

Makerspaces
Top Trailblazing
Projects

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Makerspaces Top Trailblazing Projects

A LITA Guide

Caitlin A. Bagley



An imprint of the American Library Association

CHICAGO 2014

www.alastore.ala.org

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Printed in the United States of America

18 17 16 15 14 5 4 3 2 1

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ISBNs: 978-1-55570-990-7 (paper); 978-1-55570-991-4 (PDF); 978-1-55570-992-1 (ePub); 978-1-55570-993-8 (Kindle). For more information on digital formats, visit the ALA Store at alastore.ala.org and select eEditions.

Library of Congress Control Number: 2013050266

Book design in Berkeley and Avenir. Cover images © Shutterstock, Inc.

Ⓢ This paper meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

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Introduction

Makers in the Library: Fostering Creativity and Invention

The culture of makerspaces is all around us; it just takes some careful observation to see them. Chances are high that you are a maker yourself. Have you ever knitted, crocheted, or painted? Have you ever assembled your own home computer or modified your bike or car to go faster? Being a maker or working in a makerspace does not require you to have a high-level skill set. Rather, it teaches you new skills. In one sense, it is enlightening because no one need feel intimidated when going to a makerspace. There you will find you are not alone. Even better, you may know more than you thought you did.

When I first set out to document makerspaces across the nation, I struggled with how to define a makerspace and where exactly they could be found. As a nascent technology in libraries, they were far and few between, though as I began to research I found more and more springing up in new places. My methodology involved designing a survey that would address the physical, technological, and monetary needs, as well as the demographics of the patrons using the makerspaces that were either currently in use or in the process of being developed. I promoted the qualitative survey—composed of twenty-four questions in three major sections—on library listservs and ALA TechSource’s social media channels.

As the movement was still quite young, I knew it would be hard to find enough fully operational makerspaces to describe a meaningful variety of projects. I chose to include makerspaces that were in the planning process and would be opening up in 2014, describing design and technical decisions still in process. Respondents

were either self-identified as having a makerspace or recruited based on publicity about their project.

This book is best used as not a prescriptive guideline for all who wish to create a makerspace in their own libraries, but as a place to quickly gather information on what others are doing—while also leaving room for your own individual ideas and creativities.

As digital content proliferates, the purpose of libraries is often called into question. Almost any librarian could easily defend libraries' value in innumerable ways, but after one has finished with the defense, another important question remains: what are the key roles and tasks we should be doing to sustain our libraries?



Makerspaces operate in an almost ephemeral world. There is not a true uniform definition of what a makerspace can be, which can be both a blessing and a curse when it comes to identifying one. As you read through this book you will find all sorts of makerspaces, each doing something unique and different, all under the makerspace moniker. They live in public libraries, academic libraries, and even school libraries.

Not unsurprisingly, very little has been published on the subject of library makerspaces in general or their pedagogical backgrounds in particular. Much of the literature drawn on pedagogy was taken from similarly based projects in learning centers or communal learning environments. One common theme I found among library learning centers and media centers using new modes of teaching with technology was that learners require the space to discover and learn on their own—and as they do this, they gain a higher degree of self-satisfaction (Carmichael 2009). The act of independent creation encourages return visits. The motivation for offering a makerspace is to encourage a love of learning. In order to do so successfully, the makerspace provider must first identify a learning style or mode to promote. For example, with hands-on learning and modeling, people use a kinesthetic learning style. This is not a reliance on superior motor ability, but rather a focus on learning at one's own speed by one's own hands. Additionally, makerspaces encourage collaborative learning that has a focus on interpersonal and small group skills as well as creating a sense of accountability (I-Sha, Tiong, and Seng 2008). Naturally, different makerspaces will focus on different learning styles. A school or public makerspace that is focused on children may have a stronger emphasis on kinesthetic learning than a makerspace focused on adults, which

might lend itself more to group learning. Facilitating group learning—whether through an information commons or a makerspace—is usually a core tenant of academia. Attracting more patrons to work collaboratively is consistent with the mission statements of most libraries.

Makerspaces are certainly unique and original, but the most important question librarians ask is: how are they relevant to libraries? Good question. Libraries are standing on a weird precipice right now. Our patrons need more help than ever using technology and interpreting a sometimes overwhelming glut of information; at the same time, they often view us as being bound to the old model of print. Not to knock print, but any practicing librarian knows that it is just one part of what libraries are about today. Libraries are community centers, and we should think of makerspaces as places for our communities to gather and learn how to create and build together as a community.

Inside these pages you will find examples of libraries that have taken varied approaches to makerspaces with a wide range of budgets and project offerings, as well as a few general practices that should be applicable to most libraries. They have done so. Find what intrigues you, and take a few ideas and run with them.



