might also want to use different levels for differentiated learning.

Your last issue of **Engage Learning** for the school year will be in February 2018.

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MEET THESE STANDARDS

✓ LANGUAGE ARTS

- Students will develop appropriate content vocabulary to understand day and night.
- Students will use a graphic organiser to organise information.
- Students will use writing and drawing tools to create a book using material from the text. They will read fiction and compare the style with nonfiction writing.

✓ LIFE SCIENCE

Students will use observable features to distinguish between arachnids and spiders.

✓ EARTH SCIENCE

Students will learn about basic patterns such as day and night and the phases of the moons.

✓ PHYSICAL SCIENCE

Students will observe and describe some forms of energy. They will understand why solar energy is a good alternative.

DAY AND NIGHT

LANGUAGE ARTS OUTCOME: Students will develop appropriate content vocabulary to understand day and night.

EARTH SCIENCE OUTCOME: Students will learn about basic patterns such as day and night and the phases of the moon.



CURRICULUM CONNECTION

Students will learn about day and night. This is a cycle that occurs naturally. They will learn what causes day and night. They will also learn about the changes that happen during the day and night.

BUILD BACKGROUND

Hold the cover of the January issue of Engage Learning magazine. Ask students to describe what they see on the cover. Point to the word “Day” and then write it on one side of the board. Ask each student to suggest one word that describes a characteristic of day. After writing the words related to “Day,” point to the word “Night” and write it on the other side of the board. Ask each student to state a word that describes a characteristic of “Night.” Write each of the words under “Night.” Discuss the words related to day and night by asking students why they are important descriptors of day and night. Some words that you might add to the students lists include: sun, sunrise, sunset, Earth, moon, morning, noon, afternoon, evening, sky, pattern and cycle. Make sure to discuss these words and use them during the lesson.

READY TO READ

This article is written as a call and response text. We chose this format so that the you could read more complex text to students and students could read the age-appropriate sections. The concepts in this story are complex and this format will help improve student comprehension. This approach will also increase students’ vocabulary.

You will see labels above each text box that say, “I Read” or “You Read.” The teacher should read aloud the “You Read” sections. Students should read the “I

Read” sections. Point out these labels to students so that they will know how to read this article.

You might try having all the students read the “I Read” sections aloud in unison. Or call on individual students to read the “I Read” sections.

After handing out the magazines, have students turn to pages 2-3. Explain how they are going to read the story. Have them read the text on page 2. They you read the text on page 3. After reading the two pages, ask: What is the biggest difference between day and night? (*Day is bright; night is dark.*)

Have the students turn to pages 4-5 and read aloud the sections following the call and response format. After you finish reading the two pages, ASK: How does the sky change in the morning? (*The sky gets bright and the sun rises.*)

Turn to pages 6-7 and read the text on the two pages following the call and response format. After students finish reading, spend some time explaining the diagram on page 7. If you have access to a top, bring it in to the class. Spin the top. Point out that the top is spinning straight up and down. Then note as the top slows, it tips a little. Tell students that Earth spins just like a top ready to fall over. It does not spin straight up and down. ASK: Does the sun really move in Earth’s sky? (*No.*) Why does it look like the sun moves in the sky? (*Earth spins like a top.*) Explain to students that the spinning motion is called rotation. Spin the top again. Tell students it is rotating. ASK: Does Earth rotate? (*Yes.*) What does it mean to rotate? (*To spin.*) What does Earth’s spinning cause? (*Day and night.*)

Have students turn to pages 10-11. Tell students that they are going to learn how the moon changes shape. Use the QR Code on page 10 to show a video about the moon's phases. Then read the pages. After reading, hold up the pages and point to each photo. As you point to each phase of the moon, say its name. Repeat this a few times until students know the names of the phases. Then pair the students and have them take turns with one pointing to a phase and the other naming it. Repeat this until all students know the names of the phases.

After you have read the story aloud several times, tell students that you are going to switch. You are going to read the "I Read" sections and they are going to read the "You Read" sections. You can select one student to read the "You Read" sections, or have the students read them in unison.

