"GROUND CONTROL TO DEAF AND HARD OF HEARING STUDENTS..."

space camp provides lessons in science, math, teamwork, and fun

By Becky Perkins

"During the week I attended the Space Museum campus, I continued learning through the various workshops on science and technology. The first day, I studied the structure of the Earth and the solar system. It was a good opportunity....I will keep studying more about space." Corey from Baltimore, Maryland, Space Camp 2004

Corey is just one of the thousands of deaf and hard of hearing students to have attended Space Camp at the U.S. Space & Rocket Center in Huntsville, Alabama, over the last 20 years. Each year in the spring, students from schools all over the United States attend a one-week, hands-on learning experience in math, science, and technology at the center.

Dr. John Tiffany, former principal of the Alabama Institute for the Deaf and Blind in Talladega, helped establish the space camp for deaf and hard of hearing students when financial support from the Huntsville Sertoma Club permitted 21 students from three states to participate for one week in May 1987. By spring 1988, 72 students from eight states participated. Since then, students from 25 different states and other countries have participated and become space camp alumni.

Space Camp (for students ages 9-11), Space Academy (for students ages 12-14), and Advanced Space Academy (for students ages 15-18) feature a variety of out-of-this-world activities. These activities begin to familiarize students with the experience of astronauts, increase their interest in science and math, foster teamwork exercises, and enhance their self-esteem. They include simulated shuttle missions, where deaf and hard of hearing campers are assigned titles and duties and they experience state-of-the art technology. Whether they assume the role of mission controller, pilot, space walk specialist, or space lab scientist, students receive manuals for their responsibilities and learn the process they need to control, the experiments they need to conduct, and the vocabulary they need to use. Sign language interpreters and special cameras allow

Photos courtesy of Becky Perkins

Becky Perkins, M.A., is the school counselor for deaf and hard of hearing students in the Columbus Public Schools in Columbus, Ohio. She has a B.S. in deaf education from Kent State University and earned an M.A. in school counseling from Gallaudet University. She welcomes comments to this article at: *bperkins@columbus.k12.oh.us*.

students to sign to each other and enhance communication.

The simulated missions average three hours between "take off" and "touchdown." In addition to the normal routine of a shuttle flight, students often encounter unexpected simulated mishaps. During one mission, for example, a meteorite hit the satellite system; during another mission, the air hose suddenly sprung a leak. Students solve what can become catastrophic situations by using teamwork and ingenuity.

Space Camp and Space Academy participants learn about rocket assembly by using a kit to design and launch their own rockets. They experience the feeling of reduced gravity when they are strapped in a chair that is suspended on a huge spring and bounced up and down on a simulated moon surface. They experience what scientists call the G-force when they buckle into a circular wall that spins very quickly. The force pins them so tightly that when the floor descends and their feet no longer touch it, they hang suspended, sliding gently down as the ride slows.

A Space Shot simulation allows students to "blast off" from Earth. Other simulations allow them to try and complete tasks in a gravity-deprived environment, where they become aware of the awkwardness of manipulating tools and equipment. In addition, students in Advanced Space Camp have a scuba experience that allows them to work under water where they "repair a satellite" in an environment in which they experience 1/6 the gravity of Earth. They also receive an hour of college general science credit from the University of Alabama in Huntsville.

In Aviation Challenge, students have hands-on experience with high-performance jet simulation, scenario-based missions, land and water survival training, and flight dynamics. These activities are set-up just outside of the grounds of the Space and Rocket Center, where they are surrounded by helicopters and fighter planes that were once used by the United States military. There are also two hangars. Inside one of the hangars, simulated fighter jets are set up—minus their wings and wheels—with large computer screens arranged just outside of the windshields. The screen enables the student pilot and co-pilot to feel as if they are actually flying the jet on assigned missions.

In another Aviation Challenge activity, each student is appointed to a team and each team has specific responsibilities during the "escape and evade mission," in which they accomplish a goal—perhaps dismantling an enemy bomb, kidnapping a guard from an enemy base, or infiltrating an enemy camp—in the darkness of the surrounding woods during the last night at camp.

There are also water survival activities on a man-made lake near the hangars. Campers are taught how to escape from a jet or a helicopter if there is an accident or an emergency landing on the water.

All students—in Space Camp, Space Academy, and Aviation Challenge—participate in activities that include academic learning. Students use workbooks and take trips to the U.S. Space & Rocket Center Museum and Rocket Park where actual rockets that were used by NASA, such as Saturn V, are displayed.

Each day counselors and chaperones quiz the campers on facts they have been taught about astronauts, the solar system, rocket technology, the space race, and the International Space Station. Participants display their new knowledge by participating in the "Space Bowl" challenge on the last night of camp, for which teams compete against each other by answering questions in various categories. The winning team is announced the next morning during graduation.

The curriculum enhances benchmarks in math, science, and technology of most school districts. Equally important, students learn more about themselves—their strengths and weaknesses. Many are away from home for the first time and they experience independence in making decisions on their own. They also have increased feelings of self-esteem as they achieve success within the camp framework and work together with their peers. At the end of camp, both campers and chaperones have a sense of togetherness. Each person leaves with enthusiasm and renewed strength. Alumni feel encouraged to learn more about space and flight travel on their own. Space Camp participants are exposed to career areas they didn't know they could pursue.

The cost of Space Camp is $675. This includes all meals, lodging, program materials, and activities. Some scholarships are available. However, most students and chaperones fund-raise and write grants to be able to attend.

To find out more about how your class, group, or child can attend these camps, go to *www.spacecamp.com/deaf*. You can also contact Amy Newland, director of International Space Camp for Deaf/Hard of Hearing Students, at *amn01wpd@wpsd.org* or (412) 371-7000, ext. 691.