The Cycle of Daytime and Nighttime

1A

Note: Introducing the Read-Aloud may have activity options which exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Introducing the Read-Aloud — *10 minutes*

Domain Introduction — *5 minutes*

Note: Students who have participated in the Core Knowledge Language Arts program in Kindergarten and Grade 1 will already be familiar with certain cycles in nature from the Kindergarten *Plants, Seasons and Weather,* and *Taking Care of the Earths* domains, and Grade 1 *Astronomy* and *Animals and Habitats* domains.

Tell students that when something repeats, or happens over and over again in the same order, it is called a cycle. Discuss with students that there are cycles happening all around them, all of the time. In all cycles, there is a starting point. Things in a cycle always come back to the starting point before beginning, or starting over, again.

Have students share some examples of events they are familiar with that repeat, or occur over and over again, in the same order, such as the days of the week or even the cycle of school years. Cycles are series of events that repeat again and again in the same order.

Essential Background Information or Terms — *5 minutes*

Tell students that in this lesson they will learn about a cycle that is related to the movement of their planet, Earth. Ask students if they can feel the earth moving. Tell them that even though they cannot feel the earth moving, it is moving very quickly in two different

ways. Lead students in a discussion about what they remember about the two ways that Earth moves from the Grade 1 *Astronomy* domain: Earth rotates, or spins around, its axis; Earth also orbits, or moves in a path around, the sun. Tell students that over the next few lessons, they will learn how these two types of movement are directly related to the cycle of daytime and nighttime as well as to the cycle of the four seasons.

What Do We Know? *5 minutes*

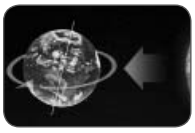
There are several different kinds of cycles that occur in nature. Explain to students that some of nature's cycles repeat quickly, whereas other cycles take longer to repeat. Some cycles take place every day and night! Discuss with students what they experience when it is daytime and when it is nighttime. Have them use their five senses to describe the differences between daytime and nighttime.

Vocabulary Preview *5 minutes*

Axis

Show image 1A-3: Spinning

1. In today's read-aloud you will hear that Earth spins around an imaginary line called an *axis*.
2. Say *axis* with me three times.
3. An axis is a line through the middle of an object. [Point to the axis of the sphere to the right.]
4. Earth's axis goes from the North Pole to the South Pole. Earth spins around its axis.



Show image 1A-4: Earth rotating on its axis

5. Where is Earth's axis in this image? What does Earth do around its axis?

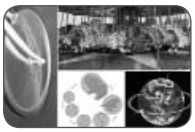
Rotate

1. In today's read-aloud you will hear that it takes twenty-four hours for Earth to *rotate* one time on its axis.
2. Say the word *rotate* with me three times.
3. To rotate means to spin around.
4. When you pedal your bike, the wheels of your bike rotate.
5. What else can you think of that rotates? [Suggestions: Ferris wheel, merry-go-round, toy top, car tire, ballet dancer, basketball spinning on your finger, spinning coin, etc.]

Purpose for Listening

Tell students to listen carefully so they will be able to identify the main topic and explain how daytime and nighttime take place on Earth.

Presenting the Read-Aloud — *15 minutes*



The Cycle of Daytime and Nighttime

Show image 1A-1: Things that go round and round

There are many, many things around us that go around and around.[1] A **cycle** is a sequence of events that repeats itself again and again. Just like there are circular objects that go around and around, there are also many natural cycles that occur on Earth that happen again and again, too.[2]

1 [Point to the bicycle wheel and carousel.] Can you think of other things that go around and around? (spinning top, hands on a clock, tire swings, etc)

2 Here are two examples of cycles: the life cycle of a frog and Earth's rotation that causes the cycle of daytime and nighttime.

Show image 1A-3: Spinning

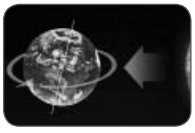
Earth spins around and around, a never-ending cycle that influences everything we do here on Earth.[3] As Earth turns around, part of it faces the sun and part of it faces away from the sun.[4] Can you guess what cycle happens when our part of Earth faces the sun and then rotates to face away from the sun? Did you guess the cycle of daytime and nighttime?

