



# SUMMER TECH CAMP



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## RoboCamp: Hands-on learning at its finest

Fifth-grader Daniel Carter of Ephrata dreams of one day serving as a missionary to China, where he hopes to build prostheses for people who are missing limbs.

That's an audacious goal for a youngster, but from what I observed at a summer technology camp last week, he might one day accomplish it. Carter was one of 24 enthusiastic fifth- and sixth-graders who spent two days building and programming robots at the North Central Educational Service District's RoboCamp.

The students, who walked into the class with lots of computer savvy but had no experience building robots, constructed machines using Lego robotics kits and then programmed them to perform a variety of tasks. They learned how to install various sensors, such as those that could detect the difference between light and dark or that could identify when the robot ran into an immovable object. They used a computer program to tell the robot what to do when it hit such an object. They learned how to work the gears that made the machines run fast or slow, forward and reverse.

This was hands-on learning at its finest, using a computer program and an off-the-shelf kit. The instructors, John Kelly and Pete Phillips of the ESD, gave the students the fundamentals of robots, with the help of a NASA robotics expert who spoke to the class on a live videoconference hookup.

He told the students that the tasks they were trying to accomplish with their simple robots were not much different from the programming being done at NASA.

The students were plugged in, fired up and raring to go. "There's no holding them back," said Phillips. "Give them the basics and off they go."

Students worked on their robots in teams of two, which allowed them to divide up the duties between building the robots and programming them. Phillips and Kelly said that's a key component of the learning process. Collaboration brings some challenges but also rewards as they jointly try to figure out how their robot went wrong and how to get it back on track.

The student teams had various tasks to accomplish, such as testing their robots to make sure that it would stay in an area confined by a heavy black line.

In the final contest, which the parents attended, the student teams had to design and program robots that would find empty pop cans and move them out of the way, with the additional complication of having to get around an immovable coffee pot.

The robots performed remarkably well, for the most part. I think it's fair to say the parents were amazed by what their children had accomplished in two short days.

Lisa Mulhall, who spearheaded the development of the camp, said she had a good chuckle when a parent tried to help his son with his malfunctioning program as the final contest was about to begin. This parent, confident that he could fix the problem, quickly discovered he was in way over his head.

The ESD sponsored one robotics class last year, and this year filled two beginning and two advanced classes. It was wonderful to see students so engaged in learning in a unique environment blending science, teamwork and technology.

Mulhall and fellow coordinators Tammy Mack and Suzanne Reister envision spinning Tech Camp off into the schools throughout North Central Washington. One day they'd like to host a regional or state competition where teams of students build and program robots to complete assigned tasks.

Daniel Carter, the Ephrata student, had this to say of the experience: "It's just awesome. There's really good food and the projects are just great."

There are, of course, limits to such an education. One parent was heard to say that she would be pleased if her son could design a robot to clean his room. Perhaps that'll be a subject for the advanced RoboCamp sessions coming up later this month.