What Do You Make?

How the traditional and new trends of makerspace translate the values of contemporary public libraries: The case of Edmonton Public Libraries

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Enter into his gates with thanksgiving, and into his courts with praise:

be thankful unto him, and bless his name. For the LORD is good; his mercy is everlasting; and his truth endureth to all generations.

Psalm 100 : 4-5

To my wife Martha Abraham, you are

the source of my strength, the substitute of my mother

and the compass to my future path. And to our adorable children- Yoseph and Bethel.

To my friends, colleagues and members of my family,

I am so grateful for your continuous encouragement and enduring support.

Acknowledgements

I do believe everything happens for a reason. My Lord Almighty, you brought me to Canada, helped me explore a totally different world and graced me with this success. God, you are always at work in the lives of your people, and thank you for spending more time on my life and make me your priorities. My friends, families and colleagues, I would like to thank you in millions for your assistance and support. I don't have words to express my appreciations. My colleagues at EPL, especially Claudio Bringas, thank you so much for your valuable inputs in this capstone project. You were all the driving forces of the whole process of this research. I would also like to thank my research informants; both the users of the makerspace and EPL management representative. My very special thanks goes to my decent, wise, generous and humble supervisor Dr. Rob McMahon. Your advice, comments, suggestions, guidance and mentorship throughout the project were very helpful for the success of this project. My cohorts and the whole administrative team of MACT... I was so lucky to have had you around. Things wouldn't have been that simple without your relentless help over the entire program. Thank you all so much!

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Acronym

EPL: Edmonton Public Library.

DLI: Digital Literary Initiative.

UR: User's Response.

MR: Management Representative.

IQ: Interview Questions.

Abstract

Background: Modern day public libraries are no longer only designated as information hubs. They are also symbols where cultural, social and political experiences are displayed. Public participation and content-creation are appearing there. Makerspaces, emerging components of institutions like public libraries, facilitate these roles by adapting a programming model where users create, rather than just consume, content (Howard and Slatter, 2013, p.272).

Objective: This study understands, examines and critiques: (a) major values of public libraries; (b) how Edmonton public libraries are adopting and effectively materializing these values in practice; (c) how makerspaces are assisting patrons explore their potential as creators; and (d) how makerspaces are adjusting and maintaining the values of Edmontonians.

Theory and Method: Drawing from Clay Shirky's (2008) interpretation of Uses and Gratifications Theory of Mass Research I will research the experiences of makespace users at the Edmonton Public Library (EPL). I will apply qualitative description research method. I will use the semi-structured, qualitative interview data gathering technique. I will purposely recruit five participants (one EPL executive, four active users of the makerspace) to address my research question.

Findings: The uses of the Makerspace reflect new, distinct roles at EPL. Despite EPL's aggressive moves to expand its services, and strong support for existing programs, I observed requests among users for technology, programs and space. Although users also noted the welcoming nature of the Makerspace and strong staff support, they also noted some concerns about inclusiveness and traditional values. These findings have the potential to inform the development of EPL's makerspace.

Conclusion: Since the Makerspace is a recent development, most of the trends observed there are new, emerging and continually expanding.
Given these observations, it is important for EPL to build on its success and continually assess and understand new values being observed at its makerspace.

Key Words: Public Libraries, Makerspace, Values of Libraries, The Makers Movement, Public Participation, Programming Model, Hacking, Digital Commons, Participatory Learning.

Chapter 1. Introduction

Unlike what I know from my country of origin, Ethiopia, my exposure to Edmonton Public Library (EPL) over the past couple of years helped me observe the role that libraries play in transforming society. Libraries' diverse structural readjustments and prospects in the west appear tantamount to broader social values and political and economic progress. In the old days, libraries were considered as "a symbol of permanence and maturity and pride" (Babiak, 2013, p.12). In Canada, libraries are historically seen as "a curiosity ward and friendly home" (Babiak, 2013, p.33). Some scholars on the other hand describe libraries as venues that unleash the author within us all (Lankes, 2016, p.122).

My experience at Edmonton Public Library and the review of existing literature further revealed that libraries in general, and makerspaces in particular, are influencing the lives of numerous people (positively and negatively). They are also connected to different sectors. With the growing need for resources and inquiries for expert assistance among patrons of libraries, I also observed some limitations in service provision and the need to keep in contact with diverse emerging cultures at Edmonton Public Libraries' makerspaces.

