Meet Your Maker | Maker Movement

By Matt Enis on July 6, 2015 Leave a Comment

Denver PL doubled the space for its ideaLAB in the past year. Top photo shows Nate Stone (l.) helping a teen in the audio lab, center shows teen activity, and the bottom photo is an adult session on learning to code. Photos by Christina Kiffney

On June 11, the Institute of Museum and Library Services (IMLS), in collaboration with the Congressional Maker Caucus, Maker Media, and Nation of Makers, hosted its first Capitol Hill Maker Faire, featuring a series of panel discussions and an expo open to the public, including members of Congress. Held in conjunction with this year's National Maker Faire at the University of District of Columbia and the White House National Week of Making, June 12–18, these events indicate the growing interest in our nation's capital in the Maker movement and its potential implications for education, workforce development, and community building.

"The Maker Caucus, which I helped found with a few of my colleagues [in February 2014], has been growing and is now up to 35 members of both parties," Congressman Mark Takano (D-CA) tells *LJ*. "We've been encouraging our colleagues to engage with their local Maker communities, and the Capitol Hill Maker Faire was an opportunity to expose Congress to a movement that is taking hold in every congressional district in America. Members and staff showed up not quite sure what to expect and left with a new understanding of how Making is reshaping education, small business, and public spaces."

Some detractors continue to question the wisdom of libraries investing scant resources in new equipment and new initiatives that are outside many institutions' realm of expertise—and may ultimately prove to be a fad. Others argue that offering the tools for hands-on learning and creative projects is a way forward for

libraries seeking to redefine their role in 21st-century communities. The latter view appears to be winning out, as evidenced by robust interest in *LJ*'s sister publication *School Library Journal*'s dedicated Maker issue and the popularity of *LJ* and *SLJ*'s recent joint online Maker workshop (soon to be repeated).

"Libraries have long been a place that democratized knowledge and content; for a really long time that meant the book, and then it meant access to the Internet through computer labs," says Tim Carrigan, senior library program officer for IMLS. "This is the next step in that evolution, as we move from a society that emphasizes consumption of knowledge to the cocreation and production of knowledge."

Rise of the Makers

The contours of the modern Maker space movement began to take shape in the mid-1990s, with the formation of such tech-focused nonprofit associations as the Geek Group in Michigan and c-base in Berlin, Germany. Now often referred to as hackerspaces, these associations offered facilities and equipment that members could use on individual technology projects and attracted communities of experts who could assist one another and collaborate on larger activities. During the past decade, other independent hackerspaces have continued to spring up around the globe, including Metalab in Vienna, Austria; NYC Resistor in Brooklyn; and Noisebridge in San Francisco.

Another key event happened in 1998, when Massachusetts Institute of Technology (MIT) professor Neil Gershenfeld began teaching a course he called "How To Make (Almost) Anything," a hands-on lab in which students could learn how to use industrial fabrication equipment such as laser cutters, 3-D printers, and computer numerical control (CNC) milling machines. Students "responded passionately to the tools," working alone or in groups to build inventions including a bicycle that recharges batteries, or an alarm clock that won't shut off until deep sleepers win a short game against it, Gershenfeld recalled in a 2005 interview with the *Boston Globe*.

In 2001, with funding from the National Science Foundation, MIT founded the Center for Bits and Atoms (CBA), with Gershenfeld as director. By 2003, he had made it part of CBA's mission to begin facilitating the deployment of this type of equipment in fabrication laboratories, or "Fab Labs," in cities and rural communities worldwide, with the aim of "democratizing access to the tools for technical invention." The network, which has since grown to almost 100 in the United States and more than 500 globally, offers community access to a common set of equipment, including a laser cutter, a vinyl cutter, a CNC milling machine, an electronics workbench for prototyping circuits, and a rapid prototyper, such as a 3-D printer.

TAILOR-MADE Collaborative, creative spaces are now custom-tailored to community interests. (Clockwise from top l.): Congressmen Steny Hoyer (c.) and Mark Takano (r.) take part in the Capitol Hill Maker Faire; buzz-worthy activity rooms in Phoenix PL's hive @ central; an electrical Maker session at Fayetteville Free Library's Fab Lab is shockingly good fun; a hot mess going on at Madison PL's Bubbler. *Credits (clockwise from top l.): courtesy of IMLS; courtesy of Phoenix Public Library, courtesy of Fayetteville Free Library ; and courtesy of Madison Public Library*

Standards and practices

The standardization of the Fab Lab model enables collaboration throughout the network. Users "should be able to do the same things…in [the] Nairobi, Cape Town, Delhi, Amsterdam, or Boston Fab Labs," explains the Fab Foundation website. When the Fayetteville Free Library (FFL) near Syracuse, NY, became the first U.S. public library to install a permanent Maker space in 2011, it qualified as a member of the network.

