

Space Exploration

Learning Target: Students will identify the reasons for space exploration (to discover, to make life better on Earth, and to encourage the wonder of exploration). Additionally, students will explain the challenges inherent to space exploration (necessity of transporting needed food, water, and air; contending with temperature extremes; living in micro-gravity; and medical considerations upon return to Earth). Finally, students will describe the purpose of the International Space Station (to discover ways to allow humans to work, live and play in space for extended periods of time).

Activity: To activate students' prior knowledge, ask them what they know about space exploration. Write their ideas on the board. Now ask students what things they would need to live in space and keep a list on the board. Lead a class discussion regarding the reasons for and challenges inherent to space exploration (as described above). Give students a chance to add to the answers they provided earlier.

Read aloud *The International Space Station: Let's-Read-And-Find-Out Science Stage 2* by Franklyn Branley (illustrated by True Kelley). Ask students what would happen if there were no heating or air conditioning aboard the ISS. What would happen if they ran out of water or food? How do astronauts use the bathroom in space? What would astronauts do if they needed to escape? Beyond these survival issues, ask students to think about how astronauts would learn, socialize, have fun, and enjoy life in space!

Formative Assessment: Place students into groups and ask them to design "blueprints" for a space station that would meet all of their living needs (basic necessities for life, transportation to and from Earth, regular resupply, protection from the vacuum and temperature extremes of space and socialization). Provide each group with the materials needed to design their space station (construction paper, crayons, markers, collage pictures for gluing, etc). Ask each group to also label their blueprints and write 1-2 paragraphs explaining why their space station design meets all of their living needs. For a fun follow-up activity, provide groups with marshmallows (regular and miniature), gumdrops, pretzel sticks and graham crackers and ask them to build a three-dimensional model of the space station they designed. Take pictures of their finished models to display with their blueprints and paragraphs and then let the students eat their space stations.

Couldn't tell the ISS from an Apollo capsule? It's okay. You and your students can visit NASA's photosynth website for still images and a virtual tour of the International Space Station:
<http://www.nasa.gov/externalflash/photosynth/index.html>.