Building Solar Ovens to Teach the Greenhouse Effect

How the greenhouse effect works in the solar oven:

1. The aluminum foil reflects the light rays from the sun into the box. The higher energy light radiation can easily penetrate the plastic wrap.

2. The transparent plastic stops heat from escaping the box. The lower energy heat (infrared) radiation cannot as easily penetrate the plastic wrap.

3. The black construction paper absorbs the heat.

4. Warm surfaces such as the construction paper in the box radiate heat in order to cook the food in the solar oven. Some of this radiation escapes through the thin plastic film as heat.

5. Some heat is lost to convection as it escapes through the cracks in the solar oven.

Basic Solar Oven Materials:

- Cardboard shoe box or clean pizza box
- Duct tape
- Aluminum foil
- Plastic wrap
- Black construction paper
- Wooden skewers or craft sticks
- Thermometer

Advanced Oven:

- Glass sheet (old picture frame)
- Mirror(s)
- Insulating materials (paper, cotton, foam, etc.)