As discussed in the existing literature, makerspaces in Canada in particular and North America in general are fulfilling the real needs of their communities. They are assisting patrons in making tools, innovating and inventing, storytelling, tinkering, and role-playing (Dougherty, Conrad, & O'Reilly, 2016, p.3). But despite the emerging calls and future plans (mega projects) involving makerspaces, these roles are not widely considered by some pertinent parties as sufficient contributions to society.

I believe, one of the valid questions for any researcher to ask at this point is whether these spaces are adequate in preserving and maintaining the values of libraries, and their role in society.

In this research, I will attempt to understand, examine and critique: (a) the major values that public libraries aspire to preserve and maintain; (b) how Edmonton public libraries are adopting and effectively materializing these values in their day-to-day activities; (c) how makerspaces are assisting patrons in exploring their potentials; and (d) how makerspaces are adopting and maintaining the values of Edmontonians through these libraries.

1.1. Background

1.1.1. Edmonton Public Libraries.

1912 marked the amalgamation of two cities in Alberta: Edmonton and Strathcona. The merged cities took the name of Edmonton, and over time acquired a university, three colleges, four

theatres, 24 public schools and 40 places of worship. As noted on the library's website, in pursuit of what was then considered as "knowledge, entertainment and a better life", Edmonton Public Library (EPL) opened on March 13, 1913 as "a temporary space above a meat and liquor store in the Chisholm Block at the corner of 104 Street and Jasper Avenue". Just a few hours later, Strathcona Library commenced its operation in "its iconic brick orange brick building" which EPL is using it as one of its branches now (EPL, 2013, p.3). As Babiak (2013) indicates, when EPL opened its doors around a century ago, the population of Edmonton was just over 2,000, while in 1909, the number increased to 23,000 (p.10).

Babiak (2013) also explains, in the past, libraries in Canada were considered to be symbols of permanence, maturity and pride. Of course, EPL introduced an open-access library system. To give an impression of the old days of EPL libraries I have selected the following interesting picture in black and white published at the Edmonton Journal in February 2016.

Picture 1: Photo of Edmonton Public Library (1924)

The original Edmonton Public Library, shown in this photo from 1924, was built at 100th Avenue and 100th Street. One of the distinctive turrets of the Hotel Macdonald is visible on the left side of the photo.

Source: Edmonton Journal Published on: February 12, 2016 | Last Updated: February 12, 2016 7:00 PM MD.

Retrieved from: http://edmontonjournal.com/news/insight/edmonton-then-and-now-an-architectural-gem-housed-the-citys-first-public-library

Today, EPL has over twenty branches and well over 500 employees. EPL is also the most frequently visited public place in downtown Edmonton with over 6 million patrons knocking its doors for different services annually. A recent Nordicity (2016) report on EPL vividly explains this library's economic and socio-economic impacts on society, stating that its programs, services, materials and collections generate well over $131.5 million in value for Edmonton residents. As well, that report states that EPL's operations contribute 719 full-time equivalents (FTEs) of employment positions and almost $56 million in GDP to the Edmonton economy (p.3). According to EPL's 2015 Annual Report, the library has currently over 9 million books and library materials; about 12,550,953 digital collections; 8,980,915 virtual visits, and an estimated e-usage of 2,131,509 (please refer to EPL 2015 statistics from http://www2.epl.ca/annual-report/2015/statistics.cfm for more information). EPL's Strategic Plan for 2014-2018 also establishes a strategic goal of creating a digital environment and public spaces that "fuels Edmontonians' experimentation, discovery and wonder, ...and delight and engage them with incredible contents and rich experiences collaboratively" (Carruthers, 2013, p.2).

1.1.1.1. The Digital Literacy Initiatives (DLI) department.

This is a department within Edmonton Public Library (EPL) which provides general support for and development of digital literacy. DLI provides these types of supports both for staff (training and development) and for customer programming and services. The programs and training includes a lot of different technology and software, creative software, 3D printing, and robots, as well as teaching coding language to 3 year olds, among other things.

