



Stargazing

Subject

Earth Science

Grade level

5-8

Duration

Two class periods

Objectives

Students will

- identify and describe characteristics of the nine planets in our solar system; and
- describe and compare different types of celestial bodies found in our galaxy

Materials

- Paper, pencils, and scissors
- Glue or tape
- Magazines and handouts with pictures of various stars, planets, and celestial bodies
- White construction paper, one piece per student
- Astronomy texts and encyclopedias
- *Stargazing* video and VCR or DVD and DVD player
- Computer with Internet access (optional)

Procedure

1. Introduce the lesson by talking about the Milky Way galaxy and our solar system. Have students identify the planets in our solar system and talk about the characteristics of each planet. What makes Earth different from other planets? Discuss the various stars and other celestial bodies found in our galaxy. A good way to introduce this topic is to view segments of the *Stargazing* video or DVD.
2. After watching the program, tell students that they will pretend to be astronauts who have just returned from a journey across our galaxy. In that role, they will create journals that document what they saw in outer space. Their journals must be descriptive and creative and include at least five facts about all nine planets in our solar system; they must be descriptive and include comparative information about at least three different celestial objects

(such as a black hole, asteroid, meteor, or supernova). Each journal should be a minimum of three pages in length.

3. Give students time in class and as homework to write their journal entries. To collect facts, students may use library references and other texts, the *Astronomy* program, Internet resources, or other research material. The following Web sites have information and pictures that may prove helpful to student research:
 - <http://seds.lpl.arizona.edu/nineplanets/nineplanets/nineplanets.html>
 - <http://www.okstate.edu/aesp/image.html>
 - <http://www.inconstantmoon.com/>
 - <http://www.frontiernet.net/~kidpower/astronomy.html>
 - <http://kids.msfc.nasa.gov/>
4. When students have finished writing their entries, have them decorate sheets of white construction paper with drawings or photographs of planets and celestial objects. Have students fold these collages in half and “bind” their journal entries inside.
5. Allow volunteers to read parts of their journals aloud to the class. Hold a discussion about different celestial objects in our galaxy and the similarities and differences of the planets. Display the journals in the classroom so that students can read other journals.

Evaluation

Use the following three-point rubric to evaluate students’ work during this lesson.

3 points: Students actively participated in class discussions; wrote highly creative and well-researched journal entries that correctly met the established criteria; and used correct grammar, punctuation, and spelling.

2 points: Students participated somewhat in class discussions; wrote fairly creative and well-researched journal entries that correctly met most of the established criteria; and had minimal errors in grammar, punctuation, and spelling.

1 point: Students participated minimally in class discussions; wrote disorganized or incomplete journal entries that did not meet the established criteria; and had multiple errors in grammar, punctuation, and spelling.

Vocabulary

atmosphere

Definition: The envelope of gasses surrounding any celestial body

Context: Mars is too cold and its atmosphere is too thin to allow liquid water to exist at the surface for long.

celestial

Definition: Of or relating to the night sky

Context: High above Earth in the night sky, a universe of stars, planets, and other celestial objects appears to revolve about us in fixed patterns.

orbit

Definition: The path described by one celestial body in its revolution about another

Context: The sun's gravity is strong enough to hold all the bodies in our solar system in orbit.

pulsar

Definition: A young neutron star that produces beams of radiation from its magnetic poles

Context: A pulsar is a neutron star that sends out or beams regular pulsating waves that can be picked up on Earth.

solar system

Definition: The sun with the celestial bodies that revolve around it in its gravitational field

Context: Our solar system includes nine known planets, as well as moons, asteroids, comets, and thousands of meteors.

supernova

Definition: The death explosion of a massive star, resulting in a sharp increase in brightness followed by a gradual fading

Context: This supernova was first seen in 1987 in a galaxy near ours called the Large Magellenic Cloud.

Academic Standards

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K–12. To view the standards, visit <http://books.nap.edu>.

This lesson plan addresses the following standards:

- Earth and Space Science: Earth in the solar system
- Unifying Concepts and Processes: Evidence, models, and explanation

The National Council for Geographic Education (NCGE) provides 18 national geography standards that the geographically informed person knows and understands. To view the standards online, go to <http://www.ncge.org>.

This lesson plan addresses the following standards:

- Physical Systems: The physical processes that shape the patterns of Earth's surface

Credit

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