



“Be a Computer Scientist”

Job Task:

You are the computer scientist! You have been asked to program a robot that will lift heavy blocks to construct the frame of a large building. The robot is able to operate using several programming languages but you must formulate simple instructions, first, so that your team of computer scientists can translate the instructions to the various programming languages. You have been given a test robot to develop your instructions. Can you provide the test robot with clear instructions to build the tower?

Timeframe: 30-45 minutes

Materials List:

- Small collection of blocks or similar objects on the bench

Procedure:

1. Place a small collection of blocks or similar objects on the bench.
2. One person (perhaps the teacher or other adult for a start) plays the role of the Robot. This person should only respond to particular commands. These commands are not given to the children, and can be made up on the fly.
3. Have each student take a turn instructing the robot to complete one step in the construction of the tower. Instructions should be similar to: “Move your hand to the left”, “Pick up the block beside your hand”, etc. If the child gives an instruction that is too complex or otherwise not in the robot’s vocabulary (e.g. “put the three blocks on top of each other”) then the robot expresses confusions by shaking his head or burying his head in his hands.
4. The task is completed when the tower is built. At this point, discuss with the children about which commands it would be reasonable for the robot to respond to, which wouldn’t make sense. Does a small vocabulary limit what can be done, or does it simply make more instructions necessary?

⁶ Adapted from *Harold the Robot* created by Richard Nelson, Jason Clutterbuck, Sebastian Höhna, Stefan Marks and Wilson Siringoringo