

K-3 Planetarium Lesson: Our Skies

Theme:

There are recognizable features in the night sky. The view of the night sky from Alaska is different than from other places on earth.

Goals:

- Students will become familiar with what planetariums offer.
- Students will become excited about observing the sky.
- Students will become more familiar with key features of Alaska's night sky.

Objectives:

Students will learn:

- The sun is a star.
- A planetarium is a place to see objects of the sky at any time.
- Objects, like stars, appear smaller the farther away they are.
- Your location on earth affects your view of space.
- A constellation is a pattern of stars in the sky.
- The big dipper "points" to the north star, Polaris. These 8 stars together are the stars on Alaska's state flag.

Alaska Science Performance Standards/Grade Level Expectations:

(K-2 have no science standards/GLEs)

SA1.1 [3]: The student develops an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring and communicating.

SA1.2 [3]: The student develops an understanding of the processes of science by observing and describing their world to answer simple questions.

SA2.1 [3]: The student will demonstrate an understanding of the attitudes and approaches to scientific inquiry by answering, "how do you know?" questions with reasonable answers.

SD4.1 [3]: The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by recognizing that objects appear smaller the farther away they are.

SD4.2 [3]: The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by recognizing that objects have properties, locations, and movements that can be observed and described.

SG4.1 [3]: The student demonstrates an understanding that advancements in science depend on curiosity, creativity, imagination, and a broad knowledge base by asking questions about the natural world.

Alaska Content Standards-Cultural Standards:

E2: Students are able to understand the ecology and geography of the bioregion they inhabit.

Outline:

Outside the Dome:

- Introduce yourself & where you are from.
- Explain what a planetarium is: a place where you can see stars and things in the sky no matter what time of day it is or what the weather is like.
- Tell what it will be like inside and go over the rules.
- Explain how to get inside quickly.

Inside the Dome:

Getting Acquainted

- Familiarize students with setting, view, and lesson pacing.

Light and Dark Skies

- Daytime view of the sky.
- Astronomy definition
- The Sun is a star.
- Today's view of the sky.
- Dark sky
- Stars appear small because they are so far away
- Milky Way
- Moon (if visible)
 - More about perspective: Moon & sun appear same size even though moon is smaller (because it is closer)

The Big Dipper & The North Star

- Alaska's flag
- Trace the big dipper.
- Show how the big dipper can be used to find the north star, Polaris.
- Polaris.
- It looks like the other stars are spinning and Polaris is standing still.
 - Discuss rotation with older students.

Constellations

- Constellations are patterns or pictures of stars in the sky.
- The Big Dipper is part of Ursa Major.
- Greek & Roman myths. Many others from around the world!
- Northern Hemisphere vs. Southern Hemisphere Constellations

Moon

- Astronomers also use telescopes and spacecraft to get a close up view.
- Moon Flyby.
- Back to Earth

Starry Night Script:

OUR SKIES (K-3)

Put the Computer into [RED SCREEN MODE](#) to help you & students see better in the planetarium.

Put the [UAF Logo](#) on the screen before you get into the show.
[Click HERE](#) to remove the logo.

Introduction

Introduce yourself and explain what a planetarium is.

Light and Dark Skies

Start with a (light) **daytime view** of the sky.

Ask: What can we see in the sky? Is it different in the daytime/nighttime? What about in the winter vs. summer?

Explain that today you are going to talk about **astronomy**, the study of space and everything in it. Then say you are going to look at some stars.

In the summer time there is 1 star visible nearly all the time. Can anyone think of what it is? **The Sun!**

Ask the kids to find/point to the sun.

We often don't see other stars or planets in the summertime because the sun brightens our sky. The stars are still there, we just can't see them. Talk about today's view of the sky.

Change to a **dark sky**. If it is already dark because it is winter, change to the current view. If it is light out because it is spring/summer/fall, [SPEED UP TIME \(600x\)](#) and watch the sun set. [STOP TIME](#) once it is dark.

