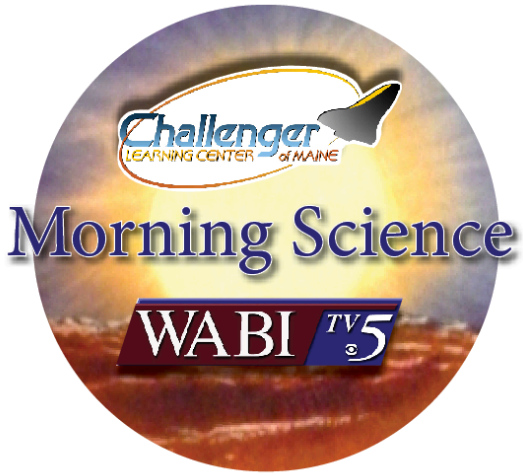

Challenger's Morning Science Segment:

July 13, 2015

Topic: Mechanics of a Robot Hand

Build: Robot Hand Model

Credit: http://www.nasa.gov/pdf/172353main_Hold_Your_Hand.pdf

Materials Needed:

Narrow Rubber bands / drinking straws / very stiff paper [ex. Folders] / clear tape / scissors / yarn / ruler / pen

Building a robot hand model –

NASA's detail instructions for building your robot hand model can be found at the following website.

http://www.nasa.gov/pdf/172353main_Hold_Your_Hand.pdf

Some key recommendations for your build are:

-Remember Rubber Bands and straws go on opposite sides of the fingers. Also make sure rubber bands are tight to create tension for the fingers.

-Be sure to use a long piece of yarn, free of knots to allow for smooth travel through straw pieces.

The science:

Building a robot hand model will allow you to understand all the different moving parts of a hand. A robot hand that is modeled after a human hand requires 14 different joints or points of rotation. Also, during the build, you will need to keep in mind which direction a finger bends in relation to the entire hand. In this model, the folder material acts as the bones of the band, the tape as the ligaments, and the rubber bands/straws/yarn act as the muscle/tendon groupings. Engineers have to be creative in the materials they use in robots to mimic the amazing different types of cells of the human body. It is a challenge that engineers are continually improving everyday.

This activity ties into the following Challenger Camp: Engineering: Rovers, Robots and More, July 20-24 & July 27-31 [same camp offered during 2 different weeks], Grades 3-5 - This activity allows campers to test different robot hands and challenges ---picking up tools, carrying an object and more!