

The interest-driven, youth engagement in the creation of digital and physical artifacts characteristic of “making” is being increasingly recognized as a powerful opportunity for libraries of all sizes and service populations to support STEM learning (e.g., Austin et al. 2011; Balas, 2012; Dixon et al. 2014). To date, the push for incorporating and facilitating more *making* practices into libraries has gone beyond initial success cases of large public urban settings and now extends to smaller cities and their respective public community libraries and school libraries (e.g., Preddy, 2013). Yet many of the professional librarians working in small city public and school libraries have limited experience or professional development to help them optimally orchestrate *maker* activities like fabric circuitry, 3D printing, or collaborative youth computer game design in their respective spaces. This is in part because approachable *making*-oriented models and resources for these librarians are lacking and also because invisible barriers often exist between different types of libraries (i.e., public and school), despite the fact that they are trying to reach some of the same service populations of “connected youth” (Ito et al., 2013).

This **Research** project for the **Laura Bush 21<sup>st</sup> Century Librarian Grant Program** will develop and test models and practices to support and grow collaborative library professionals in both school and public libraries in small cities. In particular, this research project will investigate, by way of implementation-oriented research, the learning needs and necessary supports that capitalize on both groups of librarians’ prior expertise in order to develop replicable models for successful and cross-setting librarianship practice that will support youth in *making*.

## Impact

While we will deliberately build on existing IMLS supported resources such as the *Learning Practices Framework* for museums (Brahm & Wardrip, 2014) and the *Learning Labs* recommendations report (ASTC, 2014), we take seriously that the small city public and school libraries have different constraints and opportunities that may not be addressed through these resources. As such, we have assembled key partners for a research-practice partnership (RPP, Penuel et al. 2011) involving university and library collaborations that will help us develop an understanding of unique and common librarian learning needs in both settings around the effective facilitation of maker activities. One of our primary impacts will be the creation of a new model of context-specific professional development for these library professionals developed through direct partnership in designing, implementing, and supporting new youth maker programs and librarian learning activities. Following in situ formative and concluding summative evaluation of these activities, findings will be broadly disseminated through existing networks, such as ILEAD and professional librarian conferences (e.g., ALA, PLA, AASL), and national research conferences (NARST, ICLS, AERA).

Second, this project will demonstrate how the expertise and resources already available at two different kinds of libraries already frequented by a generation of “Connected” youth can be bridged to achieve similar aims. While we recognize that there are a number of substantial differences related to patronage, learning standards, and preparatory training between community and school librarians, we also recognize that small cities have under-exploited opportunities for synergy. For example, cross site community-based teen peer mentorship programs for school credit could help libraries in both sites better prepare for technical demands associated with running maker activities. Alignment of tools and activities (such as a junior high *Maker Faire* hosted at the local library) can also help create continuities across these settings. The impact of such crossovers could be designed to better inform how connected teaching and learning can move across different library settings and what librarians at different sites can do to make it happen more often (Ito et al., 2013).

## Project design, goals, and outcomes

The **Goals and Objectives** of this proposal are to: 1) Understand the practical maker-related learning needs for public and school library professionals; and 2) Implement professional support via continuing/professional development workshops and tools introduced locally and through the Mountain West, and 3) Distill and nationally disseminate demonstration cases, curricula, and lessons learned highlighting how formal (i.e., school libraries and media centers) and informal (i.e., public community libraries) can establish partnerships that support connected maker-related learning for youth and community members. This project will unfold as iterative cycles of design-based implementation research (Penuel et al., 2011), involving an authentic research and practice partnership between university researchers at Utah State University (USU), and community (North Logan City Library) and nearby middle school libraries located in rural communities in Northern Utah. In two

design cycles, we will engage partner members in articulating librarian learning needs, implementing professional development models and support structures that fit within current librarianship schedules and demands, working with libraries to launch youth-serving maker programs, formatively evaluating impact and sustainability, and revising support tools as part of a reflective cycle of continuous improvement and dissemination that is both regional and national through workshops, site visits, and conferences.

Year	Research Activities	Participants	Outcomes
What are learning needs of the library staff members and design differences at the two kinds of library sites?			
1	Contextual inquiry (Beyer & Holtzblatt): Recorded observations, interviews, focus groups	School and public librarians, teachers, youth, parents	Model of the constraints and opportunities affecting library-supported making in each setting, pilot maker activities for each space
To what extent does the professional development model support expanded librarianship in <i>supporting learning practices</i> across contexts?			
2 and 3	RPP to develop and conduct professional development workshops	Public and school librarians, teachers, youth	Expanded and revised implementation of library maker programs at school and public sites, identified cross-setting maker activities
To what extent do identified learning practices and design guidelines generalize?			
3	RPP programs and workshops, dissemination of cases, design guidelines, and tools at librarian and research conferences	Public and school librarians, teachers; youth	Model site for sustainable school and public library maker partnerships, new librarian learning tools (e.g., activity guides, rubrics, online videos); report about learning practices for making in and across school and public libraries

### Personnel, Advisory Board, and Estimated Budget

The project team will include: *Dr. Victor Lee* (PI) brings considerable expertise in designing and evaluating making activities for youth. *Dr. Mimi Recker* (Co-PI) brings library science expertise, project management expertise, and expertise on design of professional development tools. *Dr. Sheri Haderlie* (Senior Lecturer) will bring her expertise as director of USU's school librarianship program to help design librarian learning materials design and disseminate findings to School Library organizations.

An advisory board consisting of outstanding local and national scholars and practitioners in librarianship and *making* will meet annually with the research team and partners via teleconference. The Board will engage in project review, evaluation, and oversight in response to updates from the project team, as well as recommendations for mid-course corrections or changes to the research plan as appropriate.

The advisory board will include: *Dr. Lisa Brahms* (Pittsburgh Children's Museum, author of the LP framework), *Dr. Kristin Fontichiaro*, (University of Michigan, an expert on school and public rural libraries) *Curt Jenkins* (Cache School District Curriculum and School Librarian director), *Dr. Kylie Pepler* (Indiana University, leading scholar of the *Maker Movement*), *Paula Zsiray* (Mountain Crest High School, veteran school librarian), and *Bill Derry* (Westport Library, Director of Innovation and *Maker* initiatives).

The estimated budget covers costs in the following categories: 1-month summer salaries for the PIs; research funding for two USU doctoral students specializing in librarian education; travel for PIs and head librarians to attend national and regional conferences to disseminate research results and to conduct continuing education workshops for librarians; stipends for 6 advisory board members and 2 head librarians; participant incentives for focus group participants (teen advisors, parents, community members) and librarians participating in new professional development; other direct costs (research materials and *maker* equipment for library sites, printing for advertising programs, transcription, and tuition); benefits (45%); indirect costs (43.1%).

Period of Performance: July 2016- June 2019			
Year 1	Year 2	Year 3	Total
\$168,150	\$149,455	\$153,794	<b>\$471,399</b>