

Chapter 10: The Outer Planets- A Comparative Study

Student Worksheet

Objective:

Learn an aspect of the outer solar system in depth by comparing your object of study to another.

Engage:

In looking for life in the solar system many people are surprised to hear that Jupiter's moon Europa and Saturn's moon Enceladus are some of the most possible habitats for life. In looking at asteroids to mine, many people are surprised to learn that there are asteroids outside the asteroid belt, near Earth. When Pluto lost its planet status, many people learned that there are objects near Pluto's orbit larger than Pluto, or that Pluto has many moons. There are a lot of fun details to learn which will enhance your understanding of our solar system, and your place in it.

Think of something interesting about yourself that your classmates do not know. Take a minute to share with the people near you, and to learn little-known facts about them.

Introduction:

In an astronomy course there is so much to learn about the stars, the Milky Way, and other galaxies, that the solar system often gets forgotten. When you take the time to learn about the solar system it reveals so much majesty and mystery. In this activity you will learn more about an object or type of object in the outer solar system and compare what you have learned to another object. For example: You might really want to learn about Saturn's Moon Titan because you heard about river deltas there. In this project you would learn about Titan, then choose an object somehow related to Titan to compare your findings. Through comparison we learn a great deal.

Your Task:

Learn more about an outer solar system object that interests you; share what you learned with someone else in the class who chose an object somewhat related to yours.

Procedure:

1. Brainstorm with your class in order to explore the outer solar system. What sorts of objects are found there? What are some mysteries that remain?
2. Choose a topic for research.
3. See what your textbook can teach you about the object. Take notes.
4. Use another resource to learn about your topic— e.g.,the internet (solarsystem.nasa.gov is a great resource), an astronomy magazine, or a data-base to learn more. Maybe you will find some good images or diagrams. Take notes. You may be generating new questions as you learn more. Follow-up with those questions.
5. Review your findings so they make sense to you. You should be able to understand what you learned well enough to talk about it. Make note of the questions you still have. Some of your questions might be shared by astronomers who study your topic.
6. With the instructions from your teacher get into pairs or small groups to share your findings.

Conclusion:

1. What was the most interesting thing you learned?
2. What questions do astronomers have about your topic?
3. How did comparing your findings with another classmate deepen the understanding you gained?

Extend:

- Make a poster, chart, or pamphlet to display your results.
- Choose two related objects to compare—e.g., compare the rings of Jupiter to the rings of Uranus, or compare two dwarf planets in the Kuiper belt. Make a Venn diagram to compare and contrast.
- Learn more about the far outer solar system from the results of the Voyager Mission.