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## Beyond the Ordinary: STARBASE Portland

PORTLAND AIR NATIONAL GUARD BASE, Ore. --It's a typical group of fifth graders; kids enthusiastically raising their hands to answer questions from the teacher, as a few begin shouting out the answer before called upon. Yet the situation and subject is not the normal classroom setting with playgrounds and lunchrooms in the building. At STARBASE Portland, the kids can see F-15 Eagles taking off from their classroom window and program robots made from Legos.

With the emphasis for science and engineering education growing nationally, the need for this twenty-year old program has never been more pertinent. The 25-hour STEM (Science, Technology, Engineering and Mathematics) curriculum is taught over five-days and is aligned with national and state common core education standards for math and science.

The kids at STARBASE Portland this particular week are from Chief Joseph-Ockley Green Elementary School in Portland, Ore. The group is working on a chemistry experiment as they study warm and cool compound reactions.

"This program is an amazing way to open kid's eyes," said Molly Chun, the school's principal.

The Oregon STARBASE program has two locations, one here at the Portland Air National Guard Base and a second program at Kingsley Field in Klamath Falls. The two programs have been serving more than 40 Oregon schools a year (about 2,000 fourth and fifth graders annually) since 1993.

Chun has been an educator for over 34 years and is in her first year as the Principal at Chief Joseph-Ockley Green. When she discovered the STARBASE program at the Portland Air National Guard Base she quickly saw the impact it was making with her fifth grade students.

"The work is hands-on and is meaningful because right away they (kids) get it. The learning is taking them out of their normal element and allowing them to comprehend STEM education in a fun and meaningful way," she said.

Recent National Assessment of Educational Progress (NAEP) scores of Oregon students revealed that only 34 percent of fourth grade students and 35 percent of eighth graders tested above the proficient levels in science.

The key is to engage the students and create and interest in STEM careers and to fill the void of qualified applicants for many Oregon companies.

"Getting kids out from behind the desk and setting 'that hook' early in their lives for this kind of learning and this subject is what makes this program at STARBASE so outstanding," said Chun.

The interaction and hands-on approach creates an atmosphere of enthusiasm not only for the youth but for their teachers as well. As the kids engage in experiments, their teachers also participate in the learning.

A teacher for over 18 years, Andrew Jaquiss who has attended STARBASE Portland countless times over the years with his students, watches as his class engages in a STARBASE technology lesson on robotics. This is his first year teaching at Chief Joseph-Ockley Green.

"I love this program, it is great because it really excites the students," he said.

The positive approach to science combined with five full days out of the daily classroom while at STARBASE fosters new understandings and approaches to learning.

"The equipment at our school does not even begin to compare to what the kids have here at STARBASE," said Jaquiss.

"For these kids, science has now been turned into a fun activity."

Because the setting of the STARBASE program is on the Portland Air National Guard Base, students are also introduced to the positive role models who work on the installation.

Uniformed Airmen often lead tours to showcase leading edge technology ranging from the science of flight to the use of robots for the removal of explosive ordinance. Seeing technology used outside of the text book keeps the knowledge tangible.

On the fifth and final day at STARBASE Portland for the Chief Joseph-Ockley Green students, they have a class in forensic science given by Jon Dyer, a State of Oregon crime lab technician.

"Teaching science to kids is something I really love doing," said Dyer.

He brings in real life tools that are used in the field for the students to use for a fingerprint testing experiment. With over 13 years of experience in the field, he mixes in real life stories with a high energy approach as he instructs the group to carefully examine their own fingerprint samples.

Story by Tech. Sgt. John Hugel <sup>[1]</sup>

"What do you see when you inspect the print? Do you think that both of your thumb prints look the same?" he asks.

"I get excited to see the kids connect not only to science but to each other. This is a kinetic experience and what I want the kids to know is that you don't have to be a genius to be a scientist," said Dyer.

The work he does is voluntary yet it allows him to learn something new each time he gives a class at STARBASE.

"The program is awesome and when I see kids get enthusiastic about science that keeps me excited as a scientist," he said.

Overall the STARBASE program promotes creative approaches to learning. It allows students to see how science, technology, engineering and math knowledge are used in practical applications.

"These kids really need to see how this kind of learning is used beyond a text book," said Chun.

"The real world now becomes their classroom."

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