Distance Learning and Education Project expands

More students and teachers can interact with real space scientists, engineers and astronauts than ever before thanks to JSC's expanding Distance Learning and Education Project.

The concept of distance learning originated years ago with school correspondence courses. Soon, organizations such as city zoos, museums and NASA also began to share their resources with academia. However, during the past few years technology has removed the remaining barriers and distance learning has experienced a dramatic spike in popularity.

The increased capabilities of distance learning around the world prompted JSC Center Director George Abbey to support a new team within public affairs called the Distance Learning and Education Projects Office to manage the increasing opportunities to share the excitement of NASA and JSC with school groups.

Some organizations in JSC have been doing their own versions of distance learning and outreach for many years by giving virtual tours or hosting chat sessions. This new office, led by Susan Anderson, will act as an umbrella for those activities by referring educators to the appropriate program for the type of learning event that fits their needs and ensuring that the activities are tracked and measured.

"The project's vision is to entice students to investigate the possibilities of applied sciences by distributing NASA-related training, education, and inspirational opportunities through distance learning technology," said Anderson. "We're trying to offer teachers not only motivational and inspirational tools, but also provide them with a different way to educate students, not just in math and science – but interdisciplinary aspects, including history or sociology. There are some very good lessons that we can reinforce for these topics as well."

She says the goals for the new distance learning initiative are to expand and upgrade the DLEP events; improve Web site usability; increase university and institutional partnerships worldwide; and expand the resources for employee development and supplement crew training. She also wants to build reciprocal agreements with contractor organizations.

NASA JSC Photo JSC2000-00278

The Distance Learning and Education Project team brings the human space flight program to life in classrooms around the world. The team includes, back row, left to right, Erika Guillory, Sarah Enticknap, Timothy Reynolds, Desmond Anthony and Sharon Hosea, and front row, Susan Anderson, Bob Fitzmaurice, and Emmett Durham.

To that end, one of the initial objectives the team is working on is developing interactive subject-based education modules to supplement the distance learning sessions currently offered. This not only will help the educators maximize the interactive experience, but help ensure the students absorb consistent, valuable education messages and allow JSC to accurately measure and track the effectiveness of its distance learning events.

Emmett Durham, Indyne, Inc., senior instructional systems designer for the program, says he uses a systematic approach to creating the modules – first identifying the instructional goals and then identifying the learning objectives needed to reach those goals.

"We can use this interactive opportunity to turn the students on to science and space," said Durham. "If we can get them excited about space and show them how cool it is, perhaps more students will find they like it after all and will pursue math and science as a career."

The modules include life science, Earth science, space life science, geography and microgravity, and are developed in accordance with national education standards. Each module includes background lessons to prepare the students for the interactive event. And because student learning abilities vary according to age, each module has age-appropriate versions for various grade levels. The team is already using the microgravity lessons and the remaining modules will be complete for the 2000-2001 school year.

Anderson said she hopes to establish distance learning partners in each of the 50 states, as well as reach schools in other countries, such as Department of Defense sites abroad.

"The proliferation of technology is changing the way we teach our children," said Anderson. "I really believe you are going to start seeing less and less of the standard classrooms."

Although the initial goals of the new Distance Learning and Education Project focus on facilitating education for outside entities, part of Anderson's role is assessing how these same educational tools can benefit JSC employees.

"Just-in-time training will become a natural process for our on-board crews," said Anderson. "Basic training via DLE will be the next progression for international astronaut training, and NASA and contractors will eventually have easy access to university courses via live video teleconference capabilities and the use of Web-casting."

That's a very attractive prospect for JSC employees, but first the team needs volunteers to help out with the growing requests for DLE activities. If you have a specific area of expertise and are interested in becoming a distance learning instructor, please contact Sarah Enticknap at x47325 for information on training.

