



Teacher's Pre- and Post-Program Visit Guide

Program	Be a Space Ace
Grade Level	5 - 8
Time	50 minutes
Location	Museum of Natural History & Science Classrooms

Program Objectives

- Students will learn about the light spectrum and how astronauts use diffracting lenses to determine the composition of astronomical objects.
- Students will understand how scientists use the Earth's geological features to study the moon and other planets like Mars.
- Students will learn our astronomical address and what makes up our solar system.

Program Description

Help scientists discover clues about the planets in our universe. Through problem solving and hands on experimentation the students will participate in activities that are out of this world!

Major Vocabulary and Concepts

Atmosphere	Earth	Galaxy
Habitability	Hubble Space Telescope	Light Spectrum
Mars	Milky Way Galaxy	Planets
Soil	Solar System	Universe

Activities

Activity # 1: *Astronomical Address*

Students will determine their astronomical address and discuss our solar system.

Activity # 2: *Mystery Milky Way Solar System Soil Samples*

Students investigate the physical and biological properties of soil samples from different "planets" to determine whether it is "habitable" or not. Students use deductive reasoning to determine which planet the soil might have been taken from.

Activity # 3: *Planetary Rainbow*

Students will learn about the light spectrum and wavelengths in order to understand how scientists discover the composition of objects too far for us to travel to. Students will then be able to use diffracting glasses to examine the differences between some common gasses and the light they emit.

Suggested things to do in your classroom before the program:

- Have students research the planets in our solar system; compare and contrast them to the Earth in terms of habitability (ability to support life).
- Research one of the following types of technology listed below used in space research. Write an essay in 150 words about the main purpose of the equipment's mission, where it is used, and the information it has collected.

Hubble Space Telescope

Mars Exploration Rovers - Spirit or Opportunity

Cassini-Huygens Mission

Chandra X-Ray Observatory

Keplar

LRO: Lunar Reconnaissance Orbiter

Mars Reconnaissance Orbiter

International Space Station

Spitzer Space Telescope

THEMIS

Suggested things to do after the program:

- Play "Group the Galaxies" game! For lesson plan and PDF of printable cards, visit: http://amazing-space.stsci.edu/resources/print/classroom_activities/group_the_galaxies.pdf
- Play "Myths vs. Realities: Stars." Test your students' knowledge about stars! <http://amazing-space.stsci.edu/resources/myths/stars.php.p=Teaching+tools%40%2Ceds%2Ctools%2C%3EStellar+evolution%40%2Ceds%2Ctools%2Ctopic%2Cstars.php%3EOverview%3A+Star+myths%40%2Ceds%2Coveviews%2Cmyths%2Cstars.php&a=%2Ceds>

Curriculum Standards Addressed

Ohio - Earth and Space Sciences, Physical Sciences, Science & Technology, Scientific Inquiry, Scientific Ways of Knowing

Kentucky - Earth/Space Science, Physical Science, Unifying Concepts

Indiana - The Nature of Science and Technology, Scientific Thinking, The Physical Setting, Common Themes

Related Exhibits and Features

The Space exhibit located in the Museum of Nature History & Science.

Resources

- www.nasa.gov
- www.jpl.nasa.gov
- amazing-space.stsci.edu
- www.kidsgeo.com
- http://hubblesite.org/the_telescope/
- <http://www.astrophysical.org/starclassification.php>
- <http://astrobiology.nasa.gov/articles/digging-in-the-dirt-on-mars/>
- DK Eyewitness Books: Space Exploration by Carole Stott. DK Publishing, Inc., 2004
- *Mysteries of the Universe*, by Nigel Hawkes. Aladdin Books Ltd., 1995.
- *What if...Space didn't have any planets, stars, or there weren't any galaxies, or it was full of aliens, or the universe stopped expanding?* by Steve Parker. Aladdin Books Ltd., 1995.