



Maker Corps Case Study

SCIENCE MUSEUM OF MINNESOTA

By Alice Anderson, Science Museum of Minnesota

Long known for its interactive exhibits and extensive educational programming, the Science Museum of Minnesota has also established itself as a place to build and experiment with classic and emerging technology. Specifically during their *Activate Saturday* afternoons, a special volunteer cohort facilitates hands-on activities that visitors of all ages can access to practice an engineering-design continuum: play, tinker, make, engineer. The activities may range from building dinosaur sculptures out of paper and brass hinges to creating a tapping game by making circuits with telephone wire and metal plates. All of the projects are creative design experiences that use inexpensive materials or free computer software. The museum does not have a separate makerspace open to the public, but does offer classes that are similar throughout the year in its Learning Technologies Center.

The *Activate* program is the result of many years of experimenting with maker-like programming at the museum, sometimes in partnership with other organizations. Keith Braafladt, who oversees programming out of the Learning Technologies Center, has been with the museum for over 15 years and is focused on making sustainable, capacity-building programming. He settled on a strategy that engages general visitors in short but satisfying making activities and youth who are in a part of a class or camp in longer, more in-depth experiences with using and designing technology. This two-fold approach fit well with Maker Corps' mission and design: the Maker Corps members would deliver programming to the public while growing their own skills as facilitators and designers within a community.

“My goals are to carry on some of the work that I have done for a long time, which is bringing in people to provide them a creative and supportive atmosphere to be able to do education and to actually inspire people and really engage all learners of all kinds in new things. And sort of propagate that kind of thinking.”

– Keith

MAKER CORPS MEMBERS

In the summer of 2013, SMM hosted four Maker Corps Members, three of whom continue to be a part of *Activate*. For 2014, SMM hired two people, Milton and Rachel, both of whom had prior experience at SMM. Milton, now a college Junior, had been a high school participant with the museum's Youth Science Center. Rachel, now a college Freshman, had been an Education Intern with the LTC and was an *Activate* volunteer. Both were encouraged by Keith to apply to become a Maker Corps Member.



Rachel presents an activity she designed inspired by the museum's special Dinosaurs exhibit.

While the LTC and *Activate* program have a solid foundations for training new staff in the facilitation and design of activities, being a Maker Corps volunteer gave Milton and Rachel two key experiences: time to develop their own activities and a connection to the broader Maker community.

Keith, Milton and Rachel all agreed that the having the time to develop activities – going through the entire design process with feedback from colleagues – was tremendously important for the *Activate* program and for Milton and Rachel's development as activity developers. From Keith's perspective as a manager, he cited the need to have time to tinker with ideas in a supportive environment one of the most crucial elements to successful programming – and one of the hardest to protect in job with many demands.

Because both were students, they found it difficult to actively participate in all of the Development Camps, but reported that they would go back and watch videos or look for resources later. They also explored what other MCMs were creating and searched for activity designs within the Google+ community. Rachel found her in-person interactions with other *Activate* staff to be most useful, but Milton had some helpful interactions online with other MCMs.

“Right now I actually feel a lot more confident doing things by myself and trying them out and then sharing it with people. Especially after Keith really pushed us to document everything and share everything that we do on the Tumblr and the Google plus. That really helps, just having somebody tell you, “Just do it. Don’t be afraid to show the stuff you’re working on. Just let people know.” And then also the Maker Ed community, it’s really helpful because they really encourage you to. So when I post something, sometimes I’ll get comments, people saying, “Oh, that’s really cool. Can you send me a link or something telling me how you did this? Or explain to us a little bit more what you were doing here and why you were doing that.” So that’s really helpful.” – Milton

MAKER PROGRAMMING: ACTIVATE SATURDAYS

Instead of a dedicated “Makerspace” that some museums have, at SMM the tools and technology come to the visitor at 6-8 tables around the museum, inviting visitors to stop and play, tinker, and make. While the materials are different at each stop, the activities are all designed with artistic and engineering goals in mind. A special volunteer cohort facilitates the activity at each table, encouraging visitors to explore the materials, create something, try it out, and refine what they’ve made.

It could be argued that the museum does have a space that resembles a Makerspace – one where people try out new technologies, experiment with new designs, and engage in an ongoing dialog with other “makers” – but it just happens to be the offices of the Learning Technologies Center (LTC). Adjacent to computer classrooms and the Kitty Anderson Youth Science Center, the LTC is the hub for *Activate* activity design and summer camp development where Milton and Rachel worked.

Milton and Rachel both found interactions with inquisitive visitors or visitors who were surprised at what they (or their children) could do especially rewarding. All of the *Activate* activities either have a take-home piece or incorporate free software or web-based programming that visitors can try at home. As a result, when they were talking with visitors or designing activities, Milton and Rachel kept the goals of accessibility and independence in mind.



Milton facilitates the “Circuit Selfies” activity, where visitors place one hand on a conductive surface while holding a friend’s hand to connect the circuit.

IMPACT ON AUDIENCE

The result of these meticulously developed activities and facilitation was an experience that went beyond SMM visitors' expectations of a Science Museum. One Saturday in August we spoke with eight parents during *Activate* as they watched their children make either a balloon rocket or a paper hand with rubber band "tendons". Without exception, parents thought their children were engaged and very interested in what they were doing and loved that the activity was hands-on. Several commented on how accessible the activity was for any age (including adults), especially because it didn't require any reading. When asked what their child was doing and learning, many mentioned they were practicing a new skill or getting ideas from other people. One parent captured the spirit of the activities by responding, *"I'm not really sure. There's building and geometry, like that...and air something. And playing. I'm sure that they're learning something but they feel like they're playing. So that's good."*

BUILDING ON THE MAKER CORPS MOMENTUM

From Keith's perspective, being an effective facilitator is a major goal of his *Activate* program, and role as a mentor. For him, figuring out what the learner's goals are is a crucial and challenging skill to develop and one he is committed to helping his staff develop. As he explained, *"You have to look for the moments of clarity and confusion that the learner has. You have to be able to identify those and then you have to address them, and it all has to happen on the fly with all sorts of different people. ...And what you're trying to do is that, I think, everything I teach you, you can teach someone else. My attitude is 'I may not have highly developed skills in whatever it is I'm doing but I have a depth of experience with it to be able to have ideas while the process is being taught or while I'm experiencing the process'."* This individualized facilitation approach is a way for Keith and his team to encourage visitors to return, in a setting where the occasional visit is the norm. As he put it, *"[The visitor] can develop some kind of connection or relationship with that person for a moment and the big reason for that is that we think that nurturing that will encourage them to come again. Not just to come again to pay money, to come again to have more opportunities to take learning risks, to be creative and participate."*

At this point, *Activate* has a set of dedicated staff and reliable activities to run this weekly program. Keith is focused on continuing to develop new activities and ideas as well as support his staff in their growth as facilitators. He also continues to communicate with other museums nationally that offer maker or "tinkering" programming.



Keith films Rachel explain the "Acids and Bases" activity she designed.