SI 501: Background Research Report

# Salem-South Lyon District Library

DiversifiedSolutions - Jie-Wei Wu

Due date: Oct 24

Word count: 2877

## Organizational Mission

The SSLDL aims to service their community and satisfy their community's needs. Located on the South Lyon area, it's surrounded by 12 schools and some business companies. Thus, it hols a wide range of target users, from children, the old, student, housewife to business man. In addition to lending books, their services across lending cooking equipments, providing computer labs and study rooms, holding plenty workshops and programs, and providing online resources. The library desires to be a pioneer and to stand out in the modern libraries.

## Client Problem Summery

Being a supporter to their community, the library is still looking to expand and wants to provide more valuable service to the community. In this moment, they're thinking holding STEAM-oriented programs or any other relevant to provide for their community, such as makerspaces. In this project we focus on what might be the challenges if the library would like to provide a maker space. The challenges might result from the librarians and the community.
Also, the library wants to utilize its budget efficiently. Moreover, for the occasional users, SSLDL also wants to engage them in using the library. They are wondering if the new service could also include those potential users.

## Questions

1. Why might Libraries be suitable for makerspaces? What are the now existing maker space within libraries? What do they provide?

2. What might people from different situation/background want from a makerspace?

3. What might be some of the challenges or concerns if the library were to follow through with a maker space?

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## 1. OVERVIEW

Makerspaces is a collaborative space with many equipments and for people to work collaboratively and share knowledge. It supplies equipments that people might not afford personally such as sewing machine and laser cutter. The makerspaces make people who are interested in technology started to engage and inspire people who have limited passion willing to try. Makers, or people who use makerspaces, could produce and create various things in the makerspaces, such as mending clothes and repairing broken items.

Libraries are recently beginning to host makerspaces. This report addresses whether a makerspace is "suitable" for a library and what are the benefits if libraries are going to hold makerspaces. It also address what kind of challenges would the libraries facing when they are planning on building makerspaces. This report is organized as follows. First, what is a makerspace would be briefly described. Then the emerging maker movement within libraries are stated and discussed, followed by the people with different backgrounds in the makerspaces are stated. In the next section, the opportunities existing in the librariesâĂŹ makerspaces, such as being learning centers and providing social interactions. Last, the challenges under establishing a makerspace are revealed. Finally, a brief conclusion shows.

## 2. WHAT IS A MAKERSPACE

In general, a makerspace could be a physical place featured many visible technology equipments and tools and invisible functions. Practically, people can learn how to do-it-yourself, make hands-on creation, practice skills, and grow from mistakes.

The technology equipments can range from 3-D printers, sewing machines and computer-aided design softwares such as CAD. The equipments might be too expensive to get personally. It might be a problem for common people to afford the technology equipments such as CAD, because of its cost or to have sufficient space in their home. Therefore, a makerspace provides individuals with an environment including all necessary equipments for their work and allows an individual to safely explore and experience. In addition to the physical support, makerspaces also support users with other significant functions, such as educational opportunities and social interaction.

The funding of a makerspace comes from many sources. It could be based on membership fees. Some personal makerspaces charge people who use makerspaces on fixed periods, such as per hour or per month. In addition, the funding could also be accessed from external organizations, such as universities, for-profit companies, non-profit organizations.

Although it is obvious on the practical and physical appearance, makerspaces are not defined by some specific materials or spaces. It is more about a set of community partnerships, collaboration, sharing, learning, and creation. People making and creating in makerspaces are called makers. The maker sprit is more like taking risks, trying things they never experienced before, and willing to fail again and again. Makerspaces could regarded as the informal sites for creative production.

## 3. THE MAKER MOVEMENT OF THE LIBRARIES

For centuries, libraries have been supported the writers and learners with their plenty of resources and contents. Some resources are not only books. They are CDs, DVDs, newspapers and electronic resources. This kind of nature existing in libraries might truly offer them a good opportunity to be adept in the trend of maker movements. The very beginning idea of create a makerspace in a library could be traced to a magazine, *Make*, published by Phillip Torrone [4]. His argument is that the fee required to enter a TechShop or hakerspaces pushes a segment of population away. Yet, if some libraries are converted to TechShop, in Phillip's statement, that would benefit more population of the US country. The TechShop could be viewed as a similar concept of makerspaces.