1.1.2. Stanley A. Milner Library/Makerspace (The Project's Major Site).

Like other EPL branches, the Stanley A. Milner Library where this research takes place is also one of the busiest institutions in Edmonton. This branch is located on the south side of Churchill Square at 102 Avenue and between 100th and 99th Street. According to Babiak (2013), like the other EPL branches elaborated on in the preceding part, the Stanley A. Milner branch was established with the intention of uplifting peoples' wisdom. In fact, as part of a

mega expansion project of the branch and EPL, the branch has temporarily moved to Enterprise Square (10212 Jasper Avenue) as of January 2017. The Milner branch's revitalization project is believed to take three years. The project started the renovation process at the beginning of 2017 after the City Council approved the $62.5 million project in the fall of 2014 (raised to $69 million in early 2017) for the revitalization and renewal of the Stanley A. Milner Library. Of this amount, $59 million was committed from the City of Edmonton with the expectation that $10 million would come through community support and fundraising (https://www.epl.ca/about-the-stanley-a-milner-library-revitalization/).

Figure 2: Design (3D Animation) of New EPL, Stanley A. Milner Site- Under Renovation

Source: https://www.epl.ca/about-the-stanley-a-milner-library-revitalization/

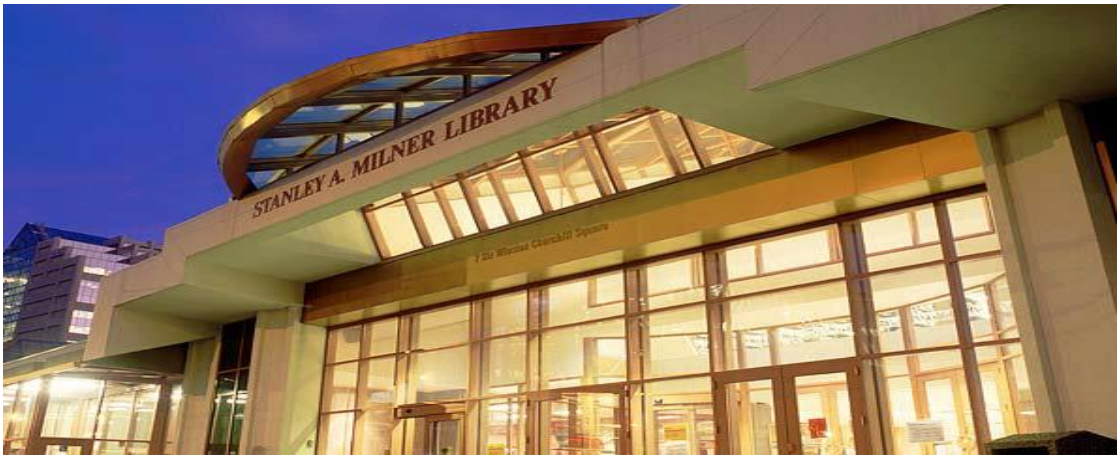
The Stanley A. Milner library branch was established in the early 1960s with two and a half million books. Currently, it is home to EPL's headquarters. As stipulated in the Library's Community Profile (2014), this organization provides services to a total of seven communities: Boyle Street, Downtown, Glenora, McCauley, Oliver, Riverdale, and Rossdale (p.3). The main objective of the library is to transform society by providing access to up-to-date resources. The library basically shares expertise, information, technologies and spaces for the people living in the metropolitan centre of Edmonton (Babiak, 2013).

Though there are shared objectives and visions, makerspaces have different names and arrangements in different institutional setups. EPL views its makerspaces as a service that is responsive to current customer needs. In the context of EPL, Hordal (2013) defines makerspaces as venues that "… provide access to materials, tools, and technologies to allow for hands-on exploration and participatory learning" (p.3). EPL not only provides print and audio-visual materials to patrons inside libraries, but also shares its resources publicly, and actively engages the community.

According to Babiak (2013), the downtown library looks like "an odd place, sometimes a little threatening if you make eye contact incorrectly" (p.29). Like many observers' feelings, it is the smokers and texters, seniors, hustlers and mothers with babies waiting for a bus or just standing and staring that drove Babiak (2013, p.29) to describe this outsider's' perception of the downtown library. For me as an insider, this is like judging a book by its cover. As Babiak (2013) also comments later in this same book "…the library has become a keeper and reflector of local culture....an engine of local curiosity. It is Edmonton: the past, the present, the future" (p.36). Examined in line with its institutional objectives, the 2014 "Library of the Year" has many things to offer, including the makerspace.

For the past 50 years this library branch "has been the site for heroes to slay dragons - sometimes in the pages of books, sometimes in the actions of staff" (Edmonton Sun, March 20, 2017).