AFTER READING

Activity 1: Rotation

You need:

- large globe
- a world map or map of India
- a clock
- a floor lamp
- a figurine

To do:

1. Explain to students that Earth spins around once every day. Show Earth's tilt and axis on the globe.
2. Place a floor lamp in the middle of the demonstration area and turn it on. Tell students that the lamp represents the sun and the sun is always "on" and always shining. If students express confusion at this, tell them this demonstration will show them how the sun is still shining, yet we can experience night.
3. Show students their approximate location on a map, and tape a small figurine onto the same area on the globe.
4. Ask a volunteer to help. The volunteer will hold the globe while the teacher holds a clock. Use a clock with hands that are easy to move, such as a time-teaching clock.
5. Ask the volunteer to hold the globe so that the figurine is in the direct light of the lamp, or "sun." Put the time of 12 noon on the clock. Point out that the figurine is getting the most light of anywhere on the globe.
6. Explain to students that in real life it would take 12 hours for the figurine to travel just halfway around the globe. As you move the clock to 1:00, the

volunteer should move the globe a little. Do this together hour by hour so the class can see what is happening.

7. By the time the clock is at 6:00, your volunteer student should have moved the figurine 45 degrees. Stop at this point so students can observe the angle of the light on the figurine. Discuss how this angle is similar to the angle of light near dusk. Ask students to notice the long shadow of the figurine, which is like the long shadows people see as evening approaches.
8. Continue by rotating the globe another six hours, stopping at what would be midnight and stop again. Ask the students to notice how there is no light on the figurine, and ask what they think anyone located here on the globe would be doing at this time. (Answer: *Sleeping, of course.*)
9. Continue another six hours and ask them to take notice of how the sun is rising on the spot with the figurine – hour by hour, back to noon.

Point out that this demonstration showed Earth's rotation on its axis over the course of one day. After completing the activity hand out copies of the worksheet on the next page.

ACTIVITY 2: Phases of the Moon

Have students turn to pages 12-13 of their copies of **Engage Learning** magazine. Tell them they should take the magazine home and at the same time each night they should look outside at the moon and then draw the moon as it appears in the sky on the pages. They should put the date next to each drawing. Have students label the phase of the moon using the diagram on pages 10-11.

At the end of each week, have the students bring their copies of the magazine back in and discuss what they observe. If more than one week has passed, have them discuss the whole period in which they were observing the moon.

VIDEO HUB

Day and Night

<https://www.youtube.com/watch?v=hWkKSkI3gkU>

<https://www.youtube.com/watch?v=EXasopxAfOm>

Phases of the Moon

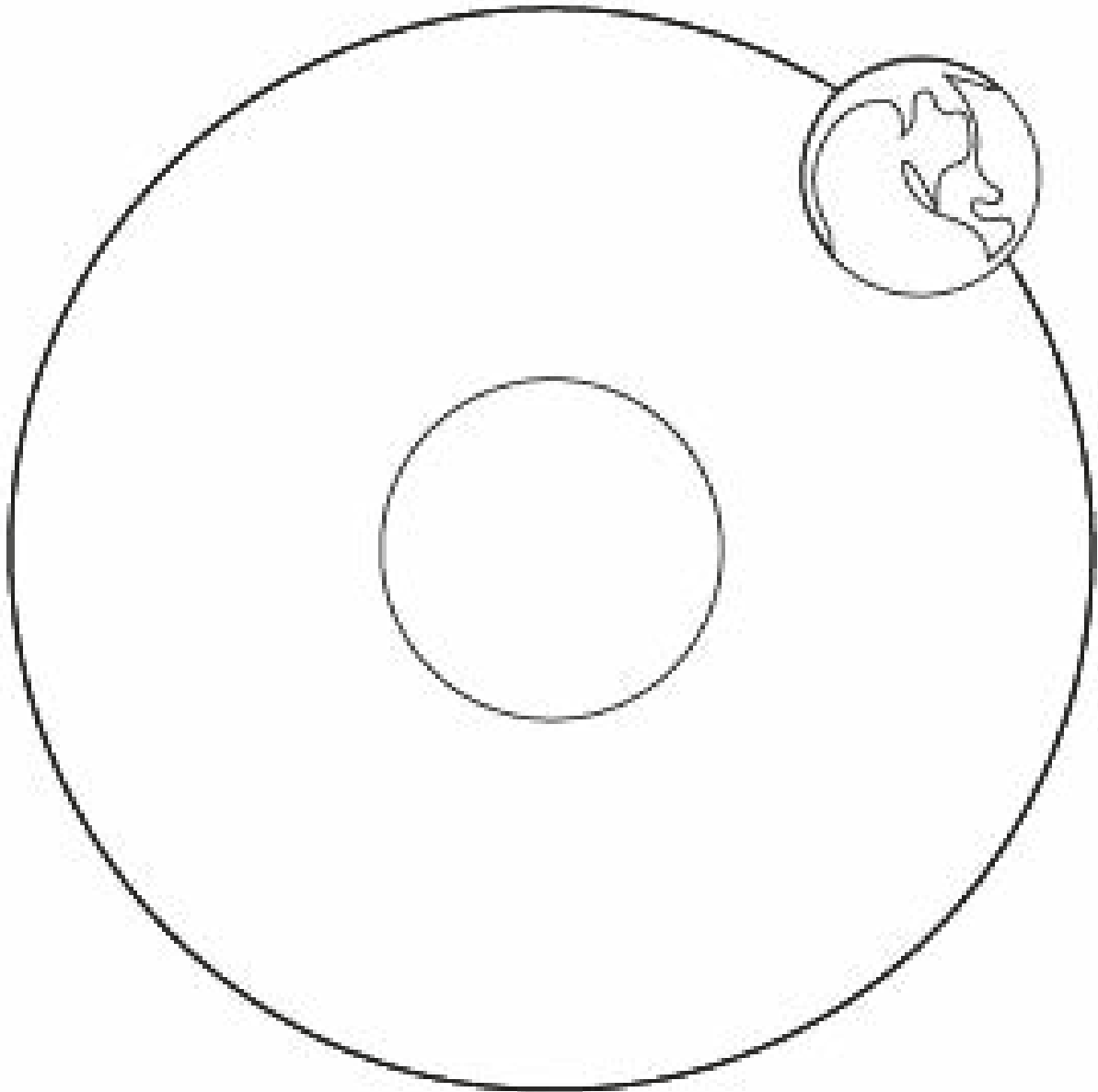
<https://www.youtube.com/watch?v=bWeaQctUp1c>

