

EDUCATION

littleBits™

LITTLEBITS EDUCATION COMMUNITY CASE STUDY

NONPROFIT OUT-OF-SCHOOL PROGRAM WITH LITTLEBITS

BY

Kerry Richardson

Steve Ciampaglia

TITLE

Co-Founders/Co-Directors

ORGANIZATION

The Plug-In Studio

Oak Park, IL

AGE LEVELS

8 and up

LITTLEBITS PRODUCTS USED

Deluxe Kits with additional vibration motor modules

DATE

May 2014



The Plug-In Studio, co-founded and co-directed by Steve Ciampaglia and Kerry Richardson, is a collaborative community art project; a research, curriculum and pedagogy incubator; an artist/teacher training program; and an advocacy initiative.

STEVE CIAMPAGLIA

Cofounder/Codirector

Plug-In Studio



Dr. Steve Ciampaglia is an Assistant Professor of Art + Design Education at Northern Illinois University. His research areas are community arts, art + tech, and media arts education.

KERRY RICHARDSON

Cofounder/Codirector

Plug-In Studio



Kerry Richardson is media artist and educator. She is an Adjunct Assistant Professor at the School of the Art Institute of Chicago where she teaches in the Department of Film, Video, New Media, and Animation and the Department of Contemporary Practices.

WHO WERE THE KEY PEOPLE IN YOUR ORGANIZATION THAT MADE THIS PROJECT POSSIBLE?

As co-directors, we wear all the hats—we write grants, manage equipment, develop partnerships, design curriculum and teach classes—and we organized the ArtMakerSpace project with the support of The Propeller Fund. We also have two fantastic artist-teachers, Lindsey French and Stephen Germana, who teach Plug-In Studio classes, and we are so excited to have them collaborating with us on the ArtMakerSpaces.

HOW DID YOU LEARN ABOUT LITTLEBITS AND WHAT MADE YOU DECIDE TO IMPLEMENT THEM INTO YOUR PROGRAM?

We can't recall where we first learned about littleBits but as soon as we saw them, we knew we would find a way to use them.

When we started The Plug-In Studio, our main goal was to introduce contemporary art practices that integrate technology- what we call "art + tech"- into the K-12 classroom.

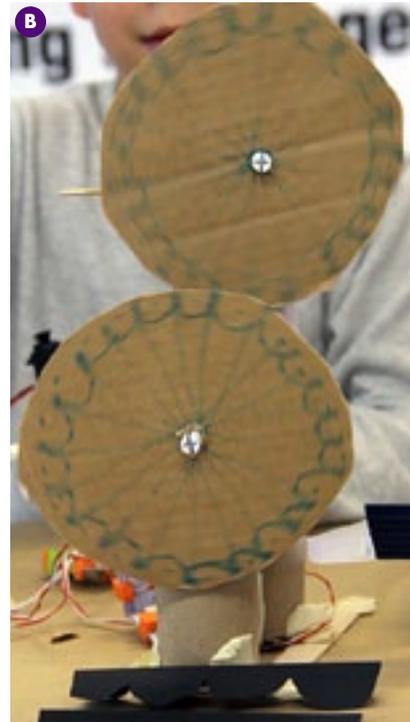
We liked the idea of interactive kinetic sculpture, something that professional artists might make with microcontrollers, electronic components, and materials like metal and wood. But we wanted to scale it down, and make it accessible for anyone, and affordable for us since we operate on just about no budget.

We love the filmmaker Michel Gondry and his homemade cardboard aesthetic. So we thought – electronics and cardboard! We'll have kids embed littleBits into sculpture made from recycled materials.

A Student artwork: Talk To Me Pengu Talk to the penguin and it buzzes back at you.



B Student artwork: Ferris Wheel



EXPLAIN HOW YOU INCORPORATED LITTLEBITS INTO YOUR PROGRAM? DO YOU HAVE AN OUTLINE OF YOUR PROCESS?

We are very interested in the process of tinkering that the maker movement has popularized. Young people today don't have many opportunities to learn through an open-ended exploration of materials. And the structured nature of the K-12 curriculum rarely gives kids the chance to experience the iterative process that is so much a part of art and design.

So we came up with an idea for a series of public events called ArtMakerSpaces, something less formal than the 10-week classes we usually offer but still rooted in learning theory (particularly that of Seymour Papert and his concept of "hard fun"). ArtMakerSpaces are free, pop-up, drop-in art + tech workshops that we host at community partner sites around Chicago. Young people (and their families) drop in and play with littleBits, which leads to lots of lights and buzzers and motors going off all at once. But for us, that exploration is just the first step.