The cycle of daytime and nighttime is the result of our planet **rotating,** or spinning, around on an imaginary line called an **axis**. What's an axis? Well, imagine a spinning basketball turning around and around. Then try to picture an imaginary line running through the basketball, from the bottom to the top. That imaginary line is what we call an axis.[5] Earth's axis passes through the North and South Poles. It takes twenty-four hours for Earth to rotate, or spin, one time on its axis.

3 The earth is constantly moving. Can we feel the earth moving?

4 The sun is a giant star that provides light, heat, and energy for the earth.

5 [Point to the axis in the image.] Try to imagine an invisible line running through our body from head to foot—a central line, or axis, around which we can spin.



Show image 1A-4: Earth rotating on its axis

Rotation is the movement of Earth on its axis. This movement makes the cycle of daytime and nighttime. Earth takes twenty-four hours to turn, or rotate, back to its starting position. So as the earth rotates, we go from daytime to nighttime, and back to daytime again, at the very beginning of the cycle.

As Earth rotates, light from the sun falls on one half of Earth. We call this daytime. The other half of Earth is in darkness, and we call this nighttime. As Earth continues to rotate, the part of Earth that had sunlight moves into darkness, and the part that had darkness moves into the sunlight. This is a never-ending cycle of daytime and nighttime. [6]

6 Describe one thing that people usually do during the daytime, and one thing that people usually do at nighttime.

Show image 1A-5: Sunrise

The cycle begins at daytime with sunrise in the early morning. Sunlight hits our planet and moves across Earth from east to west. [7] When we see the sun rising in the east in the morning and setting in the west in the evening, it is because of the earth rotating, or spinning. For people on Earth, it makes sense to say that the sun rises in the morning. Each morning at dawn, the sun appears in the eastern sky on the horizon. The horizon is the line we see in the distance where the ground meets the sky. At dawn, some people say, "Look! The sun is coming up!" [8] This first appearance of the sun above the eastern horizon is called sunrise.

7 [Show students which way east and west are in your classroom.]

8 Is the sun really moving? (No! The earth is moving, but to us it looks like the sun is moving.)

Show image 1A-6: Sunset

Over the course of the day, the sun seems to move across the sky, gradually following its path from east to west. In the evening, the sun sets in the west. Ever so slowly, it gets lower in the sky and disappears below the horizon. That's when people say, "The sun is going down." [9] This disappearance of the sun below the western horizon is called sunset.

9 Is the sun really going down? Why can't we see it anymore?

Based on what we can see from where we live on Earth, it seems sensible to say that the sun moves across the sky each day—rising, or moving up, in the east; and setting, or sinking down, in the west. But that's not actually true. It is the daily rotation, or spin, of the earth that makes the sun seem to rise and set each day. [10]

10 Have you seen a sunset recently? How would you describe it?

Show image 1A-7: Children sleeping and children waking up

This daily rotation explains why there is always daytime and nighttime some place on Earth. As it spins, certain parts of Earth's surface face the sun, receiving its heat and light. When it is light on one side of Earth, it is dark on the other side. So, if it is daytime where you are right now, then on the other side of the earth it is nighttime, and the children there are sound asleep. And, when you are nestled in your bed tonight, children on the other side of the planet will be waking up to a bright new day.[11]

How does the cycle of daytime and nighttime affect living things on Earth? The sun is extremely important to life on Earth. All plants, animals, and people rely on the sun in order to **thrive,** or grow well. The sun's energy gives life to plants, which in turn nourish animals and people.[12] The sun's heat keeps the surface of Earth warm enough for plants and animals to survive. In the next few lessons, we will learn all about how the sun affects living things throughout the four seasons.

11 [Show students where they live on a globe.] Is it day or night right now where we live? [Show students a location on the other side of the globe.] Is it day or night right now on the other side of the world?

12 When you nourish something, you provide it with what it needs to grow.

Discussing the Read-Aloud — *15 minutes*

Comprehension Questions — 10 *minutes*

If students have difficulty responding to questions, reread pertinent passages of the read-aloud and/or refer to specific images. If students give one-word answers and/or fail to use read-aloud or domain vocabulary in their responses, acknowledge correct responses by expanding students' responses using richer and more complex language. Ask students to answer in complete sentences by having them restate the question in their responses.

