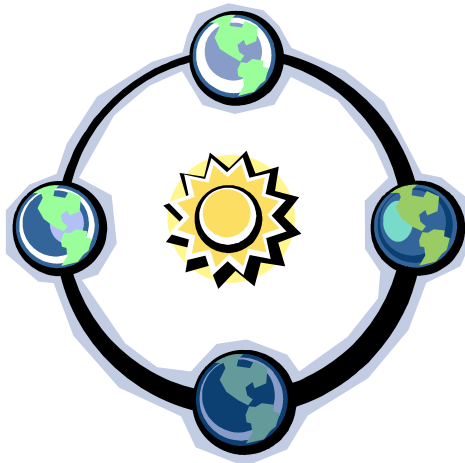


Spaceship Earth

6th grade

Post-Visit Activities



Activities

Activity 1: Create a Space Exploration Timeline

During your class's visit to the Virginia Air & Space Center, each student was given a Space Quest Factoid card containing an important highlight or advancement in space exploration. Each student researched his or her assigned topic in the Space Gallery Exhibit area and compiled factoids on the card. When you return to your classroom, you can string a long piece of colorful ribbon or yarn across your classroom ceiling, wall, or school hallway. Have your students arrange their cards in chronological order along the ribbon or yarn to create a Space Exploration Timeline. The students can then further research their topics to create reports or do one or more of the projects listed in the Cross-Curricular Extensions & Enrichments Activities Section in this packet.

Excellent internet sites for student research can be found at:

http://www.jpl.nasa.gov/multimedia/voyager_record/

This site contains an extensive library of multimedia features, including pod casts, slideshows, videos, quizzes, and more about a wide range of exploratory missions and planetary research.

<http://history.nasa.gov/40thann/videos.htm>

This site contains movies and audio files about important events in the history of space exploration.

<http://www.exploratorium.edu/mars/teachers/index.html>

This online exhibit contains a complete catalog of images from the Mars Exploration Rovers, plus web casts, activities, and links to animations of the rovers' journey, and more.

<http://solarsystem.nasa.gov/planets/index.cfm>

This site contains detailed information about all of the known planets in our solar system, missions into space, spacecrafts, and technology. It includes pictures, videos, and interactive features. The kids section of the site contains games, fast facts, and activities.

http://teacher.scholastic.com/space/space_firsts/index.htm

By exploring this interactive time line, students learn about important milestones in the history of space exploration. For each "space first" covered, there is a link to an outside website that provides information about the topic covered.

Activity 2: Moon Phases

Have the students observe and record the phases of the moon each night, for one month, on a Moon Phase Calendar that can be found at

<http://www.middleschoolscience.com/moonphase.pdf> . Have them label each phase as a

“New Moon, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Last Quarter, and Waning Crescent.” They can find information on the different moon phases at

<http://www.enchantedlearning.com/subjects/astronomy/moon/Phases.shtml> .

Another version of this activity is to have the students construct a “Phases of the Moon Daily Log” using 30 white 3 x 5” index cards fastened together by a metal fastener. A round object can be used to trace the same sized moon on each card. The students fill out the phase they see each night and label the phase with the correct term. When completed, they will have a flip book. As the students flip and view the animation, have them make a distinction between “waxing” and “waning.”

Activity 3: Tides

At the Virginia Air & Space Center, the students learned that tides are caused by the gravitational pull of the moon and the sun. Since the moon is so much closer to the earth than the sun is, the gravitational influence of the moon on our tides is more than twice that of the sun. It was demonstrated to the students that the water on the earth “piles up” in bulges at the point closest to the moon, and due to the laws of physics, also “piles up” on the opposite side of the earth, furthest away from the moon. This “piled up” water moves as long waves around Earth, called *tides*. We perceive these tides as vertical movement of the ocean waters. The heights of the tides vary each day depending upon the relative position of the sun, moon, and earth. Students can learn more about the various types of tides from <http://www.boatsafe.com/kids/tides.htm>.

