



[Home](#)



Playfully Inventing & Exploring  
with Digital & Other Stuff



[Things to Try](#)



[Project Gallery](#)



[Crickets](#)



[Events](#)



[Workshops](#)



[About PIE](#)

## Playing with Light

We've done several variations on this workshop, but here's how we described one of them at the Science Museum:

*City Lights, Twinkling Lights* : Creating with Crickets

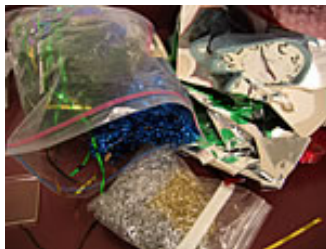
Play with Light! Explore light and color with interactive tools and cool materials.

Make a tiny nightlight that glows, blinks, and changes color. Contribute your nightlight to a glowing landscape of twinkling lights.

## Goals of the Workshop

- Experiment with lights and a variety of crafts materials to see what the possibilities are
- Learn how you can use programming to make even a single light do many things
- Design and program something interesting that incorporates sensors, light, and physical materials.

## Materials



- Computers
- Crickets
- LEDs and wires, as well as switches, sensors, and motors
- Shiny and translucent craft & recycled materials: straws, mylar, plastic portion (or nut) cups, reflective contact paper, tinsel, glitter, beads, etc.
- Tape, glue, cable ties, string
- Low-temperature hot melt glue

# Set Up

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The craft materials are on the long counter on the far wall. We used two freestanding tables, one with four computers and the other with two, as work tables. (We were planning for up to 8 people in this workshop.)

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At each work spot, we had a laptop with a cricket and interface (PICO beam), and printout of a simple sample program, and a few craft materials (pencils, pens, scissors, some glittery paper).

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We also set two chairs at each computer. We gave participants the option of working alone or in pairs. And it is handy to have extra chairs available when you sit to talk with someone about what they're working on.

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We also set up a hot-glue station immediately adjacent to the work tables, so you didn't have to carry your sculpture far if you needed to glue something.

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The materials table held all kinds of supplies, roughly grouped: construction stuff (like wood scraps, cardboard, foam core) were together; shiny and reflective stuff was together. We also had a small selection of some useful LEGO pieces, and a cutting station with a utility knife and a cutting mat.

## Introduction

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I led a basic introduction to the Crickets and to programming for the whole group. We used a laptop with a projector so the whole group could see the program as I created it.



We wrote a simple program as a group. We began by turning on a light, then we changed the color of the light, then we figured out how to switch between two colors. Our program looked something like this one.

## Working & Playing

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Happily, the tables did not stay neat for long. We really wanted the participants to play with the lights, and to experiment both with the programming and with how to use the art & craft materials with the LEDs.

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This project made great use of the materials: the styrofoam balls were lit by the LEDs from the inside. (You can just see that the ball on the right is glowing pink...)

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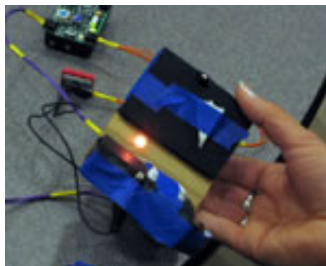
We also used mirrors, pieces of tumbled glass, and other materials that intensified the appearance of the lights.

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In the workshops with artists, participants were interested in experimenting with the sensors. Here, two artists use a light sensor to control a light, a sound, and a motor.

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This is a self-illumination book: when you open it, the lights turn on.

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Workshop participants learn from each other. I showed one group how to make the Crickets communicate, and this artist set up a group of three Crickets that communicated.

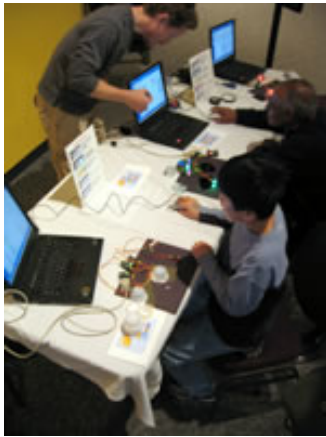
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At the end of each workshop, we took some time to go around the room and see what people made.

## Other Thoughts & Reflections

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We have also tried versions of the light workshop for drop-in museum visitors in the galleries.

For this event, we set up a table with three laptops, crickets, lights, and some sample programs.



Here's what each work spot looked like. We had a few reflective and colorful materials to play with, but not many.

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We printed out some sample programs and had them out on the tables. We thought these would give people walking up an idea of what was happening at these tables.

You can download pdf's of each of our handouts:

- [Try Programming Lights](#)
- [Set Light Color](#)
- [Blinking Lights](#)



Programming lights worked well as a drop-in workshop activity. The lights are appealing and it is easy to see how changes in the program change the lights. People grasp the programming pretty quickly, and can do many things with just one or two lights.

What I didn't like about this particular drop-in workshop: We had very few materials out, and visitors didn't do much with the materials.



In our second drop-in light workshop, we put much more of an emphasis on materials and making. We still had tables and computers for programming, but we had nightlights on those tables to try...



and we set up a long counter space with a "nightlight landscape" of tinsel and Mylar with Cricket-controlled nightlights to try...



and a big table with lots of materials (including bulbs and batteries) where you could make a nightlight. The mix of activities - playing with lights and materials and programming lights - worked well.

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[Home](#) | [Things to Try](#) | [Project Gallery](#) | [Workshops](#) | [Events](#) | [Cricket](#)s | [About PIE](#)

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