As with the many library Maker spaces that have debuted since, FFL has also adapted its "Fabulous Laboratory" to the needs of its community, adding a "Creation Lab" for digital projects and "Little Makerspace" for kids. Knitting and quilting clubs, which work with the space's nine sewing machines—among other equipment not included in the standard Fab Lab model—are among the most popular programs for adults.

Meanwhile, Connecticut's Westport Library, which launched its Maker space in 2012, last year acquired two NAO Evolution humanoid robots to encourage youngsters to learn coding skills, along with licenses for

computer-aided design software to enable local engineers to help other patrons prototype inventions. The Chattanooga Public Library's 4th Floor space offers a zine-making lab and a loom and has taken advantage of the city's gigabit ecosystem to launch GigLab, giving the public access to enterprise-level gigabit-connected hardware. At the Detroit Public Library, the Maker space at the HYPE Teen Center offers hands-on workshops on bicycle repair and customization.

If anything, the expanding range of tools, programs, and services offered by various Maker spaces has served to clarify that the movement is about an ethos, not equipment. Each Maker program offers its community a place to gather, share expertise, and work creatively and collaboratively, regardless of the tools involved.

Space for variety

This feature profiles just a few of the unique new ways in which U.S. public libraries are embracing the Maker movement, including an update on FFL's Fab Lab; The Bubbler, an arts-focused program at Madison Public Library, WI; recording studios for teens at branches of the Queens Library in New York; the Free Library of Philadelphia's Maker Jawn program, which facilitates STEAM education and creative projects with inexpensive materials; the Phoenix Public Library's hive @ central business incubator space; a roundup of projects involving libraries and community gardens; and, featured on the cover of this issue, ideaLAB at the Denver Public Library, a comprehensive Maker space that has built a successful, popular coding program.

"The Maker movement itself is very free form, and…that's part of the beauty of it and why it has been so successful, because it's moving us away from things that are maybe, perhaps, more rigid," Carrigan says. "What we are finding is that while these programs and spaces that museums and libraries are developing may have many similarities, there are also important differences that speak to the needs of local audiences, and we really need to honor that."

In an effort to nurture the movement's growth while continuing to encourage a variety of approaches, IMLS has been working with the Children's Museum of Pittsburgh, the Chicago Public Library, the Hunt Library at North Carolina State University, and San Francisco's Exploratorium museum on an initiative that aims to build the capacity of libraries and museums to develop effective Maker space programs.

At press time, Carrigan and Peter Wardrip, research scientist for the Children's Museum of Pittsburgh, were scheduled to give a presentation on Sunday, June 28, at the American Library Association (ALA) 2015 conference in San Francisco, at which they will introduce an emerging framework that the group has developed to help interested organizations make informed investments in Maker programs. Carrigan notes that the framework is still in the draft stage and that the initiative will be seeking feedback. He also emphasizes that standardization is not the goal.

"The framework will prepare people to ask a series of very intentional, focused questions, the answers to which will perhaps lead a museum or library to focus its local investments differently," Carrigan says. "I think that [Maker spaces] can look a lot of different ways. A cookie-cutter approach doesn't feel right to me."

lj.libraryjournal.com/2015/07/public-services/meet-your-maker-maker-movement/

SOCIAL SPACES

ideaLAB

Denver Public Library

Featured on this month's cover, the Denver Public Library's (DPL) ideaLAB is a great example of how starting small can demonstrate a huge demand for Maker space programming in a library's community.

Aiming to create a dedicated space for hosting weekly teen tech club meetings and other programs for teens, DPL opened the doors of a retrofitted, 400 square foot former podcast booth and storage area in its Central Library in May 2013. Featuring a green screen, a recording booth, and four computer workstations, the small space was originally focused exclusively on digital media creation. Within weeks, attendance was booming, and adults were asking to use the space, too.

"It was always supercrowded, and there was obviously a lot of need for it," says ideaLAB Program Coordinator Nate Stone. Last year, DPL expanded ideaLAB's physical space as well as its mission. The 1,000 square foot area now includes a 3-D printer; a dedicated workstation for electronics with soldering iron and heat gun; a sewing machine; and a gaming station, along with expanding programming with tracks for teens, adults, and families interested in art, electronics, music and video production, web design, and game design.

Stone said that the library is still exploring what the community wants from the space and figuring out which types of programs appeal to different groups, but ideaLAB's popular web development and coding classes have already begun generating relationships with local experts and volunteers.

