

Library Innovation Studios: Transforming Rural Communities

(An IMLS funded Grant Project featuring Four Makerspaces Rotating to 30 Nebraska Libraries)

The Nebraska Library Commission along with partners, University of Nebraska—Lincoln, Nebraska Innovation Studio, Nebraska Extension, and Regional Library Systems, are excited about a project that was recently awarded a National Leadership Grant funding through the Institute of Museum and Library Services (IMLS). The project will kick off July 1, 2017 and conclude June 2020.

The project will use makerspaces, community engagement tools, and training to develop a model for rural libraries to expand their role as community anchor organizations that drive economic and community development. This multi-faceted effort will 1) establish local Community Action Teams in 30 rural communities; 2) purchase equipment and related materials for four rotating Innovation Studios; 3) develop instructional materials and equipment certification processes; 4) employ sustainability strategies for permanent studios; 5) provide training on the use of the equipment, including Train the Trainer strategies; 6) assist with local marketing efforts and programming/events, including Open Houses and Maker Showcases; and 7) host annual Inventors Showcases in Lincoln. The infusion of the maker culture into rural areas will increase community buoyancy by strengthening services and facilitating local economic development and entrepreneurship. Three goals will guide the project:

- Rural community residents will be empowered with the tools and guidance to explore, collaborate, create, learn, and invent.
- Libraries will transform their rural communities through participatory learning spaces while establishing themselves as strong community catalysts for community change.
- Libraries (and communities) nationwide will have access to a replicable model.

Thirty Nebraska public libraries will be selected and will activate community action teams to host a Library Innovation Studio with makerspace equipment for up to five months. Each studio collection will have components in the following categories:

- Digital fabrication (3-D printing/scanning/copying, laser cutting, CNC router)
- Electronics (prototype kits, microcontrollers, robotics)
- Textiles (soft circuits, wearable technologies, sewing/embroidery machine, vinyl cutting)
- Digital media creation (filmmaking/digital photography)
- Music technology
- Specialized software and subscriptions
- Basic hand tools and other accessories.

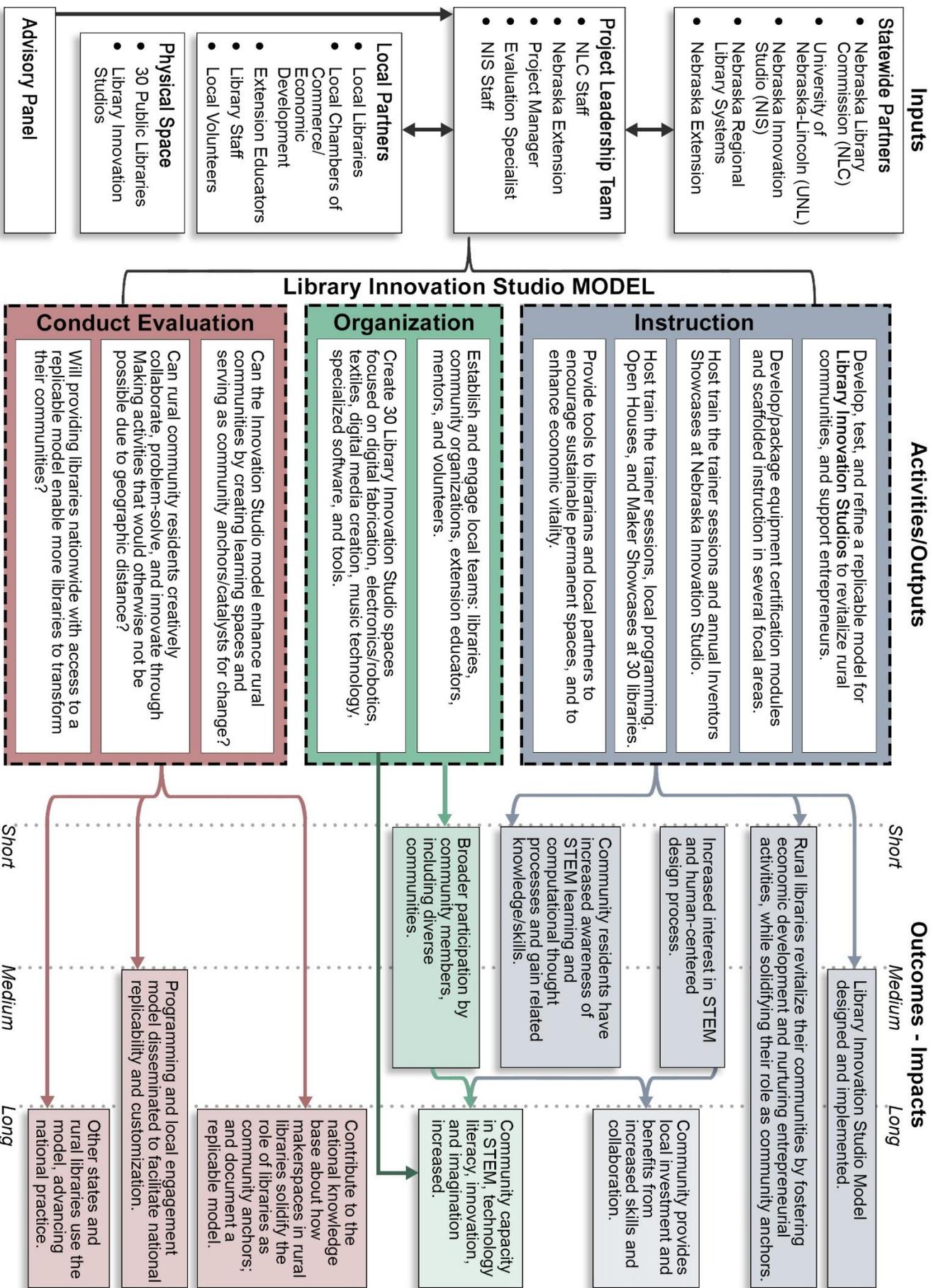
Criteria to select the thirty public libraries to host Library Innovation Studios have not been finalized. The Nebraska Library Commission is working on an application and selection process that will be announced early May. Because this project is geared toward rural communities, at this time we anticipate that only accredited public libraries from communities with populations of less than 25,000 will be eligible to participate as one of the 30 libraries. Criteria will likely include space availability, staffing, hours the studio will be open to the public, and the ability and readiness to establish a community action team made up of local partners and volunteers.

