


Pattern & Circuit Design

with






RAN ZHOU

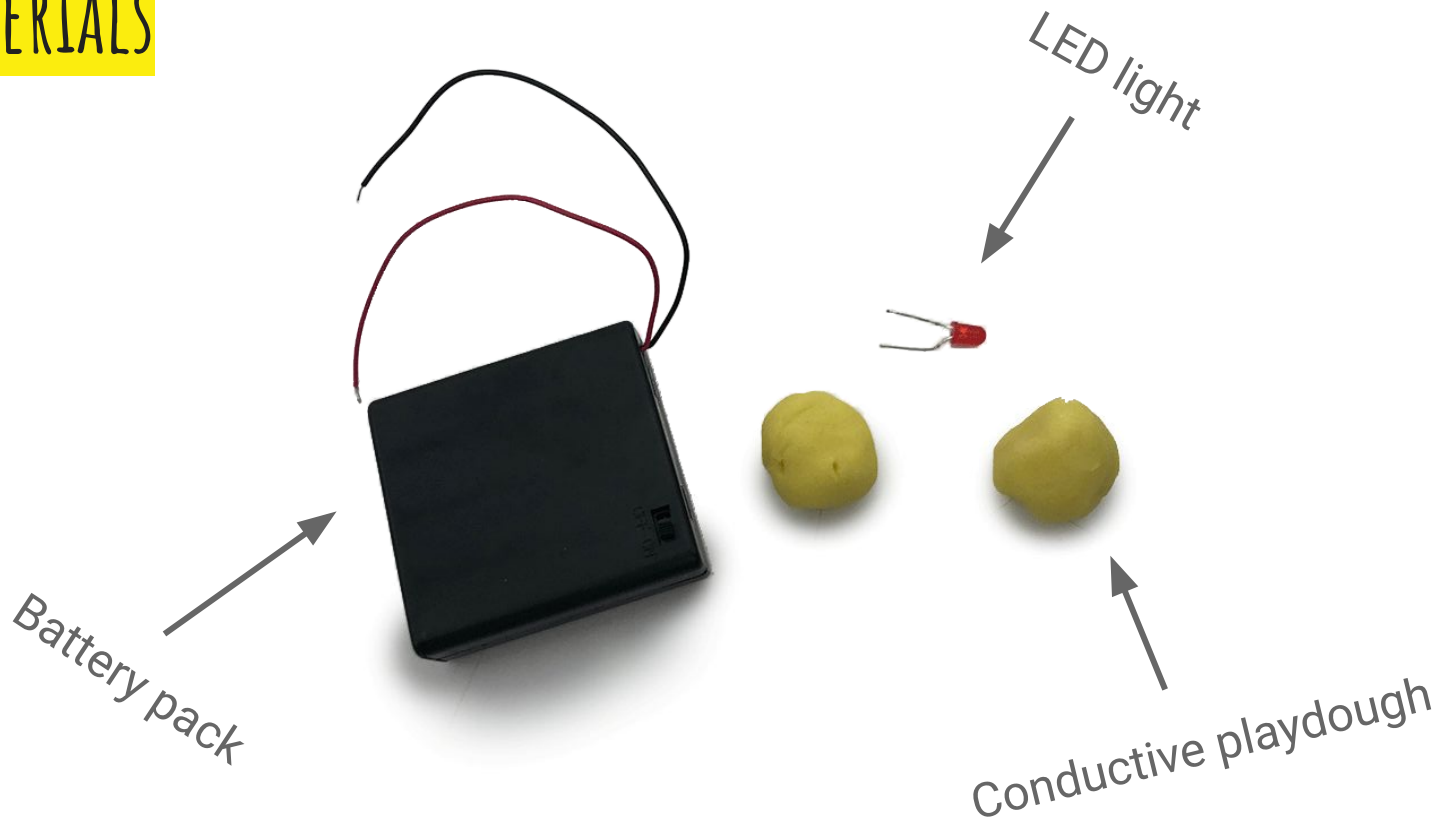
- Architecture and Urban Planning
- Crafter
- Pcom
- Love Robot 



BRANDI KINARD

- Mechanical Engineering
- Fine Artist
- Activist
- Love Sci-fi 

MATERIALS



PATTERN & CIRCUIT

A combination of pattern design and basic circuit logic.

Students will create their own circuit project with conductive and non-conductive play dough.



