

Photo Description



This picture shows tall buildings in a city. The sun is shining bright between the buildings. There are trees and grass in front of the tall buildings.

Scientific Phenomena

The anchoring phenomenon in this image is the apparent position of the sun in the sky and how it creates light and shadows. The sun appears to move across the sky during the day due to Earth's rotation on its axis. As our planet spins, different parts of Earth face the sun, creating the cycle of day and night. The bright sunlight visible between the buildings demonstrates how the sun provides light and energy to Earth.

Core Science Concepts

1. The Sun provides light and heat - The bright sun in the image shows how our star gives us the light we need to see during the day.
2. Day and night patterns - The sun appears to move across the sky as Earth rotates, creating predictable patterns of light and darkness.
3. Shadows are created when objects block light - The buildings in the image cast shadows because they block some of the sun's light.
4. The sun helps plants grow - The trees and grass visible in the foreground need sunlight to make their own food through photosynthesis.

Pedagogical Tip:

Use a flashlight and classroom objects to demonstrate how shadows form when light is blocked. This hands-on experience helps first graders understand the relationship between light sources and shadows.

UDL Suggestions:

Provide multiple ways for students to observe sun patterns: drawing pictures, using body movements to show Earth spinning, and creating shadow puppets to engage different learning styles and abilities.

Zoom In / Zoom Out

1. Zoom In: At the microscopic level, sunlight is made up of tiny particles called photons that travel from the sun to Earth. These light particles help plants make food in their leaves through a process called photosynthesis.

2. Zoom Out: This city is part of Earth's larger system where the sun's energy drives weather patterns, seasons, and supports all life on our planet. The sun's position affects temperatures and daylight hours around the world.

Discussion Questions

1. What do you notice about where the sun is in this picture? (Bloom's: Observe | DOK: 1)
2. How do you think the shadows from these buildings might look different in the morning compared to the afternoon? (Bloom's: Apply | DOK: 2)
3. Why do you think the trees and grass need the sunlight we see in this picture? (Bloom's: Analyze | DOK: 2)
4. If you were standing in this spot tomorrow at the same time, where do you predict the sun would be? (Bloom's: Evaluate | DOK: 3)

Potential Student Misconceptions

1. Misconception: The sun moves around Earth during the day.
Clarification: Earth spins like a top, which makes the sun appear to move across our sky.
2. Misconception: The sun goes away at night.
Clarification: The sun is always shining, but Earth's spinning makes our part face away from the sun during nighttime.
3. Misconception: Shadows are always the same size and shape.
Clarification: Shadows change size and direction as the sun's position changes throughout the day.

NGSS Connections

- Performance Expectation: 1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.
- Disciplinary Core Idea: 1-ESS1.A - The sun is a star that appears larger and brighter than other stars because it is closer.
- Crosscutting Concept: Patterns - Objects in the sky have patterns of movement that can be observed and described.

Science Vocabulary

- * Sun: The bright star that gives Earth light and heat during the day.
- * Shadow: A dark area that forms when something blocks light.
- * Pattern: Something that happens the same way over and over again.
- * Rotate: To spin around like a top.
- * Daylight: The time when the sun lights up our part of Earth.

External Resources

Children's Books:

- The Sun is My Favorite Star by Frank Asch
- Day Light, Night Light by Franklyn M. Branley
- Shadows and Reflections by Tana Hoban

YouTube Videos:

- "Day and Night Explanation for Kids" - Simple animation showing Earth's rotation and how it creates day and night patterns: <https://www.youtube.com/watch?v=p4Gotl9vRGs>

- "All About Shadows for Kids" - Educational video demonstrating how shadows form and change throughout the day: <https://www.youtube.com/watch?v=y8qXn3OdWtE>