I would like to extend my gratitude to the libraries and librarians who helped me to bring this book to fruition. In particular I would like to thank: Anchorage Public Library, Brooklyn Public Library, Carnegie Public Library, Cleveland Public Library, Georgia Tech Libraries, Mesa Public Library, the Michigan Makers Group, Urbana Free Library, and Valdosta State University Libraries. In addition to these libraries, many of their staff members were willing to correspond with me. They graciously answered my survey and my many follow up emails. They include: Paul B. Baker, Melissa Morrone, Corey Wittig, C. J. Lynce, Charlie Bennett, Sarah Prosoy, Ellen Gustafson, Joel Spencer, and Michael O. Holt.

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About Makerspaces

Concerns and Considerations

As I discussed makerspaces with people who were not familiar with them, it quickly became apparent that the same questions come up again and again. The following chapter aims to address concerns that may not be mentioned in other places within the book; it also speaks to more general matters common to library makerspaces. Consider this a general FAQ section of the book, shedding some light on basic questions such as “What is a makerspace?” “Why do I need one in my library?” and “What if my library can’t afford one?”

DEFINING THE MAKERSPACE

As mentioned in the introduction, this book uses the term *makerspace* to refer specifically to a space that has been designed to allow users to create, build, and learn new projects and technologies.

People often ask how a makerspace differs from a hackerspace. Hackerspaces have been around for slightly longer than makerspaces and exist as a sort of older sibling. Hackerspaces tend to be designed around a group of people coding and creating of software together. Events at hackerspaces can vary depending on how many projects groups are working on and what the focus of the event is. Generally speaking, though, they are set as places for groups to come together to work and learn, pooling their mental resources.

Makerspaces revolve around people creating and working together to build unique items, using a supply of tools would be inaccessible or expensive for individual users. While makerspaces use some elements common to hackerspaces, the makerspace focuses more on creating something tangible that can be taken away from the space. Most libraries are choosing to focus on makerspaces instead because these offer more options for a wider variety of learning styles, skills, and projects.

JUSTIFYING A MAKERSPACE FOR YOUR LIBRARY

As you read this book, you may wonder if makerspaces are really needed in the library environment. Certainly they are not unique to the libraries, as they can be found in a number of different environments—and frequently they exist as their own solo project, unassisted by another institution. Libraries definitely operate on restricted budgets, and they do not necessarily need new library events and spaces to draw away from other programming. So why would anyone want to jump on the makerspace bandwagon and start their own?

First, libraries exist to bring opportunities to their patrons and to promote learning. A makerspace does not require an all-encompassing space, nor will it take over the entire library. It can be as small as a corner or nook—space enough for your patrons to get hands-on learning that they would not otherwise have available to them.

Some makerspaces have generated an aura that makes some librarians uncomfortable. Part of this is a wariness of getting caught up with the “flavor of the moment” and being afraid that the library will make a large financial commitment to something that will not last beyond a few years. Listen to your patron community and see what they want. They might not yet have the words to specifically say that they want a makerspace, but perhaps they want a space where they can work on hobbies and construction projects away from the house. Maybe they’re eager to understand how AutoCAD works, but they’re confused about the first steps. Maybe they have been telling you about a great prototype for an iPhone application they’ve come up with but have no way to finance the production of, or a homeowner who wants to build a scale model of a home renovation they’re planning. These are all people who are in need of the services of a makerspace, but who may not be aware that these are things the library could offer them for free or at reduced cost. If your library is using the “it’s just a trend” argument to hold off on implementing

a makerspace, consider the following reasons for why it might be time to get over your fears and start building one.

Few makerspaces actually require intense new construction or renovation of old spaces. They just require equipment, programming, and a place for the equipment to be stored when not in use, as well as room for groups to work together. Does your library have a meeting room that patrons can reserve to study or work on large independent projects? Why not take advantage of the space on days when it is not in use? Some libraries have dedicated days where their meeting rooms are closed off for workshops, and this model can be applied to makerspaces. Other examples are young adult and children's areas, which often have more room to explore and work on projects than the rest of the library. If the focus of your makerspace is aimed at particular populations such as young adult services or children, it may be possible to merge makerspace technologies with areas that have already been developed for these groups. Most of these spaces will already have computers, worktables, and open space for project construction. If the events are held only once or twice a week, it will not be a major upset to the environment to add these elements to the areas for a few hours of the week. Consider bringing in tables and workstations for patrons to use in the space. Most libraries have a few extra tables that do not get used regularly; it may be possible to move these tables to the makerspace location while activities are taking place and then to move them back to their previous locations during downtime, being sure to remain aware of fire code as you move furniture about. This will involve some small amount of prep on staff's part, but it is not an overwhelming project for most libraries to take on. Some libraries even have all their makerspace equipment on one cart that they can roll in and out of storage as needed.