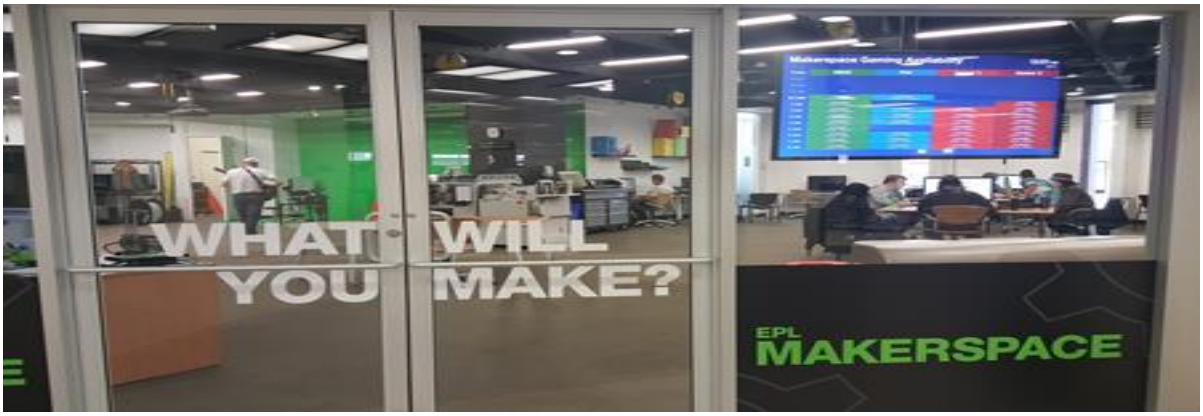
Figure 3: The Old Stanley Milner Library, which went to renovation January 2017



Source: Retrieved on April 18,207 at 1642 hrs from:

http://www2.epl.ca/resources/epl1913-2007.pdf

Figure 4: The Makerspace at the Stanley A. Milner



(Photo: Shimelis GEBREMICHAEL-May 2016)

1.1.3. Libraries and Librarians of Modern Times.

The current and future of libraries is in a constant process of change. Libraries are transforming their technological, social, demographic and funding systems. Libraries are making some adjustments in their basic infrastructural developments and setups to focus on the idea of collaborations with different actors to make their services more efficient and compatible with contemporary contexts, needs and aspirations (Anderson & Cvetkovic, 2015, p.133).

In contemporary society, the significance of libraries and the importance of their service providers and librarians to the community are highly appreciated and effectively utilized. This idea goes beyond the fact that every society "should have a library" (Babiak, 2013, p.9). In other words, libraries are not simply venues of top down commands: places to borrow materials, generate resources for research and other purposes, or provide spots to read. Rather, they are becoming institutions with multiple purposes and a wide range of tangible effects. Scholars describe libraries and librarians as "agents for radical positive change who chose to make a difference" (Lankes, 2016, p.1). In this role, libraries intend to materialize a key mission: "improve society through facilitating knowledge creation in their communities" (Lankes, 2016, p.17).

Both the platform created by libraries and the professionals who facilitate the work they do diligently create knowledge through active and continuous conversations with patrons (Lankes, 2016, p.23). But in some instances, librarians are seen as different from hierarchical government structures. In his recent analysis, Lankes (2016), for instance, describes librarians as parts of the community who are distinct from the malpractices observed in other government structures, such as corruption (Lankes, 2016, p.2).

Libraries of modern times are therefore far beyond what we normally assume. Contrary to the belief of considering librarianship as a passive occupation, libraries indeed promote active activities such as reading, informing their communities, and making a positive radical difference that helps address issues and pressing concerns (Lankes, 2016, p.4)

1.1.4. What are the Major Values of Libraries?

Libraries are of great importance to all communities. Despite their daily routines, they have now started to respond to some emerging needs and trends. The discussions and arguments on

values of libraries touch on different issues. In his well-articulated book about EPL, Babiak (2013) describes the importance of libraries, saying: "we learn better together, even if no one says a word" (p.10). This approach emphasises the communal life present in libraries; a concept very attached to my heart. In terms of their values and significance, I found libraries of the west to be more diverse and well organized than the ones I knew from Africa - from Ethiopia, to be very specific. However, all communities and scholars alike, beyond a doubt, agree with the fact that: "to learn, to grow, to change together, to share what would otherwise remain secret, is the work of a mature community" (Babiak, 2013, p.10).