"There's a huge pipeline problem here in Colorado…. [S]o there's a crew of adults that really want kids to learn [coding and web development]." These volunteers can offer insight and advice that teens and adults might otherwise have to pay thousands for in a coding boot camp, and Stone believes the ideaLAB environment can be more effective than trying to use free resources to learn independently.

"There are a gajillion separate websites where you can learn HTML, Javascript, Ruby, or whatever," Stone says. "But what people want is a space where they can talk to other people, even if they're using those free online resources."

With ideaLAB, "we started out thinking that we had to provide all of the programming" but have found that offering a space with tools tends to facilitate collaboration and the sharing of advice, Stone says. "That's what

we're starting to get our heads around right now."

---

hive @ central

Phoenix Public Library

The Phoenix Public Library's (PPL) hive @ central is all business. While many public libraries offer amenities such as meeting rooms, business publications, and databases, free Wi-Fi, and other resources that local entrepreneurs will find useful, hive brings these amenities together in a 2,500 square foot coworking space on the second floor of PPL's Burton Barr Central Library and encourages networking and idea sharing with meet-ups, business expos, and mentors from the local business community and a comprehensive, recurring series of workshops called the "Business Roadmap Program."

Since hive @ central opened in January 2014, more than 2,000 people have attended a Business Roadmap series, which includes intensive courses on creating a business plan, filing and registering a business, financing, drawing up contracts, structuring prices and revenue projections, branding and marketing, hiring and team development, and other core topics. To date, 39 new businesses in the Phoenix metro area have been attributed to the program, according to Kathy Husser, PPL's adult services coordinator.

"We're the very first rung on the ladder for any type of entrepreneur or innovative person who wants to start a business but doesn't know where to start," Husser says.

Developed in partnership with Arizona State University's (ASU) Entrepreneurship and Innovation Group and the City of Phoenix Community and Economic Development Department, with support from the Arizona State Library and the Institute of Museum and Library Services (IMLS), hive @ central is a member of ASU's Alexandria Co-Working Network, which also includes the Eureka Loft at Scottsdale Public Library, THINKspot at the Mesa Public Library, and the InnovationHub at the Maricopa County Library District's Goodyear branch. Although this network of business incubators is still relatively new, the model is already getting attention. Naperville Public Library, IL, recently cited the ASU program as an influence when it debuted its own business incubator and coworking space, NaperLaunch, in June.

Maker Jawn

Free Library of Philadelphia

Originating in the old-school Philadelphia hip-hop scene, *jawn* is an all-purpose slang term that can be used as a substitute for any noun. The eclecticism of this local lingo proved perfect when the Free Library of Philadelphia (FLP) named its "Maker Jawn" program, which debuted at FLP's Kensington branch in spring 2013. Maker Jawn aims to engage kids and teens with projects that include producing video, building small robots using electric toothbrush motors, creating audiobooks and stop-motion animation, sewing and weaving, and more.

Theresa Ramos, program development coordinator for FLP, attended the recent Capitol Hill Maker Faire (see intro, p. 24) and notes the variety, and disparity, of resources on display at the expo. Maker projects can involve materials as simple as paper or as complex and expensive as programmable robots, and Ramos says that the Maker Jawn Mentors who create programs for kids and teens at FLP have been considering this as they develop activities. For example, FLP offers access to 3-D printers, but taking into account other resources available to Maker Jawn, is a 3-D printer demo inherently useful or inspiring to program participants?

"You need to figure out what you can do, and what you can sustain, and build on that," Ramos says. "If you don't have the money or the staff to sustain something, I don't think one-off events have real impact."

Staff often think up creative ways to use recycled or inexpensive materials, and the results can be exciting. In May, Maker Jawn participants at five North Philly libraries created paintings, papier-mâché sculptures, and drawings for a trike that was entered in the city's Kensington Kinetic Sculpture Derby. Maker Jawn then won the derby award for best pack of ten or more, and its work was displayed in the main hall of the Philadelphia Museum of Art.

The Bubbler

Madison Public Library, WI

Upon closing its central, downtown branch for renovation in November 2011, Wisconsin's Madison Public Library (MPL) hosted a "once-in-a-lifetime party," inviting 100

local artists to create one-day installations throughout the empty building. Dubbed “Bookless,” the event was a huge success, drawing 5,112 visitors and raising almost $30,000 in a single day. More important, Bookless helped point the way forward for a system that had been looking for ways to enhance its appeal and relevance to Madison’s young adults.

“It led us to talk about how we could take this arts event and continue it in the programming we’re doing at the library,” explains MPL library program coordinator Trent Miller, a 2015 *LJ* Mover & Shaker. And from those conversations came the Bubbler, a “program where you learn, share, and make anything!”

