

REACHING FOR THE STARS

Local team wins aerospace competition!

Right: The Kosmos team's model, the Stellae Extreme Space Station.
Below: The team poses with NASA astronauts at the 2008 Fiesta Bowl.



In 1969, Don Godfrey was glued to his television as Neil Armstrong and Buzz Aldrin landed on the moon and brought Walter Cronkite to tears. In 2008, he watched as his son Philip sat behind the stocky beige computers of the Apollo-era Mission Control Room, grinning back at him.

"I told my son, 'When Neil Armstrong walked on the moon, I was 12, and I just wanted to be in that room,'" said Don. "And now you're 12 ... and you're there." Ahwatukee resident Philip, along with Kosmos Combined Home School Group-teammates Ben Braaksma (14), Jesse Lowery (11), Luana Johnson (11) and Lauren Sullivan (11), beat out more than 200 teams to win the 9th Annual Honeywell Fiesta Bowl Aerospace Challenge. Among the prizes: a trip to the Johnson Space Center in Houston, with astronaut-led tours and a once-in-a-lifetime opportunity to learn about the space program. But the kids are quick to point out that, besides microgravity and dehydrated shrimp and docking sequences, they learned about teamwork, responsibility and communication. Perhaps Philip says it best: "I learned to trust my teammates, because I really didn't want to."

This year's aerospace challenge asked teams to design a model of an international space station to house 100 people for two years, spending no more than \$50. In addition to basic living conditions, functioning and maintenance, teams had to tackle all the issues of

a floating global community: language barriers; currency (after much deliberation, the Kosmos team chose the "Starbuck"); government; law enforcement; and religious tolerance. The Kosmos team broke the research into sections and spent 10 weeks studying up—meeting once a week to share their findings—before beginning the arduous building process.

COLLECTION OF CONTRIBUTIONS

First, each kid built his or her own model and presented it to the group. Then they agreed on the best aspects of the five models and melded them together to create the Stellae Extremae Space Station (Latin for "outermost stars"), or the SESS. The final model was easy to keep under budget with a little creativity, composed of everything from a dryer vent-duct to a bicycle wheel. Coke and water bottles signify oxygen and hydrazine (space station fuel) tanks, food storage and an escape pod. Quaker Oats boxes serve as the maintenance shuttle. A shoebox is a docking station. Completing the design is "a lot of Duct Tape," said Don, with a laugh, "to make it look spacey."

The building process required more than 150 hours of labor and many late nights. Each kid brought different ideas and talents to the model. From Lauren came the PALS robotic maintenance system, which "transported things and people from one side of the station to the other," she explained. Jesse built a hydroponic garden made from a CD stacking case. Philip designed the space elevator—an idea with which, as they later found out, the Russian government is also toying. Luana built the habitation module and Ben the main tubular structure and the two solar domes. After so much work, the team is committed to the SESS. When asked if he'd like to live in space, Ben said, "Yes, especially if it were our design." Jesse agreed: "We designed it to be safe, and it would be very instrumental in exploration." No doubt the Wii game systems the team included for exercise and recreation don't hurt either!



Above: The Team shows off their winners' plaques with the space crew they consider their own.

Left: Centaur, a robot designed for traversing Mars and the moon, which was tested here in Arizona.

Below: Philip Godfrey sits behind a computer at the Apollo-era Mission Control Room.





Neutral Buoyancy
Laboratory

ENLIGHTENING EXPERIENCE

After the many months of preparation, a 10-minute presentation, and a question-and-answer session with Honeywell engineers while six NASA astronauts looked on, the Kosmos team took 1st place ... and the many prizes with this designation. They won tickets to the Fiesta Bowl, where they were presented as this year's winners on the field in front of roaring crowds. But the best prize was easily the visit to the Johnson Space Center in early April. They began with Astronaut Chris Cassidy at the Neutral Buoyancy Laboratory, where astronauts train in a 6.2 million-gallon pool housing a full-scale truss segment of the International Space Station (ISS). Outfitted in their heavy spacesuits, astronauts can practice space walks and maintenance missions in simulated microgravity beneath the water. That's microgravity, mind you. Just ask the Kosmos team: There's no such thing as Zero-G!

The next day, Astronaut Colonel Alvin Drew took the team to the shuttle simulator, where each kid practiced a simulated landing of a space shuttle flight (an audiotape of one such simulation reveals lots of screaming). This was Luana's favorite part of the trip. "I got to do an ascent, descent and landing under Colonel Drew's instruction," she explains.

After a tour of full-scale models of different modules of the ISS (including the chance to try out the \$9.5 million toilet, with its phonebook-heavy instruction manual) led by Astronaut John Phillips, the kids visited the Habitability and Environmental Factors Office. There, the

team learned how food is packaged for astronauts to eat in space. From there, they went to the robotics lab, where they stood face-to-face with Centaur, a robot built to someday traverse the moon or Mars; he was tested right here in Arizona!

The final day included a tour of Mission Control with Astronaut Barbara Morgan, the first teacher in space (two decades after the Challenger tragedy). The kids looked in on the two functioning Mission Control Rooms, one for the current shuttle and one for the ISS, and then got to sit in the chairs of the Apollo-/Gemini-era Control Room. Finally, the team had lunch with Astronaut Clay Anderson, whom they now consider "our astronaut."

MATH AND SCIENCE MOTIVATOR!

It has been a longtime goal in America to get more kids interested in math and science. With the help of so many enthusiastic astronauts, this job has been easily done for the five members of the Kosmos team. While not all of them want to ultimately work in these fields—Luana wants to be a bird breeder and Ben "a musician, a baseball player and a Chess Master"—they have gained a lifelong appreciation for the wondrous and dangerous thing we call space.

Jesse's parents, Bob and Beth Lowery, said that they hope their son learned that "even high-minded goals like becoming an astronaut are attainable if you are willing to work hard and apply yourself. The people we met throughout the experience were extremely capable; however, the characteristic shared by the astronaut corps is not genius but determination." **A**

Just how Proud Are These Parents?

"We are very proud of Jesse. While we are excited about his abilities, we are most pleased with his kindness, compassion and his love for life and others. He is truly a whole-hearted kid." **—Rob and Beth Lowery**

"We are very proud of how Ben, as the oldest of the group, stepped up into a leadership role among his friends."

—Vern and Meribeth Braaksma

"We are proud of Philip and would have been proud of him even if he had not won. But we have instilled in him the need to keep trying and we find great joy in his positive, can-do attitude and his work ethic."

—Don and Beth Godfrey

"I am very proud of all the effort and hard work that Luana and the team put forth. Each student's work was essential to the entire team effort and each student gave 100 percent. Luana did not know anything about the International Space Station when she joined the team, but by the end she was entirely capable of explaining the elements of the space station developed by the team."

—Dr. David and Leslie Johnson

"I am most proud of Lauren for her willingness to focus on a project that, without the support of teamwork, would have been beyond her capability. She learned the importance of hard work and expanding herself to tackle tasks that are normally outside of her comfort zone." **—Todd and Shawn Sullivan**