

# BUILD IT

## Lesson Plan for Straight Line Challenge

### Materials

For each student

- NXT Lessons 1, 2, and 3

For each group

- Mind Storms NXT Base Set
- Custom BUILD IT NXT cable
- Parts from Technology Set and Educational Resource Set
- One or more propellers
- One slow motor
- Computer with NXT-G software
- USB cable or Bluetooth enabled on computer
- Two towels – one at desk/table to work on robot and one to carry around and wipe robot immediately after testing

### Procedure

1. Have students fill out pre-project surveys. 10 – 15 min
2. Conduct pre-project assessments 20 – 30 min
  - Make sure students fill out bubble sheets with a dark pen or pencil, begin careful to fill in each bubble carefully.
  - Confidence levels: 1 is very low, 3 is so-so, and 5 is certain
3. Go through NXT Lessons 45 – 60 min
4. Introduce Straight Line Challenge 10 min
  - Rules:
    - Two parallel lines marked at both ends of pool.
    - Bot starts behind one line.
    - When teacher says go, bot is released.
    - Bot must go forward until it reaches second line and then immediately must go backwards back to the first line. To take into account bot length, whichever part of the bot is on the starting line at the beginning is where the bot must touch the second line before going back and also where it must touch the first line again to finish.
    - Wire control is important. A little twisting to help fight cable effects is permissible, but no pushing or pulling to make the bot go faster.
    - Fastest time wins.
5. Build and testing time. 90 – 120 min
  - Suggested demos: Gears; Propulsion and Water Flow Effects
6. Conduct challenge. 20 min
7. Logs, presentations, and review 15 – 30 min
  - Allow time for students to finish logs.
  - Optional – have a presenter from each group show their bot and discuss what they did.