Robot Dance Challenge

Student Directions: Find a video of a dance performance and write an analysis of the dance using the questions below to guide your analysis. Decide what moves could be replicated in some way by the Scribbler robots and create a 2 minute dance performance between two or more robots. Student should consider making costumes for their robots. Students should use a video camera to film the performance and place it online.

Dance Sources:

* Broadway Performances
* Dancing with the Stars
* Local Ballet Troup
* Dances from Historical Periods
* Ethnic Dances from Cultural Groups (African, Gypsie, etc)

Some Dance Research Questions:

* Who performed the dance and for what reason?
* What were 5 moves (or steps) that you saw performed?
* What culture originated this type of dance?
* For what cultural reason was the dance performed?
* What moves could you get the robot to perform?
* What move did you see that the robot could not perform? Why can humans perform these moves and the scribblers cannot? Can you find another robot on line that might be able to perform more of these moves? What is different about this robot than the Scribbler?
* Did any of the moves you saw in the dance give you ideas for other moves?
* What costumes were used during the dance? How would you create aspects of these costumes for your robot?
* Where their musicians who played for the dance? How could you program your robot to play music, while others danced?

**National / State Technology Standards**

**Time:** 6 class periods

**Deliverables:** Video of dance performance, Short paper summarizing research questions, dance program between two or more robots

**Understandings**

* Robots have motors that allow them to move in various directions.
* Motors have limits with regards to size, weight, speed, direction and maneuverability.
* Motors need continuous power to function.

**Essential Questions**

* What is a motor and how does it function?
* Why are the movements of a motor limited?
* How is energy transferred from the battery to the motor?

**Performance Tasks:**

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| **Task** | **Time** |
| Inform students of the project, understandings and essential questions | Day 1: 5-10 minutes |
| Show students 3-4 short videos from different dance performances and talk about the types of steps. | Day 1: 10-15 minutes |
| Discuss with the class how these activities could be mimicked with the Scribbler robot. You might want to remind them of the commands learned so far, such as forward, backward, turnLeft, turnRight, rotate, and motors. How could these moves be replicated? | Day 1: 5-10 minutes |
| Use an interactive board to collaboratively write the psudocode for one of these activities. | Day 1: 15-20 minutes |
| Ask students to research various dances and performers on Love to Know – Dance - <http://dance.lovetoknow.com/Cultural_Dances> | Day 1: homework |
| Work groups to program the dance. | Day 2-4: 50 minutes |
| Build any costumes or props that you need for the dance. | Day 2-4: homework |
| Film the performance; plan on 3 performances per day | Day 5-6: 50 minutes |

Rubric: Robot Dance Activity

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Item** | **Points Possible** | **Points Earned** |
| Student has written pseudocode for the program to help understand the steps the robot will go through to mimic a human activity. | 5 |  |
| Program is functional and returns no errors. | 5 |  |
| Program has comments that help another programmer understand how the program works. | 3 |  |
| Program code has been shared on the wiki. | 2 |  |
| Student has peer reviewed at least two other programs and made constructive comments. | 5 |  |
| Performance has been filmed and posted online. | 5 |  |
| **Total** | 25 pts. |  |