<https://www.youtube.com/watch?v=AQ5vty8f9Xc>

<https://www.youtube.com/watch?v=f4ZHdzl6ZWg>

<https://www.youtube.com/watch?v=wz01pTvuMa0>

DAY AND NIGHT



1. Colour the sun
2. Colour the daytime half of Earth green and blue
3. Colour the night-time half of Earth black

POWER FOR ALL

LANGUAGE ARTS OUTCOME: Students will use a graphic organiser to organise information.

SCIENCE OUTCOMES: Students will learn to ask questions as they read.

PHYSICAL SCIENCE OUTCOMES: Students will observe and describe some forms of energy. They will understand why solar energy is a good alternative.



CURRICULUM CONNECTION

By reading this story, students will learn that energy can be converted from one form to another. For example, they will learn that solar energy can be converted into electrical energy.

TAP PRIOR KNOWLEDGE

Discuss ways you and your students use energy. You might discuss using energy for light, heat, cooling, travelling in a car and other ways. Ask them to explain where the energy they use comes from. Be sure to discuss electricity. As part of the discussion, draw a circle on the board and write the word, electricity in it. Like the plasma ball shown on pages 14-15, have connectors come out from the centre, and ask the class to come up with all the things that electricity helps them do. The discussion could include but should not be limited to the following:

- Electricity makes a fan work all night so that we can sleep well.
- Electricity makes alarm clocks run.
- Electricity keeps food cool in the refrigerator.

After finishing the discussion, hand out copies of the graphic organiser on the next page and have them list the different kinds of energy sources they use. We included two sources to begin the exercise. After students finish, have them share their energy sources.

READY TO READ

Have the class read pages 14-15 and read aloud the headline and deck. Ask students to describe what the article is about.

Then have students turn to pages 16-17 and read them aloud. Repeat a couple of times and then ask a student to read aloud page 16 and another student to read aloud page 17. ASK: According to what we just read, where do people get power? (*Animals, wind, water, coal and oil.*)

Turning to pages 18-19, read aloud the two pages. Repeat the reading a couple of times. Then select students to read them. After you finish reading the pages, ASK: Why is India using new kinds of energy? (*So all people have clean, safe power.*) What is wrong with old stoves? (*They give off harmful gases.*) How do new stoves help? (*They make less pollution.*) What are people bringing to villages? (*Solar panels.*) What do solar panels do? (*Turn light into power.*)

Finally, turn to pages 20 and 21. Explain to students that these pages use words and pictures to tell a story. You will read aloud the words and the students will “read” aloud the pictures. Use the key to explain what each picture stands for. Read the whole passage, pausing so that students can shout out the words associated with the pictures. Using this technique, read the passage a couple of times. Then divide the class into pairs and have one student read the words and the other “read” the pictures. Then have them switch.

