

Playing with Electricity

Exploring electronic circuits through open-ended play

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Project Type: Hands-on Exhibit

Museum/Venue: SciTech Hands-On Museum

Target Audience: Age 7 and up

Big Idea: Provide children with easy to use electronic components and allow them to experiment and play.

How?

Children will be provided with a variety of electronic building blocks, with which they will be able to construct simple circuits. These building blocks (“units”) will each consist of a basic element (light, motor, switch, etc) and color-coded connection sockets, all mounted on a small wooden block (see mockup, Fig 1).

A large supply of wires with easy-to-use and unthreatening “banana” plugs will also be provided, which will allow the user to quickly and easily connect various Units together.



Power supplies (most likely 6V batteries or AC adapters) will be fitted with circuitry to prevent shorts, then placed out of reach (behind glass/plastic), except for a pair of color-coded leads to allow users to safely power their Units.

These elements would be placed in and around a large table, with large color photos of suggestion circuits. To encourage play, a large pre-made circuit would be placed in the middle of table to demonstrate open-ended possibilities.

Figure 1 - Mockup of an LED Unit

Why?

The primary goal of this exhibit would not, in fact, be to teach, but rather to encourage curiosity and play. By placing a large enough quantity and variety at a table, we hope to foster an area of play, where visitors could compare and compete with each other.

To many, electronics are a complete magical mystery. Being able to construct their own simple circuits could certainly help to demystify the entire field. Though we certainly don't foresee any deep understanding of electronics to result, a higher level of comfort or curiosity may be achieved.

In addition (and again, not in any rigorous way) concepts such as parallel vs. series, or the difference between LEDs and Incandescent lightbulbs, can be taught or experienced.

Evaluation Process

Using cardboard and parts readily available at RadioShack, we can rapidly prototype the various Units. A basic collection could be taken to SciTech and tested without undue effort.

The most obvious drawback to this plan is that the social aspect is one we think is very important, and for that, many Units will be required to allow all involved parties complete freedom in their design (at least 4-5 each of 4-5 different varieties).

Connections to other SciTech Exhibits

SciTech already has a handful of open-ended play areas (molecule construction, wooden block table), as well as an entire area devoted to basic electronics. Our proposed play area could be placed in a variety of places without extreme difficulty.

Visualizations, Graphics, Other Items?

Absolutely key to having people actually do something with the units is to provide them with simple, understandable, and easily reproducible examples. We plan to have flat on the table a variety of possible designs, in simple to understand photographs. Text would be avoided, and in all likelihood absent entirely.

Also, to draw attention and possibly inspire people, we would like to have a large, complex, flashing/buzzing/moving assemblage of Units on display in the center of the table. This would be constructed entirely out of available parts, but would mean that ~15 extra Units would be necessary.