For more information contact: JoAnn McManus, Grants Coordinator (Project Director for this project), Nebraska Library Commission, 1200 N Street, Suite 120, Lincoln, NE 68508-2023, 402-471-4870, joann.mcmanus@nebraska.gov



**Nebraska
Library Commission**

Library Innovation Studios: Transforming Rural Communities Logic Model



Library Innovation Studios: Transforming Rural Communities Advisory Panel

The project's Advisory Panel will contribute to the project's success, offering guidance and support throughout the project period in the areas of project design, partner engagement, sustainability, dissemination, and other processes including continuous improvement strategies. The ten highly qualified individuals (listed below), that have committed to serving on the panel represent a cross-section of areas important to the project's success—economic development, entrepreneurship, education, business, Makerspaces, rural libraries, and library organizations.

We expect that Advisory Panel members will meet periodically over the three year period. Individuals outside of Nebraska will connect to meetings electronically. The Advisory Committee will provide input and advice on:

- How to better engage community partners;
- How to work with communities to sustain makerspaces;
- How to reach target audiences;
- How to improve the project and processes;
- How to disseminate project information and results; and
- How to develop future partnerships for sustainability.

Advisory Panel Members

Mary Soucie, State Librarian, North Dakota State Library (Bismarck, ND)

Mary is North Dakota's State Librarian (chief officer), and is a member of the board of directors for the Association for Rural and Small Libraries (ASRL). Mary has worked in public and school libraries; as the Youth Services Consultant for a Regional Library System; and was also an adjunct professor at a community college teaching Reader's Advisory and Adult Programs.

Andrew Sherman, Director, Sidney Public Library (Sidney, NE)

Andrew represents a small library in Nebraska actively engaging community organizations in an effort to develop a community maker space. Andrew is a part of a community partnership called *Sidney Create*, working towards a STEAM focused makerspace in the Sidney community.

Cecelia Lawrence, Director, North Platte Public Library (North Platte, NE)

Cecelia is a member of the Nebraska State Advisory Council on Libraries and represents a small library in Nebraska. As director of the North Platte Public Library, Cecelia has partnered with numerous organizations, including the Lincoln County Historical Museum, Humanities Nebraska, Kids Klub, Prairie Arts Center, Mid-Plains Community College, and Visit North Platte.

