Pro-Bot Challenge Lesson

Science & Arts Academy
December 10, 2015

Grade: 8
Time: 45 minutes

Goal

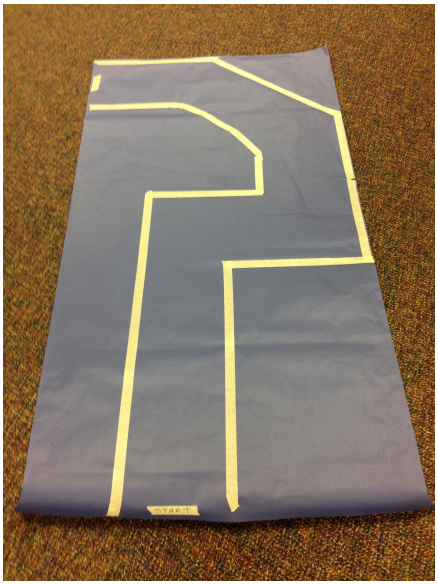
Through tinkering, program the Pro-Bot to traverse a small obstacle course, deliver a candy bar to another room, and draw shapes (if times allows).

Materials

3 Pro-Bots & extra AA batteries
3 Butcher paper with basic maze outlined (straight, right angle, angle, angle)
3 rulers
Masking tape & permanent marker to make start line for delivery run
3 candy bars or something similar
School Map (for delivery overview)
White butcher paper for drawing shapes
Thin markers for bot to draw shapes with

Procedure

Have the students break up into 3 groups (or a number of groups for however many Pro-Bots you have).



Small Obstacle Course / Basic Maze

- Each group receives a Pro-Bot, ruler, and butcher paper maze.
- The teacher is not to provide any instructions on paper or otherwise on how the Pro-Bot works.
- Groups have 10-20 minutes to figure out how to program the bot through the maze (start with the lower amount of time and increase if necessary).
- Rules:
  - Must stay between the masking tape lines.
  - Start and end are labeled.
  - At the end of the maze, the front of the car must be over the tape.
- When the time is up, groups will watch the other groups go through the maze and judge their success.

Deliver a Candy Bar

- Each group receives a Pro-Bot, meter stick, candy bar and tape.
- The start line is the same for all three groups and will be marked on the floor in masking tape by the teacher.
- The Pro-Bot must run in one continuous program to make the delivery without being programmed additionally to make it to the destination.
- Each group will affix the provided candy bar to their bot using tape.
- On the school map show the groups their target (this could be a different location/person for each group's delivery). For example, a group would deliver the candy bar to the teacher's desk next door so that all the teacher had to do was lean over to pick up the candy. Note: Do not make the destination too far away as the bots can only go so fast.
- Groups will need to measure and plan out their program before running it.
- Once the candy is successfully delivered, this mission is accomplished.
- Extensions: What is the speed of the Pro-Bot? How long should it take the bot to get to x? Did the attached candy bar affect the Pro-Bot's speed? Could the code entered into the Pro-Bot be condensed and made shorter by using codes such as repeat?

Draw Shapes (if times allows)

- Each group receives a Pro-Bot, white butcher paper, and thin markers.
- Using the marker in the bot's slot, have the Pro-Bot draw:
  - 6 pointed star
  - 5 pointed star
  - Anything else you/they come up with