Learning Labs in Libraries and Museums:

Transformative Spaces for Teens

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Cover photo: Teens put a 3D printer through its paces at the Teen Tech Studio in Columbus, OH. Photo by COSI.

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What Are Learning Labs?

Libraries and museums are trusted community spaces where people of all ages can pursue their interests, gain expertise, and have meaningful experiences. Across the country and around the world, museums and libraries are placing themselves at the center of innovative research and practice about how young people create and share knowledge, powered by a combination of digital media and traditional tools.

Learning Labs are innovative spaces that prepare youth to meet the challenges of a complex global economy and gain the skills they need to succeed in a rapidly changing world, while allowing them to follow their passions and to inspire one another. These spaces follow the design principles of Connected Learning—learning that is interest-driven, socially relevant, and aimed at expanding educational or economic opportunity.[1] Connected Learning is realized when a young person is able to build the skills and knowledge to pursue a personal interest or passion in an environment that provides support from friends and caring adults, and can link this learning and interest to academic or career success or to civic engagement. Learning Labs create this kind of environment for teens, with access to peers and supportive and knowledgeable mentors as well as a combination of digital media and traditional tools.

In 2010, President Obama launched Educate to Innovate, a nationwide effort to bring American students to the forefront in science and math achievement by making science, technology, engineering, and mathematics (STEM) education a national priority in order to ensure that the youth of today gain the skills they need to join the workforce and pursue the economic opportunities of tomorrow. In addition to federal leadership, the White House called for public-private partnerships to support this initiative. In 2011, the federal Institute of Museum and Library Services (IMLS) and the John D. and Catherine T. MacArthur Foundation responded by launching the Learning Labs in Libraries and Museums program to support the creation of innovative teen spaces at libraries and museums, and to unite these sites in a national network. Through two cycles of national grant competitions, sites in 24 cities and counties were selected; each site received $100,000 for the planning and design of their Learning Lab. Although the formal funding of new sites by IMLS and MacArthur has ended, Learning Labs continue to emerge following the examples and models initiated in this program.

Mentors and teens at The Mix space at Science Museum of Virginia. Photo by Matt Baker

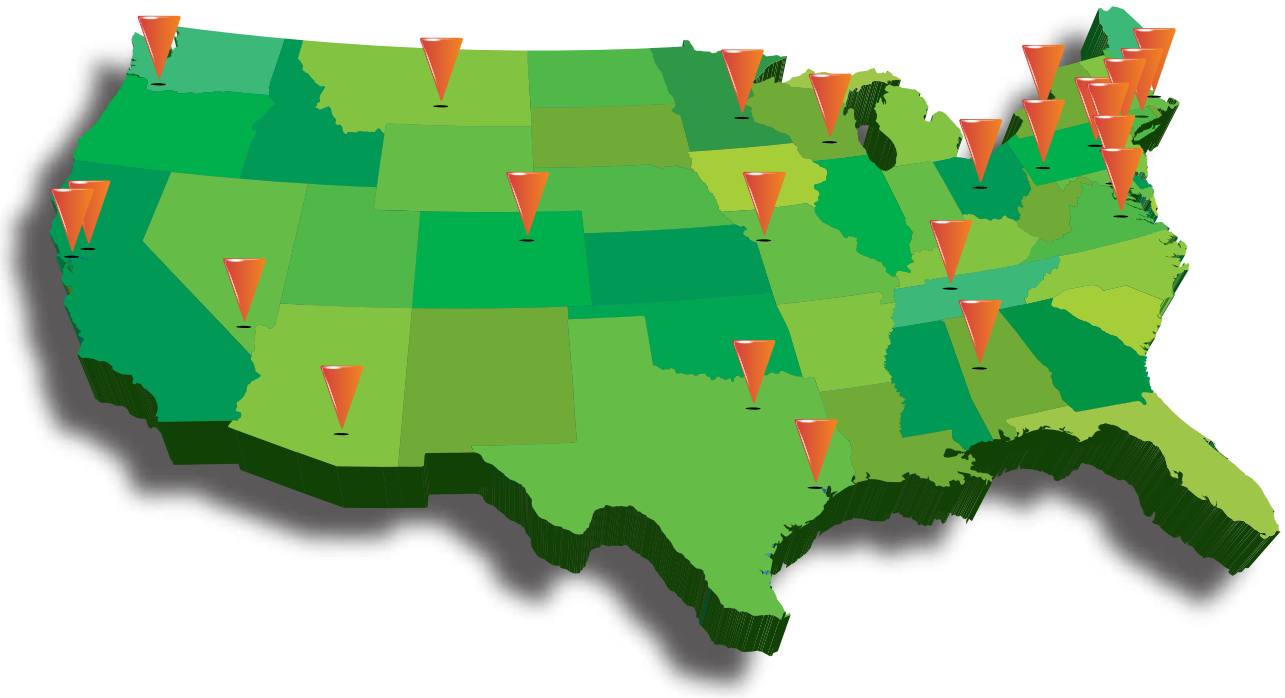


Figure 1
Sites funded by the Learning Labs in Libraries and Museums program.

