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The Next Generation of Scientists: Project ASTRO San Diego Takes Kids to New Heights

by Ondine Brooks Kuraoka

Kids are natural explorers and scientists, whether it's figuring out how to get into the cookie jar, or watching what happens when water shoots into the sky from the hose.

"Why does this happen?" and "What happens when I do this?" These are the questions that propel our children from the moment they wake up in the morning. For many children the landing of the Spirit and Opportunity rovers on Mars earlier this year caused a flurry of excitement and marked the beginning of their interest in learning more about space.

Inspiring Partnerships

Project ASTRO (mintaka.sdsu.edu/projectastro) creates partnerships between local scientist-volunteers, teachers and their classrooms, immersing kids in hands-on activities that deepen their understanding of science concepts and inspire an interest in astronomy. Having recently celebrated its 10th year, Project ASTRO has served more than 103,000 students around the country and has grown to 12 regional sites.

Dr. Philip Blanco is the coordinator of Project ASTRO in San Diego. Blanco, who pursued his childhood interest in science to become a research astrophysicist, now teaches college-level physics and astronomy in addition to raising his 5-year-old son. After starting out as a classroom volunteer himself, he now coordinates Project ASTRO's local site from the Astronomy Department at San Diego State University.

Blanco says, "We train the volunteers and form partnerships with the teachers. We don't just go in, do a one-time presentation and then go away again. It's an ongoing partnership where we foster a long-term relationship between the teacher, the astronomer and the kids through multiple (at least four) visits throughout the school year. The children get to think of the volunteer as 'their astronomer.'"

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Children Ask Great Questions

As his own involvement in Project ASTRO began as a volunteer, Blanco has experienced the rewards of connecting with a classroom first-hand. "They had a box full of questions every time I visited. Children ask some great questions which you never hear from adults.

"For me, the most inspiring part of the project has been seeing children completely engaged in trying to understand how we explore the universe and how we understand it. This is an inquiry-based program; we get kids to ask the questions and we encourage them to answer them as well. It's great to see that 'Eureka!' look on their face when they've just figured out something for themselves," Blanco says.

Hands-on Activities

Involving the kids in hands-on fun is key to the program's success. According to Blanco, there are no slide shows or lectures, ideally. A favorite activity is using simple Styrofoam balls and a light source to model the phases of the moon in three dimensions. Other activities include the "Toilet Paper Roll Solar System," "The Reasons for the Seasons" and "Make Your Own Comet."

Two Very Different Classrooms

Lynn Minor teaches the special day class for children with cognitive disabilities at Jefferson Elementary in North Park. Minor and another Jefferson teacher, Debbie Thigpen, combined classrooms to participate in Project ASTRO together. Thigpen teaches a GATE (Gifted and Talented Education) cluster class.

Hooked On Science

Minor explains how Project ASTRO hooks kids on science, saying that in 5th grade, "they still have a sense of wonder about the world. The activities are kinesthetically active, which really helps the kids, and us, get the concepts. The astronomy walk is a very powerful tool. Each step represents 10,000 miles.

"We walked from our school all the way to the edge of Morley Field, to indicate the distance between the sun and Pluto. It helped create a mental picture. The kids realized the distance between the inner and outer planets is incredibly huge, and that it's not how it looks in the textbooks."

Other favorite activities included making "comets" and sundials. Their classroom astronomer brought his solar telescope and the students were able to see sunspots. Thigpen says, "Lynn and I were very impressed with the dedication and the professionalism of all the people that we worked with in Project ASTRO. Our astronomer, Rob, connected really well with the kids." Minor added, "He went to Australia to study the solar eclipse last year and emailed us and sent pictures. He also went to Antarctica and contacted us from there."

"Rob is going on to get his doctorate now. He showed a true love for science which was inspiring for my students and me," Thigpen said.

Minor says that Project ASTRO "helps children to see that science is all around them and that it's tangible, that it's a real career and that scientists are real people. It opens up the possibility for them to conceive of it for themselves." Jefferson Elementary is an inner city school, where the majority of the students' families are of low socioeconomic status.

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Scores Improve With Excitement

Due to poor test scores in the past few years, there's been a push in education to return to teaching basic skills of literacy and math. "One criticism we've received is that astronomy is esoteric and that it's not relevant to these basic skills. But we've heard from teachers that when students participate in Project ASTRO, math scores and even literacy scores improve because the kids are working in groups and describing their results. Interest in space is a common theme across all ages, cultures and abilities. It doesn't matter whether the students are learning-disabled or gifted," says Blanco.

The project focuses on grades 4-9, because, Blanco explains, this is where U.S. children begin to stumble in terms of their understanding in science and math. "We have the kids calculate the sizes and positions of the planets and one of the amazing things I've heard from teachers is that the kids cannot wait to do the math. They don't realize that they're applying the concepts of proportional reasoning and scaling. So instead of a dry math problem, we're doing something that's a bit of excitement," says Blanco.

Need for Volunteers

Project ASTRO's biggest challenge is the need for volunteers. There are many more teachers who would like their classroom to participate than there are volunteers. "Anyone who is an 'armchair' astronomer with a scientific background is welcome," Blanco says.

"We do have people from industry as well as academia and amateur groups. We have a computer scientist, and a couple of engineers, but there are so many people in San Diego working in the software and defense industries who would make wonderful scientist-volunteers and role models. This is a great way for them to put their expertise back into the community and help our schools.

"In fact, many tech-industry professionals trace their inspiration back to an interest in astronomy and space when they were kids. This is a chance for them to recapture and share that enthusiasm with the next generation of scientists and explorers."

Blanco reassures would-be volunteers, "We never send scientists into the classroom 'cold.' We have an annual training workshop where teachers and scientist-volunteers are paired up and try out the activities themselves before taking them to the classroom.

"When a scientist or astronomer comes to visit, the kids are extremely well-behaved and appreciative. And after a few visits, you become their role model. You get to know their names and they give you refrigerator art. And even though the kids move on, we do leave a legacy with the teachers in doing these hands-on activities."

Universally Appealing

Blanco says, "Project ASTRO is not just about teaching kids about the universe. We use astronomy as a vehicle to excite the curiosity of young minds and show them how they can practice real scientific inquiry. Astronomy is a great way to do this, since it cuts across cultural boundaries in its universal appeal, and of all the physical sciences it is the only one with a vast and diverse amateur following. A pair of eyes is all you need to get started in astronomy."

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“Project ASTRO San Diego is a unique coalition of colleges such as SDSU, UCSD and USD, along with local amateur organizations such as the Mars Society and the San Diego Astronomy Association. The Reuben H. Fleet Science Center and the San Diego County Office of Education have also been very supportive.”

When kids learn more about space they realize they are part of a much larger place, and amazing things happen. Their quest for answers will lead to discoveries limited only by their imaginations. Our children’s ideas shape the future; encourage their questions about everything under the sun, and beyond.

Contact Information

Information on Project ASTRO can be found at <http://mintaka.sdsu.edu/projectastro>.

To learn more about becoming a volunteer or involving your classroom, e-mail Dr. Philip Blanco at pblanco@mamacass.ucsd.edu.

Fun Astronomy Websites

<http://mars.jpl.nasa.gov> (go to Mars for Kids)
www.astronomy.com

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<p>Ondine Brooks Kuraoka is a freelance writer from San Diego. Her sons love to build “Mars Rovers” out of LEGOs. Her website is www.sandiegofreelancewriter.com.</p>
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