One of the first practical application is a project, "Make it at library space," implemented by The Idaho Commission for Libraries (ICfL) In 2012 2013 [5]." They aimed to increase the maker movement across Idaho libraries. During this project, library staff experienced implementation of creativity, STEAM-based (science, technology, engineering, arts, mathematics) programming, training on leveraging partnerships, and involving community. A year later, the library staff was tracked to report the consequence of the project[6]. As the staff reported, the project changed the libraries from many perspectives. More various patrons from different ages and backgrounds, such as the older and homeschoolers were engaged more in the library. They participate in the technology program enjoyed the social benefit of the makerspaces. The conclusion of this project was providing the libraries the opportunity if creating a culture and place that could engage their users with widen experiences and functionality. The interesting point is that more people and institutions are aware of the maker movement with li-

braries and try to spread the ideas by training and designing programs. Though the project's data, which are statements of the library staffs, might be biased and not clear enough, the reports still shed some light on the positive outcome of using libraries as makerspaces.

More research and discussion have emerged in recent years [7, 8, 9]. For small business and entrepreneurship in the community, makerspaces might provide them further technology and innovation [10]. Also, the function from providing information to creating knowledge and increasing the creativity emerges [1, 11]. The library could become a place to those who focus on learning and creation. Moreover, the relationship between schools and libraries is renewed. The colleges and universities could adopt maker movement and provide practical experiences and learning activities while the students do things by themselves [12, 13]. Further discussions about academic libraries are proposed [3]. Yet the separation from academic, public and school library is too trivial and unnecessary. In general, the major functions of a library is roughly the same. Facing the new opportunity of trended makerspace, it appears that libraries jus do what they have been doing in current society and community. The libraries stand a positive opportunity of creating makerspace.

# 4. COMMUNITY IN THE MAKERSPACES

Connection is important and the key to make a successful makerspace. After all, other than the sources such as expensive machines and spaces, the most valuable thing in a makerspace is to bring people together [3, 7]. People from different ages and background might hold different expectation when they come to the makerspace. In this section, the major component of community are extracted. The current research and work relatively are then briefly described.

## 4.1 Kids

From the Make: magazine, the maker movement of kids is arising. For parents who are not familiar and do not have sufficient equipment to hold house making things, a makerspace for kids offers the parents a way to educate their kids thinking by doing. The MakerKid, a makerspace set in Toronto, is targeted at kids [23]. They offer a variety of programs including learning to code Minecraft and making robotic inventions. In another makerspace in Detroit, Mt. Elliott, the participants are mostly youth between eight and nineteen years [21]. The key of this makerspace is that the participants are from local community. Kids need to teach other kids how they figure out and learn things such as troubleshoot a game controller, edit a video, silk-screen a T-shirt, or fix a bike's brakes. In addition, some participant would use the makerspace to extend their interest or skill. For example, an eleven-year-old girl initially creates videos on her mother's phone, then she produces the videos on the computer and upload them to host a YouTube channel with two of her friends in the space. It reveals that kids could be inspired and learn more by making things.

## 4.2 Students

Students need creative thinking and problem-solving skills for them to be prepared to enter the job market after college. A project in makerspace could help students learn how to think independently and how to find resource to solve the problems. It even could make students more interested in the filed of technology and engineering. Learning through making, students are also able to reinforce the theories they learnt in the class of school. For students, a makerspace provide them a spirit of creativity to make things they like and they are interest in but not provided by the schools. Also it provides the freedom that school might constrained because of resource or time.

## 4.3 Adults

Relatively, design a makerspace for adults are much harder and complicated compared to previous groups. The training for adult is relatively lacking [19]. We still could observe the expectation of adult makers from case study. From a case study, the authors observed a makerspace majorly composed of adults [21]. The purposes of adult members could be concluded to two major types. One is creating products for sale, and the other is for fun. Also some others are novice adult users and kids who like to attend regular workshop or classes rather than being members. In this space, they observe a wide variety of making. Members could build things for personal use, such as an engraved phone case, and for their start-up companies, such as wind turbines, while some work for fun and build an hourglass or welding bike chain sculptures.

# 5. OPPORTUNITIES OF MAKERSPACES IN LIBRARIES

Some additional advantages reveals for makerspace existing in libraries rather than a personal organization. This is based on the nature of libraries.

## 5.1 Learning Commons

A makerspace somewhat brings a library back to their functions: being learning commons. The need of a physical place for makers to meet and share ideas, and the libraries have the opportunities to create such spaces. Many new learning activities could happen within the makerspace. The creativity events could be like self-publishing technologies [1, 20], robotics competitions [21], programming workshop, and even cooking. Also, makerspaces are seen as a new way for school students to experience outside the book statements. It would be like a new lab and allow students to explore and earn experiments with technology in creative ways. That also could reinforce the theories they learn in the classroom. Moreover, the requirements of producing a maker environment requires many equipments and places to work with the tools and equipments. For libraries, they have already some equipments that are not books. Although the traditional imagination of a library is that it is combined of books, the library truly have things such as CDs, videos and so on. Thus, for libraries, since they have provide the users materials the users might need in the learning process, they would be more familiar on purchasing process and planning a makerspace, which could also view as another way for library users to learn.

