Soldering

An intro to mini welding! Soldering iron skill test to get two wires to stick together.

Project Type: Tinkering. Creative, Tactile

Group/Individual: Individual

Lesson Plan Audience: Maker Mentor

Time: .5 hr

Hard Skills: soldering

Soft Skills: Resilience and patience, problem solving, respect for tools and safety

Ideal # of Participants: requires one-on-one mentor to maker attention

Age Group: 8+, mentor should use best judgement as to whether the maker has the dexterity and judgment to handle a dangerous tool

Ideas for Taking it Further:
Soldering can be used in many electronic construction activities, a great next activity is art bots or tooth brush bots.

Difficulties/Tips:
Soldering requires attention to details and respect for a potentially dangerous tool. It is a nice next step up tool from the hot glue gun. Allows for makers to more deeply engage with electronics.

Requires a well-ventilated room and access to a power outlet.

The solder may not melt at first. Some soldering irons, especially ones that have seen a lot of use, tend to have certain spots that are hotter than others. Try rotating the soldering iron in your hand to find the hot spot.

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Materials:

Safety goggles
Solder
Soldering iron
Soldering stand
Sponge
Water
Third hand tool
Extension cord, access to power outlet
Wire
Wire snipper
Wire stripper
Heat resistant workspace
Fan (helpful for ventilation)

Steps:

1. Safety. Put on safety goggles. Explain the tool and that it is only dangerous if used improperly.

2. Prepare the workspace. Place soldering iron in stand and turn on. Wet sponge.

3. Prepare the wire. Unravel wire from spool and use wire snippers to cut two pieces, each one about the length of your longest finger. Use wire strippers to strip a half inch of the wire casing.

4. Place both pieces of wire in the third hand tool. Be sure that they are held at both ends so that it cannot flick or fling any hot solder. Take one stripped side of a piece of wire and closely overlap it on a stripped side of another piece.

5. Remove the soldering iron from its stand. Hold it in the hand your write with. In the other hand, hold the solder with about two inches unraveled from the roll.

6. Heat the place you are about to solder. Hold the soldering iron on the site for about ten seconds. It is important to heat the site that will be soldered so that the solder will stick better.

7. Bring the end of the solder to the point between the wire and the soldering iron. Watch the solder melt. Pull the solder away first, then the iron. Quickly clean off any excess solder using the wet sponge. Let the solder cool for thirty seconds.

8. You did it! Now take the wires out of the third hand tool and give them a little tug to test your solder. Now go practice your soldering on other electronics projects!

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