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Playfully Inventing & Exploring
with Digital & Other Stuff



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Gastrobots: Food for Thought

Photos and descriptions from [MIT Museum Invention Studio Scrapbook](#)

"Choose from a menu of food options to control your creations. Use asparagus, lemons, and cream-filled Twinkies™ to complete an electrical circuit and determine the behaviors of your own fantastic invention."

Location: MIT Museum; Time: 1-3:30 pm; Age: All ages

Goals of the Workshop

- Get inspired to explore circuits by playing with food
- Experiment to determine the conductive properties of different materials

Materials



- Variety of foods, such as: eggs, milk, cheese, meat, juice, fruits, vegetables, soy sauce, cream-filled pastries (mostly foods that are conductive--moist and/or salty)
- Plastic specimen jars and copper wire
- Crickets
- Resistance sensors, alligator clips, paper clips
- Cricket displays
- LEGO motors and bricks
- paper towel and paper plates
- small plastic zip-close bags
- paper or plastic tablecloths

Set Up

Play with Your Food
Food Fighters
Kung Food
Gastrobots

We feared a goey nightmare. Michael, Mira and I are all for messing about, but we imagined pudding smeared on the walls and oatmeal stuck in our hair. So we avoided the more rambunctious name ideas, like "Play With Your Food," "Food Fighters" and "Kung Food." "Gastrobots" sounded tame. Even a bit... clinical.



We created these awesome "stomachs" in which to place the messier foods. Holes for copper wire were drilled through the lids of plastic specimen jars. The wires were hot glued in place.

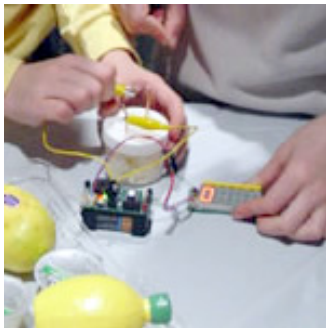


A table was set up full of food samples. Varieties of milk, cheese, meat, juice, fruits and vegetables were displayed, and some of them were placed in the stomachs.

Here is what the table looked like before the workshop...



And here is what it looked like after the participants experimented.



We made "conductivity displays" that simply displayed the value of the resistance sensor.

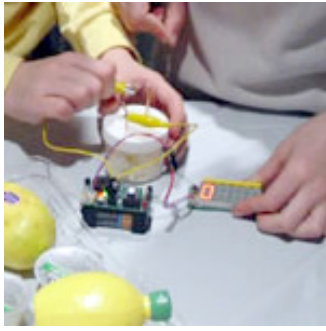
Each conductivity display was made of:

- a Cricket
 - a resistance sensor with alligator clips
 - and a display
-



We also prepared LEGO windmills, and pre-programmed a few crickets to alter the power level of their motor in response to varying conductivity levels. Here's [the program we used](#).

Introduction



When visitors arrived in the room, we gave them the conductivity displays.

Here is the [text from the handout](#) that we included with the displays.



When the Invention Studio began, we immediately directed the group to experiment with their displays at the food table.



Experimenting with different foods in the "stomachs" and the conductivity displays.



Getting ready to test the conductivity of pickle slices...



After a few minutes of testing different foods, we gathered back together.

Kids noticed that the marshmallows didn't conduct very well at all, and some hypothesized that they might make good insulators.

Kids also noticed that the lemon conducted very well, and someone told about having once lit a light bulb with a lemon.



While everyone was still gathered in one place, we handed out the windmills. [A printout of the code](#) was placed onto each windmill platform, and kids were encouraged to try completing the cricket's electrical circuit with different types of foods, and to notice the different ways that the windmill moved.

Working & Playing



The kids were totally into it.

I gave everyone the option to either:

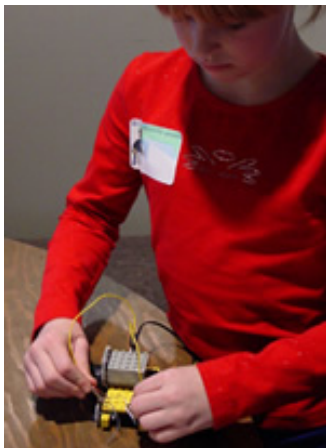
- change the program on the Crickets that control the windmills;
- change the windmill structure in some way;
- or, create something new whose action (or sound) is controlled by the varying conductivity levels in different types of food.



Creating a circuit through a kiss.



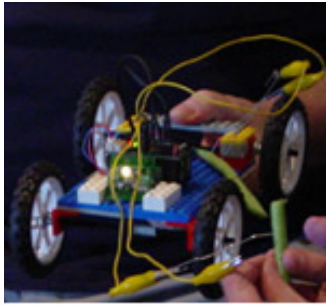
Re-engineering the windmills.



Creating a vehicle that moves based on the conductivity of the food



This group changed the windmill into a bubble-maker.



Another group changed the windmill into a "green bean machine."

See a [photo of the green bean machine](#) and the [green bean machine movie](#) (380K).



This is a food transporter - the resistance of its cargo determines its speed. Here it's carrying a pumpkin. See the [pumpkin movie](#) (750K)



Here it's carrying a chocolate cream-filled cake. See the ["twinkie" movie](#) (350K).

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