## 5.2 Social Interaction

In addition to the learning and exploring functions of makerspaces, social function is significant as well. That is, interaction between makers could produce enormous benefits. The junior makers could learn from experienced makers. The makers could also cooperate to build things. For libraries, they have stood as an interaction center for communities. People come in to read together and to share the

space. Thus, it is intuitive to transfer the library space to a makerspace. For libraries, it might make library users more engaged. Also, the benefit could be attract potential users.

# 6. CHALLENGE OF A MAKERSPACE IN THE LIBRARY

While holding their benefits and success on providing makerspaces, libraries surely have the inevitable challenges. Not two makerspaces are the same. Making is a new way for patrons to use the libraries. However, how does librarians prepare themselves to embrace and provide this new service? Instead of coping any existing patterns of other makerspaces, they need to know the speciality of themselves, such as space, budget and their patrons. Based on these conditions they could design their own makerspaces.

## 6.1 Steps of Establishment

Regarding to practical aspects, some researches discuss initial steps and concerns in the establishment of a makerspace. Nilsson et. al. states the two key things are infrastructure and community-building [15]. Infrastructure includes the physical space, purchasing equipments and setting up booking system e.t.c. Community-building is like engaging patrons. The spirit of a makerspace is learning that goes on beyond the physical walls. In addition, a case study conducted in Australian public library states that it is important to create a blueprint [16].

Another challenge of establishment is how to build the culture within this space, such as learning and knowledge sharing. Some experts could act as leaders to educate other users on both how to use the tools and the knowledge of things they make. Yet, surely we could not rely on occasional expert users to educate the rest of the community. Serval possible actions to address this situation might be: 1) training more lead users, 2) developing a series of courses or workshops to guide and educate to all new users, and 3) organizing by the lab management [15].

## 6.2 Training of Libraries

Although the research on training of makerspace is scare and the makerspaces are still new services in the field of librarians, librarians are continuously asked to provide the last technology and services. They would leave the conventional library with most physical books. Important part is to think outside the box and express ideas [14]. Another factor is about how to find learning sources and what kind of resources. Before that, they need to know what possible situations might happen. For example, if the 3D laser printer is out of order, do the libraries know how to fix it? Or should they just know the steps to find professional engineers handle this situation? Problems happened in past libraries emerge in a new form. The solutions also vary between libraries. The librarians need to ask them what would they do when they face the situations. They then would know where to find learning resources, such as from peers, communities, and on-line resources. Makerspace training is evolving slowly. Until now we just could say that the training, especially on-line training, are emerging [19].

## 6.3 Training of Patrons

In addition to staffs, the patrons play an important rule in the procedure of building a makerspace. Library patrons might come to makerspace but do not know what they want and what they are doing. They might want to try, although it's a good thing to have the willing to try and to make mistakes, it still need to invest efforts to educate the users. In addition, there are always new or occasional users in the makerspaces. How to make sure that the users are in safe ground could be a potential issue. That is, make the users the environment to make mistakes but nothing damage happens. Regards of how to use the tools in the space, the library could create guidelines and even learning videos. In addition, libraries could educate the patrons via workshops and training sessions. The variety of patrons need to be considered as well. Some of them are novice and some are experts. Most of them might be between these two extreme points. Young makers are tend to have higher adventure spirits while older people might have more conservative strategies [19]. The library needs to observer the library users and design a better way to benefit more users.

## 6.4 Budgetary Constraints

Funding is necessary when building a makerspace. Libraries ofter rely on external organization to supply the funding. Thus when the expense required to run a makerspace is beyond the normal daily fee. Budget constraints can truly a According to the research report of D. Slatter and Z. Howard [16], they interview three librarians who run a makerspace in their libraries. The challenge all of they point out is budget limit. The changing nature of technology add more difficulty for them to follow.

## 6.5 Other Challenges

The statements of previous challenges are established on the assumption that the library is going to build a makerspace. Yet, one challenge is that understanding if the library needs to build one. After all, makerspaces could only exist when there is a set of audiences appeal to [17]. That is, if a public library does not have patrons interested in hands-on activities and in using the space, it makes no sense to provide it. There needs to be awareness of benefit to the community. In addition, the purchasing and providing fancy and expensive equipments, such as 3D printers, might put the library in the business of manufacturing, which some people might argue that's not what a library for [18].

