



Helping Hand Design Brief

Challenge: Design and build a helping hand device that lets you grab different objects (e.g. tennis ball, cotton balls, M&Ms) and drop them into a container that's at least two feet from you. **What biomechanics are involved in this design? What considerations do you need to make to create a Helping Hand for someone who needs it?**

Criteria/Specification: You are tasked with determining the best type of material and design of helping hand device needed to aid a person in picking up and moving an object 2 feet away from you. The grabbing device must:

1. Pick up an object,
2. Hold onto it and move it 2 feet away, and
3. Drop it into the provided container.

During the design process, you must:

1. Design, sketch, construct, and test at least 2 prototypes,
2. Record your testing data, and
3. Write a statement that justifies, using your data, the prototype selected for final submission.

Resources:

Materials: Brass fasteners, cardboard, rubber bands, sandpaper, string, toothpicks, skewers, paint stirrers

Tools: Scissors, tape, hole punch

Time: You have 25 minutes to design, test, and perfect your helping hand device.

Evaluation:

Criteria	Advanced (4)	Proficient (3)	Developing (2)	Beginning (1)
Design	Student sketched the design and construction shows good craftsmanship.	Student sketched the design and the helping hand device is constructed well.	Student did not sketch the design and/or the helping hand device does not work.	Student did not sketch the design and the helping hand device is not constructed.
Data	Helping hand device picks up any size object. Data is recorded.	Helping hand device picks up mid and large sized objects. Data is recorded.	Helping hand device picks up large sized objects. Data is recorded.	Helping hand device not tested. Data is not recorded.
Redesign	Student creates a second helping hand device that works much better than the first one.	Student creates a helping hand device that works slightly better than the first one.	Student is unsuccessful in improving their original design.	Student does not attempt to improve original design.
Justification	Student's justification is clearly reasoned and based on data.	Student's justification is based on data.	Student's justification is not clear or is not based on data.	Student does not write a justification.
Teacher Comments:				