NASA and contractor employees can volunteer to be on-camera hosts for DLE events. Those who volunteer will participate in two half days of training: *Delivering Your Message Live!* and *You're on Camera, Now What?* The DLE office will provide the materials, objectives and a proposed script, which hosts can customize to fit their own style. Volunteers will be limited to four hours of DLE support activities per month. ■

Hubble opens new eyes on universe

NASA's Hubble Space Telescope is back in business, as made dramatically evident in stunning new celestial pictures of remote galaxies and a colorful dying star released recently.

The images were taken last month as part of the activities to recommission the Earth-orbiting telescope.

The pictures are a culmination of the successful space shuttle servicing mission STS-103 last December, which restored NASA's premier optical space observatory to full capability beefed-up with new electronics and critically needed replacement gyroscopes. Hubble has now resumed probing the universe's many mysteries with a crystal-clear view.

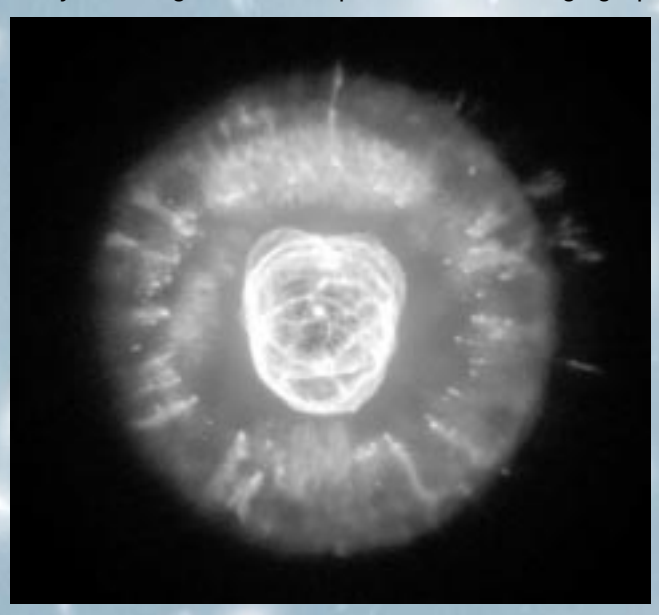
"Thanks to the great work by the astronauts, Hubble is better than new," said Dr. Ed Weiler, NASA associate administrator for space science. "I think there is no better proof than these pictures that NASA's capability to send humans into space to work on Hubble has had a vital role in space science and the renaissance in astronomy we're now seeing."

To verify the telescope's refurbishment, astronomers resumed operations by aiming it at two scientifically intriguing and photogenic celestial targets.

One object is an intricate structure of shells and streamers of gas around a dying sun-like star 5,000 light-years away. Designated NGC 2392, it is dubbed the "Eskimo Nebula" because, as seen through ground-based telescopes, it resembles a face inside a furry parka. In Hubble's sharp view, the "furry" features resemble giant comets all pointing away from the central star, like the spokes of a wheel.

A second target is a massive cluster of galaxies called Abell 2218, which acts like a giant zoom lens in space. The gravitational field of the cluster magnifies the light of more distant galaxies far behind it, providing a deep probe of the very distant universe. The cluster was imaged in full color, providing astronomers with a spectacular and unique new view of the early universe.

Spacecraft operators report that all the new equipment installed on the telescope in December is working perfectly, including the new computer, solid-state recorder, and fine guidance sensor. In particular the new gyroscopes are allowing Hubble to reliably point with exquisite precision at celestial objects.



NASA's Hubble Space Telescope captures a majestic view of a planetary nebula, the glowing remains of a dying, sun-like star. This stellar relic, first spied by William Herschel in 1787, is nicknamed the "Eskimo Nebula" (NGC 2392) because, when viewed through ground-based telescopes, it resembles a face surrounded by a fur parka. In this Hubble telescope image, the "fur parka" is really a disk of material embellished with a ring of comet-shaped objects, with their tails streaming away from the central, dying star.

Two key science instruments, the Wide Field and Planetary Camera 2 and the Space Telescope Imaging Spectrograph, are now being used for routine science observations by astronomers worldwide to probe everything from planets, to black holes, to far flung galaxies. ■