In one way or another, libraries may affect and influence people and institutions around them. That is why librarians and their leaders are advised to be very conscious and curious about their services, and the people they provide them too. Anderson and Cvetkovic (2015) note and firmly argue that librarians should not to be influenced in their judgments and services by personal ethical norms, religious beliefs and backgrounds and political affiliations (pp. 16&17). The idea of intellectual freedom is also widely applicable in the library environment, for example by referring to the fact that the users have the right to seek and receive information without restrictions, examinations and scrutiny (Anderson & Cvetkovic, 2015, p.21). In earlier times, when information was so scarce and resources were limited, libraries were curiously observed as the focal points where knowledge was held. There were times where debates erupted as a result of this phenomena between those who advocate libraries to be for selected few and those who say that libraries are " ...for everyone, not just a highly educated, refined class of Edmontonians with grand houses in the current neighbourhoods" (Babiak, 2013, p.68).

It is also wise to imagine what the future libraries could bring to nations and their communities. Most scholars agree that the future of librarianship is one that "encompasses new rules, technologies, and techniques that could eradicate old stereotypes about what a library is and what librarians do" (Anderson & Cvetkovic, 2015, p. 131). One of those long standing rules is for example the fact that "reading and writing, studying and concentrating on a public or a great mystery - all are solitary and private" (Babiak, 2013, p.9). This idea somehow contradicts with emerging public trends in these spaces, such as generating ideas, making things, sharing resources, and improving innovations. These activities, in fact, demand communal and collaborative activities that are happening in libraries - and predominantly, inside makerspaces.

1.1.5. ***Makerspace; Broad Definitions.***

In defining "makerspace", I like the analogies Burke (2014) made. He wrote most importantly that describing a makerspace is "akin to the blind men who attempted to identify an elephant". Makerspace can be defined "in ways that are driven by limited experience and that do not give the observer a full sense of what is possible" (Burke, 2014, p.2). When we intend to describe makerspaces, we touch on different issues: people, equipment, space, policies, and so on. In makerspaces, "...the tools provide the means for that inventor or group to bring an idea or discovery into being". On the other hand, "getting those tools out into a common space where multiple inventors could come together and share their knowledge" is also believed to be an important development that makerspaces bestow in the library context (Burke, 2014, p.3). This is to say, patrons are currently not flocking to the library for simple economic reasons like printing their work but also for sophisticated activities like producing videos and designing games and 3-D objects (Lankes, 2016, p.122).

1.1.6. Makerspaces; Major Roles and Characteristics.

From what I have read and explored so far, makerspaces are acting like spaces, facilitators and driving forces of the organizational mission and vision of libraries. The concept is both old and new; their applications are both organized and otherwise; their contributions touch all sectors while their prospects are highly regarded and considered both dynamic and transformative. Most importantly, their applications and contributions in public realms like libraries are viewed as important milestones. Though in some instances the process appear odd, makerspaces focus on an idea of sharing, and there is no better place for this to happen than in public libraries.

Scholars agree that sharing through different activities, mostly in public places, allows us to "...sit among the parchments and scrolls and books with other people, alone together" (Babiak, 2013, p.9). This shows beyond doubt that a main value of libraries is to help improve communities and society "through making them smarter" (Lankes, 2016, p.23).

1.1.7. Who are Makers?

Access to makerspaces and their duties depends on the types and objectives of the spaces where they are located inside schools, communities and other organizational settings. Makerspaces might therefore be affiliated to specific institutions or communities, or simply open for everyone like the ones within public libraries. Be this as it may, these spaces allow and create an opportunity and

platform for users to imagine, play and make freely (Dougherty, Conrad, & O'Reilly, 2016, p.3). In the view of these same scholars, makers who use these spaces could also be characterised as "people who regard technology as an invitation to explore and experiment" (Dougherty, Conrad, & O'Reilly, 2016, p.xv). By "technology", these scholars mean any skill or technique that people learn and employ. In terms of their backgrounds, makers could be described as members of the community who make all kinds of things for a variety of personal, social, and commercial reasons and for educational, artistic, practical or entertainment values or purposes (Dougherty, Conrad, & O'Reilly, 2016, p.xviii). That is why makers could either be depicted as professionals, non-professionals, amateurs. However, as many scholars agree, one thing is for sure: Makers are "smart, clever, and curious" and in the case of kids, predominantly play and have fun in the spaces (Dougherty, Conrad, & O'Reilly,2016, p.xviii).

