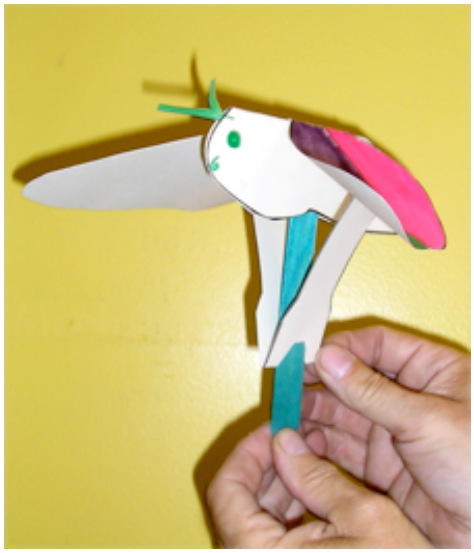
Butterfly with Linkage

Help your students understand linkages by making a butterfly toy that flaps its wings.

Materials:

- Butterfly templates (one for each student). Modify for birds, dragonflies, bats, or other flying creatures.
- Tongue depressors (one per student)
- Scissors
- Tape
- Markers

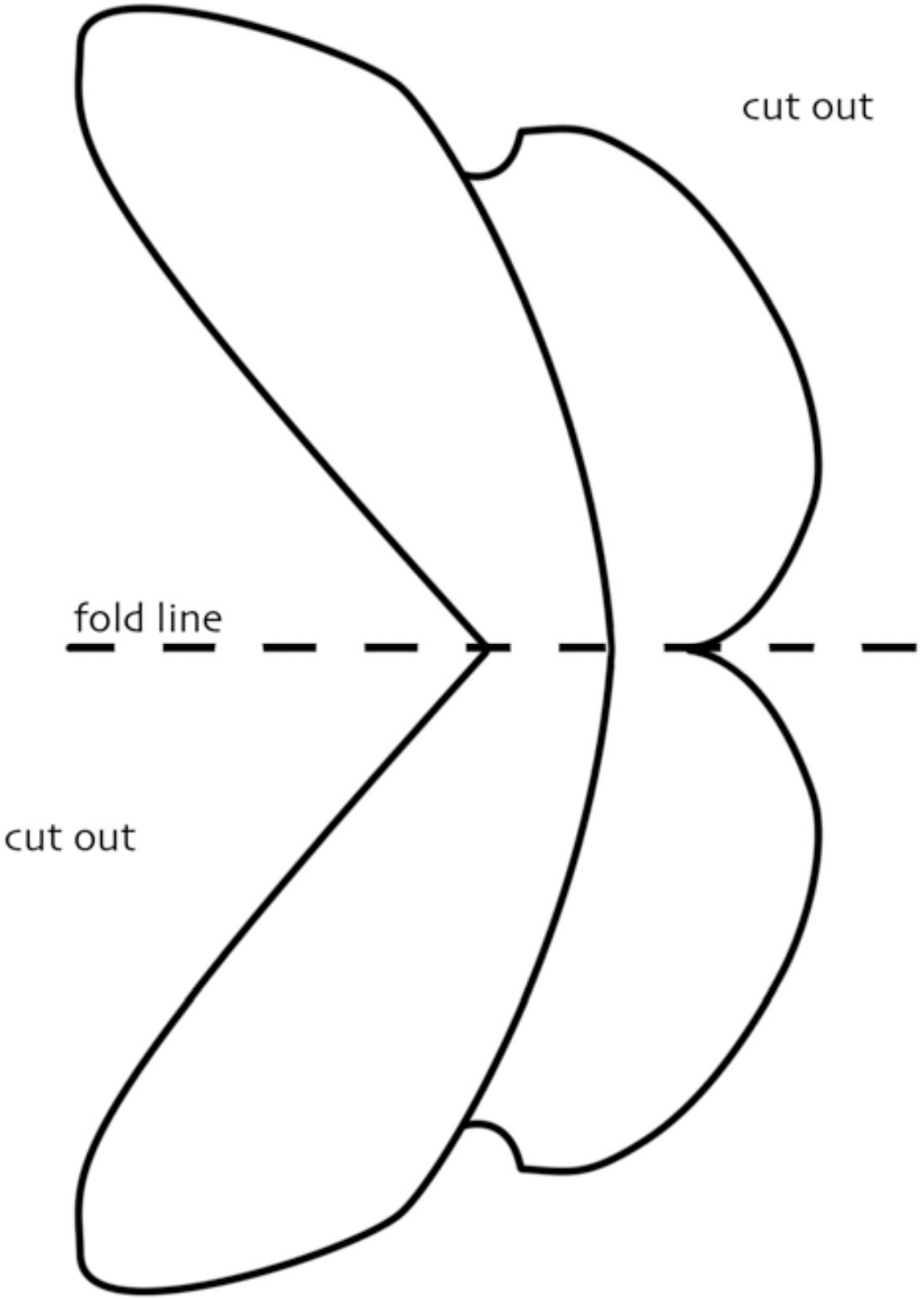


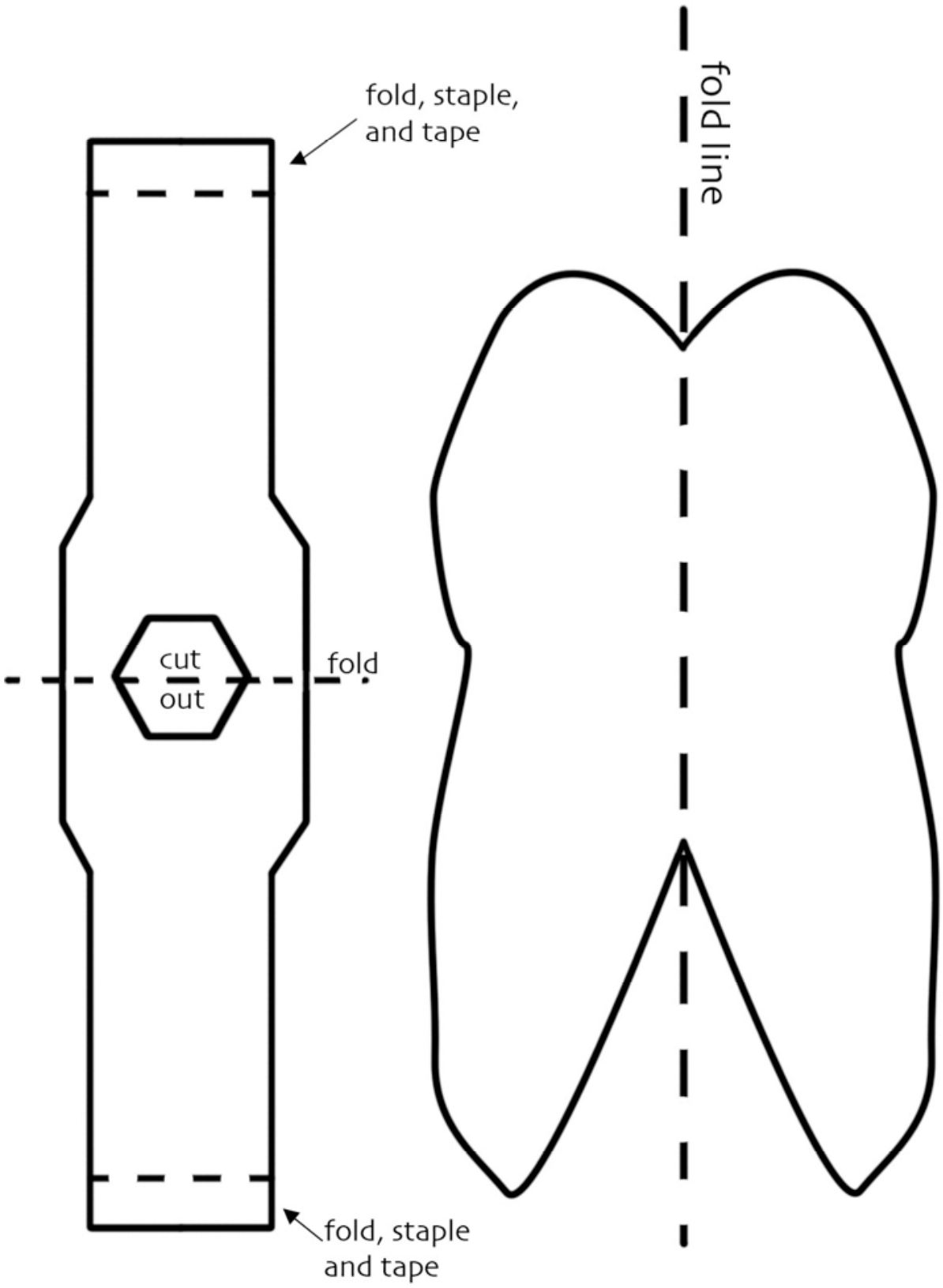
Procedure:

1. Demonstrate a sample of the toy to be made. What is the linkage? How does the up-and-down movement of the linkage affect the motion of the wings?
2. Cut out the templates and decorate.
3. Fold the body in half and place the tongue depressor inside the body and tape it closed.
4. Crease the wings down the center and tape the wings to the body so they can still flap loose.
5. Fold the linkage in half and thread the opening over the tongue depressor so that the small folds at the end get taped to the underside of the wings. Experiment with how the placement of the linkage on the wings affects its range of motion.

Science Content:

A linkage is made up of separate pieces connected by movable joints. Moving one piece causes others to move as well. Linkages can also change the type of motion. In this case, the linkage is the paper that extends from the tongue depressor to the wings. The up-and-down motion of the linkage causes the wings to flap. Linkages are very common mechanisms that allow for one type of motion to create another.


cut out
fold line
cut out


fold, staple,
and tape
fold line
cut
out
fold
fold, staple
and tape