The Bubbler’s origins as an interactive event and arts festival helped MPL reboot local views on what a 21st-century library can be, while strengthening ties to local artists and organizations such as Madison’s Sector67 creation space. Those relationships have since helped shape the program’s growth.

MPL’s new Central Library, which opened in 2013, houses Bubbler headquarters and a media lab with a sound booth and digital audio workstation, custom game design PCs, a green screen with filming equipment, stop-motion animation stations, and other amenities. But Miller notes that MPL deliberately left out the word *space* when naming the Bubbler. The concept isn’t focused on a specific place where patrons come to create, it’s about connecting the community with local artists and experts.

“Our focus has always been on the people as opposed to the equipment,” Miller says.

Since 2013, the Bubbler has hosted a continuous series of artists-in-residence, who use a portion of the Bubbler Room at central as a public studio and offer classes to MPL patrons. An ongoing “Meet Your Maker” series features interactive events on topics ranging from screen printing to cheese making. “Night Light,” a monthly after-hours series, features gallery events and live music, theater, storytelling, and dance performances. These series and others have accounted for more than 1,000 programs during the past two years, with over 24,000 attendees.

Recording Studios

Queens Library, NY

The Queens Library (QL) for Teens in New York City’s Far Rockaway neighborhood was originally opened in 2008 as an overflow location to reduce crowded conditions in the local branch and to give teens their own space where a relaxed set of rules

was combined with teen-targeted collections, computer skills workshops, and career fairs. Aiming to create a program that would engage kids while teaching higher level software skills, QL used a $50,000 grant from the state assembly in 2010 to build a recording studio with a vocal booth, two keyboards, three editing stations, and licenses for Pro Tools and Reason professional mixing and editing software.

That program has experienced such sustained success that QL last October opened a new studio in the teen center at the library's Cambria Heights branch. With the volunteer help of local musician and producer Curtis Perkins, the new studio dropped its first album this spring. More than 200 people showed up for a launch party on April 24.

Perkins says that a lot of people become interested in music recording and production at a young age, but skills like sound editing require studio equipment and editing software to learn, and time in a professional studio in Queens can cost $75 or more per hour.

"Kids want hands-on learning [experiences], but most studios are too expensive," Perkins says. "Having this [space] is excellent."

Gail Smith, coordinator of the Cambria Heights teen center, said that the center is currently offering regular classes in five tracks: chorus, beat-making, recording, rap and music, and writing. The new album is mostly cover songs, but now that many of the teens are acclimated to the studio, she and Perkins are encouraging them to write their own music and record their own demos. (Check out the Teen Center theme song by Perkins and ijyana below).

Fab Lab

Fayetteville Free Library, NY

With the launch of its Fab Lab in 2011,the Fayetteville Free Library (FFL), NY, was the first public library in the United States to offer patrons access to a permanent, comprehensive Maker space program. The idea of Maker spaces in libraries had been percolating at the nearby School of Information Studies at Syracuse University, and then-FFL student support staffer Lauren Britton (a 2013 *LJ* Mover & Shaker) pitched the concept to FFL executive director Sue Considine. Considine credits the entire Fayetteville community for the Fab Lab's success and says that FFL was simply adhering to its mission when it began exploring what was, at the time, uncharted territory for libraries.

"When there are new opportunities available to our community to enhance their lives—whether it's technical or civic or social or educational, whatever it might be—it's our responsibility as a public library to investigate and research and with our knowledge of our community's needs make that content available on our library platform," Considine says.

The Fab Lab was a hit from the beginning, drawing interest from regular patrons, as well as demographics that FFL had difficulty reaching with traditional programs.

"These tools, this equipment, this technology is a catalyst to reach deeper into the community," Considine says. "Cast our net wider and broaden our base. Allow for people to develop new ideas about why the library might be relevant to their lives or to the community."

The space's development and growth has since been guided by the community. A Little Makers program gives kids a chance to explore bookmaking, MaKey MaKey and Snap Circuit Jr. kits, and more. A digital media Creation Lab now offers FFL patrons the opportunity to use a green screen and professional video equipment. The Fab Lab continues to offer everything budding inventors might need to mill or print their latest prototype, but sewing machines and collaborative sewing projects have become a popular feature as well.

"There's a tremendous interest in our community in sewing," Considine says. "People who have been sewing alone in their kitchens for years, or people who were interested in learning to sew…this whole community within our community has come together and developed around the placement of a piece of equipment in the public library…. Just like [Fab Lab founder] Neil Gershenfeld has said all along, the power of fabrication is not technical, it's social. We've believed that from the very beginning."

For examples of 'grower space' see "Lending a Green Thumb."

About Matt Enis

Matt Enis (menis@mediasourceinc.com; @matthewenis on Twitter) is Associate Editor, Technology for *Library Journal*.