Alabama Museum of Natural History (Tuscaloosa, AL)

Billings Public Library (Billings, MT)

Carnegie Library of Pittsburgh (Pittsburgh, PA)

Columbus Metropolitan Library (Columbus, OH)

Dallas Museum of Art (Dallas, TX)

Da Vinci Science Center (Allentown, PA)

Free Library of Philadelphia (Philadelphia, PA)

Howard County Public Library (Columbia, MD)

Kansas City Public Library (Kansas City, MO)

Las Vegas-Clark County Library District (Las Vegas, NV)

Lawrence Hall of Science (Berkeley, CA)

Lynn Public Library (Lynn, MA)

Madison Children's Museum (Madison, WI)

Monroe County Library System (Rochester, NY)

Museum of Fine Arts, Houston (Houston, TX)

Nashville Public Library (Nashville, TN)

New York Hall of Science (Corona, NY)

Oregon Museum of Science and Industry (Portland, OR)

Pima County Public Library (Tucson, AZ)

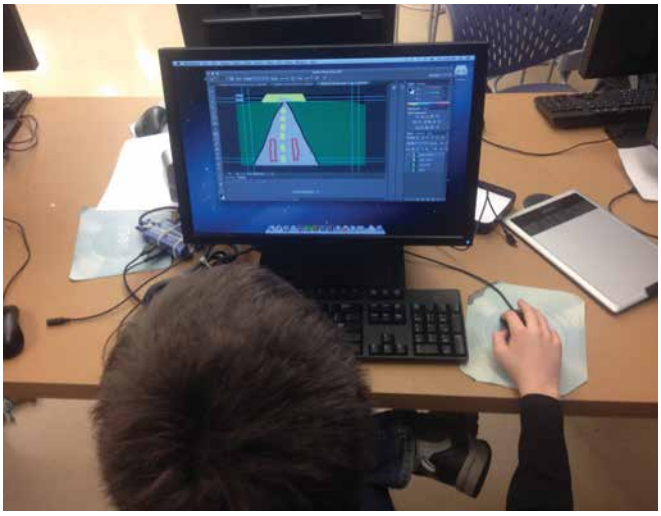
Poughkeepsie Public Library District (Poughkeepsie, NY)

Rangeview Library District (Thornton, CO)

Saint Paul Public Library (Saint Paul, MN)

San Francisco Public Library (San Francisco, CA)

Science Museum of Virginia (Richmond, VA)



Teen at Poughkeepsie Public Library District creating animated videos. Photo by Angela Panzer.

Learning Labs come in many shapes and sizes, but they all share some common features:

- They are places where youth of diverse backgrounds can connect with one another and with adult mentors to explore topics of personal interest and relevance.
- They provide access to new media, with a mix of digital and traditional tools.
- They emphasize interest-driven and production-centered learning.
- They provide new contexts for youth to build skills and gain knowledge that connect them to future opportunities.
- They capitalize on a community's rich set of resources by forging collaborations among libraries, science centers, museums, community organizations, and other centers of exploration.

The libraries and museums participating in the Learning Labs initiative are leaders in rethinking and redesigning what learning can look like for middle and high school youth outside of the school setting. The belief behind Learning Labs is that youth are best engaged when they are at the center of their learning—following their passions, collaborating with peers, going beyond the role of consumers to become active creators and producers. At Learning Labs, youth gain experience with technology and digital media in ways that help them to express, create, and connect their interests. In these spaces, gamers become builders, poets become filmmakers, coders become fashion designers, and musicians become engineers.

Learning Labs Are:

Through work with early YOUmedia sites, Mimi Ito and her team of researchers have begun to point toward collective outcomes resulting from Connected Learning experiences in spaces such as Learning Labs.

Outcomes point to:

- A supportive and safe environment for developing interests and expertise
  - Intergenerational relationships centered on shared interests, identity, and mutual respect
  - A safe peer culture that values intellectual and creative excellence
- Exposure to a breadth and depth of interests
  - Discovery of new interests
  - Deepening and extending existing interests
- Connecting interests to opportunity in the wider world
  - Publicity and recognition for their skills
  - Orientation toward academics and career

Connecting Research and Practice

Learning Labs emerged from—and continue to influence—a rich body of research that began with the three-year ethnographic study of young people's media practices in everyday settings[2] led by Mizuko (Mimi) Ito, anthropology professor at the University of California, Irvine, and a team of researchers. Ito observed that young people online, no longer driven by a grade and facing fewer consequences for failure, were engaging with ideas, experimenting with roles, and exploring interests in new ways.

Ito found that teens in these digital spaces circulate among social engagement or "hanging out" (spending time on Facebook or texting, for example); tinkering or "messing around" (posting and editing photographs, trying new apps); and deeper "geeking out" (designing games, building robots) to develop skills and knowledge around their personal interests. These hanging out, messing around, and geeking out stages of engagement or interaction, often referred to as HOMAGO, can be either a linear or nonlinear progression depending on the degree and depth of activity.

YOUmedia at the Chicago Public Library, opened in 2009, was the first space with activities designed to support HOMAGO, putting these ideas into practice. ARTLAB+ at the Hirshhorn Museum and Sculpture Garden in Washington, D.C.; YOUmedia at the Miami Dade Public Library System; and YOUmedia DreamYard in New York City soon adapted HOMAGO to their own settings, which included not only a library, but also a museum and a community center.