1. *Literal* What is the main topic of the read-aloud? (The main topic of the read-aloud is the cycle of daytime and nighttime.)
2. *Literal* What is a cycle? (A cycle is a sequence of events that happens over and over again.)
3. *Literal* What causes daytime and nighttime? (Rotation of Earth causes daytime and nighttime.)

4. *Inferential* How does the rotation of Earth cause daytime and nighttime? (During rotation, the earth spins on its axis. It is daytime for the part of Earth that faces the sun. It is nighttime for the part of Earth that faces away from the sun.)

5. *Inferential* If it is daytime on our side of Earth, is it daytime or nighttime on the other side of Earth? (It is nighttime.)
   Why? (If the sun is shining on one side of Earth, it cannot be shining on the other side of Earth at the same time.)

[Please model the *Think Pair Share* process for students, as necessary, and scaffold students in their use of the process.]

I am going to ask a question. I will give you a minute to think about the question, and then I will ask you to turn to your neighbor and discuss the question. Finally, I will call on several of you to share what you discussed with your partner.

6. *Evaluative* *Think Pair Share:* How would life on Earth be different if Earth did not rotate? (Answers may vary.)

7. After hearing today's read-aloud and questions and answers, do you have any remaining questions? [If time permits, you may wish to allow for individual, group, or class research of the text and/or other resources to answer these questions.]

Word Work: Thrive

5 *minutes*

1. In the read-aloud you heard, "All plants, animals, and people rely on the sun in order to *thrive,* or grow well."
2. Say the word *thrive* with me.
3. *Thrive* means to grow and develop.
4. When a living thing receives the things it needs to grow and develop, it will thrive.
5. Can you think of a specific thing you need in order to thrive? Use the word *thrive* when you talk about it.
   [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "I need _____ to thrive."]
6. What's the word we've been talking about? What part of speech is the word *thrive*? How do you know that it is an action word?

Use a *Making Choices* activity for follow-up. Directions: I will name a plant, animal, or person, and then I will name an item. If the plant, animal, or person needs that item to thrive, say, "[Plant, animal, or person] needs [item] to thrive." If the plant, animal, or person does not need that item to thrive, say, "[Plant, animal, or person] doesn't need [item] to thrive."

- oak tree/sun (An oak tree needs the sun to thrive.)
- rabbit/burrow (or home) (A rabbit needs a burrow to thrive.)
- children/water (Children need water to thrive.)
- children/television (Children do not need television to thrive.)
- crops/rain (Crops need rain to thrive.)
- cat/ball of yarn (A cat does not need a ball of yarn to thrive.)

Complete Remainder of the Lesson Later in the Day

The Cycle of Daytime and Nighttime

1B

Note: Extensions may have activity options that exceed the time allocated for this part of the lesson. To remain within the time periods allocated for this portion of the lesson, you will need to make conscious choices about which activities to include based on the needs of your students.

Extensions — *20 minutes*

Syntactic Awareness Activity — 10 *minutes*

***Compound Words Using* –time**

Note: The purpose of these syntactic activities is to help students understand the direct connection between grammatical structures and the meaning of text. These syntactic activities should be used in conjunction with the complex text presented in the read-alouds. There may be variations in the sentences created by your class. Allow for these variations, and restate students' sentences so that they are grammatical. If necessary, have students repeat the sentence after you.

Directions: Today we are going to practice making and using compound words. When two words are added together to form a new word, it is called a compound word. If you know the meaning of the two words, you will most likely be able to tell the meaning of the new compound word.

1. In today's read-aloud we heard several compound words. Listen to my sentences and raise your hand if you hear a compound word. Remember, compound words are two words added together to make a new word. Tell me which two words make a compound word. Then, try to guess the meaning of the compound word based on what you know about the two words that make up the compound word.

