Goal: Get acquainted with your group and the NXT

Part One: Let’s make friends! (30 minutes)

Getting off on the right foot and building rapport with your students is a crucial component in good group dynamics. You will spend the first 40 minutes of today’s session getting acquainted with the members of your group.

Uncommon things in common
You will work with your group to find 3 uncommon things you all have in common. After 5 minutes of talking in your group to arrive at the three uncommon things, one representative from your group [a student] will present your three facts to the large group. Your group will receive one point for all original and non-duplicated answers.

Tell me a story
Sit in a circle with your group. You (the mentor) will start a story by saying a sentence. Move around the circle, giving each person a chance to repeat everything that has already been said and then adding a sentence to the story. The group that has the longest story gets 5 points. Bonus points for funny stories.

Towers
Build the tallest freestanding thing you can with any 20 LEGO pieces. The winning group gets 5 points. Any structure taller than three inches gets points too.

Part Two: Introduction to the NXT (15 minutes)
You’ll either review (for returning students) or discuss for the first time the different parts of your robot. Talk about the motors, the sensors, and the ports. Discuss the two classes of ports, e.g., input and output, letters and numbers. Talk about the differences between input and output from the point of view of motors and sensors. Discuss what the programming process is about --- you create a program; you download it onto the robot. Discuss how this robot is similar to larger, more complicated robots and how it’s different. Get the students to talk about what they think differences are and why we’re using these Lego/NXT robots.

Turn the robot on and off, talk about what you can do without writing a program, e.g., using a sensor to test light levels or something else.
Part Three: Programming (25 minutes)
All groups will program their robots to move forward on 100 power for 10 seconds. You should be sure that each student in your group understands these different parts of the program. Show them the move block and how you create a program.

Show how clicking on the move block reveals lots of information about the block.

Discuss the ports and the motors and the forward/reverse/stop icons. Discuss the power slider and what the icons mean.

Discuss the options for how the motors will run, that is the duration area. Talk with your group about the options and what’s going to happen when you run the motors for 10 seconds.

After you’ve written the program, downloaded it, and described how to run the program (don’t run it) discuss with your group what will happen when all the robots are let loose to run for 10 seconds. When everyone is ready (all groups) look around and have your group predict which robot will go farthest in 10 seconds? Why? Discuss this with your group and complete the handout, listing all hypotheses.

As a large group we will test this, lining up all of the robots in the hall and running the move-for-10-seconds program. What are the results? Were your hypotheses right? Discuss with your group and document the discussion on the handout.

Part Four: Cleanup
All materials should be picked up off the floor and transferred to our storage closet.