Sue Walker, Library Consultant, *Make It at the Library*, Idaho Commission for Libraries (Boise, ID)

Sue worked collaboratively with Erica Compton, Program Manager at Idaho STEM Action Center, to develop, implement, evaluate, and improve Idaho's *Make It at the Library* project and continues to carry out that initiative that has served many rural libraries. Sue is a Library Consultant who focuses on programming and services for underserved populations. Sue was recommended to serve on this group by Idaho's state librarian, Ann Joslin.

Eric Kaplan, President, Omaha Maker Group; Nebraska Ambassador to the Nation of Makers Initiative; (Omaha, NE)

Eric's background is in mechanical engineering; he manages and designs facilities and mechanical systems for Union Pacific Railroad. Eric is also a tinkerer, and organizer of the Omaha Mini Maker Faire project.

Gregg Christensen, Entrepreneurship Education Specialist, Nebraska Dept. of Education (Lincoln, NE)

Gregg is the Secretary & Founding Member of Nebraska Entrepreneurship Task Force (*NETForce*). Gregg is a graduate of Kearney State College with a B.A. in Marketing Education and a Master's Degree from the University of Nebraska - Lincoln. Gregg has also contributed significantly to the advancement of DECA (an international association of high school and college students and teachers of marketing, management and entrepreneurship in business, finance, hospitality, and marketing sales and service). Gregg has been involved in marketing education and DECA at the secondary and postsecondary education levels for more than 32 years.

Catherine D. Lang, State Director, Nebraska Business Development Center (NBDC) (Omaha, NE)

The NBDC supports entrepreneurs across Nebraska, assisting them with the tools they need to start and sustain a business. Catherine earned her J.D. from the University of Nebraska-Lincoln's College of Law and has served in a number of governmental roles, including Director of the Property Tax Division of the Nebraska Department of Revenue, Commissioner of Labor for the Nebraska Department of Labor, and Director of the Nebraska Department of Economic Development. As the Director of NBDC, Catherine has lead statewide outreach for NBDC and worked to build collaborative efforts across all four of the University of Nebraska campuses to support the NBDC mission.

Chad Johnson, Senior Education Specialist, Nebraska Public Power District (NPPD) (Aurora, NE)

Chad leads the efforts associated with NPPD's *Pathways to a Technical Future* program, a framework for connecting curriculum and careers through a process designed in the makers' mentality utilizing open education resources and focus on STEM learning. Students gain knowledge and practical skills in STEM. *Pathways* is built upon a spectrum that correlates learning opportunities with business fundamentals and educational strategies. This program includes a focus on teacher professional development, curriculum resources, and local partnerships. Chad also leads the NPPD *STEM Connection Lab* (a traveling makerspace project for schools). Through its education program, NPPD provides learning opportunities to the community and schools with science-based activities. The lab is an expansion of that program. The 10-station lab was set up in the school's media center, and educators were able to visit each station that touched on areas like robotics, 3-D printing, data collecting and product branding.

Trevor Lee, Executive Director, Valley County Economic Development and Ord Area Chamber of Commerce (Ord, NE)

Trevor is also a Board Member of the Nebraska Economic Developers Association representing rural communities. Ord, the community he represents, also hosts an Entrepreneurship Camp for students each summer. Trevor has led numerous economic development marketing strategies for small and rural communities.

Juan Sandoval, Rural Enterprise Assistance Program (REAP) Latino Business Center Director, Center for Rural Affairs (Norfolk, NE)

Juan is a native of Valencia, Venezuela, moving to the United States in 1999 after he received a degree in Business Administration and Marketing. Before he joined REAP, Juan worked at local bank and a Credit Agency in Norfolk, Nebraska. Juan is also the REAP Northeast Nebraska Loan Specialist covering 12 counties providing technical assistance (business coaching), loans up to \$150,000, and developing trainings for Latino small business owners. Juan is an active board member with the Norfolk Area United Way, UNL Madison County Extension Office, member of the Schuyler Downtown Revitalization and Commercial Development Committee, and member of the Norfolk and Columbus Area SCORE Chapters. Juan has led partnership efforts between REAP and the Schuyler Public Library to provide technology and small business training to our Hispanic community.

