Combining Robotics and Exercise

Problem   How can we use robotics to get students thinking about exercise and the motions it takes for the body to complete the exercises?

Lesson Summary   *Students will create a robot or person out of any materials. Each robot/person must be created to do a type of exercise, using robotics.*

Major Topic and SOL

>   Technology SOL:
>
>>   C/T 6-8.13 Use technology to complete a wide variety of tasks when working in teams.
>>   C/T 9-12.2 Apply knowledge of different types of technology and digital resources to routine and complex tasks.

Length of Time   3 days/4.5 hours

Student Objectives

>   The assignment students have been given is to create a person with movable limbs, out of any materials, and to use the robotics to create movement with the person to mock any type of physical exercise, such as sit-ups or jumping jacks. Students will use Visual Programmer or Scratch to program the Hummingbird.

21st Century Skills

- Critical-Thinking and Problem Solving
- Communication
- Creativity and Innovation
- Collaboration
- Information and Media Literacy
- Contextual Learning

Prerequisite Information

>   Students must have knowledge of the Visual Programmer and Scratch programs before they are ready to program the Hummingbird robot. The students have designed a project in the Scratch program and have had some practice with the different aspects of the Hummingbird robot before moving on to this project.

Assessment Evidence

- Students will design person/robot and program a Hummingbird robot to make the person move, such that it appears the person/robot is exercising.

Supplies/Materials/Technology

- Visual Programmer
- Birdbrain

- Scratch
- Hummingbird robot
- Person/robot designed by partnerships

Problem: Students don't exercise enough. How do we use robotics to get students thinking about exercise?

Lesson 1:
- Work with a partner to design people/robots that do exercises.
- Decide which exercise to do so each partnership does not have the same one.
- Research exercises: How does the body move to complete the exercise?
- Generate design solutions: Collect materials and begin building robot with exercises in mind.

Lesson 2:
- Work with a partner to design people/robots that do exercises.
- Generate design solutions: Continue building people/robots.
- Start connecting robotics.

Lesson 3:
- Finish constructing people/robots.
- Finish connecting and testing robotics.
- Make improvements as necessary.
- Present and share robots with the group.