Pre-Visit Information
The Sky Above: A Virtual Experience – All Grades

Standards to Build On:

South Carolina College- and Career-Ready Science Standards 2021: 1-ESS1-1, 5-ESS1-1, 5-ESS1-2, 8-ESS1-1, 8-ESS1-2, E-ESS1-1, E-ESS1-4

Next Generation Science Standards: 1-ESS1-1, 5-ESS1-1, 5-ESS1-2, MS-ESS1-1, MS-ESS1-2, HS-ESS1-1, HS-ESS1-4

What's this all about?

We're going to go on an adventure in our very own night sky to learn about how the Earth moves, what kind of objects we might be able to see in our night sky, seasons, and the difference between stars, planets, and moons. This experience uses amazing software such as Stellarium and Worldwide Telescope to share these concepts with your students.

For a complete SCSM astronomy experience, we recommend booking both this program and an observatory solar viewing virtual field trip.

What's going to happen?

Students will interact with our astronomy educators over a virtual platform such as Zoom or Google Meet. We'll use Stellarium, Worldwide Telescope, and a PowerPoint presentation to explore topics such as celestial motion, constellations, Earth's orbit around the Sun, seasons, and stars. Students will be able to see Stellarium and Worldwide Telescope through the screen share function on Zoom/Google Meet. This program is standards-intensive and includes brief periods for student Q&A.

Key terms/concepts we may cover include:

Constellation
Asterism
Planet
Moon
Star
Earth's rotation on its axis
Earth's orbit around the Sun
How the tilt of Earth's axis causes seasons

Things you can do before the program:

Activity 1: Discuss the following with students:

- Why the Sun appears to move from east to west through the day (Earth is rotating)
- What causes seasons (Earth's axis is tilted)

Activity 2: Explore ways in which students can act out motions of celestial bodies. For example:

- Have one student be the Sun and another student be the Earth. The "Sun" student should stand still while the "Earth" student walks around the "Sun" student. This demonstrates Earth's orbit around the Sun.
- Have one student be the Earth and another student be the Moon. The "Earth" student should stand still while the "Moon" student walks around the "Earth" student. This demonstrates the Moon's orbit around the Earth.
- The above Earth/Moon activity can be extended by having the "Moon" student orbit very slowly, while the "Earth" student turns in place very slowly. The idea is to have both the "Earth" and "Moon" students facing each other at all times. This demonstrates how the Moon always keeps the same face pointing towards the Earth.
- Tips:
    - Make sure that students don't move in circles too long or too fast. We don't want anyone getting dizzy or sick!
    - Give students props to identify "their" objects. For example, the "Earth" student can hold a globe and the "Sun" student can hold a brightly-colored volleyball.

Activity 3: Activity 3: Ask students to go outside with their parents on the next clear night and simply look up at the night sky. What's the same about each of the stars you see? What's different?

Note: It's completely understandable that some students may have trouble observing the night sky from where they live. Light pollution, trees/buildings in the way, and safety concerns with being out at night can make night sky observing challenging. There could also be a string of cloudy nights around the time of your program. To support students in doing this activity, our Observatory Manager can help you obtain and use a free program called Stellarium. It's one of the software programs we use in this virtual sky tour experience!

Helpful links:

SCSM observatory virtual program FAQs:
https://scmuseum.org/astronomy/observatory/observatory-educators#virtual-programs

Stellarium: This night sky simulation program is available as a free download: https://stellarium.org/

SCSM observatory image gallery: https://scmuseum.org/astronomy/observatory