The experiences of youth in YOUmedia Chicago and other early sites led Ito and other researchers from the Digital Media and Learning initiative to develop the more comprehensive and unifying Connected Learning framework. As Ito observes, "The relation between various research teams and the YOUmedia team in Chicago was a rare example of being able to work closely and collaboratively across practice, design, and research. The insights gained from YOUmedia were central in the development of the conceptual and design framework for Connected Learning and continue to inform the research."

Connie Yowell, director of education for the MacArthur Foundation, has described Connected Learning as "bringing together [teens'] social world and the thing they want to get better at, and then connecting those two with something that has a payoff in the real world. When we bring those three spheres together, we have what we call Connected Learning."

Connecting the Dots to Wider Opportunity

Kansas City, Missouri, is a city that combines traditional and 21st century communications industries. It is both the home of Hallmark Cards Inc., the nation's largest greeting card company, and the first U.S. city selected by Google Fiber for free, high-speed broadband Internet service. The local Learning Lab project, a partnership between the Kansas City Public Library and Science City at Union Station, is working within this communications-rich context to make sure teens are prepared for the future, equipped with skills like coding, digital storytelling, and game design. These skills will prepare youth to pursue unique opportunities like the newly established digital-storytelling degrees at Johnson Community College and the University of Missouri. Youth will be ready for jobs with the emerging tech startups that have followed Google Fiber to the city.

Figure 2
From Collected Learning Alliance
clalliance.org

Learning Lab as a Community Catalyst

In 2013, David Smith, senior director of science and strategic initiatives at the Da Vinci Science Center in Allentown, Pennsylvania, convened multiple organizations in the Allentown area to respond to Cisco Systems Inc.'s US2020 City Competition. The goal: increase the quality and scale of STEM mentoring in the region. Smith tapped into Allentown's many community organizations, including the Learning Lab Virtual Studio at the Da Vinci Science Center, to create the Mentor Allentown Coalition, which will leverage existing STEM programs and the local workforce to provide 2,300 teens with high-impact mentoring based in part on the Connected Learning framework. The proposal was one of three Grand Prize winners nationally.

As Smith says, "There is a direct line from what I first saw in action in YOUmedia Chicago during the first Learning Labs convening to this project. We have learned through a variety of experiences that teens are hungry for opportunities that link deeper learning to their own personal interests and to personal connections and, at the same time, offer them a pathway to employment and a brighter future."

Amelia, an Arizona youth on the Pima County Library Teen Design Team, said it best: "It's about youth having a voice to decide what they want to do and how they want to do it and how it'll affect their lives."

New Models and Practices

Learning Labs teams approached the planning and design processes of their Labs in a variety of ways. The activities within the Labs are as varied as the communities and institutions in which they exist. Many teams looked to YOUmedia Chicago and other early sites like ARTLAB+ and DreamYard for inspiration, but were encouraged to design and implement experiences and spaces to reflect the youth, priorities, and opportunities in their communities.

Teams of library and museum professionals used the HOMAGO principles and Connected Learning framework to guide the design of labs and quickly identified essential components of successful youth spaces. Three of these essential components are strategies for teen engagement, systems to recruit and support mentors, and some kind of physical space or spaces where these combine into a learning environment.

Teen Engagement

Direct involvement of teens in the planning and design process is one of the signature characteristics of the Learning Labs. Inviting youth to help create the physical spaces and learning experiences ensures buy-in from teens and helps to pilot Connected Learning experiences in the new spaces.

Teens from ARTLAB+ answer questions about developing their digital media space. Photo by Wayne MacPhail.

During the planning of Nashville's Learning Lab, The Studio@NPL, the Nashville Public Library hired architects to help design the space and the architects turned to teens for help. Lead architect Dominique Arrieta joined with Kevin Leander, associate professor in the Department of Teaching and Learning at Vanderbilt University, to develop a program that put youth at the foreground of designing their own learning environment. The teens used online design tools and games, including augmented reality and Minecraft; toured other spaces for inspiration; and created a "wish list" of elements they want to see, including a maker space and—in keeping with their Nashville roots—a recording studio. This deep level of engagement has helped to redefine how the Nashville Public Library is serving teens.

Teen from the Free Library of Philadelphia displays E-textile jewelry. Photo by MakerJawn.

Similarly, teens designing the Learning Lab at Pima County Public Library in Arizona worked with community-service professionals to create focus groups and develop a survey that reached an impressive 2,100 youth to find out what teens wanted in their community and in a new space. The survey results led the teens to organize the vision for their Lab around space, place, and programming. The youth also created a video to introduce the project to potential stakeholders and presented it to the county board. As Eleanor, one member of the Pima County teen group, said, "A year ago I wasn't a youth leader. Being part of this group has helped me gain skills, talk to youth, talk to adults."

For these and other Learning Labs, a high degree of input and engagement has transformed individual teen advisors into youth designers who work as part of collaborative teams. Teen participation in planning and design engenders a sense of ownership and responsibility toward the Lab space and its resources.