Library Innovation Studios: Transforming Rural Communities Equipment Specifications *(subject to change)*

Major Machines

Each Studio will include one LulzBot TAZ 6 **3D printer** (\$2,500). The TAZ 6 has received accolades from sources like tomsguide.com and is currently rated 4.4 stars out of 5 at amazon.com. The printer includes self-leveling and self-cleaning features, reducing the need for staff to travel to libraries for adjustments and repairs. In addition, the TAZ 6 is compatible with more than 30 different filament materials, three major operating systems (Linux, Windows, and Mac), and multiple 3D file types. The printer is regarded as an excellent, beginner-friendly tool for prototyping and experimentation. Beyond its capabilities as a standalone device, the TAZ 6's capacity for printing durable and high-resolution models means that it can be used to generate replacement parts for our other machines. The TAZ 6 arrives with a one-year warranty and the option to purchase extended coverage (two years for \$725).

One Epilog Zing 16 **laser cutter** (\$7,995) will be included in each Studio. The Zing engraves onto marble, glass, wood, acrylic, and other materials. It also offers a vector mode, which allows the user to cut material such as cloth, plastic, leather, and more. Each Studio will also include one **vinyl cutter** (\$850) and one Carvey Inventable desktop **CNC router** (\$2,500). These machines will allow users to create items from a variety of materials.

Additionally, a \$500 Matter and Form **3D scanner** will be included in each Studio, to be used in tandem with the other major machines.

The machines might draw upon existing user skills, such as design experience or familiarity with manufacturing processes, but will also allow users to develop new skills such as computer usage, programming, and 3D modeling. These new skills will help ready our users for new opportunities in their communities and workplaces.

Robotics

The **LEGO Mindstorms EV3 Home Edition** (\$350) allows users to build and control five robots and 12 bonus models. Robots may be programmed on a computer or controlled via smart phone or infrared remote (included with this set). The Home Edition includes free software, available for download from the LEGO Mindstorms site—other editions, such as the Education Edition, require an additional purchase for software used to program the robots.

Circuit Kits

The **SparkFun Inventor's Kit** (\$88), **Arduino Starter Kit** (\$85), **littleBits Kits** (2 @ \$99), and **Makey Makey** (\$50) offer less involved, less cumbersome approaches to learning programming and incorporating circuitry into user designs. Also included in this section is the **LilyPad Design Kit** (\$80), aimed specifically at wearable technology. As with many of the Studio's items, the LilyPad lends itself to work with other devices. For instance, a user could create a leather dog collar with the Epilog laser cutter, then use LilyPad accessories to add illumination to the collar for night walks.

Audiovisual

The **Canon EOS Rebel T6i Video Creator Kit** (\$749) includes both wide angle and telephoto lenses, a microphone, light kit, tripod, remote control, and screen projector. We would also like to purchase a compact travel support system with a **Chromakey green backdrop** (\$69) to aid our users in creating greenscreen effects. In addition, we'd like to include a **Hoya UV filter set** for the camera (\$48) to compensate for varying lighting conditions in our libraries. Our audiovisual equipment will be used in

concert with an Apple iMac desktop computer. The iMac includes **iMovie** and **GarageBand software**, eliminating the need to purchase additional programs, and the machine's 5K display and processing power lend themselves perfectly to audiovisual work.

Sewing Machines

Nebraska's Bernina retail outlets are providing four computerized embroidery/sewing machines to the project at no cost to the project.

Computers

Each Studio will include a total of **10 computers**. They will include a mix of laptop and desktop PCs and one Apple iMac computer. Computer selection criteria included equipment requirements for Studio machines that interface/run with computers, flexibility considerations for the variety of physical spaces that libraries will be using for the Studio space, ergonomic preferences for the Studio users, ease of setup for group training events, and preparation work in the library for preliminary design mock-ups on individual computers.

- **HP EliteOne 800 G2 23" All-in-One PC** - \$1,311 per unit warranty included 3 yrs. parts, labor, Next Business Day Onsite Service per unit (4 per Studio)
- **HP 250 G5 Notebook PC** - \$516 per unit warranty included 3 yrs. parts, labor, Next Business Day Onsite Service (5 per Studio)
- **Apple iMac 27" desktop computer** - \$1,775 per unit warranty included 3 yrs. parts and labor (1 per Studio)

Software and Subscriptions

Adobe Creative Cloud subscriptions for five devices (\$1,500) include graphics and design apps such as **Photoshop** and **Adobe Premiere Pro**, which our users will utilize in modifying and augmenting their creations. We've also requested funding for a subscription to **SolidWorks, a 3D CAD program**. Whenever possible, we will be adding free and open-source alternatives such as Google SketchUp to our machines to provide our users with a variety of choices in beginning and modifying their creations.

