

## NOURISHING THE SENSES OF EARTHLINGS ON MARS

Astronaut Andy Thomas, landing in Florida after 130 days in space in the scientifically correct but artificial environment of Mir, said he enjoyed stepping out of the Shuttle to breathe Earth air, air with moisture and aroma, air with content. For thousands of years, we Earthlings have oriented ourselves to our surroundings via sights, sounds, smells, and touch. Our bodies have evolved to make the most of information we gain from our senses. On Earth, we experience air with humidity; plants that tickle; insect and animal sounds; a sky that changes color throughout the day; textures that tell us if a surface is hospitable or provides pleasure in its own right. But Mars is not Earth and colonists will be deprived of these earthly necessities unless they -- or a facsimile -- are engineered into the colony.

Sixth-graders attending Houston Preparatory Academy, an intensive summer educational program for children of academic achievement who live in public housing, will imagine and design aspects of the Mars colony designed to provide nourishment for the senses of Earthlings during their long stay away from home.

### **General Sequence of Events**

Houston Prep prepares students with academic promise to meet the entrance requirements of top area prep schools via a math, science and language arts curriculum. Their summer program, held on the University of Houston (UH) campus, also makes medical care, social services and sports programs available to the students and their families.

At the conclusion of their UH-based program, the students will move to the educational facilities of Challenger 7 Memorial Park, a Harris County Precinct One nature facility near Johnson Space Center. From this location, students will closely examine their natural environment, take a field trip to Space Center Houston, carry out web-based research, and design aspects of the Mars colony particularly suited to nourishing the senses of Earthlings on Mars.

### **Program Calendar, June 8 through August 11, 1999**

*June 28-July 2*

HWCA-HEI Crew works with the Houston Preparatory Academy to identify math, science and human factors topics applicable to space exploration.

*July 6-August 6*

Houston Prep carries out summer educational, health, sports and social services program. Previously identified Mars-related concepts are introduced by HWCA-HEI Crew members in weekly classroom visits. Additionally, HWCA-HEI Crew finalizes materials for the Three-Day Research and Design Extravaganza.

*August 9-11*

At the Education Center, Challenger 7 Memorial Park, Houston Prep students participate in a **Three-Day Research and Design Extravaganza:**

*Day 1 Morning Session* - Students tour Challenger Park with a park naturalist and an artist, who help the students identify how their senses gather information from natural sources. Teams are formed, each addressing one of the basic senses.

*Day 1 Afternoon Session* - HWCA-HEI Crew assigns applicable research questions to Houston Prep students and identifies Internet-based resources that contain information they need. Students use computer and network resources at United Space Alliance Training Academy to do their research. Members of HWCA-HEI Crew coach and assist.

*Day 2* - Visit Space Center Houston. Participate in a special HWCA-HEI program at the "Feel of Space" station, where students will see how astronauts sleep, shower, eat and work in space.

*Day 3* - The students spend all day designing sensorial aspects of the Mars colony, using information they've learned over the summer and during the three-day research and design extravaganza. Art supplies for both two-dimensional and three-dimensional designs are available for their use. HWCA-HEI Crew guides and assists. Upon completion, their projects are displayed in the newsletters and web sites of both HWCA and HEI.

**Number of students served:** 20 sixth graders

The HWCA-HEI Crew is composed of HWCA artists and employees of Hernandez Engineering, Inc.(HEI), an award-winning contractor to NASA.

## HWCA-HEI CREW

**Shirley Brandt, HEI robotics engineer,** conducted science classes for 120 seventh graders at Santa Fe Junior High School during Engineering Week. She demonstrated the complexities of programming robots when she assumed the identity of a robot, then challenged the students to "program" her to put on a jacket. Shirley is on the board of Bay Area Council on Drugs and Alcohol, which provides education and treatment for drug-affected families.

**Angie Chestnut, multimedia producer for Bastion, a division of HEI,** is an elected trustee of Harris County Department of Education, where she has worked on a variety of projects, including developing educational facilities for adjudicated youth and technology planning. She develops multimedia educational programs that utilize her experience in both computing and education. She is a published author and designs fine jewelry.

**Dale Jennings, HEI test engineer, NASA's X-38 project,** which is producing a space vehicle designed to return a crew of astronauts from the international space station to Earth in case of emergency. Dale's work includes consideration of the technology of flight, wind, weather, parachute behavior, and human factors such as vertigo. He has received awards for his work on the X-38. Dale retired from the Army, where he was an airborne test engineer and a skilled parachute rigger.

**Joy Mullett, HWCA artist, writer, and HEI electronic publications specialist,** received a NationsBank grant to work with students at HISD's Deady Middle School to paint a large mural in the cafeteria. She also worked with Deady students to create an art car. Joy has expertise in telecommunications systems and is a published author and photographer. Her art has been exhibited in Texas and California.

**Jennifer Nguyen, HEI programmer, NASA engineering simulation lab,** develops simulations for the ascent and re-entry of space craft. She has also prepared analyses of shuttle payloads, including kinematics illustration of operational sequences and 3D animation. Jennifer made Engineering Week presentations to kindergartners and, with her husband, provides classes at a local Vietnamese community center.

Houston Women's Caucus for Art  
[www.artwomenhouston.org](http://www.artwomenhouston.org)  
Hernandez Engineering, Inc.  
[www.hernandez-eng.com](http://www.hernandez-eng.com)  
United Space Alliance  
[www.unitedspacealliance.com](http://www.unitedspacealliance.com)  
Challenger Park, Harris County Precinct One  
[www.io.com/~pdhulce/cha17.html](http://www.io.com/~pdhulce/cha17.html)  
Houston Preparatory Academy  
[www.neosoft.com/~houprep](http://www.neosoft.com/~houprep)  
Space Center Houston  
[www.spacecenter.org](http://www.spacecenter.org)