Mentors

Mentors are integral to Learning Labs. Reuben, a teen in Richmond, Virginia, said of the mentors at The MiX, the Learning Lab at the Science Museum of Virginia: "I've come to find The MiX as my second home. I can talk to my mentors about anything. They know so much; I can even learn another language from them! But they're always there for me when I need something."

Often experts in their own fields—poets, engineers, musicians, filmmakers, geographers, librarians, and museum educators—mentors help teens to identify new interests, encourage them to expand their horizons, and offer them access to expertise and resources. The development of new mentor models has also been the impetus for libraries and museums to rethink staffing models—recruiting mentors and staff with diverse skills and cultural capital that are relevant to youth. Mentors who can relate to youth are critical for teen engagement, as reported in a three-year evaluation report[3] on Chicago's YOUmedia by the University of Chicago's Chicago Consortium on School Research.

Mentor works with teens during a SketchUp workshop at Billings Public Library. Photo by Todd Clippenger.

Mentors are “the ones who are responsible for getting kids to articulate their own interests,” says K-Fai Steele, teen-programming specialist at the Free Library of Philadelphia, a Learning Lab site. “Mentors have insight into kids’ mental processes. They have to pick up on cues, and make something productive out of it.”

To recruit mentors, Learning Labs draw on assets in their communities. The Geotech Lab at the University of Alabama Museum of Natural History and Tuscaloosa Public Library, for example, relies on graduate students and members of the Geography Club to serve as mentors. These college students bring with them their enthusiasm about their study areas (environmental ecology and geography) and also serve as role models for youth who may not see themselves in an academic setting.

Others have created programs to attract mentors to their spaces. In Thornton, Colorado, the Studio at Anythink Wright Farms (one of the Rangeview Library District’s Anythink Libraries) developed an artist-in-residence model to recruit local artists as mentors. The result has been a series of consistent, high-quality mentors drawn from artists who often work in the community without the benefit of a large budget or organizational support. Artists are paid a stipend for a six-month commitment.

As Mo Yang, Anythink Studio guide, reports, the approach has helped the program focus more strongly on teen interests. “We are able to do this by bringing in professionals in the community who are excited to mentor teens so teens can learn everything while still having fun, collaborating, building a network, and having a vested interest.”

New York University’s Connecting Youth research team found that mentoring continues to be an essential element for success in engaging teens in Learning Labs. Staff have found that diverse working professionals and college students with extensive knowledge in particular fields in STEM and the arts can help teens to express themselves, to be productive, and to build upon their interests in meaningful ways. As one staff member told the research team, “It’s really about the connections that youth make to their mentors.”

Physical Space

Learning Labs teams have taken innovative approaches to rethinking the use of space to support HOMAGO and Connected Learning activities—with significant youth input into the space design process. Createch, The MiX, the Labs, TechHive, The Studio, QuaranTEEN—as these names and photos reveal, the physical spaces of Learning Labs are as varied as the communities they serve. Many teams have retrofitted existing teen spaces or developed underused spaces like meeting rooms to create new teen centers. Lawrence Hall of Science, for example, converted a computer lab amphitheater with fixed seating into a dynamic teen space. In Allentown, Pennsylvania, the Lab partners are considering space in a bike shop. Learning Labs were placed within Maker Spaces at the New York Hall of Science and the Oregon Museum of Science and Industry, creating teen-specific programs around tinkering, building, and creating. The Learning Labs in Nashville and San Francisco are large spaces that were made available by renovating underused spaces. Kansas City is using a mobile Lab, moving equipment and mentors among libraries, museums, and community partners.

Teens talk frequently about needing spaces that are "teen only"— spaces that are safe, flexible, and provide opportunities for youth voice and public display of work. The most important features are not the size or shape of the space, but rather the ways of thinking, behaving, and working that emerge within it.

Spaces at Kansas City Public Library. Photo by Kansas City Public Library.

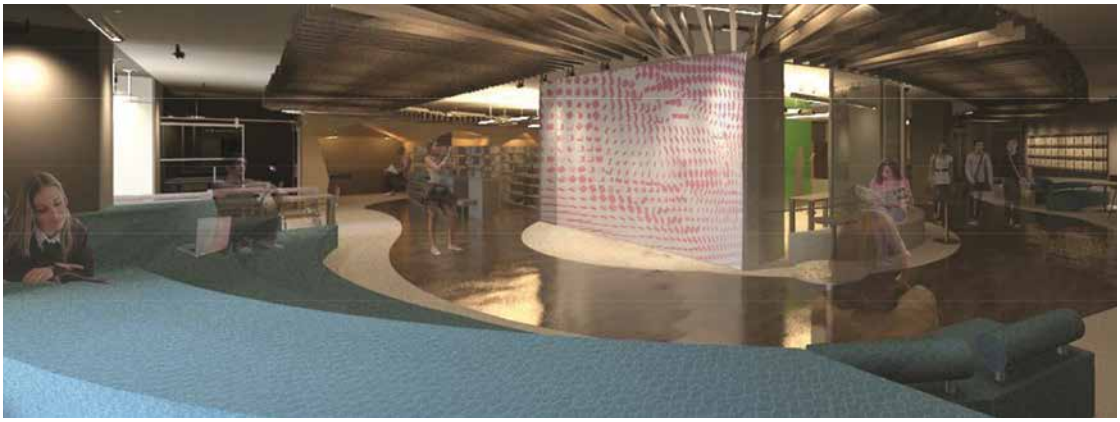
Counterclockwise from top: Teen Tech Studio at COSI. Photo by COSI.

