CONSTELLATIONS

Science | Art | Language Arts

This grab and go lesson will focus on constellations and how they have served as a navigational tool.

Grade Level
K-2nd

Lesson Length
Either two 30-minute sessions
Or one 60-minute session

STEM Careers
- Astronomers
- Astrophysicist

Life Skills
- Social Skills
- Cooperation
- Teamwork
- Keeping Records

Learn More
- Visit Raising Nebraska *raisingnebraska.unl.edu*
- Visit Hastings Museum *hastingsmuseum.org*

Virtual Fun
- http://www.skyandtelescope.com/astronomy-resources/stargazing-basics/learn-the-sky/
- http://www.skymaps.com/downloads.html

LEARNING OBJECTIVES

By the end of the lesson, students should be able to:
- Understand how constellations served as a tool of navigation
- Know constellations are seasonal
- Be able to draw and tell the Greek story of one of the following constellations: Orion, Canis Major, Canis Minor, Big Dipper, Little Dipper, Cassiopeia, Taurus, the Pleiades

EDUCATIONAL STANDARDS SUPPORTED

- NE 2.4.1.a Identify objects in the sky (the Sun, the Moon, the stars) and when they are observable.
- NGSS 1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.
- FA 2.2.4.d Identify how images and objects are used to convey a story, familiar experience, or connection to the world.
- LA1.1.6.d Retell major events and key details from a literary text and/or media.
- LA 1.1.6.e Retell main ideas and supporting details from informational text and/or media.
- LA 1.2.1.d Compose simple paragraphs with grammatically correct sentences of varying length, complexity, and type.
- LA 1.2.a.i Use own words to relate information.

MATERIALS LIST

- Constellation journal
- Stickers (stars or dots)
- Wax paper or tracing paper
- Yarn (optional)
- White cardstock paper
- Markers
- Tape or glue

PREPARATION

- Print out journal sheets and Greek story sheets
- Tape up different images on each wall in the classroom (only if doing Activity 1)

2017 Solar Eclipse Material Author(s):
Sara Cooper | Elizabeth Janning
Katie Karr | Jackie Steffen
Amy Timmerman | Brandy VanDeWalle

DO

INTRODUCTION

The Earth is constantly orbiting around the Sun, moving locations in space. On top of that, the Earth is rotating around as it orbits. These two things cause us to see different constellations during different seasons.

It would also make it so we see different constellations during the day- if you eliminated all light sources. During the eclipse this will happen! Instead of seeing the typical summer constellations, you will be able to see constellations that are usually only seen in the winter time.

If you choose, you can also mention how ancient cultures learned about constellations because they served as a type of calendar. For example, the constellation Bootes (the herdsman) was a way the Pawnee tribe knew it was time to harvest. When he is high in the sky (around September / October) their crops were ready to harvest. For this reason, he is often called the grandfather of agriculture.

Vocabulary

Constellation: a recognizable star pattern in the night sky

Orbit: a curved path of an object around another object

Rotation: the action of spinning around an axis

OPENING QUESTIONS

Note- if your class has not discussed this yet, complete Activity 1 before answering.

Why do we see different constellations at different times of the year?
This is due to the rotation and orbit of the moon. Stars are relatively fixated in the night sky. However, the Earth moves positions in space thus giving us a look at different constellations at different seasons.

ACTIVITY 1: A MOVING EARTH

(If your class has already talked about why constellations are seasonal, this activity can be skipped.)

- Place an image on the middle of each wall in your classroom.
- Tell the students the walls of the classroom are representing space. They represent the Earth.
- Tell the students it is currently summer time and have them face the front of the room and look at image 'A'. Ask: Who can see image 'A'? (All should raise their hand) Then ask who can see images 'B', 'C', and 'D' without moving their heads. (No one should be able to see those images)
- Next tell them seasons are changing, it is now fall. Have them face a side wall to look at image 'B'. Ask: Who can still see image 'A'? (No one should be able to)
- Repeat on the other walls.
- Now ask the opening question.

Modifications:

To learn how the night side and the day side of Earth see different constellations, have them face image 'A'. Tell them this is the day side of the Earth. Explain that their backs are to the night side of the Earth. Have them pretend they have eyes on the back of their heads and ask them what they would see. (The would see the image on the back wall)

ACTIVITY 2: RESEARCH

Divide students into 8 group and assign each group one of the following constellations: Orion, Canis Major, Canis Minor, Big Dipper, Little Dipper, Cassiopeia, Taurus, and the Pleiades.

Note: Canis Minor and Canis Major will be harder to find information on.

Have the groups fill out their journal sheets. If possible, let the students research their constellations in the library. If that is not an option, have them use computers or provide age appropriate books to each group.

Once the research is completed. Tell the groups to write out a script of their Greek story. Have the groups act out their Greek story to the rest of the class.

ACTIVITY 3: BUILD IT!

(This activity can be done in groups or on their own)

- Give each student a piece of white paper. Let them draw the artwork for their constellation
- Give each student a piece of wax paper the size of their paper or tracing paper. Have them tape or glue the top half of the papers together.
- Give the students the dot or star stickers they will need for their constellations. The stickers represent the stars in their constellation.
- Have them put a sticker on the wax / tracing paper where the star would be in the artwork.
- Once all the stars are placed, have them use a marker or yarn to connect the stars.

REFLECT

Point out that each constellation they studied, is typically visible during winter night sky. Ask: If they are winter constellations, how will we see them during the eclipse? (If they struggle, repeat Activity 1 with the day / night modification)

APPLY

If possible, allow your students to see the eclipse happen. If that is not possible, have them sky gaze at night with their families and see what constellations they can find. There is a link in the 'Learn More' section for students to create a star map they can use to star gaze and find constellations.

References

MacRobert, Alan. "Sky at a Glance." Sky and Telescope . N.p., Feb. 2016. Web. 02 Apr. 2017. <http://www.skyandtelescope.com/>.

We want to hear from you!

Let us know what you thought of the lesson or send us a picture of youth participating in the lesson.

#NE4HSTEM #ECLIPSE2017

RESEARCH JOURNAL

Constellations

NAME

DATE

ASSIGNED CONSTELLATION

Our constellation is visible during the _____season in the northern hemisphere.

The Greek mythical story behind our constellation is:

STARS AND LINES

CONTELLATION ART

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