

Studying Planets in the Solar System

Lesson Plan

Grade Level: 6-8

Curriculum Focus: Astronomy; Solar System

Lesson Duration: Two class periods

Student Objectives

- Understand the characteristics of the planets in the solar system
- Discover how astronomers study planets in the solar system
- Create a presentation on one planet of the solar system, accompanied by an illustration, model, or bulletin board display

Materials

- Video on *unitedstreaming: What's Out There? Our Solar System and Beyond*
Search for this video by using the video title (or a portion of it) as the keyword.

Selected clips that support this lesson plan:

- Welcome to the Milky Way Galaxy!
 - The Beginning
 - The Sun
 - The Inner Planets
 - The Outer Planets
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- Pens, pencils, and markers
 - Scissors
 - Large sheets of paper
 - Paints, glue, and tape
 - Books, magazines, encyclopedias, and other resources about space and planets
 - Computers with Internet access

Procedures

1. Explain to students that they will create profiles of the nine planets in the solar system. Each group in the class will present a written and oral report about a planet. Presentations should

include photos, illustrations, and any other multimedia materials that groups wish to present. The materials created by each group will be part of a class solar system display.

2. Have the class brainstorm information to be included in the planetary profiles. Suggested topic questions include the following:
 - How large is the planet? (What is its equatorial diameter?)
 - What is its atmosphere like?
 - What are some of its geological traits?
 - Does this planet have any moons? If so, how many? What are they like?
 - How long is the planet's "day"? How long is its "year"?
 - What is the surface gravity like on the planet?
 - How did scientists learn about the planet?
 - Who first discovered the planet? When?
 - Over the course of history, how and why have scientific theories about the planet changed? For instance, how and when did the theory that the Earth is round become a fact?
 - What are the chances that life exists – or may have existed – on this planet?
3. As a class, choose the top ten questions to be answered in the planet profile. List these questions on the board.
4. Divide the class into nine groups. Write the name of each planet on a slip of paper and place the slips into a hat. Have each group pick a slip of paper with their assigned planet.
5. Collect books, magazine articles, encyclopedias, and other resources about the planets. The following Web sites provide a good starting point:
 - Windows the Universe: Our Solar System
http://www.windows.ucar.edu/tour/link=/our_solar_system/solar_system.html
 - The Nine Planets
<http://www.nineplanets.org/>
 - World Almanac for Kids: The Solar System
<http://www.worldalmanacforkids.com/explore/space.html>
 - Welcome to the Planets (for planetary images; also see "Planetary Profiles")
<http://pds.jpl.nasa.gov/planets/>
6. Give the groups time to research and gather data about their planet. Remind them to address the ten questions selected by the class.
7. After their research is complete, have the groups create a presentation to share their planetary information with the class. Presentations may be in the form of a written report with illustrations, a three-dimensional model, or a bulletin board display.

8. Allow class time for each group to present its planet's profile. Include a class discussion period for students to ask any questions they still have. This may prompt further exploration and research.
9. Display the planet profiles for other classes to view.

Assessment

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

- 3 points: Students' reports and presentations fully answer the class's top ten topic questions in an interesting and creative way; there is full group participation during the presentations.
- 2 points: Students' reports answer the top ten topic questions but the reports are not presented creatively; the whole group participates in the presentation.
- 1 point: Students' reports do not answer the top ten questions; the group does not fully participate in the presentation.

Vocabulary

comet

Definition: A celestial body that consists of a fuzzy-appearing head usually surrounding a bright nucleus, usually with a highly eccentric orbit, and that often, when in the part of its orbit near the sun, develops a long tail that points away from the sun.

Context: The massive gravitational pull of Jupiter drew the comet Shoemaker-Levy into a collision course with the planet.

galaxy

Definition: Any of the very large groups of stars and associated matter that are found throughout the universe.

Context: Our solar system is part of a larger group of stars known as the Milky Way galaxy.

meteorite

Definition: A meteor, which is a small particle of matter from the solar system, that reaches the surface of the Earth without being completely vaporized.

Context: A shooting star that lands on Earth is known as a meteorite.

planet

Definition: Any of the large bodies that revolve around the sun in the solar system.

Context: It takes the planet Earth 365 days to revolve around the sun.

probe

Definition: A man-made device used to send information from outer space or a celestial body to Earth.

Context: The Voyager space probe transmitted pictures of Saturn's rings to scientists on Earth.

solar system

Definition: The sun and the group of celestial bodies that are held by its attraction and revolve around it.

Context: It is believed that Earth is the only planet in the solar system that can support life.

Academic Standards

Mid-continent Research for Education and Learning (McREL)

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit

<http://www.mcrel.org/compendium/browse.asp>.

This lesson plan addresses the following national standards:

- Science—Space Science: Understands the composition and structure of the universe and the Earth's place in it.
- Science—Earth Science: Understands Earth's composition and structure.

National Academy of Sciences

The National Academy of Sciences provides guidelines for teaching science in grades K-12 to promote scientific literacy. To view the standards, visit this Web site:

<http://books.nap.edu/html/nses/html/overview.html#content>.

This lesson plan addresses the following national standards:

- Earth Science: Earth in the solar system
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Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>