Mural created by Dallas youth. Photo by Perot Museum of Nature and Science and Dallas Museum of Art.

Youth cutting out cardboard parts for a skeeball machine. Photo by TechHive.

San Francisco Public Library Teen Center design rendering. Photo by San Francisco Public Library.

Green Studio at Anythink Library. Photo by Anythink Library.



Impact of the Learning Labs Program

The Learning Labs grants have altered the operations of many of the libraries and museums involved. Institutions have taken advantage of this work to initiate a new vision of services and resources for teens. For some, the Lab development process became the catalyst for a robust new vision of collaboration and network development within their community. Many teams have built new relationships with teens and are more comfortable incorporating youth voice into all aspects of planning and design.

The planning and design process also allowed practitioners at many of the Learning Labs sites to participate in learning in new ways. Over time, practitioners are creating new identities for themselves at their institutions as they foster more direct relationships with youth. While traditional teen services at libraries focus on connecting youth to resources, they are now helping youth to discover their creative potential. As Crystal Faris, director of teen services for the Kansas City Public Library, says, "Because of this experience, for the first time I think of myself as an educator."

Institutional Transformation

Learning Labs have sparked innovation and transformation in the participating libraries and museums. For example, the Saint Paul Public Library and the Saint Paul Parks and Recreation Department came together to open Createch, a Learning Lab in a jointly designed, constructed, and managed community center in the Arlington Hills community. Their groundbreaking partnership has led to new thinking about roles of libraries and parks, and how learning happens in this new space.

"We're adjusting how we talk about the space," says Debbie Willms, deputy director of the Saint Paul Public Library. "We don't have a library zone and a rec zone. We have calm, creative, and active zones."

In addition, the library and parks staff have overlapping roles and joint professional development. "It's one staff and everyone can do all the jobs, everyone can answer all the questions, everyone can run a score clock," says Willms.

> "I've had a lot of grants, but this $100,000 grant to start a Learning Lab has been more transformational than anything I've seen."
>
> *—Debbie Willms, Saint Paul Public Library*

The program is also influencing broader professional development for teachers. Library and parks staff have coordinated with two local universities so teachers can do their technology teaching practicums in the classrooms at Createch. A recent workshop included a charter school, public school, two libraries, a college, and Parks and Rec staff coming together to teach circuitry. "That was amazing to me," says Willms. "All these groups coming together and not worrying about who's representing whom, because they're all there to bring services to teens."

"The grant has been a catalyst for coordination," says Kathy Korum, assistant director of the Saint Paul Parks and Recreation Department. "It's not the way we've done Parks and Rec ever. Before, we built buildings and put stuff in them and waited for people to come. This has pushed us to think about things in a completely different way. We go out and find people now and spread this idea to all neighborhoods. Community connections are abundant because of the grant."

But the work is about more than institutional collaboration. Putting interest-driven learning at the center, along with digital tools to explore those interests, has begun to transform how institutions see their role in supporting youth education.

Morgan Anderson, coordinator of teen programs for Columbus Museum of Art—one of five partners in the Columbus, Ohio, Learning Lab project—emphasized that transformation: "Our institutions have never before worked together and tried to identify learning pathways for youth across the city. Instead of competing for an 'audience,' we are working together to serve youth in our community. This is a fundamentally different mindset for our organizations—placing us as collaborators and not competitors."

Across the Learning Labs network, the institutional transformation of libraries and museums is seen through new investment in teen services and emphasis on more inclusive planning and design processes, reimagined professional development, and the creation of new partnerships.

Fostering 21st Century Skills

Walking down a street in Queens, New York, you're likely to see two things: transit riders climbing the staircases to the train platform and older women with two-wheeled carts packed with groceries or packages in tow. In the juxtaposition of those carts and those stairs, the teens at the Learning Lab in the New York Hall of Science (NYSCI) in Queens saw a problem, and a solution.

Maker Space at NYSCI is an amazing Learning Lab where teens use tools ranging from band saws to 3-D printers to create solutions—in this case, a better cart. Their prototype cart would have a more flexible wheel for easier ascent. This real-world project is a microcosm of how youth-driven experiences in Learning Labs support the development of vital 21st century skills such as creativity, civic engagement, problem solving, and collaboration.[4]

Teens learn to solder at New York Hall of Science. Photo by Explainer TV@NYSCI.

"A lot of inquiry-type learning is asking questions and getting a result," says David Wells, the Maker Space director. "With hands-on tinkering, questions lead to more questions and kids start thinking for themselves."

Youth also learn to repackage "failure." "It's not about making mistakes, but how you react to them that matters," Wells says of the trial-and-error process at the NYSCI Maker Space. Once teens are comfortable with making mistakes and learning from them, rather than being intimidated by them, they've learned a skill "that can take them anywhere," he says.

The kind of learning that happens in these spaces helps teens to develop problem-solving skills and encourages collaboration and persistence, behaviors critical to success in a highly competitive and rapidly changing workforce.

