What I did

For my capstone project I went to Greenbelt Elementary School to help run an after school robotics club. I used the Lego Mindstorms to introduce the students to basic concepts of robotics and to get the students interested in the STEM fields. At the school I introduced the students to the Lego Mindstorms and spent the rest of the semester creating a battle robot to compete against the other groups’ robots. The students started out with no experience with the kits and over the weeks quickly became expert in Lego robotics.

Goals

Three main goals of this project
• Teach basic robotics skills to elementary school students,
• Increase interest in the STEM fields among elementary students especially among girls and minorities
• Build the relationship between the University of Maryland and the College Park community.

What I Learned and Accomplished

I have learned several things from this experience. Going in on the first day I had a small idea of what I was going to experience at the elementary school. Once I arrived on the first day I introduced myself and learned about the students I would be working with for the rest of the semester. Each of them had their own unique set of skills that was helpful as we created our own unique robot. From week to week I introduced new concepts from building the base of the robot to the program. Over time each of student learned how to use the program to make the robot move around the room. By the end of the semester the students had learned a lot and were looking forward to continuing their interest in robotics.

Lego Mindstorms?

Lego Mindstorms are kits that contain several components that can be combined to form several different types of simple robots. Some of the major hardware components include sound, touch, distance, and inferred sensors as well as three motors. These hardware components connect the central controller which is also where you upload the program to run the robot. The software component of the Mindstorms includes a data logging program and the programming program for the robot. The programming portion of the Mindstorms consist of a graphical user interface in which you drag icons onto the screen in order to build the program for the robot. The program can be as simple as moving the motors for a certain about of time to as complex as following a line on the ground.

WHY it is Important

This project was created in response to the United States falling behind in test scores over the past several years. The average PISA Math and Science scores are 500 and 500. In 2003 the United States had below average scores in both math and science with scores of 483 and 491 respectively. (US Dept. of Education) Over time the US has raised their test scores only slightly and still remain behind other countries in average test scores. In 2009 the US was ranked 23rd in PISA test scores behind such countries as Australia, Estonia, and Canada. (Ranking America)