

# The Night Sky

## Summary

The whole class will create a night sky using white butcher paper and glow-in-the-dark crayons and then discuss the rotation of the Earth, the movement of the moon, and the position of the sun.

## Main Core Tie

Science - 3rd Grade

[Standard 1 Objective 2](#)

## Materials

- Glow-in-the-dark crayons, chalk, or paint
- White butcher paper
- [Night Sky Recording Sheet](#)
- Wheeled scooter or chair
- *The Librarian Who Measured the Earth*, by Kathryn Lasky
- Desk lamp to represent the sun
- [Time cards](#) that correspond with *Night Sky Recording Sheet*

## Additional Resources

### Books

- *The Librarian Who Measured the Earth*, by Kathryn Lasky; ISBN 0-329-0444403
- *Don't Know Much About Space*, by Kenneth C. Davis; ISBN 0-439-43850-0
- *Eyewitness Books: Astronomy*, by Kristen Lippincott; ISBN 0-75660656-X
- *Space: A Nonfiction Companion to Midnight on the Moon* (Magic Treehouse Research Guide Series) by Mary Pope Osborne; ISBN 0-375-81356-x
- *Moonhorse*, by Mary Pope Osborne; ISBN 0-679-86709-0

## Background for Teachers

Until about 400 years ago, most people thought Earth to be the center of the universe with everything else revolving around it. Copernicus was one of the first astronomers to study the idea of a "sun-centered universe." Galileo and many others later proved his theory correct. With this discovery came the knowledge that Earth rotated on an axis causing the sun and the stars to appear to move across the sky.

Some students may already know that Earth rotates on its axis and revolves around the sun but probably can't explain why it seems that the other bodies appear to move through the sky. This lesson will allow students to draw conclusions to come up with their own explanations.

## Intended Learning Outcomes

1. Understand science concepts and principles.

## Instructional Procedures

## Invitation to Learn

Share parts of the book, *The Librarian Who Measured the Earth*. Talk about how inquiry drives discovery of new things and compare it to the curiosity of the main character Eratosthenes in the book. Explain to the class that we will be discovering the answer to a question posed by scientists many years ago.

Encourage students to think of questions like Eratosthenes in the book. Discuss questions that students may have about the earth, moon, stars etc. and use these questions to lead into the following activity.

## Instructional Procedures

Read *Moonhorse* by Mary Pope Osborne. Talk about constellations and how they are a group of stars that form a pattern.

As a class create a night sky using white butcher paper and glow-in-the-dark crayons. Each group of two to three students takes a section of the butcher paper and draws different constellations. Use constellation books (see references) or websites to show students which constellations are visible in the Northern Hemisphere and during the current season. Assign each group a specific constellation to draw on their piece of paper. Add other stars around it. Post them on the walls around the classroom. Put cards with different times of the night across the top.

Pose the questions: Why does it seem that the sun moves across the sky during the day? Why does it seem that the moon and stars move across the sky at night.

Discuss previous knowledge of the night sky and of movements of Earth, moon, and stars.

Have students make a prediction as to why the objects in the sky appear to move across the sky and record it in their journal.

## Earth

Discuss with students the rotation of Earth.

Darken the room and have a student representing Earth sit on the scooter (or chair) and slowly spin the scooter in place. Student will face their body toward each time represented by the cards and sketch the constellations that they see. You may need to turn on the lights in between each time so that students can see to sketch. They then turn to the next time card and sketch what they see in each time block on the Night Sky worksheet.

## The Moon

Repeat activity, this time focusing instead on the movement of the moon using a student as "the moon" to show the rotation and revolution of the moon. This time the student representing the moon walks around the student representing Earth, always facing Earth, while the earth rotates. Explain to students that the moon only makes it around the earth once for every 27 rotations of Earth.

## The Sun

Show the apparent movement of the sun. Start by using four students to represent the Earth.

The teacher holds a lamp to represent the sun. Students each pick a different city from around the world and write it on a sign. Students stand in a circle facing outward. Students rotate together slowly and observe the light from the "sun." Explain that when they are facing the sun it would be 12:00 noon and facing away would be 12:00 midnight. Students can sketch the position of the "sun" at different times of day in their journal.

Students write their conclusion as to why these objects appear to move across the sky. Lead students to the conclusion that scientists discovered in that it is because Earth itself is moving.

## Extensions

### Curriculum Extensions/Adaptations/ Integration

With the student representing the sun in the middle of the room, "gravity" will slowly pull "the earth" around the sun as the student representing the earth records the major stars he or she

sees in the night sky during each season. (Each quarter of the room can represent a different season). Activity can be repeated with students in pairs representing earth and gravity so that each student has an opportunity to record what he or she sees in the "night sky" during each season.

Literature connection - after reading about different constellations and the legends that they originated from have students make their own constellation by dropping paper stars (or bits of paper) on a black piece of paper and connecting them to make a new constellation. Students can then write their own legend about the origin of their constellation.

Pair learners with special needs with classmates of different abilities.

Allow students with special needs to dictate journal activities to a partner.

#### Family Connections

Study the stars at home. Sketch the real sky at different times during the day with the same procedure and worksheet used in the classroom activity.

#### Assessment Plan

Students complete journal activities or dictate them to a partner.

Pose the question "Does the sun move?" and "Do the stars move?" and have students write a sentence or two to answer. This could also be used as a pre-assessment.

Observe students as they work.

#### Bibliography

##### Research Basis

Jarrett, Denise. (1999). The inclusive classroom: mathematics and science instruction for students with learning disabilities. *It's just good teaching*.

This article discusses the benefit of using "Inquiry-Based Science" or in other words posing a question to students and providing activities and/or experiments to allow students to discover the answers to scientific questions themselves rather than just being told. The article talks about using varied levels of inquiry depending on the age and ability of the learners. The article poses the argument that inquiry based learning is a good way to help students with disabilities to be involved in the learning process in the regular classroom.

#### Authors

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