If desired, make it "artificially dark" by turning off the daylight ([TURN OFF DAYLIGHT](#)).

Ask the students if the stars look like the sun. Remind them again that the sun is a star. Stars are like our sun but are very far away. They are so far away that when we look at them from earth, they **seem to be tiny**.

Ask what else they see. Point out the band of the **Milky Way** (lots of stars together!). Somebody might think of the **moon**. If it is visible, point it out. Mention how we sometimes don't see the moon because only the dark side (not lit by the sun) is facing us. Say that sometimes we see the whole moon, sometimes just part of it, and sometimes we don't see it at all.

3rd: Ask if the sun and moon are the same size. Hopefully they will say no! The sun is 400 times bigger than the moon. But, when we look at it from earth, the sun and moon appear the same size. That's because the sun is further away from us (400x farther!). Remember, the further things are away, the smaller they appear. 3rd graders may have already begun to experiment with **perspective** in their drawing.

You might need to mention that we also see **planets** in the sky. Planets sometimes look a lot like stars to us but they move differently in the sky.

The Big Dipper & The North Star

Let's see if we can learn to recognize some things in the sky!

Ask students if they recall what is pictured on Alaska's flag.

Trace the [BIG DIPPER](#).

Show how the big dipper can be used to find the north star, [POLARIS](#).

Turn on the label for Polaris and ask the kids to watch that star and notice what is different about it.

[TURN OFF SATELLITES](#) (very distracting!) and then [SPEED UP TIME \(600x\)](#) so the stars appear to move.

Polaris stays still!

STOP TIME

With older students ask if they know why the stars look like they spin in the sky throughout the night (earth's rotation). With younger ones, explain that the earth spins like a top (that's why we have day and night). Right above us is Polaris, the north star. So, it looks like the other stars are spinning and Polaris is standing still. Remind them that it takes **24 hours for the earth to spin** on its axis. During daylight, the sun appears to rise and set because of this rotation.

Constellations

Constellations are patterns or pictures of stars in the sky.

The Big Dipper is part of a bigger constellation called **Ursa Major**.

Turn on the constellation of [URSA MAJOR](#) to show the stick drawing of the constellation (the big bear).

You can imagine your own pictures in the sky or you can learn to recognize some that people all over the world know. Would you like to see more pictures in our northern sky?

[TURN ON THE CONSTELLATIONS \(STICKS\).](#)

[TURN ON THE CONSTELLATION ILLUSTRATIONS.](#)

(To deselect Ursa Major & Polaris: push Apple-Y)

These pictures come from the stories of people in Ancient Greece & Rome. There are many others from around the world! Share a short story of one of the Greek/Roman constellations if there is time.

Tell the students to pick a favorite constellation. Have them watch when you change to a view from the southern hemisphere.

Change viewing location to Australia. *(Press Apple-L. Type in Sydney & select Sydney, Australia.)*

Ask if they can still see their constellation. No! The view from the southern part of the planet is different than from the northern part. People in the south are looking at a different part of space.

[TURN OFF THE CONSTELLATIONS.](#)

Moon

Astronomers watch the stars, planets, galaxies and other things in space. They are not always limited to using only their eyes to see things. Astronomers also use telescopes and spacecraft to get a **close up view**.

Would you like to see the moon up close before leaving? Have the students lie down and show them the **Moon Flyby**. Tell them to observe closely and decide if more of the moon is bumpy or smooth.

(Go to the Favourites Menu: Solar System/Moon to find the Flyby.)

Recap & Back to Earth

Now that you know a little about the stars, you can observe them too! Let's be sure you are ready...

What is the constellation on Alaska's flag? (Big Dipper or Ursa Major)

What does the big dipper point to? (Polaris/North Star)

What star is visible in the summertime? (The Sun)

Great! Lets head home! What is our home planet? **EARTH!**

(Go to the Favourites Menu: Solar System/Earth and select "Our Home" for a view of the Earth in space.)

Let the earth spin in space and then go "home" to Fairbanks.
