Names: _____ Date: _____

Robot Dance Lesson Plan

Overview

This 45 minute "unplugged" activity is designed to introduce students to the concept of programming as a series of detailed steps. Students should recognize through this activity that the actions that are expected of the "robot" (representing the computer) must be requested by the programmer, and the commands should be written in a language that the "robot" understands (English, in this case – modify for ELL students).

- **Materials**
  - White boards for half the number of students in your class
  - White board markers for half the number of students in your class

Objectives

- Design and write a series of steps for the "robot" to follow
- Execute the steps by saying them verbatim to the "robot"
- Assess the accuracy of the steps by watching the "robot" execute the commands
- Redesign ("debug") the program to allow the "robot" to perform the required task

Introduction

Explain to the students that today, they will working in partners, and each person will be taking on two roles alternately– the role of a programmer and the role of a robot. As the programmer, they will need to write a series of steps that they would like the robot to execute. This can be a dance or a task. As the robot, they will need to listen to the steps given by the programmer, and they must ONLY execute the steps they are given – they should not assume or "fill in the blanks".

(Teacher Note):

- Break the students up into partners and give each pair a white board and a white board marker.
- Be on the look out for students who are following commands that are not detailed enough (i.e., Which hand should be raising? How high should that hand be raised?, etc.)

Activity

Tell the students the following:

You will write a set of instructions on the white board. These instructions should be written in order to tell another student how to "dance". When you finish your instructions, you will switch with a partner, and one at a time, you will take turns being the "robot", and following the instructions that were written for you. YOU MUST FOLLOW THE INSTRUCTIONS EXACTLY AS THEY ARE WRITTEN! Please do not write more than 15 lines of instructions – we don't want our "robots" to short circuit!

Closing

Bring students together and ask them to share their challenges and successes. Ask the students the following:

- What did the "robot" represent in this activity? What did the "programmer" represent?
- How detailed did your program need to be, in order for your robot to follow the commands perfectly?
- How many of you were told that you were giving commands or following commands that were too simple? How did you give more detail?

Assessment

- Students should complete the "Robot Dance" worksheet

Names: _____   Date: _____

Robot Dance

<u>Directions:</u> Each student will act as both a programmer and a robot in this activity. You will write a set of instructions on the white board. These instructions should be written in order to tell another student how to "dance". When you finish your instructions, you will switch with a partner, and one at a time, you will take turns being the "robot", and following the instructions that were written for you. YOU MUST FOLLOW THE INSTRUCTIONS EXACTLY AS THEY ARE WRITTEN! Please do not write more than 15 lines of instructions – we don't want our "robots" to short circuit!

Questions

1. (As the programmer) How difficult was it to give your partner enough detail to be sure they danced correctly?

    Very Difficult   Somewhat Difficult   Not Very Difficult   Very Easy

2. Why did you give the answer you gave in question 1?

    _____

    _____

3. (As the robot) How difficult was it to dance correctly, with only the instructions you were given?

    Very Difficult   Somewhat Difficult   Not Very Difficult   Very Easy

4. Why did you give the answer you gave in question 1?

    _____

    _____

5. How do you think this activity relates to programming a computer (giving a computer directions in a language it understands, in order to perform a task)?

    _____

    _____

    _____

    _____

    ** This lesson plan was taken from: http://csunplugged.org/programming-languages-0