Building Learning Ecosystems

Learning becomes more robust and relevant when learners can dive into their passions through multiple entry points and locations.[5] The 2014 report of the Aspen Task Force on Learning and the Internet, *Learner at the Center of a Networked World*,[6] calls for "a shift from the traditional focus on one learning institution, the school, to a focus on the learner and all the places where there are opportunities to learn, like museums, libraries, after-school programs, and the home." In recent years, the term "ecosystem" has increasingly been used as a metaphor for a learning system. Although imperfect, it captures the key elements of diverse, individual learners, interconnected in a matrix of relationships that fit a local setting, yet are capable of change.[7] For many of the Learning Labs teams, the planning and design process was the impetus for creating new learning pathways that involve youth learning anytime, anywhere, and that transform entire communities into landscapes for learning.

Teen hacks a stuffed animal at New York Hall of Science. Photo by Explainer TV@NYSCI.

The Bay Area of Northern California is home to a powerful new collaboration between the area's leading learning institutions and its media and arts makers. The initial Learning Labs project in the Bay Area is a joint effort of the San Francisco Public Library, California Academy of Sciences, KQED, and the Bay Area Video Coalition. When these institutions came together, they began to create a new set of learning environments with multiple points of entry and access for the youth they seek to serve. A new physical space in the San Francisco Public Library will serve as a hub for youth programs. In the meantime, the team sponsors events in multiple settings across the area, supported by the collective organizations.

The Learning Labs grant was a catalyst for this team to join forces to plan a Hive Learning Network, a project supported by MacArthur, with operations led by the Mozilla Foundation. The Bay Area Hive will connect the San Francisco Learning Labs coalition and TechHive, the Learning Lab at the Lawrence Hall of Science, in Berkeley, with other youth-serving organizations, institutions and individuals in the region.

Columbus, Ohio, provides another example of a new kind of learning ecosystem emerging from the Learning Labs investment. This collaboration of the Columbus Metropolitan Library, Columbus Museum of Art, Wexner Center for the Arts, Center of Science and Industry (COSI), and WOSU Public Media is called SURGE Columbus, a name chosen by the local Teen Council that evokes the "circuit of learning" it seeks to create. These institutions fit together in a different way than the San Francisco team. In Columbus, each institution supports its own physical Learning Lab space and sets of activities; they work together to build a coordinated infrastructure of learning opportunities for their youth, with

pathways that connect their spaces. These institutions have developed a shared vision of outcomes for the local area as a whole, and are developing tracking and data systems to understand how youth move across these learning contexts.

Learning Lab sites in Dallas, Columbus, and Pittsburgh are also involved in the emerging Cities of Learning initiative, which began in Chicago in 2013 with support from the MacArthur Foundation. Cities of Learning builds collaborations across local government, nonprofit, philanthropic, and business sectors to provide relevant and recognized learning pathways that youth need to thrive. It is an effort to develop a new learning infrastructure in a city, to bring visibility to out-of-school learning, and to connect it to the classroom and to workforce opportunities. This infrastructure is based on a new alternative credentialing tool, digital badges, that make these learning pathways visible to the youth, potential employers, and schools. Underlying these collaborations is the shared language of HOMAGO and Connected Learning, which provides a foundational framework to align goals and to create a larger constellation of learning opportunities.

These examples illustrate three variants of learning ecosystems that are evolving within the Learning Labs national network. Each reflects the conditions of its location and community, each is being created with the flexibility to adapt and grow as the circumstances require, and each is targeted at the specific teens who live and learn in those cities.

Documenting Progress

Learning Labs are places of experimentation. An explicit goal of the program has been to encourage innovation, allowing each Lab to develop a unique model of a teen learning space. This innovation builds upon the shared foundation of Ito's HOMAGO research; is extended through continued investments in digital media and learning by MacArthur, IMLS, and others; and is guided by the principles of Connected Learning. As each Lab moves from planning and design to fully functional spaces, the staff is developing accompanying strategies to document impacts on youth and record the organizational changes of the institutions involved.

The national Learning Labs program included broad-scale documentation and evaluation, funded by the MacArthur Foundation and carried out by a team led by Richard Arum, professor of sociology and education in the Department of Humanities and Social Sciences at New York University. Over a period of two years, the NYU Connecting Youth team conducted in-depth interviews with Learning Lab staff to investigate how practitioners understand the concepts of Connected Learning, to identify needed resources and constraints encountered in the planning and design process, and to describe strategies for adapting the Learning Labs model locally. Key findings in the Connecting Youth report[8] highlight the importance of forming and maintaining partnerships and of including and honoring youth voice in planning and design. The Connecting Youth team has also documented the institutional transformation resulting from the Learning Labs design process, the development of a shared language around HOMAGO and Connected Learning, and the value of participation in a community of practice. This work provides valuable insights about the challenges faced in multiorganizational collaborations and the tensions encountered when organizations transition to new uses of space and staff. It also affirms the overwhelmingly positive response of youth in all of these communities when they are empowered to direct their own learning.

