

Teacher Idea Kit for

Day and



Night

**A Space Science Program
For Grades K-1**

Presented by



Funded in part by:



Day and Night

Suggested for Grades K-1

Objectives

After visiting the planetarium for Day and Night, the student should be able to:

1. Discuss why objects cast shadows
2. Demonstrate or explain the reason for day and night.

State Standards of Learning Objectives

This planetarium presentation meets the following Virginia State SOL's:

Science: K.8, K.10, 1.6, 1.7

Vocabulary

afternoon:	The part of the day when the Sun has already crossed the meridian but has not yet reached sunset
day:	The part of the 24-hour day during which the Sun is in the sky.
evening:	The part of the day between the setting of the Sun and a truly dark sky.
morning:	The part of the day after the Sun has risen but before it crosses the meridian (imaginary line running North-South dividing the sky in half).
night:	The part of the 24-hour day when the Sun is not in the sky.
rotation:	The motion of a planet turning on its axis. The time for one rotation is the length of the planet's day.
shadow:	A dark area created when an opaque object blocks a light source
sky:	The Earth's atmosphere.
sunrise:	The period of time during which the Sun seems to appear from below the Eastern horizon.
sunset:	The period of time when the Sun appears to sink below the Western horizon.

Background Material for Day and Night

Much of early scientific inquiry focused on the determination of the Earth's place in the universe. Central to this discussion was the question of which object in the Sun-Earth system was actually doing the moving. The ancient Greeks were about evenly split on the question: some believed the Earth moved around the Sun, while others thought the Sun moved around the Earth.

Today, children are aware of the differences between day and night even at a very early age. Much of our daily routine is determined by events that must occur in the daytime or nighttime. Therefore, the question of what causes daytime and nighttime can have real significance to a child.

In this program, we approach the concepts of day and night by first examining shadows and what causes shadows. We then move to a discussion of the Earth in space, and discover that our "nighttime" is the time we spend in the shadow of the Earth. Finally, we translate these experiences from our perspective in space to a perspective from the Earth's surface, experiencing several "days" in the planetarium and seeing how shadows can be used to tell time.

Concepts Covered During the Planetarium Visit

1. Solid objects make shadows when they block a source of light. Since the Earth is a solid object, it can cast a shadow. The light that the Earth blocks is the Sun.
2. When the Earth turns in front of the Sun, every place on the Earth spends some time in front of the Sun and some time in the Earth's shadow. We call the times "day" and "night."
3. From the surface of the Earth, the Earth's rotation makes it look like the Sun moves across the sky. Since the Sun moves in a regular pattern, we can use it to tell what time it is by the length and direction of shadows.

Pre-Visit Activities

We recommend that you conduct at least one of these activities with the class before your visit to the planetarium theater. Be sure to raise questions that can be left unanswered until the discussion period in the program.

1. The concept of rotation can be explored by using tops, balls, coins, wheels, or a merry-go-round.
2. Discuss the sequence of a day (24 hours from sunrise to sunrise) and what the students and their families do during a whole day. Think about what is happening on the other side of the world, perhaps in China.
3. Explore shadows with your students. Do all objects cast shadows? Do shadows change when you move the object? What about if you move the light source? What shapes are shadows? Discuss whether or not objects in space can cast shadows.

Post-Visit Activities

We recommend that you conduct at least one of these activities with your class following their visit to the planetarium theater.

1. Have them draw pictures of daytime and nighttime, including some of the objects visible in the sky (Sun, Moon, constellations, etc.)
2. Visit the library to find stories about the Sun, Moon and stars.
3. Have the students observe the night sky at home. Discuss the differences between the sky in the planetarium and the real sky.

Suggested Web Sites

SpaceWeather: SpaceWeather.com

Jet Propulsion Laboratory Homepage: <http://www.jpl.nasa.gov>

NASA's What is Earth?:

<http://www.nasa.gov/audience/forstudents/k-4/stories/what-is-earth-k4.html>

StarChild's Why is There Day and Night:

<http://starchild.gsfc.nasa.gov/docs/StarChild/questions/question31.html>

NASA: <http://nasa.gov>

Virginia Living Museum Astronomy: <http://www.thevlm.org>