The Virginia State Parks has developed an excellent lesson plan, “Telling Tides,” for teaching the different types of tides and how to read and interpret tide charts to sixth grade students. The lesson plan can be found at http://www.baylink.org/lessons/3fr_tides.html. A modified version of the same lesson plan, containing all student hand-outs, definitions, procedures, and background information for the teacher, can also be found on pages 26-28 in the 6th Grade Science Standards of Learning Enhanced Scope and Sequence at <http://www.doe.virginia.gov/VDOE/EnhancedSandS/scigrade6.pdf>. Once the students are adept at reading and interpreting a tide chart, you can have them go to <http://www.mobilegeographics.com:81/locations/2403.html> to read and interpret a real-time tide chart for Hampton Roads. Be sure to have them explain and model the relative positions of the sun, moon, and earth according to the tide chart.

Cross-Curricular Extensions and Enrichment Activities

Art

Show students some examples of postage stamps the United States Postal Service has used to commemorate historic space exploration and flight advancements at this web-site: http://www.nasa.gov/missions/research/x15_stamp.html . Ask students to research one of

the historic advancements from the Space Flight Timeline they created with their Space Quest Factoid cards and then draw and design their own postage stamps commemorating them. The students can create an exhibit of their artwork on the classroom bulletin board or in school hallways.

Have students research one of the topics from the Space Flight Timeline and then use various craft supplies to build a replica and/or diorama of a spacecraft they researched.

Computer Technology

Have students research space exploration on the internet and create their own space exploration multimedia timelines using timeline maker software.

Allow each student to select a topic on the planets, moon phases, tides, gravity, the seasons, or space exploration and have them research and create a power point presentation. Have the students view and critique them.

Language Arts & Communication Skills

Ask students to put themselves in a famous astronaut's space boots and imagine what it would be like to be them. Have them research the astronaut's accomplishments and then write a first person narrative essay telling what they did and how they felt while they were doing their missions and after.

Teach the students about oral interviewing techniques and then have them pair up. Tell them to pretend that one of them is a famous astronaut or space scientist and the other partner is a news anchor interviewing him or her about what they have discovered or done. Have them write and then act out their interview in front of the class.

Teach the students the mechanics of a newspaper article. Have them research a current event in space exploration and create and write a newspaper article using a good headline and lead. Articles must answer, "who, what, when, where, why, and how." All news articles could be compiled in a class newspaper.

Math

Students can design their own space station by going to <http://www.childrensmuseum.org/cosmicquest/spacestation/index2.html> .

They must decide what to include in their design, based on different factors such as technology, weight, and the properties of space.

Have the students create Venn diagrams and compare and contrast similarities and differences they find among various space missions or planets.

Music

Have students write a song or rap that teaches about the planets, phases of the moon, tides, planets, gravity, historical space flight event, or a current event in space exploration. Have the students teach the song to a group of students and then perform it to the rest of the class.

Science

Have the students look through newspapers, magazines, and internet sites to find current events in space and upcoming space missions. After students have found articles and pictures to share, have them write and share summaries. They can also display their photos, articles and/or summaries on a “Current Events in Space” classroom bulletin board.

To study and prepare for a test or quiz, have the students write ten riddles or problems about the solar system, moon phases, gravity, tides, or space flight for a fellow student to solve. Tell them to use research to make their riddles tricky.

Have the students conduct internet research to find out when each of the planets will be visible in the night sky. Choose one planet that is visible now and keep a planet journal for at least two weeks to show its movement in the night sky.

Students can take an interactive field trip, creating their own journey through the solar system at <http://sse.jpl.nasa.gov/multimedia/interactive.cfm> by clicking on *Launch Timeline* under *Timeline: The Robotic Exploration of Space*.

Social Studies

Ask students to research the Cold War. Have them add and attach significant events to the Space Exploration Timeline.