



## Space Tourism

### Objectives

Students will:

- Learn about the complexities involved with the space tourism industry.
- Research an celestial body somewhere in the solar system.
- Create a travel poster to a destination in outer space of their choosing.

### Suggested Grade Level

K - 12th

### Subject Areas

Space Science, Engineering

### Timeline

30 - 60 minutes

### Standards

- **3-5-ETS1-1** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- **3-5-ETS1-2** Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- **3-5 ETS1-3.** Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- **MS-ETS1-1.** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- **MS-ETS1-2.** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

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- **MS-ETS1-3.** Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

### **21<sup>st</sup> Century Essential Skills**

- **Learning Skills**
  - Critical Thinking, Creativity, Collaboration, Communication
- **Literacy Skills**
  - Information, Media, Technology
- **Life Skills**
  - Flexibility, Leadership, Initiative, Productivity, Social

### **Background**

It is widely accepted that one of the greatest achievements of the Apollo Moon programme was the view of the Earth from space. Apollo 8 astronaut Bill Anders summed up the impact of the pictures captured by his mission: "We came all this way to explore the Moon," he said, "and the most important thing is that we discovered the Earth". These images put us in our place, a blue marble against the backdrop of nothingness.

### **Imagine what would happen if we started sending business and political leaders into space and back?**

- Would that trip change their view of the world?
- As a result, could it influence the decisions they make on border disputes, pollution, or climate change?

### **Space Tourism Posters - Background**

A creative team of visual strategists at JPL, known as "The Studio," created the poster series, which is titled "Visions of the Future." Nine artists, designers, and illustrators were involved in designing the 14 posters, which are the result of many brainstorming sessions with JPL scientists, engineers, and expert communicators. Each poster went through a number of concepts and revisions, and each was made better with feedback from the JPL experts.

The posters began as a series about exoplanets -- planets orbiting other stars -- to celebrate NASA's study of them. (The NASA program that focuses on finding and studying exoplanets is

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managed by JPL.) Later, the director of JPL was on vacation at the Grand Canyon with his wife, and they saw a similarly styled poster that reminded them of the exoplanet posters. They suggested it might be wonderful to give a similar treatment to the amazing destinations in our solar system that JPL is currently exploring as part of NASA. And they were right!

The point was to share a sense of things on the edge of possibility that are closely tied to the work our people are doing today. The JPL director has called our people "**architects of the future.**"

As for the style, we gravitated to the style of the old posters the WPA created for the national parks. There's a nostalgia for that era that just feels good.

The old WPA posters did a really great job delivering a feeling about a far-off destination. They were created at a time when color photography was not very advanced, in order to capture the beauty of the national parks from a human perspective. These posters show places in our solar system (and beyond) that likewise haven't been photographed on a human scale yet -- or in the case of the exoplanets might never be, at least not for a long time. It seemed a perfect way to help people imagine these strange, new worlds.

### Vocabulary

Celestial Bodies, Graphic Design, Space Tourism

### Materials

- Paper
- Pencil
- Colored Pencils
- Crayons
- Markers
- Paint and Paint Brushes
- Miscellaneous Craft Supplies
- Laptop

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## Lesson

1. Discuss as a class the specific characteristics and physical properties of each of the planets in our solar system.
2. Brainstorm a list of other celestial objects: asteroids, comets, black holes, etc.
3. Have students research one of those celestial objects.
4. Design a poster, flyer or brochure about their chosen celestial object. **BE CREATIVE!**
5. Allow students to use whatever medium they would like: markers, paint, or graphic design using the computer!

## Extensions

1. Have students incorporate facts about their chosen celestial body into their space tourism poster.
2. Have students design ‘tourist attractions’ around their celestial body that incorporate those facts. Students will utilize those physical characteristics to imagine featured activities for ‘space tourists.’ (For example, Riding the Roller Coaster Rings on Saturn.)

## Resources

Administrator, N. A. S. A. C. (2015, February 23). Earthrise. Retrieved from [https://www.nasa.gov/multimedia/imagegallery/image\\_feature\\_1249.html](https://www.nasa.gov/multimedia/imagegallery/image_feature_1249.html)

Loff, S. (2018, June 25). Moon to Mars. Retrieved from <https://www.nasa.gov/topics/moon-to-mars#top>

Space Tourism Posters. (n.d.). Retrieved from <https://solarsystem.nasa.gov/resources/682/space-tourism-posters/>

Space Tourism Posters. (n.d.). Retrieved from <https://www.jpl.nasa.gov/visions-of-the-future/>

Solar System and Beyond Trading Cards (Complete Set). (n.d.). Retrieved from <https://solarsystem.nasa.gov/resources/2482/solar-system-and-beyond-trading-cards-complete-set/>

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