1.1.8. Why Makerspace?

Makerspaces, and their derivatives have been with us for ages. And yet, in the past these spaces were not sophisticated or well organized. They were not celebrated or properly promoted in a manner that could (as they were supposed to) contribute their share to the society. The opportunities and fertile grounds created in different organizational setups, including libraries, have now immensely benefited the processes of social, economic and cultural transformation of societies. Makerspaces, which are now considered as practical and artistic creations that could serve as a laboratory to "augment science education", to "gain economic, educational, and social rewards" and to "inspire innovation", are becoming part and parcel of organizations including libraries (Burke, 2014, p.1). This role is now transforming the library from its "traditional role of sharing expensive resources to increase knowledge but this time toward releasing the potential of patrons to create" (Burke, 2014, p.2).

1.2. Significance

The idea, operations and activities of Makerspaces are the talk of the day. They are being applied in many contexts affecting different sectors. Makerspaces are encouraging innovation, assisting the teaching and learning process and assisting the growth of economies. That means, in Makerspaces, priorities are given more to people than devices. The recent award-winning marketing campaign of EPL – "we are bigger than our building" – attests as the key role that people play in the library community. People are given priority as the real driving forces for the country's economy - more so than the elegance or beauty of the buildings or the resource collections held in libraries (Babiak, 2013, p.74). By implication, this concept refers to the real transformations in libraries upon which makerspaces are the epicentres of this 'people first' approach. Babiak (2013) further elaborated the importance of libraries saying: they "provide generous opportunities for all for richer understanding of

contemporary life, for mastery of circumstance, and for greater social and civic usefulness" (pp.93 & 94). Compared to the past, making and Makerspace are much more simple and well-structured platforms today. Here is how Babiak (2013) has vividly described these two eras, past and present:

> "The process of coming up with an idea for a product, designing its form, imagining a method to create it, gathering materials and tools, and finally ending up with a finished product used to take a lot of time. The only way to make the process more efficient was to focus on a particular area of creation (e.g. blacksmithing, sewing, carpentry) and work at it over time to gain experience. This is not to say that all making in the past represented fine craftship or was taken on only by specialists" (Burke, 2014, p.10).

1.3. Statement of Purpose

In this context, my research aims at understanding, examining and critiquing the major values of public libraries with reference to the major activities taking place at Edmonton Public Library's (EPL) makerspace. My project mainly aims to have a closer look into how makerspaces are assisting making and makers, and in maintaining and expanding the values of both libraries and their patrons. My project looks into how patrons use Makerspaces to explore their potential and preserve the values of public libraries - and particularly the EPL's objectives, mission and vision.

As an emerging phenomena, most accounts about makerspaces are new or less than ten years old. To generate a full perspective of the history, current trends and future prospects of Makerspaces, I referred to many works and reference materials. The review of the literature attests that most of the books, research materials, scholarly articles, analysis, guidelines and organizational documents are very recently published.

1.4. Research Question

My research project aims at addressing the following key questions: (a) how could the major values of public libraries be described in relation to makerspaces; (b) are Edmonton public libraries adopting and effectively materializing these values in their day-to-day activities and aspiring to preserve and maintain them at makerspaces; (c) how are makerspaces assisting patrons in exploring their potential and aligning their duties with the library values; and (d) how effective are EPL makerspaces in creating/adopting, maintaining and preserving the values of Edmontonians and that of the values of public libraries.

1.5. Research Strategy

My research will address what concerns customers, professionals and policy makers (executives) have regarding the EPL Makerspace: their reasons to use (or not to use) the Makerspace, and their background information with a particular emphasis on the key concept; the core values of makerspaces/libraries (Lefebvre, 2016). In other words, I will generate "straight descriptions of phenomena" from their daily experiences (Lefebvre, 2016). Moreover, using the qualitative description method, I will closely connect myself with my participants, understand their concerns, issues, challenges, and perceptions regarding the values of contemporary libraries, with a particular emphasis on makerspaces at Edmonton Public Libraries. Most importantly, as Howard and Slatter suggest (2013), qualitative description helps "to gain better understanding of emerging phenomena where there is little empirical literature" (p.275).

1.6. Summary

As an opening attempt, I tried to briefly overview some of the key components of my research in this first chapter. I have accordingly provided a brief, general review of my project site - Edmonton Public Library - the major characteristics and values of libraries and librarians; and the roles, values and definitions of my central topic - the Makerspace. In addition, as a foundation for the upcoming chapters I provided an overview on the significance, purpose, research questions and strategy of my project. The difference between my lifelong library experiences in Ethiopia with what I experienced in Edmonton, Canada drove my curiosity and led to the birth of this research idea. My capstone project addresses some of the gaps in research about Makerspaces and public libraries and contributes to the existing literature.