MAKING PLAY DOUGH



Ingredients

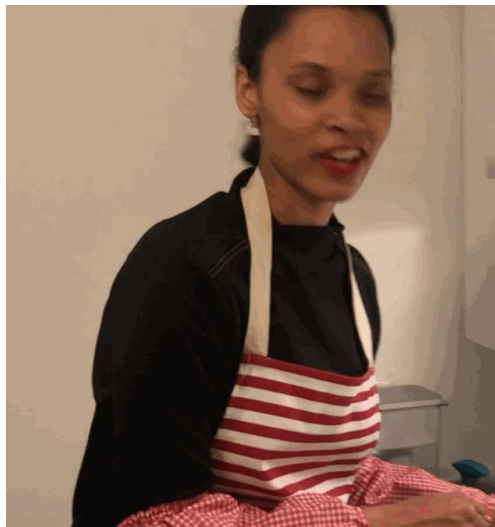
Conductive Play Dough:

Flour, Cream of Tartar, Vegetable Oil, Food Colour & Salt

Non-conductive Play Dough:

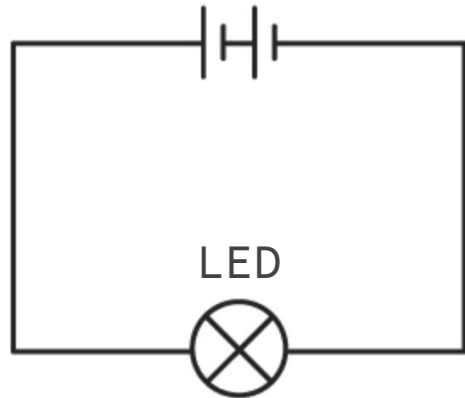
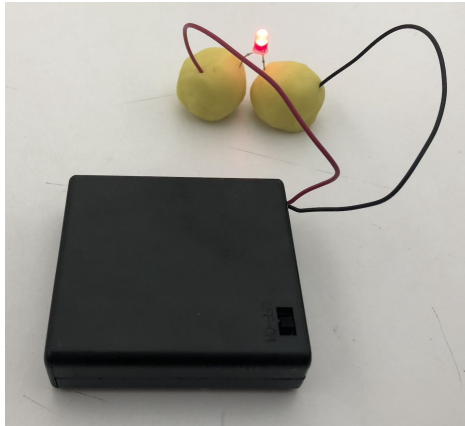
Sugar & Demineralised Water

Total Estimated Cost: Under \$20



MAKING PLAY DOUGH





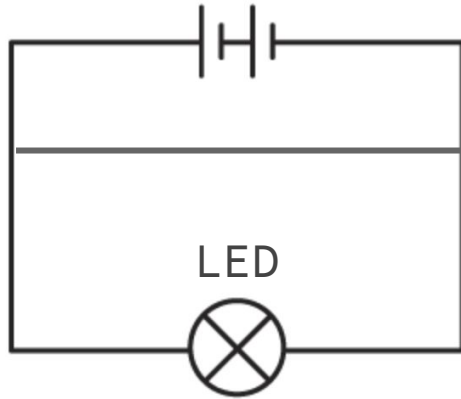
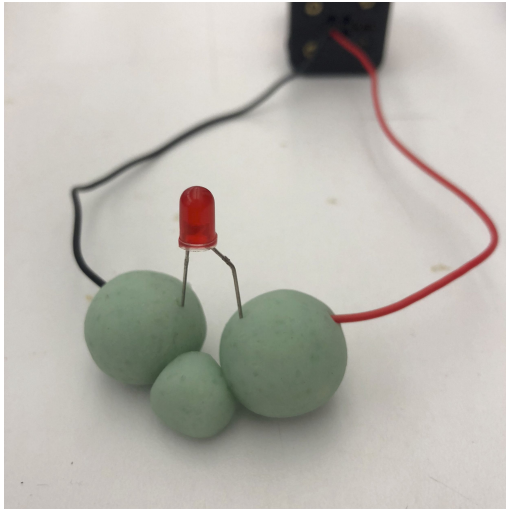
ELECTRONIC CIRCUIT

Voltage Source: causes current to flow (ex. a battery)

Load: consumes power; it represents the actual work done by the circuit

Conductive Path: provides a route through which current flows

Closed Circuit: means the circuit is complete and forms a loop that allows current to flow



ELECTRONIC CIRCUIT

Short circuit: refers to a circuit that does not have a load.

For example, if the lamp is connected to the circuit but a direct connection is present between the battery's negative terminal and its positive terminal, as well, then it is a short circuit.

COIL METHOD

1. Roll the dough into cylindrical strips
2. Wind up the stripes to create the desired shape
3. Design creative patterns with single element

Thin coil is hard to control, so we change to use thick coil



CHARACTER MODELING

Experiment with the coiling method and LED lights to sculpt a miniature model (ex. Animals, characters, objects)





BE CREATIVE WITH PATTERN AND CIRCUIT



FEEDBACK FROM UA MAKER FACULTY

“Using conductive play dough to make circuits is an amazing idea and 1 that we could integrate into our Physical Computing classes this spring!”

“The conductive playdough project could be very well included in our physical computing class.”

CONCLUSION

This project can be the first class of Physical Computing which can not only make students understand the basic circuit logic by making creative patterns, but also trigger students interests in pcom.

Coil method is also the basic lesson for ceramic, especially for container making.

Pattern design with single elements can cultivate students' ability of problem solving.

We can apply more elements in this project. For circuit part, we can try to use buzzers to make the installation more interesting. For pattern part, we may try some other forms like cubes and spheres.

NEXT STEP

We can apply more elements in this project:

For circuit: we can try to use buzzers to make the installation more interesting.

For pattern: we may try some other forms like cubes and spheres.

Students can also use the conductive play dough to create the characters and assets and make a **stop motion animation**.

THANKS