Some Learning Labs sites used in-house evaluation to collect feedback from their youth, documenting impact even while prototyping programs. Teens interviewed by these researchers say that they have found

new interests; they describe themselves as learners. The products of their activity demonstrate persistence and the ability to work together collaboratively. In their own words, youth in the TechHive at Berkeley's Lawrence Hall of Science reported that they have learned "a lot about engineering"; "to be creative and critically think my way, too"; "to successfully collaborate with other people who know many different things"; "to communicate better"; and "how to work at a museum, interact with others, and be professional."

Increased civic engagement is another kind of outcome documented among the teens at Learning Labs. The Youth Board at the San Francisco Public Library Learning Lab made presentations to the Library Commission and at City Hall to help win approval for $3.2 million in funding for their main Lab space. QuaranTEEN, the youth advisory group at the Lynn Public Library in Lynn, Massachusetts, has made presentations at City Council meetings about the program and its teen-designed space. Rallying for municipal support and funding represents a concrete way that these teens express their sense of ownership and collective responsibility toward the new learning spaces they have helped to create.

As the Learning Labs continue to develop, the ways they document and express the learning outcomes of their youth will continue to reflect their diversity. For one site, progress may look like teen-produced prototypes of public exhibits. Another site may create a body of photographs or videos that record changes in the local community. Yet another may develop a tradition of public performances and artwork that give voice to the youth who are not always heard in schools. Collectively, the Learning Labs teams will continue documenting the impacts of programs, especially those that help youth to become the creators and leaders of the 21st century.

Learning Labs Convening in Washington, DC. Photo by Wayne MacPhail.

Small group work at the Learning Labs Convening in Washington, DC. Photo by Wayne MacPhail.

A Growing Community of Practice

An important goal of the Learning Lab program has been to foster the development of a dynamic community of practice—initially among the sites funded through this grant program, and eventually open to other libraries, museums, and community sites that intend to develop similar spaces. The community of practice that has emerged is a supportive network, providing learning opportunities for practitioners, sharing resources and evidence-based practices, and spreading new examples of Connected Learning.

During the formative period of the Learning Labs' planning and design, the Urban Libraries Council and the Association of Science-Technology Centers served as cooperative agents on behalf of the funders to provide technical assistance for the teams, and began to build a network for continuous learning and sharing across the sites.

The program team organized convenings where grantees came together to share their successes and challenges, to hear from thought leaders in the fields of digital media learning and youth engagement, and to visit other Labs. These face-to-face meetings provided a basis for building relationships with peers from across the nation. The team also created virtual spaces where Labs could share resources and ideas. These spaces were experimental modes of connection that fostered relationships among sites separated by distance but united by practice.

Collectively, these in-person and online activities built community and reinforced the sense that the Learning Labs sites contribute to a movement that is larger than any individual project. As one staff member told the Connecting Youth researchers, "I felt there's plenty of intellectual support about how to do this work, and I feel like I can call any of those people anytime, any of the grantees, and ask them what's going on and how'd it work out."

Looking Ahead

The public-private partnership initiated by IMLS and MacArthur in 2010 launched a core group of libraries and museums across the U.S. that is creating innovative learning spaces for teens. They are united by the Connected Learning framework, yet each Lab reflects the unique strengths and needs of its local community. The collective planning and design process of the Learning Labs sites has been systematically documented as part of MacArthur's broader digital media and learning initiative.

These combined circumstances create a feedback loop between research and practice, following a design-based approach[9] that seeks to produce meaningful change by understanding the complex interaction of factors in multiple contexts. Not only are the Learning Labs grounded in basic research about how people learn, they provide multiple case studies that inform the evolving Connected Learning framework and inspire continued research about how youth learn in today's digital world.

The goal now is to continue community building, connecting these Labs to each other and to similar sites, and providing professional support and knowledge-sharing based on the joint IMLS/MacArthur investment. At the site level, individual Labs are turning to municipal and county governments, community foundations, industry partners, education stakeholders, and youth-development networks to implement and sustain their work.

On a national scale, Learning Labs are uniting with the network of sites established under the YOUmedia model, and hosted by the National Writing Project: YOUmedia Chicago, ARTLab+, YOUmedia Miami Dade, and DreamYard in New York City. Bonded by regional and national meet-ups, professional learning opportunities, new digital spaces such as youmedia.org, and an open YOUmedia Learning Labs community site, this network is committed to continued learning through collaborative work. Building on the grassroots effort of their initial grantmaking, IMLS and the MacArthur Foundation will support this network building with outreach and community management under stewardship of the National Writing Project.

"Because of the expertise and content they have to offer, museums and libraries are uniquely positioned to offer young people meaningful learning experiences that link to science, art, and technology," says Susan H. Hildreth, director of the Institute of Museum and Library Services. "With caring mentors and skilled professionals on staff to guide teens in their exploration, Learning Labs help youth express themselves and hone their skills in a safe environment."

Together, the YOUmedia Learning Lab sites are poised to usher other practitioners into a nationwide community of practice with a shared philosophy around engaging youth at community anchor institutions such as libraries and museums, enabling access to new technologies and caring mentors.

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Additional Resources

The Learning Labs in Libraries and Museums program has informed and been influenced by the Connected Learning principles and framework, and has also drawn on research and practice from other related projects. Visit these online resources to learn more about Connected Learning and the emerging practice that has informed and is building on the Learning Labs initiative.