Following are some of the major topics I will dwell on as part of organizing this capstone project. I will first review the prevailing literature on this topic; looking it from different angles. I will then explain the methodology I deployed in my research, including the research design, data collection strategy, and data analysis procedure. The last segment of the project is dedicated to an overview and discussion of my major findings, concluding remarks, and some possible recommendations.

Chapter 2.

Literature Review

Libraries are no longer spots for only dropping and picking up books and other audio-visual materials, or reading or studying venues. The old trends of libraries are now changing for the better in most parts of the world, especially in the west. Increased diversity of services, and wider values and purposes are overtaking the traditional narratives of libraries. In addition, unlike my experience as a student, researcher, teacher, public relation practitioner and journalist in Ethiopia, my experience with libraries enchants many more meanings than what I normally perceived as their major concepts, roles and duties. Despite their services as information hubs, libraries in the west are widely considered as "agents for radical positive change who choose to make a difference" (Lankes, 2016, p.1). In reference to Canada's experience, and specifically that of Edmonton, Babiak (2013) in fact made a note as to how public libraries were serving as the "Google" of the 1940s. He mentioned how Edmontonians used to visit the reference desks in downtown or in Strathcona when they had a question no one nearby could answer (Babiak, 2013, p.115).

In today's digital era, most citizens in North America would like their libraries to transform to respond to the daily tech demands of the community. According to a recent study, for example, many Americans aspire their public libraries to teach them digital skills - especially how they could use new creative technologies like 3-D printers. They want their libraries to help "spark creativity and provide a trusted place for people to learn about new technologies" (Horrigan, 2016, pp.3&4).

Public libraries are now not only serving the community in technology-related activities alone. Along with providing a wi-fi connection, printing, making and providing other resources, they are even helping the community in time of crisis (Horrigan, 2016, p.6). In some recent research conducted in North America, scholars have started to sense the importance of public libraries in impacting the community. Horrigan (2016), who tried to look at the trends by visiting public libraries in United States, found out that a library closing would have a major impact on its communities (p.6). The fact that these venues are considered as "a safe place, a source of educational opportunity and trusted information, as well as a place to ignite creativity in young people" is also worth mentioning when talking about the key values of public libraries (Horrigan, 2016, p.6). In fact, this same study also pointed out that people still use public libraries for variety of reasons like: traditional activities (borrowing books or reading),

attending classes or other programs, computer and internet connections, doing research and exploiting digital resources (Horrigan, 2016, pp. 12-14). Makerspaces are one part of these venues where most patrons would like to stop by and get involved in some kind of project as they visit public libraries. But despite their contribution to creativity, I see some gaps in terms of identifying the contributions of Makerspaces in supporting the intended values of public libraries.

In an effort to address this gap, I look the features of libraries in general and that of Makerspaces in particular from different angles. In this literature review, I will accordingly intend to: (a) fully understand the meanings, evolution and implications of makerspaces; (b) understand and differentiate the different types of makerspaces, their features and implications; (c) evaluate the concept of makerspace in relation to the technological social phenomena like the 'makers movement'; and (d) lay a firm ground on some of the agreed values of makerspaces with a particular reference to public libraries.

2.1. Methodology

For the purpose of fulfilling my research objective, most importantly the literature review segment of this project, the scope of my search goes beyond makerspace. Accordingly, I tried to look and identify the different angles pertaining to the values and implications of makerspaces and public libraries. As much as possible, I tried to revise pertaining concepts and tune my search towards the four major questions identified and summarized at section 1.4. This part of this capstone project is briefly stated as:

RQ1: What are the major values of libraries in public libraries and how are these values be best described in relation to the activities of the makerspace? (The Way Values are described at EPL)

RQ2: Are the Edmonton public libraries adopting and effectively materializing these values of libraries in their day-to-day activities and aspiring to preserve and maintain them within the scope of the makerspace? (The Process of Adopting Principles)

RQ3: How are makerspaces assisting patrons in exploring their potentials and aligning their duties with that of library values? (The Process of Application)

RQ4: How effective are EPL makerspaces operating in creating/adopting, maintaining and preserving the values of Edmontonians and that of the values of public libraries? (The Effectiveness of the System)

In this part of the Capstone Project, as I did in other segments too, I am intending to identify

the major issues pertaining to the traditional and new trends of makerspaces and the real values of contemporary public libraries with a particular focus on Edmonton Public Libraries. At this juncture, I also believe in explaining the process of generating pertinent information from different sources (the literature) and the techniques used in organizing them. I believe explaining this process will help readers understand makerspaces and the related issues with the major values of public libraries. This will help readers generate a vivid understanding of the focus and interest of my research. It is also worth mentioning here the challenges I encountered in obtaining the resources that directly match my research topic.

