

LEARNING ACTIVITY

Student Information

SYSTEM TITLE: Technology Education

COURSE TITLE: Exploring Technology

CONCEPT: Medical Technology

ACTIVITY TITLE: Bio-Medical Design

Required Number of Class Periods: 2

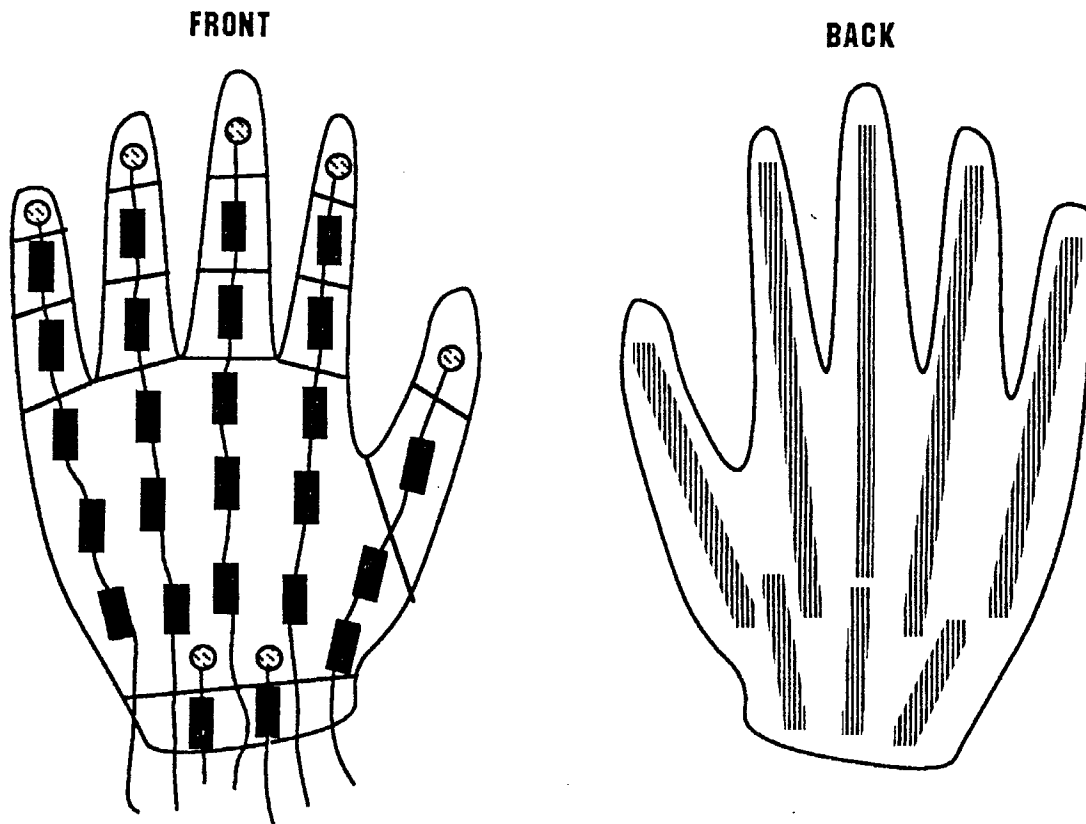
Introduction:

As humans gain more knowledge concerning the function of the human body, scientists and technologists have started to develop truly amazing ways to combat ailments to the body such as disease, internal organ failure, and even losses of limbs. With today's technology humans are able to live for an extended period of time with items such as an artificial heart, ceramic bone replacements, knee and hip joint replacement, and artificial limbs... and these are just a few of the replacement parts that have been developed for the human body.

Your objective is to design and construct a basic prosthetic hand. The hand you construct should be able to flex at all finger joints as well as the wrist joint.

You will need to trace your own hand on to a piece of foam board and then cut out the hand using scissors and an exacto knife. **BE VERY CAREFUL, THE EXACTO KNIFE IS EXTREMELY SHARP.** If you feel you need help with the cutting see your instructor. Now that the hand is cut out, you will need to attach pieces of elastic to the back side of the fingers and wrist using hot glue. Next you need to cut and attach small sections of straws between each finger joint again using hot glue. You should also place three sections of straw on the palm directly below each finger and two sections below the thumb. The last straws to be attached are to the wrist, two are needed. Once you have completed attaching the straws, you will need to thread a piece of nylon string through the straws and anchor these at the fingertips using the hot glue. Five strings are needed for the fingers

and thumb, and two are needed for the the wrist. After the strings have been threaded and anchored, you will need to give the glue time to set up. Set your prosthetic hand in a safe place where it won't get bumped and then clean up your work area. By the time you are done cleaning, your hand should be ready for a trial run. If one of the straws comes loose during use, simply add some more hot glue to re-attach the straw.



MATERIALS

The following materials can be used to construct your prosthetic hand.

- Foamboard
- Hot Glue
- Scissors
- Plastic Straws
- 1/4" Elastic Strap
- Exacto Knife

STUDENT EVALUATION

Students will be evaluated on the following:

Craftsmanship, Participation, Related Worksheets