Hand Tools and Other Accessories

In this section, we've included necessary accessories, such as batteries, but also listed items that will be needed to install and maintain our major machines. In addition, a few additional devices, such as a **40-watt soldering station** and a **digital multimeter**, are included, along with basic safety equipment (**electronic fire extinguishers**) and first aid kits.

Transportation and Storage

We've estimated a total cost of \$200 for equipment storage. Some of our items will arrive with their own bags and boxes, but we will purchase tubs and containers for equipment as needed.

Consumables and Postage

This section includes funds for materials used in creation as well as funds spent on shipping and postage costs, totaling \$7,428 for the three-year period.

Note: Prices listed are per unit cost with the exception of consumables and postage which is the total amount for the project. Grant funds of \$124,570 was secured for materials and supplies for the project which will support four studios that will reach a total of 30 public libraries in Nebraska over the 3-year grant period.



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NEBRASKA MAKERSPACE WORKSHOP

Hosted By Nebraska Innovation Studio

April 17-18, 2017

Agenda – April 17

- 7:30 a.m. Registration and breakfast
- 8:00 a.m. Welcome
Chancellor Ronnie Green, University of Nebraska-Lincoln
- 8:15 a.m. What is a makerspace, how do they work, and why are they important?
Shane Farritor, Nebraska Innovation Studio
- 9:00 a.m. Makerspaces in libraries
JoAnn McManus, Nebraska Library Commission
Rachelle McPhillips, Columbus Public Library
Amy Hafer, Hastings Public Library
Katie Murtha, Lincoln City Library
- 10:00 a.m. Break and Nebraska Innovation Studio tours
- 10:20 a.m. Community-based makerspaces
John Wise, MakeShift
Mike Timm, Omaha Maker Group
Christy Nelson, Lincoln Craft Studio
Brett Kennedy, Nebraska Innovation Studio
- 11:00 a.m. Makerspaces in schools, colleges, and universities
Michael Guericke, Metro Community College
Matt Tebo, Lincoln Public Schools Spark Program
Chad Johnson, NPPD Mobile Maker Spaces
Dan Hohensee, Lincoln Public Schools Career Academy
- 12:00 p.m. Lunch and keynote speaker
Matthew Wegner, MakeLNK
- 1:10 p.m. Nebraska Innovation Studio tours

- 1:30 p.m. Q&A with makerspace panel
John Wise, MakeShift
Ken Wiseman, GoCreate
Mike Timm, Omaha Maker Group
Amy Hafer, Hastings Public Library
Katie Murtha, Lincoln City Library
Chad Johnson, NPPD Mobile Makerspaces
- 2:10 p.m. Making activity
- 2:30 p.m. Break
- 2:50 p.m. Nebraska Innovation Network
Shane Farritor, Nebraska Innovation Studio
- 3:15 p.m. Brainstorming session
- 4:00 p.m. Presentations from brainstorming session
- 4:35 p.m. Closing remarks
Interim Vice Chancellor Steve Goddard,
UNL Office of Research and Economic Development
- 4:45 p.m. Social, Nebraska Innovation Studio tour, and opportunity to meet with makers
Cocktails and hors d'oeuvres will be served

• Your Tuesday Training Schedule

Your Name: _____

8:00 Tours & Continental Breakfast
9:00 Membership, supervision, safety
9:30 Tools, equipment & software

10:00 - 11:00 3D Modeling & Printing
Design & Print T-Shirts Demo
Laser Cutting
Arduino Basics

10:00 - 12:00 WearTec LED Bookcovers

11:00 - 12:00 3D Modeling & Printing
3D Modeling to CNC Router
Wood Shop for Makerspaces
Arduino Basics

1:00 - 2:00 Laser Cutting
3D Printer for Ceramics
CNC Router
Arduino Basics

1:00 - 3:00 WearTec LED Bookcovers

2:00 - 3:00 Laser Cutting
3D Modeling to CNC Router
Wood Shop for Makerspaces
Arduino Basics

3:00 - 4:00 Silicone Mold Making
Design & Print T-Shirts Demo
Laser Cutting
Arduino Basics