5th Grade Astronomy Unit

Unit Overview

The Astronomy unit, taught using Delta *Astronomy,* Delta *Solar System*, and FOSS *Planetary Science,* provides students opportunities to investigate the sun-earth-moon relationship, star patterns, and astronomy models. Through simulations, models, and observations of the night sky, students will deepen their understanding of astronomy.

Essential/Unit Questions:

1. What are models? Why are models used in science? What are the strengths and weaknesses of the models used?
2. What is the shape of the earth?
3. In what direction does light travel? What causes the direction to change? When light interacts (hits) an object, what are the different ways it behaves?
4. What causes day and night? What causes a year?
5. If stars are many different sizes, some bigger than the sun, why do they look so small in the sky?
6. What orbits the earth? What orbits the sun?
7. How do the patterns of stars change throughout the night? Why do the patterns of stars in the sky appear to move across the sky?
8. How do the patterns of stars change throughout the year?
9. What happens to the position of planets (relative to stars) throughout the year?

Summary of Unit Sections:

Shape of the Earth (Excerpted from FOSS *Planetary Science,* p. 55)
Using models and simulations, students are exposed to several kinds of evidence that were used historically to induce that the earth is round. Students are asked examine their beliefs about the shape of the earth and how they have come to those ideas.

Light
Students investigate the refraction and reflection of light by conducting several experiments. The section on light is designed to introduce students to the idea that light travels in a straight line until it interacts with an object.

Day, Night, and Year (Excerpted from FOSS *Planetary Science*, p. 79)
Students use lights sources and spheres to model and understand the mechanics of day and night. Models are also used to plot and understand earth's movement around the sun.

Solar System and Scale (Excerpted from DSM *Solar System,* p. 9)
Students explore the components of our solar system and are introduced to relative size and distance. Students construct models to show the relative sizes and distances of the planets.

Stars (Excerpted from DSM *Astronomy*, p. 1)
Using models, students learn that objects in the sky, specifically the sun and other stars, have predictable motions. Students explore the reasons why the skies change. By constructing a fixed "sky sphere" model showing constellations and the sun, and the rotating the earth within it, the students discover that the Earth's movement is the cause of the changing starfield. This also provides an opportunity to reinforce the idea that earth's rotation causes day and night. Through the use of additional models, students learn that starfields change yearly. Students also examine the movement of planets through Earth's starfield.