Sky is no longer the limit at NASA Explorer School

Bottom Left: Jason Mair (left) and Timothy Stankye make salt solution for a brine shrimp experiment.

Bottom Center: Niasia Mercado tries on a helmet from a space suit (Extravehicular Mobility Unit or EMU).

Bottom Right: Simone Greatheart (left) and Amber Moye mix baby food agar to test for growing airborne fungi.

SLS Volunteers Encourage Students to Pursue Math, Science and Technology Careers

Hamilton Sundstrand Space, Land & Sea (HS SLS) employees are teaming with NASA and teachers at the Sheridan Communications & Technology Middle School in New Haven, Conn., to provide real-life math, science and technology experiences for the magnet school's students.

Sheridan draws fifth-through-eighth-grade students from 14 New Haven area towns. In 2003, Sheridan was one of the first 50 U.S. schools to be designated a NASA Explorer School, entering a three-year partnership with NASA designed to encourage students to pursue careers in math, science and technology.

Dr. Huân Ngô, a former associate research scientist at Yale University, joined the faculty at Sheridan Middle School in 2001. "The NASA Explorer Schools Program has allowed us to integrate science, math and technology throughout our curriculum and develop a model program," he said.

Ngô, the team lead of Sheridan's NASA Explorer Schools Program, says the biggest advantage of the program is access to NASA resources and people. Explorer Schools can request up to 60 days of project-based and classroom support from a NASA educational specialist. "NASA education specialists work directly with teachers and students to bring math, science and technology to life," Ngô said.

NASA also provides $17,500 to each Explorer school to develop technology. Sheridan has used some of the funds to purchase videoconferencing equipment.

SLS volunteers joined the NASA/Sheridan partnership in February 2004. SLS Project Engineers Hervens Beauge, Kevin Renfro and Keisha Watts developed real-world math problems for two fifth-grade classes. "We showed that math, science and technology are important in the real world," Renfro said. "It was great to see faces light up and hands go up as the students eagerly participated in the lesson. But, the real reward is in knowing that the lesson will be talked about at the dinner table and in the neighborhood."

"We have an advantage because we work for the space program," Beauge said. "The kids are eager to listen because our work is exciting. We used examples related to NASA's Mission to Mars to show that math and science govern everything we do. We used math concepts they were learning to solve problems we face daily at work."

Ngô sees the relationship with SLS as key to future success. "Educational programs need stable community partnerships to ensure long-term success," Ngô said. "SLS brings a lot to the table. The company's ties to NASA date back to the beginning of the space program and the SLS volunteers have a level of technical expertise that teachers, even those trained in science, don't have. As a result, the volunteers can be role models for careers in math, science and technology in a way that teachers can't."

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Left: Sheridan Explorer Space Experiment Module at NASA's Wallops Island Flight Facility in Virginia.

NASA photo used with permission.

Above: Lynette Ramos (left) and Sayra Ingles experiment to see whether or not goldfish can learn to swim in a maze.

Bottom Left: Andrea Emory (left) and Edgar Escobar mix solution.

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Below: Manuel Meideros (left) and Shaquille Eaddy experiment with magnets.

Below Right: Andrea Butler mixes a solution of vitamins to test on green algae Chamydomonas.

Right: NASA Astronaut Dan Barry, a Connecticut native, visits with members of the Sheridan Robotics Club.

Photo by Chad Lyons

All photos used with permission from the New Haven school system.

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This year, Sheridan's Explorer Program includes all of the school's nearly 500 students and is focused on science. The theme of Sheridan's 2004-2005 Explorer Program is "Living and Working on the International Space Station" (ISS). The NASA/Sheridan/SLS team is developing experiments similar to those conducted by ISS astronauts, including: water recycling/ reclamation and plant growth.

"The students will perform earth-bound experiments and will compare their results with those obtained on the ISS," Renfro said. The comparison will take place during a March 2005 live downlink with the ISS crew. Sheridan is one of only two Explorer schools chosen by NASA to participate in an ISS downlink during the Increment 10 proposal process.

The goal of the Explorer program is to inspire the next generation of explorers. NASA plans to add 50 Explorer schools each year. "We're counting on the next generation of explorers to help carry the torch of exploration to the farthest regions of the universe," said NASA Administrator Sean O'Keefe at the 2004 Leadership Institute/2003 NASA Explorer Schools Student Symposium in Florida. "There used to be a saying that the sky is the limit. Well, in this first year of the second century of flight, the sky and the heavens are not the limit, but rather the starting point of our exploration adventures."

According to Ngô, there have been many wonderful moments, but the most rewarding was at the Student Symposium at Kennedy Space Center. "I realized then how well our program was working," Ngô said. "Our school's 2003-2004 theme, 'Mars and its Future Colonization,' tied the program together and helped our students internalize the concepts they were learning."

At the conference, two students from each NASA Explorer School presented a summary of their activities. Danny Devoe and Amber Moye represented Sheridan.

Devoe presented three project-based concepts related to the school's theme: alternative power and its application to Mars colonization, transportation via a robotic Lego model of the Mars Rover he created, and a model Mars colony.

Moye applied her science fair project on airborne fungi to propose environmental monitoring of airborne pathogens in space vehicles and future Mars human habitats.

Now a freshman at Sound High School in New Haven, Devoe credits the Explorer Schools Program with bringing excitement to his former school. "The program motivates both teachers and students to get more involved and try new things," he said. "For me, the most surprising thing was realizing how much math is required in science and technology."

In another part of last year's program, Sheridan students developed experiments that were launched in the nosecone of a rocket at NASA's facility on Wallops Island, Va. Andrea Butler, currently in grade seven, is one of the students who traveled to the rocket launch. "I like how NASA allows kids to be involved in this program," Butler said. "Careers in math, science and technology are good and this program provides information that both students and teachers can use in the future. I'd take a job in any of these areas because they are interesting to me."

Adam Taylor, another seventh grader, hosts the Sheridan morning broadcast news and is active in the school's robotics program. "I enjoy the interesting facts I've learned about NASA and the people who work there," he said. "I also enjoy talking to astronauts who actually went out into space. I think a career in math, science or technology would be excellent and fun."

Renfro notes that HS and other technical organizations have much to gain by partnering with schools. "The U.S. currently lags behind other countries in the areas of math and science," he said. "It is in the best interest of HS as well as the country to partner with schools to generate interest in technical careers so that we have a pool of educated people to employ in the future," he said.

Renfro also notes the importance of presenting caring role models for the kids. "It is important to show kids that adults in the community – besides their parents and teachers – care about them and their future," he said. "We can talk to the kids as partners rather than as teachers to students. The program has brought an astronaut, a NASA administrator, a congresswoman and other public figures to visit the students."

"I hope these kids understand that math doesn't stop once they leave the classroom," Beauge said. "Math is important in all aspects of our lives – even in shopping or planning how much food we need for a trip. It affects everything we do."

The Explorer Schools Program is sponsored by NASA's Education Enterprise in collaboration with the National Science Teachers Association. The program currently includes schools from diverse locations including inner cities, rural areas and a Native American Reservation in states ranging from Alaska to Hawaii. For information, visit http://explorerschools.nasa.gov.

Editor's note: *Any SLS employee who has suggestions or is interested in becoming a volunteer member of the Sheridan NASA Explorers team can contact Kevin Renfro at (860) 654-3556. Volunteers are not locked into a certain number of hours. Participation can be flexible.*