

The Moon & Beyond

Grade Level: 3-5

Subject: Astronomy/Space

Duration: One to two class periods

Objectives

Students will

- name the planets in our solar system;
- identify planets, the sun, and moon by images and descriptions;
- describe characteristics of the sun and moon; and
- compare and contrast planets in our solar system.

Materials

- Paper and pencils
- Index cards, 22 per student
- Glue or glue sticks
- Scissors
- Print and Internet resources with images and information about the planets, sun, and moon (see step 3 below)
- Crayons, colored pencils, or markers
- Computer with Internet access (optional)
- *The Moon and Beyond* video and VCR or DVD and DVD player

Procedures

1. Begin the lesson by discussing the planets in our solar system. Ask students these questions: How many planets are in our solar system? What are the names of the planets? What makes Earth a unique planet? Introduce the program *The Moon and Beyond*, telling students that as they watch, they should write facts about planets, the sun, or the moon. They will use the facts in a game.
2. After watching the program, hold a discussion about what the students learned. They will use the facts they gathered to make playing cards for the game Planetary Match-Up, which they will play with a partner. Explain that the objective of the game is to match a planet's picture with the correct facts.
3. Give 22 index cards to each student. Have students write the name of a planet, "moon," and "sun" on two cards in pencil, making sure the name does not show on the opposite side. Keeping the pairs together, students should glue or draw images of a celestial body on the blank side of the appropriate card.

Images of the celestial bodies can be at the following Web sites:

<http://www.nineplanets.org/>

<http://pds.jpl.nasa.gov/planets/>

<http://www.the-solar-system.net/>

4. On the other card in each pair, students should write two to four facts about the celestial body. For example, the Jupiter card may read: "The fifth planet from the sun. More than twice as massive as all the other planets combined." Facts are available from the above Web sites. Allow students time to make their cards in class or as a homework assignment. Make sure to tell students not to share the information, or the game will be too easy.

5. To play the game, divide students into groups of three to five and assign each group a desk or other flat area. To begin, one student leader in the group places his or her index cards in rows, with the facts and picture sides facing up. The other students work together to match the facts and pictures. When a planetary pair has been correctly matched, the student leader confirms the information and removes the cards. The game ends when all the cards have been paired; no student wins or loses.
6. Have the class play Planetary Match-Up until every student has been a leader in a group. Then hold a class discussion about our solar system. Ask students these questions: What facts about Pluto did you learn during the game? How are the sun and moon different? Which is the largest planet? Which is the smallest? Which planets were easiest to identify, and which were most difficult?
7. Suggest that students play Planetary Match-Up with a friend or family member at home.

Adaptation

For Grades 1-2

Write the names of the planets on a white board or chalkboard so students can easily copy them. Have students make their cards with an adult supervisor in a rotating center, trying to match pictures with the names of the planets. Play the game as a class before dividing into student groups.

Evaluation

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

- **Three points:** Students participated actively in class discussions and group games; used materials appropriately; and made unique playing cards that correctly identified two to four facts about each of the celestial bodies in our solar system.
- **Two points:** Students participated somewhat in class discussions and group games; used materials somewhat appropriately without much intervention; and made playing cards that correctly identified one or two facts about each of the celestial bodies in our solar system.
- **One point:** Students did not participate in class discussions or group games; were unable to use materials appropriately; did not finish their playing cards or made cards that identified one or no facts about each of the celestial bodies in our solar system.

Vocabulary

astronomer

Definition: Scientist who studies celestial bodies

Context: An astronomer works to discover interesting facts about our universe.

meteor

Definition: A bright trail or streak of matter in outer space that appears when it is heated by friction with the Earth's atmosphere

Context: A meteor is often called a falling or shooting star.

satellite

Definition: An object that orbits around another object in space

Context: The moon is our planet's only natural satellite.

telescope

Definition: A tool that makes distant objects appear to be larger and closer than they are when viewed with the naked eye

Context: Galileo discovered that he could see the stars more clearly by looking through a telescope.

universe

Definition: All existing matter and space considered as a whole

Context: A telescope lets people see parts of the universe that they could not see with the naked eye.

Academic Standards

National Academy of Sciences

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 national standards:

- Earth and Space Science: Objects in the sky
- Unifying Concepts and Processes: Evidence, models, and explanation

Credit

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