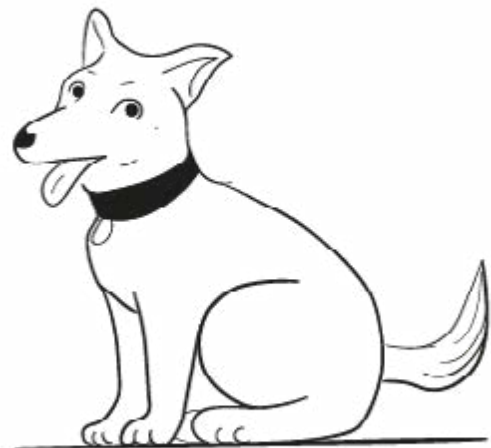
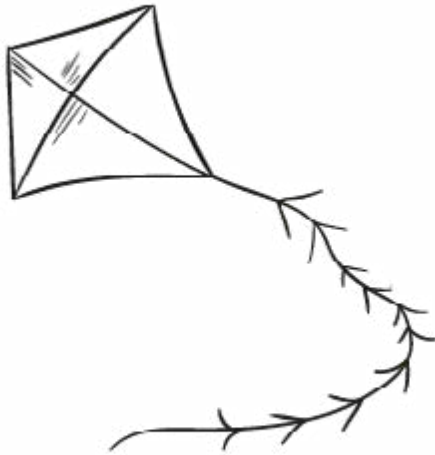
AFTER READING

ACTIVITY 1: Where Does It Get Its Energy?

Copy and hand out the next page. Use it to discuss where each object pictured gets its energy.

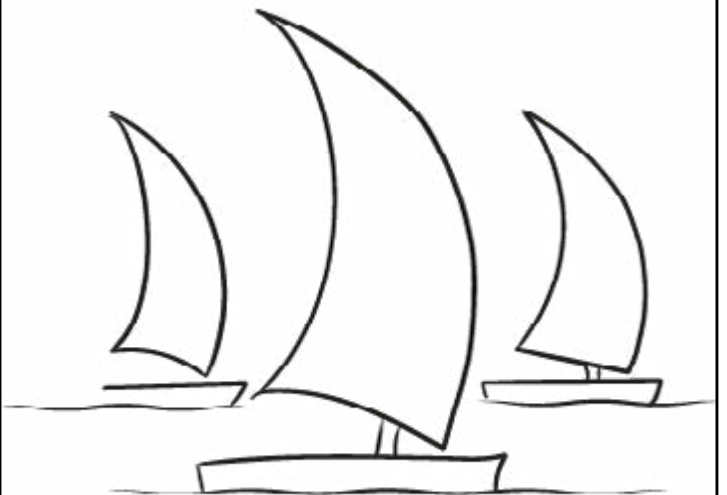
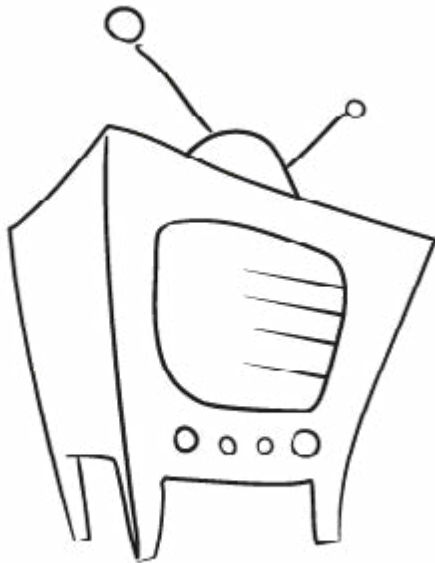
CARDS FOR:

Where does it get its energy?



CARDS FOR:

Where does it get its energy?



ACTIVITY 2: Meet the Sun

1. Take students to an area of the classroom where they can see and feel the sun, or go outside. Bring notebooks and a pencil.
2. Have them stand still for a few minutes and ask them to write down or draw what they see and feel.
3. Divide students into small groups and have them share what they see and feel about the sun.
4. ASK: How does this experience relate to what you read in **Engage Learning** magazine?
5. Ask students if they agree with the statement – all energy on Earth comes from the sun. Why or why not?
6. Copy and hand out the next page and have students use it to discuss how energy flows from the sun to plants, animals and then to them.

