



## Elaborate: Connection to the Arts

### “Orbit Dance”

*Earth in Space Module*

This hands-on activity provides students with the opportunity to further explore the concept of Earth in space by working in small groups to orbit and spin in the manner of Earth and the moon.

This offline hands-on activity can be completed after participation in the online Engage, Explore, and Explain.

**Teacher objective:** To demonstrate an understanding of Earth’s planetary movement and the movement of the moon.

**Student objective:** Upon completion of this activity, students will be able to imitate the spin and orbit of Earth and the moon.

**Estimated time for activity:** 20 minutes

#### **Procedure:**

- 1 Lead a discussion about Earth in space.
- 2 Explain that Earth spins (counterclockwise) as well as orbits the sun (counterclockwise) and that the moon does the same around Earth (moving around the Earth in a counterclockwise path).
- 3 In a large space such as a gymnasium or an outdoor field, allow students to practice spinning toward their left and orbiting to the left around the sun (for Earth) or Earth (for the Moon). Caution them to go slowly to avoid dizziness and collisions!
- 4 Group students in threes so that they can represent the sun, the moon, and the Earth. Have each group practice the roles. Make sure each student gets a chance to try orbiting and spinning at once.
- 5 Optional: Periodically call out “Freeze!” and ask questions that relate to positioning. (See below).
- 6 Sit down and discuss orbiting experiences.

#### **Teacher background & discussion points:**

Science is made up of concrete concepts that often utilize technical language. While it is important for students to understand the terminology, research has found that those who are able to draw a connection between the concepts and their own experiences develop greater understanding. By providing students with differentiated science experiences through the arts, we can foster their creativity and provide a better understanding of scientific concepts. This “Connection to the Arts” activity provides students with an innovative approach to science as they experience a variety of learning styles such as dance, music, art, poetry, and theater. Providing diverse opportunities for students to experience science will engage all students, including those who may respond more favorably to nontraditional instruction.



In this activity, students will demonstrate the rotation and orbit of the Earth and the moon. As the moon and the Earth orbit and rotate, day turns to night, and objects in space move in and out of sight. Objects in the sky have patterns of movement caused by the rotation and orbit of the planet. The sun, for example, appears to move across the sky in the same way every day, but its path changes slowly over the seasons as the Earth's position changes. The moon moves across the sky much like the sun. The observable shape of the moon changes from day to day in a cycle that lasts about a month. This is because, from Earth, not all of the light reflected off the moon is always visible.

Use the following questions after a "Freeze!" command to emphasize the scientific connection to this art activity.

- Is it day or night on your side of Earth? (Are "Earth's" eyes facing toward the sun or away?)
- Can you see the moon?
- Is it hard to spin and orbit at once?
- Which moves, the sun or the Earth?
- What did you like best about this activity?

### **Review:**

At the conclusion of the lesson, remember to review the following key points:

- Earth spins on its axis and orbits the sun.
- It takes twenty-four hours (one day) for Earth to complete a rotation and 365 days (one year) to complete an orbit.
- The patterns in the sky remain stable but appear to move across the sky because Earth is constantly moving.
- Night and day are a repeating pattern caused by Earth's rotation.

### **Accommodations:**

If students have difficulty performing a dance, a variety of accommodations can be employed.

- The student can take the sun role and answer questions instead of trying the spinning roles of moon and Earth.
- The activity can be completed by one group at a time.