# 7. CONCLUSION

Standing its nature and history, a library is somewhat suitable to establish a makerspace and serve the community. The road is not easy. Although case study and interviews are conducted, the result and response could only by staff's statements. That means it's hard to totally apply whole steps, methods and rules in one makerspace to another. However, from the previous experiences, there is still many worth picking up. Training is required and it's necessary to think about how to conduct. For establishing a maker space, many challenges are needed to deal with. The challenges widely range from librarians to library users and from funding to culture. The establishment of a makerspace is slow. It takes time to grow for both library staffs and the community the library serves.

# 8. REFERENCES

[1] Domsy, C. (2013). Libraries as creative spaces. Feliciter, 59(2), 28-29.

[2] Colegrove, T. (2013). Editorial board thoughts: Libraries as makerspace?Information Technology and Libraries (Online), 32(1), 2-5.

[3] Burke, J. (2015). Making Sense: Can Makerspaces Work in Academic Libraries?

[4] Phillip Torrone, âĂIJIs It Time to Rebuild & Retool Public Libraries and Make âĂŸTechShopsâĂŹ?âĂİ Make (blog), March 10, 2011, accessed March 1, 2013

[5] Lipus, T. (2013). Idaho libraries shake up the maker movement. Idaho Librarian (Online), 63(2)

[6] Libraries, I. C. f., Lipus, T., Specialist, P. I., Walker, S., coordinator, p., & Compton, E. (2014). Idaho libraries creating a maker culture. Idaho Librarian (Online),64(1)

[7] Abram, S., & Dysart, J. (2014). The maker movement and the library movement: Understanding the makerspaces opportunity. Feliciter, 60(1), 11-13.

[8] âĂİMaker Movement", American Library Association, September 15, 2014. Document ID: 075ca1a4-474b-5f84-f50b-474de21abc73

[9] Colegrove, T. (2013). Editorial board thoughts: Libraries as makerspace? Information Technology and Libraries (Online), 32(1), 2-5.

[10] âĂIJHigh-Tech Maker Spaces: Helping Little Startups Make It Big.âĂİ Jon Kalish. National Public Radio âĂŞ All Tech Considered. April 30, 2014.

[11] âĂIJConfronting the Future: Strategic Visions for the 21st Century Public Library.âĂİ Roger E. Levien. American Library Association Office for Information Technology Policy. June 2011.

[12] "The Maker Movement: Standing on the Shoulders of Giants to Own the Future." Sylvia Martinez. EdutopiaâĂŃ. October 1, 2014.

[13] Sikirica, A. (2015, Mar 26). Makerspace provides resources for student design and innovation in small 143. University Wire

[14] Mathews, B. (2012). Think like a startup: A white paper to inspire library entrepreneurialism. Virginia Tech University.

[15] Nilsson, E. M. (2012). The making of a maker-space for open innovation, knowledge sharing and peer-to-peer learning.

[16] Diane Slatter and Zaana Howard (2013), A place to make, hack, and learn: makerspaces in Australian public libraries, The Australian Library Journal, page 272-284.

[17] Anstice, Ian. (2012). âĂIJMakerspaces in Libraries: An Expert Takes Us through the How, Why and Why Nots.âĂİ

[18] Rundle, Hugh. (2013). âĂIJMission Creep: A 3D Printer will not Save Your Library.âĂİ

[19] Moorefield-Lang, Heather, (2015), Change in the Making: Makerspaces and the Ever-Changing Landscape of Libraries, TechTrends journal, pages 107-112.

[20] Crawford, W. (2012). Librarian's Guide to Micropublishing : Helping Patrons and Communities Use Free and Low-Cost Publishing Tools to Tell Their Stories. Medford, US: Information Today, Inc.. Retrieved from http://www.ebrary.com

[21] Kimberly Sheridan and Erica Rosenfeld Halverson and Breanne Litts and Lisa Brahms and Lynette Jacobs-Priebe and Trevor Owens (2014), Learning in the Making: A Comparative Case Study of Three Makerspaces, Harvard Educational Review journal, page 505-531,

[22] Graves, C. (2014). TEEN EXPERTS GUIDE MAKERSPACE MAKEOVER. Knowledge Quest, 42(4), 8-13.

[23] Intel collaboration links maker and education communities in canada. (2014, May 10). PR Newswire