We and the other artist-teachers are also there to work closely with the kids, encouraging them, encouraging them to develop an idea for a sculptural object, and supporting and challenging them as they work through the design and construction phases.

The artist-teacher acts as a guide, facilitating the artistic process. First we introduce electronics and circuit-building to the kids through the different functions of the littleBits. Then we give the kids space to tinker and explore the Bits, and they try out different configurations to see how everything works. Then we encourage the kids to make an interactive kinetic sculpture using cardboard. We challenge them to consider both the possibilities and constraints of making a sculptural object that incorporates technology. We then support them through the engineering and design process, helping them solve problems and stay on task. Then we document the final work for inclusion in our online exhibition. In the end, we want the kids to take satisfaction in the fact that they created some really cool art.

Young people today don't have many opportunities to learn through an open-ended exploration of materials.

WHAT WORKED WELL?

We found that the combination of littleBits and cardboard worked perfectly. littleBits are a great introduction to electronics, logic, systems thinking, and interactivity, all important aspects of technology-based art practices. littleBits are so accessible and appealing to kids.

They are extremely easy to embed. Cardboard is great because it's very versatile; it's structural but easy to manipulate and this encourages kids to prototype and modify their designs. It lends a great aesthetic to sculptural works. Best of all, you can get it for free.

WHAT WAS A CHALLENGE?

A big challenge is keeping the chaos somewhat controlled so that the kids stay focused and follow through on realizing their artworks amidst all the wild creative energy. Of course we encourage the kids to take home their cardboard sculptures but they are always terribly disappointed that they don't get to keep the littleBits too.

WHAT HAS BEEN THE RESPONSE OF YOUR STUDENTS/COMMUNITY?

Young people LOVE littleBits. Immediately.

We can't tell you how many times we've pulled out a kit, handed it to a kid, and s/he just dove right in and started making circuits.

We think the littleBits design is brilliant, from the way the magnets work to the color coding of the functions. Almost everywhere we go, parents lament the fact that their kids don't do this sort of stuff in school. And we hear that from parents across the economic spectrum.

HOW WOULD YOU SUMMARIZE WHAT YOU'VE LEARNED IN IMPLEMENTING YOUR LITTLEBITS PROGRAM?

Our ArtMakerSpace experiences confirmed our beliefs about the ways that young people learn and create. We witnessed firsthand how completely and thoroughly kids can be engaged in the learning process when they are given appropriate materials and an environment that encourages creative production.

Having multiple pathways allows different types of learners to engage with the materials we provide and the concepts we introduce in personal and meaningful ways. Learning objectives can be diverse, flexible and open-ended, yet still effective at guiding a learning activity toward a focused outcome.

DO YOU HAVE PHOTOS OR VIDEOS THAT YOU CAN SHARE?

A Student artwork:
Record Player



Amazing video links from our participants demonstrating projects in action:

[Penguin Project](#)

[Kinetic Stick Roller](#)

[Record Player](#)

[Sound Sensor Roller](#)

[Ferris Wheel](#)

[Rotating Stick Figure](#)

WHAT STANDARDS DID YOU INCORPORATE INTO YOUR PROGRAMS?

The Common Core Standards emphasize literacies across the disciplines and the application of knowledge to real world situations.

In Plug-In Studio programs, students become fluent in logic and systems thinking through their use of littleBits. They develop engineering, aesthetic and design competencies through the creation of their cardboard sculptures.

They apply these literacies to the creation of a tangible object that not only exists in the physical world, but interacts with it. Higher order critical-thinking, problem-solving, and analytical skills – all mandated by the Common Core Standards – are activated and continually reinforced through this creative process.

WHAT ARE YOUR FUTURE PLANS FOR LITTLEBITS USE?

Based on the success of our drop-in ArtMakerSpace workshops, we plan to offer littleBits classes this fall at one of our community partner sites.

Classes will allow us more contact hours with the kids than we had with the ArtMakerSpaces. We'll continue with the electronics and cardboard model, but we want to build on the interactive component through the incorporation of some of the more advanced Bits, including the Logic Bits.

We are very interested in the Arduino Bit that just launched. We can't wait to offer a robotic art class for high school age kids.

One other thought: we are both college professors in our day jobs and we've already introduced littleBits in our studio art and art education classes with great success. The Arduino Bit opens up a whole new level of sophistication for both the undergraduate and graduate students we teach.