Although makerspace materials can be expensive to purchase, supplying them to your patrons greatly reduces the cost for those who would likely never be able to purchase these materials on their own. This is particularly the case for one-time projects where the cost of expensive machinery cannot be justified for the average person. Some classic analogs to this are videos and DVDs, videogames, and cameras. These devices and items are not books—and they are smaller and generally cheaper than some other makerspace items—but what they do have in common is that they involve technologies not usually associated with a library. This is our time to embrace the future and bring it to our patrons.

Another way to justify adding a makerspace to your library is to take a look at how your patrons are using your collection and what they are asking for. If they are taking advantage of your computers frequently and asking for more computer

Library Makerspace Profiles

ANCHORAGE PUBLIC LIBRARY

Anchorage, AK

www.muni.org/departments/library/pages/default.aspx

Remote Public Library

Located in the central part of the city, the Z. J. Loussac Public Library—the main branch of the Anchorage Public Library—has created their own makerspace for the citizens of the city to take advantage of. It is a brand-new project for the library that they are hoping to premier in 2014. What follows is how they have chosen to start setting up their space, along with their development process and ideas.

CREATION

The impetus to create this makerspace started with a greater renovation plan for the entire library, which begins in 2014. Each space in the library is getting an overhaul, with some areas being taken out completely and some new areas being added in their place. As plans for the final renovation came into focus, staff at the library realized that they needed to include a makerspace as part of the conversation, and eventually they realized they needed to include one as part of the renovation.

The unique part of this is that the idea did not originate with the library; rather, it was born out of the community. Members of the community brought it up to

library staff, who then brought the idea to planning meetings. The Anchorage Public Library is lucky to have a dedicated and involved group of patrons. It was through discussions with these patrons—about what they liked and what they thought was missing—that the idea to create a makerspace came to Paul Baker, the library's Innovation Lab coordinator. Baker researched ways that libraries were incorporating new technology, and he felt that a makerspace would be a natural fit for both what his patrons were asking for and what they were capable of providing.

This is truly a homegrown space. Since the idea came from the community, the members can consider it their own place, not something being imposed upon them by the library.

PHYSICAL SPACE

The location of the makerspace at Anchorage Public Library is located on the top floor of their four-floor library. It has a beautiful view of the Chugaiik Mountain Range, which the staff feels will inspire innovators as they work on their individual projects.

The positioning of the space was not chosen at random. The room on the top floor is removed from most of the quiet spaces in the library. The library wants their users to have the ability to make as much noise as they wanted, without the fear of being shushed by either the staff or one of the other patrons. The space is 100 feet long by 35 feet wide in its own room, with a few offices in the back. By placing the space up here, staff have yet to receive any complaints about noise. They avoided this potential problem by considering all the possible locations and problem areas, such as areas that needed to stay quiet and areas where patrons would be more likely to tolerate noise. Initially staff spent time on the third floor below with their ears strained for any noise spillover, but none was heard. This makes them cautiously optimistic that they will not have any noise issues in the future.

Regarding how many users can take advantage of the space at any given time, the library anticipates that the space can accommodate up to sixty people at a time, with an ideal of thirty people per session working on hands-on projects, as well as staff members to assist.

The space needed some renovation; they did not build it completely new. This space was the library's former media center, so while it has been a subtle upgrade in some ways, they are planning on making it a more useable makerspace for their patrons, beyond simple computer access. They replaced the carpeted floor with something more industrial and capable of taking a beating (as well as capable of

simply enduring more foot traffic than the previous carpet could have handled). In addition to the new flooring, they are also adding new counters for workspaces, along with new tables that can be used as collaborative workspaces. Rather than reusing furniture, they are choosing new furniture specifically for this location so that both the flow and function of the room will work well together. This would help to make everything look intended and not as though the room has been thrown together in haste.

TOOLS

Choosing what types of machinery they would add to their space was done through conversation and rationalization with their budget from select members of the staff. In the end, some of the key pieces of equipment that they chose were 3-D printers, Linux (which they use as the main OS at their lab), Apple and PC computers, some Arduino kits, and—for a touch of fun—Lego and Erector sets.

Arduino Kits

One note on the popularity of Arduino kits: many libraries have chosen these kits to include in their library makerspace programs. For those not acquainted with the kits, they act as open-source hardware on small microcontroller boards. Typically users can program anything on the boards and “teach” their projects to do a wide variety of things. It gives people a hands-on opportunity to see the inner workings of a computer, as well as directly manipulate how they work. And the individual kits are extremely cheap for personal use: most cost under \$100, with many costing much less. Given the skills that such kits can offer and their relatively low cost, they are a natural choice for many a budget-conscious library. In addition, their low cost allows for the library to invest in multiple kits for large classes to use simultaneously, rather than having one unit that may or may not be checked out at any given time.

Operating System

Linux is a popular operating system for those who want to build their own operating system and choose how things will run on their own individual machines—so it can seem like a bold system choice for the Anchorage Public Library. Their rationale

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