TRY THIS OUT!

SOLAR OVEN

Time: 30 minutes to several hours
Difficulty: Medium

On hot summer days, it may feel like the sun could fry an egg on the pavement. As it turns out, maybe it actually can! Try making this solar-powered oven to cook yourself some delicious treats.

WHAT YOU NEED:

- Large lidded box, such as a clean pizza or shoe box
- Approximately 1 m of aluminum foil
- Sharp scissors
- Glue stick, white glue, or tape
- Black construction paper
- Plastic wrap
- A drinking straw
- Tape
- Plate or bowl
- Food ingredients (ex. Marshmallows, chocolate, cheese, etc.)
- A sunny day
- Optional: cooking thermometer

Safety first! Adult supervision may be needed when handling scissors. Do not cook meat or eggs in your oven, as these can be dangerous to eat if not cooked properly. Instead, try something like a mini pizza or s'mores!

MAKE IT:

1. Cut away three sides of a square around the lid of your box, to create a flap. Leave 2–3 cm of the lid around the edges of the flap.
2. To create a reflective surface inside the box, open it up and cover all sides with aluminum foil, including the flap piece you just cut out. Make sure the shiny side is facing out!
3. Inside the box, glue one sheet of black construction paper to the bottom. The black will absorb any reflected light or heat from the inside of the box, keeping your food toasty warm.
4. To trap the heat inside your cooker, close the box, lift up the flap, and cover the flap opening with plastic wrap, like a window. Tape it tightly to the lid.

TEST IT:

Place your ingredients on a plate or bowl, and then place it on top of the black paper in the cooker by opening the lid. Prop the flap open with a drinking straw, and place your box in the sunlight. Angle the reflective panel to collect as much light as possible. Depending on your ingredients and the weather, your food may take several hours to cook.

EXPLAIN IT:

The shiny surface of the flap and inside of the box reflects the sunlight, directing it towards your food. The clear plastic wrap allows the sunlight to enter, but acts as a barrier so that the heat can't escape. This allows a lot of heat to build up inside your cooker!

OBSERVE IT:

Have you ever entered a hot car that has been out in the sun? Usually, it's much hotter than the air around it! This is because sunlight travels into the car, and heat is absorbed. However, just like in your cooker, closed windows prevent the heat from escaping. It gets trapped on the inside and builds up until it can be released.

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GO FURTHER:

Use a thermometer to test how hot your oven can get. Then, think of ways that you could improve on the design of the oven; some things to consider are how insulated it is, the size and angle of the reflector flap, and how tightly the different parts are sealed. Make some changes, and test out if you improved the efficiency of your cooker!

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