Move Blocks and Motor Blocks Teacher Resource



Motor Block



Move Block

Why do the Robotics Engineering activities use Motor blocks? Why does the built-in help use Move blocks?

The Robotics Engineering activities are built with the goal of teaching robotics, math, science, technology, communications, and workplace skills. The progression of lessons starts with simple robot behaviors, but quickly progresses into somewhat complex behaviors, such as line tracking. Classroom time, however, is quite limited. In order to avoid the need to take valuable class time "unlearning" or "relearning" the use of the basic movement blocks, the Motor block (with its consistent pattern of 5 blocks for any movement) was chosen as

the primary programming block for robot movement. (See Figure 1) This also has the benefit of allowing students to see more explicitly how the robot moves from a mechanical perspective, through the use of the two independent motors.



Figure 1: Program to move forward with Motor blocks

The Robot Educator (the right sidebar portion of the NXT Programming Software that shows how to use various blocks and write sample programs) has a different goal. Its purpose is to provide a reference to the

quickest and easiest solution to program-writing. This is different from the Robotics Engineering activities, where programming is only one among many concerns. As a consequence, you may find programs written in different ways that do the same things, like a single Move block that takes the function of the 5-block program using Motor blocks (see Figure 2). This is normal, and can be a good seed for discussion.

Which one is right for my classroom?

If you plan to follow the Robotics Engineering activities, it is probably best to teach the Motor block programming first, because that is the programming convention that is used in all the guided instruction for those activities. Should the need arise to teach the Move block (perhaps a Motor block program wouldn't fit on the NXT, for instance), it is still easier to understand the Move block as a convenient shortcut for Motor blocks than the other way around.

If your primary purpose, instead, is solving a board-type challenge or other situation where very simple locomotion is the order of the day, you may be better off using the Move block, as it will be your primary block in everyday usage anyway.

How do I explain to students when to choose one over the other?

If your students are not yet experienced with the programming, it may not be a good idea to attempt to explain the difference yet, because you may be asking them to weigh pros and cons that they cannot yet evaluate meaningfully. Once students have some experiences to build upon, it would certainly be suitable to hold a discussion about the tradeoffs of using one method over the other, and choosing the most appropriate programming tool for the context in which it must be applied. The table in the Student Guide to Motor vs. Move blocks can be very valuable for facilitating this discussion.



Figure 2: Program to move forward with Move block