    - As Earth rotates, light from the sun falls on one half of Earth. We call this *daytime.* (day+time = the time during the day when one part of the Earth is facing the sun)

- The other half of Earth is in darkness, and we call this *nighttime.* (night+time = the time during the night when one part of the Earth is facing away from the sun)

2. [Give each student an index card.] Think of a compound word that uses the word *time* in it. Write the word that goes before *time* on your index card. You may also wish to draw a picture of your compound word on the back of your index card. Make up a sentence using your compound word.
   Suggestions: bedtime, naptime, snacktime, dinnertime, lunchtime, breaktime, lifetime, wintertime
3. [Invite students to come up to the display and put their index card in front of *time*.] What compound word did you make? What does your compound word mean? Can you use it in a sentence?

Vocabulary Instructional Activity — 5 minutes

Word Work: Cycle

1. In the read-aloud you heard, "A cycle is a sequence of events that repeats itself again and again"
2. Say the word *cycle* with me three times.
3. A cycle is something that repeats, in the same order, over and over again. [Use your arms to do a circular motion for *cycle*, and have students do the same.]
4. Today we heard about the cycle of daytime and nighttime.
5. What causes the cycle of daytime and nighttime to happen? (Earth's rotation on its axis so that half of the Earth is facing the sun and the other half is facing away from the sun)
   [Ask two or three students. If necessary, guide and/or rephrase the students' responses: "The cycle of daytime and nighttime happens because . . ."]
6. What's the word we've been talking about?

Use a *Brainstorming* activity for follow-up. Directions: What other things happen in a cycle? I will write down your answers on this piece of chart paper. Throughout this domain, we will see if any of the lessons are about the cycles you have mentioned.

⑩ Sequencing the Cycle of Daytime and Nighttime (Instructional Master 1B-1) 15 *minutes*

- Have students think about what they learned from today's read-aloud. If necessary, review specific Flip Book images that show daytime and nighttime.
- Give students Instructional Master 1B-1. Tell them that this is Response Card 1; it shows the cycle of daytime and nighttime. [**Note:** This Response Card should be held and viewed using landscape orientation.]
- Have students draw a picture on the right of something that happens during the nighttime. Have students draw a picture on the left of something that happens during the daytime.
- When students have finished their drawings, have them share their Response Cards in small groups or with home-language peers.

Demonstration of Earth's Rotation 10 *minutes*

Rotation: Day and Night

- Show students a globe, pointing out the United States and the state in which you live. Point to the tips of the globe's axis and ask: "Who remembers the name of the imaginary central line around which the earth spins, or rotates?" (axis)
- Spin the globe counterclockwise. Remind students that the earth's axis is tilted and always points in the same direction. Ask: "Who remembers which cycle is caused by the rotation of the earth on its axis?" (daytime and nighttime)
- Using a flag or pin, mark the approximate location of your town on the globe. Tell students that the globe represents Earth and the flag or pin is where they live on Earth. Hold up a flashlight; tell students that the light from the flashlight represents the sun.
- Darken the room. Ask a volunteer to point the flashlight at the globe while you hold it steady. Explain that when the marked area is lighted by the flashlight (the sun), it is daytime in your town. Explain that when it is daytime in your town, it is nighttime on the opposite side of the globe or Earth. Point to the area on the globe directly opposite your town.

- Then slowly spin the globe counterclockwise until the marked area is not lighted by the sun. Ask students if they can guess whether it is daytime or nighttime in your town when the sun is shining on the opposite side of the globe.
- Now continue slowly spinning the globe counterclockwise until the marked area is once again illuminated by the beam of light. Ask students if they can guess whether it is daytime or nighttime in your town when the sun is shining on the marked area of the globe.
- Review with students:

1. How many hours have passed when the earth spins all the way around its axis one time? (twenty-four hours)
2. What cycle does the rotation of the earth cause? (the cycle of daytime and nighttime)
3. If it is daytime where we live, what is it on the opposite side of Earth? (nighttime)

Extending the Activity

- You may wish to extend the activity by inviting three students to come to the front of the the classroom. Two of the students will represent Earth, and one student will hold the flashlight. Have the two students face outward and link hands. Then help them to rotate counterclockwise.
- Have the student holding the flashlight shine the light at chest-level as the other two students rotate. Have the two students say whether they are in daytime or nighttime.
- In addition, when one of the students representing Earth first sees the light of the flashlight, have him or her say “sunrise.” Then, as one of the students rotates away from the light, have him or her say “sunset.”

Take-Home Material

Family Letter

Send home Instructional Masters 1B-2–4.