Introduction to Mobile Robotics 1-Week Lesson

Full Speed Ahead Activity and *Wheels and Distance Investigation*

Goal: Introduce students to:

- Programming mobile robots
- Appling measurement and geometry to calculate distance traveled

Resources:
1 NXT kit for every two students.
1 prebuilt robot for each set of students, preferably Taskbot, but the Robotic Educator Model will work.
1 USB cable to upload programs to the robot.
1 computer for every two students.
1 copy of the LEGO® MINDSTORMS® Edu NXT programming software.
1 copy of Introduction to Mobile Robotics curriculum installed on each computer.
Either the NXT battery pack or 6 AA batteries for each robot.

Note to the Teacher
There are two major activities sequences in this lesson: Full Speed Ahead and Wheels and Distance.

- The *Full Speed Ahead Activity* guides students step-by-step through the process of setting up the programming environment, programming the robot, and running the basic moving forward program.
- The *Wheels and Distance Investigation* involves students in an investigation of the relationship between wheel size and the distance the robot travels given a set number of wheel rotations.

Typically this set of lessons would need approximately 6 days to implement in the classroom using the CD as the instructional guide. In order to accomplish the goals of the lesson in a 5 day time period the teacher will become the lead presenter of information to students. The curriculum CD will be used as an ancillary tool to guide student learning as needed. All of the robots will need to be built before the lesson starts. If you are teaching multiple classes at the same time, each class can use the same set of robots.

In the Projects section of the Teacher CD you will find the following set of teacher tools to help you implement this lesson:

- Teacher Notes and Concepts PDF
  - A description of the Activity
  - What the students will do
  - A note to the teacher describing the rationale for the lesson
  - What the student will be able to do by the end of the lesson
- A Lesson Starter Powerpoint, which is editable, that can be used as an anticipatory set that sets the stage for the lesson.
- Question & Answer Keys
  - Student worksheet for the lesson
  - Worksheet answer key
  - Student quiz
  - Quiz answer key