

Not Your Father's Summer Camp

By Molly West, Pittsburgh Chapter NTMA

Summer camp isn't just campfire songs and popsicle stick crafts anymore. Camp leveled up this summer in Southwestern Pennsylvania. Southwestern PA BotsIQ, a program of the Pittsburgh Chapter NTMA, designed and hosted several innovative programs for students across the region. The goal: to teach young people high-tech manufacturing skills that are not only fun, but also open a whole new realm of possibility when they dream beyond summer and into the future.

These regional camps introduced students to the in-demand skills of robotics and advanced manufacturing and demonstrated how those skills translate into fulfilling and financially rewarding careers.

The BotsIQ Robotics Camp, held at locations in Bellvue and Homestead, PA, brought 32 seventh, eighth and ninth graders together to design, assemble and code their own mini-vehicles. They used Micro:bit, 3D printing and laser cutting technologies.

JoAnna Dehler, BotsIQ youth services manager, was one of the leads for this summer program. "It was really great to see their brains totally take off with the coding. From day one to day four-- total change. We were using Micro:bit, then MakeCode. Right away they started digging through the coding gallery. They were super creative in how they were manipulating the code to satisfy what we were asking in a totally different way," Dehler said. In fact, according to Dehler, some of the kids built their own attachments to develop a front plate on their vehicles to hold an iPhone, creating their own GoPro-style device.

Oula Abdul Ghani, BotsIQ teaching fellow, was instrumental in designing the program. "We create hands-on activities based on the demands of the industry. Our activities help students acquire new career related skills in fun interactive methods."

Not only did these students become savvy with these technical tasks, but they also developed strong collaboration skills as they teamed up to compete in challenges—including an obstacle course.

"I'm always shocked with how children learn and collaborate with each other. They just come with ideas and feed off each other and take their project to a whole new level. They do it in ways that as adults we can't even anticipate. It was beautiful to witness," Dehler said.

Across the region in Westmoreland County, the BotsIQ team utilized the Westmoreland – Advanced Technology Center to host the same age group at Engineering Camp. This time, the students tackled VEX robots. They honed their critical thinking skills by designing, assembling and battling the bots. Campers learned to write code long-hand,

how to operate a CNC mill and the ins and outs of additive manufacturing. The BotsIQ team watched the students improve their trouble-shooting skills as they identified what they wanted their robots to do and how to get there. “Project-based learning is invaluable,” said Dehler.

Campers across all three locations had the opportunity to see the skills they were learning applied in a real-world environment. Based on their camp location, students toured one of three companies: Aethon, Intervala or Penn State Tool and Die Corporation.

South of Pittsburgh in Uniontown, PA, fourth, fifth and sixth graders attended BotsIQ 3D Printing Camp. This group conceptualized and designed their own games—then 3D printed pieces and cut their own game board.

Through the generosity of the Arconic Foundation and Chevron Corporation, all of these camps were offered free of charge.

The Pittsburgh Chapter NTMA program has grown exponentially since its inception in 2006 when it began with just six high schools building bots for an annual battle. BotsIQ currently serves over **60 school districts** across our region, covering **15 counties** and approximately **1,000 students**. BotsIQ has expanded to include BotsIQ Academy, a Middle School Cobot Challenge and a Close the Loop program. Additionally, the Southwestern PA BotsIQ team says they will most certainly be hosting summer camps in the future.

“Summer is a really crucial time for engaging students. You want them to adopt technical and interpersonal skills, but we also want to propel them to explore the concepts that we introduce them to,” said Dehler.

The Southwestern PA BotsIQ team believes so strongly in the importance of summer opportunities, they also collaborated with the Readiness Institute at Penn State, 100 Black Men of Western Pennsylvania and STEM Coding Labs in three separate summer events to strengthen students’ knowledge of technical skills and manufacturing careers.

Summer camp looked a whole lot different in Southwestern Pennsylvania than many may remember—but so does the future. The Pittsburgh Chapter NTMA and BotsIQ are doing their best to make sure Pennsylvania youth will thrive in the careers and opportunities ahead.