

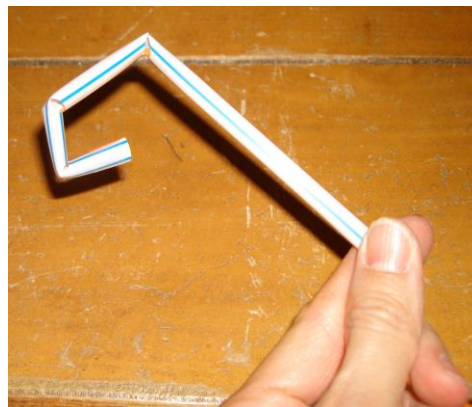
PROJECTS: “Make-a-finger” and “Make-a-gripper”

Supplies:

- Plastic straw (can be straight or bendy)
- Ruler (metric)
- Scissors
- Hole punch (three-hole or single)
- Marker
- Narrow, flat ribbon (no more than 4 mm wide)
- Scotch tape
- Plastic cup (16 oz.)
- Drill
- $\frac{1}{4}$ " drill bit

“Make-a-finger”

- 1) Cut plastic straw to 14 cm length. Be sure to cut off the bendy part of the straw.
- 2) Use a hole punch to notch the straw in three places: approximately 22 mm, 41 mm, 75 mm from one end (presets for three-hole punch shown to the right). Notches should be made on the same side of the straw. Notches should not be punched past the centerline of the straw, else the straw will be too weakened.
- 3) Cut a 37 cm length of the narrow, flat ribbon.
- 4) Thread the ribbon through the notched straw and allow the ribbon to protrude from the top of the straw (end closest to the nearest notch) by 1 cm.
- 5) Tape the 1 cm length of ribbon to the outside of the straw on its notched (flexion) side.
- 6) Manually bend the straw at its notched joints to “prime” the finger.
- 7) Move the finger by holding the base of the straw with one hand and pulling on the ribbon with the other hand. Your straw finger should flex.
- 8) Think of fun and interesting things you can do with your artificial finger (e.g. say “come here” to someone, scratch your nose, knock over something lightweight, wrap the finger around something).



PROJECTS: “Make-a-finger” and “Make-a-gripper”

“Make-a-gripper”

- 1) Make three straw fingers.
- 2) Draw a black dot approximately 2 cm from the base of the straw.
- 3) Wrap tape near the base of the finger, just above the black dot. The tape should be folded onto itself to form a pair of wings that will keep the straw from pulling through the base of the cup (socket).
- 4) Drill three $\frac{1}{4}$ " holes in the flat base of the cup approximately 120° apart.
- 5) Thread three fingers through the holes in the top of the cup.
- 6) Place one hand in the cup and loosely hold the ribbons in the center of the cup.
- 7) Use the other hand to pull the ribbons and close the gripper.
- 8) Rotate the fingers as needed to get a good grasp of lightweight objects.

