

ELECTRONIC SKETCHING: AN INTERACTIVE SCIENCE CENTER EXHIBIT

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Interactive Science Learning Centers

Why visit an interactive science center? What will be learned? What is an interactive activity? What is the spark or attraction or connection to a visitor? To answer these questions first need to know what the end result a science center is looking to achieve. The mission statement for the Liberty Science Center, located in Jersey City, New Jersey is as follows: “Liberty Science Mission Center’s mission is to get all learners of all ages excited about the power, promise and pure fun of science and technology” (Liberty Science Center (n.d.). In correlation, Feinstein and Meshoulam (2013), and additional resources such as ISE (informal science experience) involved the public along with the presence that science mimics everyday life events or situations, can introduce and increase equity and then broaden the sciences to a larger audience. ISE opportunities increase excitement in the public. The exposure and enjoyment through outreach programs, traveling exhibits, family workshops, etc. leads to an increase in traffic at home base (i.e. science center) with full-filled on-site interactive learning centers.

Interactive learning centers are viewed as a museum geared toward collected exhibits and artifacts over time, according to Schwan, Grajal, Lewalter (2014). Generally, interactive exhibits attract visitors but playing on and seeking out curiosity, which is part of human nature, touching on subject matter that produces a question mark or sparks an interest by encouraging and arousing curiosity. With that in mind, Schwan, Grajal, Lewalter (2014), stated that designing exhibits in an interactive hands-on manner, visitors are encouraged to be involved in constructionist activities and inquiry-based learning. The way to foster these mannerisms is include sound design principles.

It is helpful to understand few design principles for interactive exhibits that are key ingredients to enhance the authentic hands-on and cognitive activities provided by the direct

experience. As stated in her presentation at the Liberty Science Center, Liza Rawson, Head of Exhibition and Design at the Liberty Science Center, she touched on a few very important design principles of interactive exhibit such as the story, audience and approach. Concept, schematic, detail, and production are the nuts & bolts of the exhibit. Schwan, Grajal, Lewalter (2014) also considers stagecraft, atmosphere, narratives, and reconstructive scenes (real-world context) along with the physical layout, arrangements, line of sight, physical effort made by visitors, where the exhibit is, hard to navigate, room for exploration are all pieces of the puzzle that correlate and fit together compactly for an engaging entertaining exhibit.

Electronic Sketching Exhibit

Currents, lights, motion, and imagination fill the interactive exhibit on electronic sketching. What is electronic sketching and what does it bring to the table for the future of literacy? Veering off from the wearable technology field, electronic sketching can be the wave of the future. This interactive exhibit is electronic stories, flowing from onset of a circuit then looping to create unique designs. This theme is based on the fluidity and new lighting concepts through tiny circuits which are use to create, electronic sketches. This exhibit simulates authentic experiences using common electronics. The electronic sketching exhibit targets school-aged children, with a secondary audience of adults (teachers and parents) with a curiosity and an appetitive for a stimulating fun learning experience. Visitors see flashing colorful LED lights from a distance and leads to the exhibit. The flashing lights spell out the name of the exhibit ELECTRONIC SKETCHING. Once at the exhibit, they are surround buy hundreds of flickering lights. The backdrop comprises of a beautiful designed collage of eye-catching colorful glossy photos fully outlined in electronic LED lights. The lights orchestrate in rhythm thus demonstrating the science of circuits. Two breathtaking photos for the exhibit are the famous

Liberty Bell and a silhouette of tall skyscrapers. Three monitors looped with pre-recorded 60-second videos are mounted above the table. All videos include subtitles and a switch to change the format to a different language. One TV monitor video displays a brief history of circuits and components, followed by a few circuit demonstrations. The center, TV airs a hands-on demonstration of how fluid, flexible and easy electronics sketching works. Third TV loops a biography of the LilyPad Arduino creator, Leah Buechley and examples of some of her other soft circuit projects.