Cities of Learning—http://citiesoflearning.org/
Launched in Chicago in 2013, the Cities of Learning movement integrates the principles of Connected Learning in the community, on the job, and online by building on a learner's interest as key to engagement. In 2014, the Cities of Learning movement grew to include Columbus, Ohio; Dallas, Texas; Los Angeles, California; Pittsburgh, Pennsylvania; and Washington, D.C.

Connected Learning Alliance—http://clalliance.org/
The Connected Learning Alliance is a network of organizations, projects, and individuals helping spread and scale a learning vision designed to provide young people with access to participatory, interest-driven learning that connects to educational, civic, and career opportunities. The alliance supports the expansion and influence of a network of educators, experts, and youth-serving organizations mobilizing new technology in the service of equity, access, and opportunity for all young people.

Connected Learning TV—http://connectedlearning.tv/
Connected Learning TV features a weekly webinar series and other resources aimed at helping explain the Connected Learning approach and advocating for its adoption in education.

Consortium on Chicago School Research
YOUmedia Reports
The University of Chicago Consortium on Chicago School Research conducts research that informs and assesses policy and practice in the Chicago Public Schools. A series of consortium reports highlight YOUmedia Chicago. These include:

YOUmedia Chicago: Reimagining Learning, Literacies, and Libraries: A Snapshot of Year 1, by Kimberly Austin, Stacy B. Ehrlich, Cassidy Puckett, and Judi Singleton with Susan E. Sporte, Penny Bender Sebring, Denise C. Nacu, and Eric Brown (2011). Consortium on Chicago School Research at the University of Chicago Urban Education Institute. Accessed at https://ccsr.uchicago.edu/publications/youmedia-chicago-reimagining-learning-literacies-and-libraries-snapshot-year-1

Teens, Digital Media, and the Chicago Public Library, by Penny Bender Sebring, Eric R. Brown, Kate M. Julian, Stacy B. Ehrlich, Susan E. Sporte, Erin Bradley, and Lisa Meyer (2013). Consortium on Chicago School Research at the University of Chicago Urban Education Institute. Accessed at https://ccsr.uchicago.edu/publications/teens-digital-media-and-chicago-public-library

DML Research HUB—http://dmlhub.net/
The Digital Media and Learning Research Hub is a repository of original research, blogs, websites, webinar series, publications, and events that advance research in the service of a more equitable, participatory, and effective ecosystem of learning keyed to the digital and networked era.

Hive Learning Networks—
http://hivelearningnetwork.org/
Hive Learning Networks are citywide laboratories where educators, technologists, and mentors design innovative, connected educational experiences for youth. Together, these institutions create an ecosystem of opportunities for young people to explore their interests and develop key 21st century skills.

YOUmedia Learning Labs Network—
http://www.youmedia.org/
The YOUmedia Learning Labs Network is a group of libraries, museums, and community-based organizations that invite young people to create, learn, and build skills with traditional and 21st century digital tools. This public site is a place for anyone interested in the background and development of these sites.

YOUmedia Network on Google+—
https://plus.google.com/communities/106992383405121259967
YOUmedia Network on Google+ is for members of the larger YOUmedia Network to gather, post news, and explore topics of interest. The community is open to YOUmedia members, youth, and the public.

Funders

MacArthur Foundation

The John D. and Catherine T. MacArthur Foundation supports creative people and effective institutions committed to building a more just, verdant, and peaceful world. In addition to selecting the MacArthur Fellows, the foundation works to defend human rights, advance global conservation and security, make cities better places, and understand how technology is affecting children and society. More information is at www.macfound.org.

INSTITUTE of Museum and Library SERVICES

The Institute of Museum and Library Services is the primary source of federal support for the nation's 123,000 libraries and 35,000 museums. Its mission is to inspire libraries and museums to advance innovation, lifelong learning, and cultural and civic engagement. Its grantmaking, policy development, and research help libraries and museums deliver valuable services that make it possible for communities and individuals to thrive. To learn more, visit http://www.imls.gov and follow it on Facebook and Twitter.

Partners

URBAN LIBRARIES COUNCIL
INSPIRING LIBRARIES. TRANSFORMING COMMUNITIES.

The Urban Libraries Council (ULC), founded in 1971, is a membership association of leading public library systems in the U.S. and Canada. With the help of its members, ULC strategically advances the value that 21st century libraries provide communities in critical areas such as education, lifelong learning, workforce and economic development, public safety, health and wellness, and environmental sustainability.

As thought leaders and change agents, ULC libraries regularly receive accolades at the national, regional, and local levels. While ULC libraries primarily represent urban and suburban settings, lessons from their work are widely adapted by libraries of all sizes, including those in rural settings.

ASTC
ASSOCIATION OF SCIENCE-TECHNOLOGY CENTERS

The Association of Science-Technology Centers (ASTC) is a global organization providing collective voice, professional support, and programming opportunities for science centers, museums, and related institutions whose innovative approaches to science learning inspire people of all ages about the wonders and the meaning of science in their lives. Through strategic alliances and global partnerships, ASTC strives to increase awareness of the valuable contributions its members make to their communities and the field of informal STEM learning.

For more information about ASTC, or to find a science center near you, visit http://www.astc.org.

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