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SPACESHIP EARTH: A PARTNERSHIP IN CURRICULUM WRITING.

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As the Apollo astronauts left Earth to venture onto the surface of another planetary body, they saw their home planet in a new global perspective. Unmanned NASA missions have given us a closer look at all the other planets in our solar system and emphasized the uniqueness of Earth as the only place in our solar system that can sustain life as we know it. Spaceship Earth is a new science curriculum which we developed to help students and teachers to explore the Earth, to see it in the global perspective, and to understand the relationships among life, the planet and the sun. We use astronaut photographs, especially shuttle pictures, as well as groundbased studies to help students to understand global Earth Science and integrate various aspects of physical, life and social science.

The Spaceship Earth curriculum was developed at by a team of JSC scientists working in collaboration with teachers from local school districts. The project was done under the auspices of Partners-In-Space, a local non-profit organization dedicated to improving science education and our general knowledge of space. The team met once a month for a year then assembled the curriculum during the summer. The project is now in the testing stage as the teachers try it out in their classrooms. It has been supported by the Texas Education Agency and will be offered by the State of Texas as a supplemental curriculum for statewide use. Because the curriculum was developed by teachers, it is self contained and the lessons are easy to implement and give students concrete experiences. The three sub-units follow in a logical order, but may be used independently. If they are used separately, they may be tied together by the teacher returning to the basic theme of the global Earth as each unit is completed.

Curriculum Overview

Search for a Habitable Planet. The introductory unit focuses on the uniqueness of Earth in our solar system. The students become extraterrestrial explorers on a mission to search for a new home. They begin by defining the life requirements of different types of creatures. Students are divided into six groups of creatures having different life requirements. After creating models of their creatures, they tour our solar system looking for planets that provide the needs of their creatures. They conclude that different planets are appropriate for different types of creatures, but that Earth is the only one that meets our needs.

Blue Planet. The main unit focuses on Earth and the connections between life, the planet, and the sun. It is divided into three distinct parts:

1. Life Support System - Water and Air. The importance of water and air to the inhabitants of Earth is explored through exercises about water distribution, air composition, the effects of greenhouse gases, ozone depletion and pollution. Students will learn the effects of human intervention on the water and air that sustain life.

2. Dynamic Earth. Earth is active and volatile. Energy from the Sun produces weather from the atmosphere and oceans. Energy from inside the Earth produces new crust while it consumes old crust. Exercises show the effects of these powerful internal and external forces on Earth's surface and its inhabitants.

3. Living in the Environment. Students will learn about the problems of living in extreme environments and plan an expedition to Antarctica to collect meteorites. They will evaluate requirements for clothing, shelter, food, water, transportation, communication and recreation. They will realize that living at Earth's last frontier is challenging, but not out-of-this-world.

Moon, Our Nearest Neighbor. The final unit concludes the Spaceship Earth curriculum by leaving Earth. Students learn about our Moon as they plan to set up a Moon base. Their plans to meet life's needs on this lifeless planetary body contrast strongly with their plans for an Antarctic expedition. This contrast reinforces the uniqueness of Earth and its life support system.