

Photo Description



This image shows a beautiful sunrise over a flat landscape with a straight road leading toward the horizon. The sky changes colors from orange and red near the horizon to pink, gray, and blue higher up. Trees line both sides of the road, and the sun is just beginning to appear on the horizon, painting the sky with warm, glowing colors.

Scientific Phenomena

Anchoring Phenomenon: Why does the sky change colors at sunrise?

Scientific Explanation: A sunrise occurs because Earth is constantly rotating on its axis. As your location on Earth rotates toward the sun, the sun appears to rise above the horizon. The colors we see during sunrise happen because sunlight travels through Earth's atmosphere at an angle. When sunlight enters the atmosphere at a low angle (during sunrise or sunset), it scatters off gas molecules and particles in the air. Blue and violet light scatter easily, but red, orange, and yellow light scatter less, so those colors dominate the sky near the horizon. This natural phenomenon is predictable and happens every single day.

Core Science Concepts

- * **Earth's Rotation:** Earth spins like a top, and this spinning causes the sun to appear to move across the sky each day. Kindergarteners observe that the sun rises in the east and sets in the west because of this rotation.
- * **Light and Color:** Sunlight contains all colors mixed together. When sunlight passes through the air during sunrise, it breaks into different colors. The air acts like a filter that shows us reds, oranges, and yellows during sunrise.
- * **Patterns in Nature:** Sunrise happens in the same way every single day. Kindergarteners can observe this repeating pattern and predict that the sun will rise again tomorrow.
- * **Weather and Sky Observation:** Clouds, weather, and atmospheric conditions affect how colorful and bright a sunrise looks. Some sunrises are more spectacular than others depending on dust, water droplets, and pollution in the air.

Pedagogical Tip:

For Kindergarten learners, avoid abstract explanations of rotation and light refraction. Instead, anchor learning in observable experiences: "Every morning, the sun comes up. We see different colors. The colors happen because light travels through air." Use hand motions (spinning for rotation, waving for light traveling) and repeated daily observations to build understanding gradually. Kindergarteners learn through repeated, sensory-rich experiences, not explanations.

UDL Suggestions:

Representation: Provide both visual (pictures of sunrises) and tactile (colored tissue paper overlays) ways to explore how light creates colors. **Action & Expression:** Allow students to show understanding through movement (acting out Earth's spin), drawing, and singing songs about sunrise rather than written responses. **Engagement:** Connect the lesson to students' personal experience by asking them to share when they've seen a sunrise. Use real, high-quality photographs and videos rather than cartoons to maintain scientific accuracy.

Discussion Questions

1. What colors do you see in the sunrise? (Bloom's: Remember | DOK: 1)
2. Why do you think the sky is a different color at sunrise than it is in the middle of the day? (Bloom's: Analyze | DOK: 2)
3. What do you think will happen to the sky colors as the sun gets higher in the sky? (Bloom's: Predict | DOK: 2)
4. Do you think the sun rises at the same time every single day, or does it change? (Bloom's: Understand | DOK: 1)

Extension Activities

1. Sunrise Color Mixing Station: Provide red, orange, and yellow watercolors or markers. Invite students to paint their own sunrise, blending colors to show how the sky changes. Discuss why they chose those colors and what they observed in the photograph.
2. Daily Sky Observation Chart: Create a simple pictorial chart where students draw or place stickers showing what the sky looks like each morning for one week. Discuss patterns: "Does the sun come up in the same place? Do we see colors every day?" This builds understanding of predictable patterns.
3. Earth Spin Dance: Play music and have students spin slowly like Earth rotating. Point to one side as "sunrise" and the other as "sunset." This kinesthetic activity helps Kindergarteners internalize why the sun appears to move across the sky.

NGSS Connections

Performance Expectation:

K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.

Disciplinary Core Ideas:

- K-ESS2.D (Weather and climate)
- K-PS4.B (Electromagnetic radiation—light)

Crosscutting Concepts:

- Patterns (Students observe the repeating pattern of daily sunrises)
- Energy and Matter (Light energy travels from the sun through the atmosphere)

Science Vocabulary

- * Sunrise: The moment when the sun first appears above the horizon in the morning, and the sky begins to get light.
- * Horizon: The line where the sky meets the ground or water in the distance.
- * Sky: The space above Earth where clouds, the sun, and stars live.
- * Atmosphere: The air all around Earth that we breathe; it is made of invisible gases.
- * Pattern: Something that happens the same way over and over again.
- * Color: The way light looks—like red, orange, yellow, blue, or purple.

External Resources

Children's Books:

- The Sun by Elisha Cooper (simple, observational picture book perfect for Kindergarten)
- Hello, Sun! by Tim Hopgood (colorful exploration of sunrise and the sun throughout the day)
- A House for Little Red by Bonnie Christensen (beautiful illustrations including sunrise scenes)

YouTube Videos:

- "The Sun Rises Every Day" by National Geographic Kids – A 3-minute video showing multiple sunrises with gentle narration and beautiful real footage. URL: <https://www.youtube.com/watch?v=qVDFI-04ZPg>
- "How Does Day and Night Happen?" by SciShow Kids – A 4-minute explanation of Earth's rotation with clear visuals and age-appropriate language. URL: <https://www.youtube.com/watch?v=aToUz4-Ty7w>