VIDEO HUB

Solar micro-grid project, Dharnai Village, India

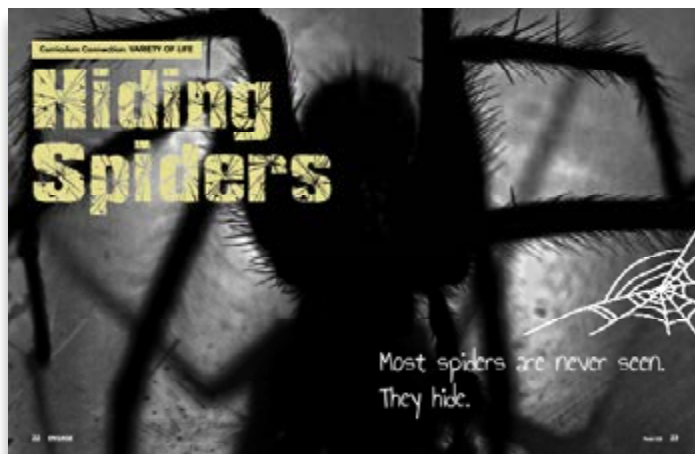
<https://www.youtube.com/watch?v=97QpEHQKlq4>

Solar water pumps <https://www.youtube.com/watch?v=SDOq3BIZMj8>

HIDING SPIDERS

LANGUAGE ARTS OUTCOME: Students will use writing and drawing tools to create a book using material from the text. They will read fiction and compare the style with nonfiction writing.

LIFE SCIENCE OUTCOME: Students will use observable features to distinguish between insects and spiders.



CURRICULUM CONNECTION

Students will learn that there are many kinds of animals. Some animals may look similar, but are different. They will learn to categorize animals by their looks.

TAP PRIOR KNOWLEDGE

Direct students to turn to “Hiding Spiders” on pages 22-23 of **Engage Learning** magazine. Have them to look at the photo and then ask: What kind of animal do you see? (*Spider.*) What do you see in the photo that makes you think it is a spider? (Possible answers include: *legs, body shape, hairs and its general looks.*)

Then ask students to explain how they can tell a bug is a spider. Write their responses on the board. After students finish reading, return to the list and discuss any changes students would like to make in their list. You might want to change some entries, delete some and add others.

READY TO READ

Read aloud the story “Hiding Spiders” through page 27. As you read, have students follow the story in their copies of the magazine. Have students underline any unfamiliar words they encounter as they listen. After you finish reading the story, discuss the unfamiliar words. Have other students suggest definitions and continue the discussion until students understand the unfamiliar words.

After students know all the words in the story, split them into pairs or small groups and have them take turns reading the story to one another. Each student should read one page at a time. The other students

in the group can help the reader with any unfamiliar words. This team approach will help both poor and good readers develop their reading skills. Circulate among the groups, helping as needed.

AFTER READING

ACTIVITY 1: Study spiders

Have students turn to pages 26-27 and look at the spiders. Tell students that all the spiders look different, but have certain characteristics in common. Ask students what the spiders have in common. They should discuss main body parts, number of legs and other characteristics.

ACTIVITY 2: Is it a spider or an insect?

Have students fill in the blanks in the text on pages 28-29.

ACTIVITY 3: Make a magazine

Before conducting this activity, visit the websites below to introduce more spiders to students. If you do not want to use more spiders, you can use the ones mentioned in the story.

You need:

- pencils
- drawing paper
- colored pencils
- Chart paper
- marker
- material for binding pages into a book (staplers, binder and three-hole puncher)

To do:

1. Tell students that they will make a magazine about spiders. Use the chart paper to assign a type of spider to each student. (You may choose to have students work in pairs or small groups.) Students should then use information from “Hiding Spiders” and the websites to tell you about their spiders.
2. Using the drawing paper and coloured pencils, students can illustrate their spider, making sure to draw it in its habitat and paying special attention to its web. Students can label the spider’s body parts. Note: Before students begin to draw, you will need to let them know if they should hold their paper horizontally or vertically.
3. Students should use the pencils to write a caption

for their illustrations. The caption can consist of a sentence, phrase or a single word. Have them use “Hiding Spiders” as a reference.

4. When the pages are complete, bind them to create a book.

VIDEO HUB

- <http://www.spiders.us/pictures/>
- <https://www.livescience.com/21786-spider-diversity-gallery.html>
- <https://news.nationalgeographic.com/2016/10/spiders-halloween-fear-arachnophobia/>
- <http://www.spidersworlds.com/spider-pictures/>