Along with the three monitors, a table shaped like a circuit board houses Pop-Up books (hands-on activity), reference material (ring of flip cards) plus general information/labels engraved in the table. The table contains circuits that light up when touched. The reference or flip cards contains aesthetically pleasing brief descriptions and illustrations of the specific subject matter. Each one printed on laminated card stock all attached to a ring with board on back for support. A ring consists of 5 flip cards. An example a flip card is electric currents and its' flow. Flip cards serve as a tool to stimulate prior knowledge and for the visual and read/writing learners.

The hands-on interactive piece is the actually "Pop-Up" book. Each book, as the title states are 3-dimensional and literally paper constructed images that pop up off the page. Each pop-up image designed and integrated with small lights. Visitors to this exhibit interactive with these books, physically handling and moving tabs across the page when a connection is made on the circuit boards image lights up. What fun for the youngsters. As referred to by Schwan, Grajal, Lewalter (2014), the attractiveness of the materials encourage engagement and induce and spark feelings within the soul of the visitor to absorb the fun and exciting atmosphere with

special type of science and technology. The stage is set, atmosphere formed, narratives and video looping, ready to connect.



Figure 2 Pop Up Book, (Beuchley, 2009)

Connection it is. The entire project is achievable in that the costs involved are within a manageable and reasonable budget. The costs mainly occur in the production area. This includes videos and monitors, enlargement of photos, installment of the electronic circuits on the photos, circuits, special paper and pens, backdrops, showcase, base, flip cards, and pop-up books. The electric safety issues are all standard and met by code. Electronic sketching taken a bit further can be a traveling workshop and outreach program within a town. Another application is in the classroom as a full-fledged lesson in science, electronically engineering, art, technology, math with an end product a pop-up book or something that has not even been thought of yet.

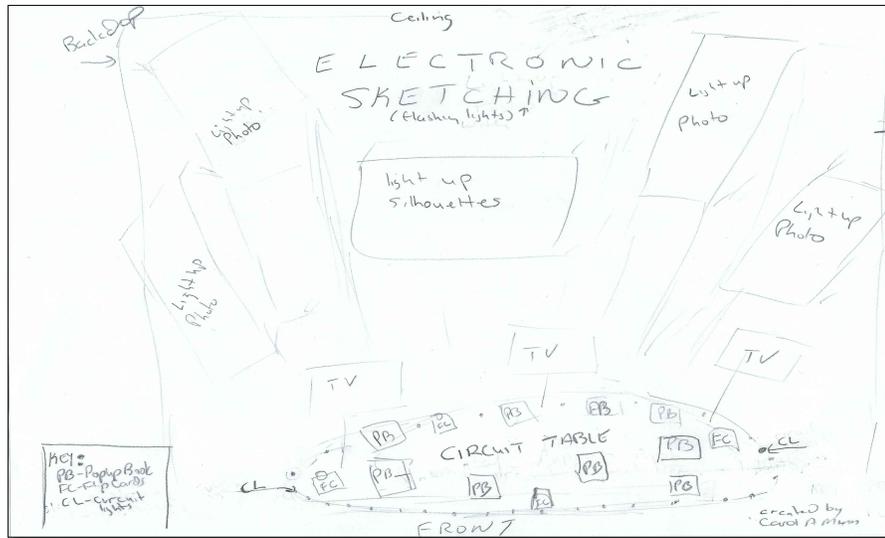


Figure 1 Electronic Sketching Exhibit Model

In summary, Sasson (2014) stated that interactive learning centers not only provide learning activities outside the school, but able to draw connections with prior knowledge and build connections with life experiences. Electronic Sketching exhibit can satisfy the criteria of hands-on learning activity, as set forth by Schwan, Grajal, Lewalter (2014), based on the key ingredients such as real-world content, eye-catching visuals, hands-on applications, storytelling and most importantly that spark which ignites the curiosity in each and everyone of us to explore, touch and have fun while absorbing concepts at a public science learning center.

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