Start with a Book: Space Rangers

Twinkle, Twinkle

Introduction

Stars are so far away from Earth that, even through large telescopes, they appear only as tiny points of bright light. Stars seem to twinkle because we see them through the layers of the atmosphere — the gases that surround our planet.

The movement of air and dust in the atmosphere bends, or refracts, a star's light in different directions. Because the light is scattered by the time it reaches our eyes on Earth, stars appear to twinkle. You might think of it as the light traveling a zig-zag path to our eyes, instead of the straight path the light would travel if Earth didn't have an atmosphere.

Supplies

- 12-inch x 12-inch square of aluminum foil
- 2-quart glass bowl
- Water
- Flashlight
- Pencil (optional)

This activity works best in a darkened room

Get kids thinking

In this activity, kids will be exploring why stars appear to twinkle.

ASK KIDS: Have you ever looked at stars in the night sky? What have you observed?

Have you ever looked up high in the night sky at the stars and then moved your head down closer to the horizon. Do the stars seem to change?

Stars closer to the horizon will appear to twinkle more than stars higher up in the sky because there is a lot more atmosphere between you and a star near the horizon.

Twinkle, Twinkle

Let's get started!

Demonstrate this activity in front of the kids, and then let them try it themselves in small groups. Crumple your square of foil, then open it up, and place it on a table or on the floor. Fill your clear bowl with tap water and place it on top of the crumpled foil.

Darken the room by turning off the lights. Hold the flashlight about 12 inches above the bowl. Look at the foil through the undisturbed water. **ASK THE KIDS:** What does the reflected light look like?

Now using your finger or a pencil, tap the surface of the water gently. Look at the foil through the moving water. **ASK THE KIDS:** How does the reflected light look like now?

What happened? The light rays reflecting from the foil when there was a movement in water appears to blur or twinkle.

Why? The movement of the water causes the depth of the water to vary. The light rays twinkle because they bend or refract in different direction when it passed through the different depths of water.

This is similar to the light rays from the stars. They appear to be twinkling when you are observing from Earth because they refract differently as the light rays move through the different thickness of air in the atmosphere. The scientific word for this twinkling phenomenon is scintillation.

More activities

DO STARS REALLY TWINKLE (VIDEO)
youtube.com/watch?v=_-GfIT6jK44