Accordingly, my literature review starts with an explanation on how the literature was identified and organized. It also explains the theoretical frameworks behind focusing on the topic and searching the resources. In addition, I included brief background on the research site. In the central part of the literature review, I will summarize and highlight pertinent debates and state my own opinions on the works of different scholars. In this regard, I will first start looking at the history and background of makerspaces. I will then move on to defining makerspaces from different perspectives and explain the new issues and concepts attached with this phenomenon. The maker movement is the other separate issue that deserves some explanations and some justifications. The final segment, which consumes a good deal of this section of my research, is dedicated to explaining the two major forms of makerspaces. The first one intends to explain makerspaces in school libraries. The second sub-topic, which is the focus area of my research, deals with makerspaces in public libraries. Future considerations are also highlighted at the end of the literature review.

2.1.1. How Are Resources Identified?

When I searched for resources, I did not limit my search to libraries and makerspaces alone. I did not either look only at the challenges and opportunities in establishing, maintaining and expanding makerspaces which was initially the topic of my project. Rather, I searched for some key phrases and words like: makerspace, maker movement, library and makerspaces, public libraries and makerspaces, current trends of makerspaces, making and hacking, values of libraries, history of making, modern makeovers, digital libraries, digital commons, public participation and participatory learning among others. In addition, on my second stage search, (as my topic shifted from the "issues and challenges in establishing, maintaining and expanding makerspaces" to "what the traditional and new trends of makerspaces are taken up in the real values of contemporary public libraries"), I specifically added new sources I believed to cement my stance and approach. The process was hectic and yet quite effective and useful. It

allowed me to identify relevant books, academic research, scientific articles, analytical journals and informative websites among others. I also used the snowball sampling technique, where I referred similar articles whenever I came across important sources in due course.

2.1.2. How Is Literature Organized?

It may sound logical to think that understanding only the concepts of makerspaces and their correlation with public libraries is sufficient for a project of this scope. However, different sources I explored so far suggested that, there are several segments and areas of expertise, which adds up to the concepts of makerspaces and public libraries**.**

Understanding the history of makerspaces, looking at their definitions and new issues, learning about the maker movement, values and trend of libraries (librarians), and makerspaces contributions to the social, economic and political well-being of the community are the areas I found that significantly contribute to my research project. Issues and challenges of the makerspaces within school libraries also helped me broaden my understanding and strengthen my topic. It creates an opportunity to both differentiating the two kinds of makerspaces (school/academic and public libraries) and to observe some new perspectives as a result of understanding this new set up.

2.2. Theoretical Frameworks on the Topic

The concept or the value of creating, making, building and exploring using new technologies is becoming a norm deep rooted in public services. Public libraries' makerspaces are no exception. There are instances where makerspaces become the core branches of public institutions. Public libraries are becoming the most popular venues to accommodate content-creation by members of the public. Public libraries in Edmonton also started to adapt this programming model where "users create, rather than just consume content" (Howard and Slatter, 2013, p. 272). EPL is adopting this new model (culture or value) of involving the public in creating their own content as opposed to only lending publications and other resources**.**

This leads to the theoretical framework I use in my study, called Users and Gratification Theory (U&G). Scholars trace back the emergence of this theory over 60 years and its predominant applications to specific fields like mass communication research. For Li et al. (2015), the theory started to be visible in radio communication field in the 1940s and "focuses on identifying the psychological needs of individuals that motivate their use of a particular medium in consumer market" (p.262). In other words, this theory describes how people are active in choosing and using media based on their specific needs. In terms of the selection of

mediums, users are aware of their needs and their behaviours. According to Karimi et al. (2014), this theoretical framework is effective mainly in examining the "how" and "why" of the "use of media to satisfy particular needs" (p.54).

2.3. Making and Makerspaces; History and Background.

As I philosophise on the concept based on my experience on literature and actual experience of makerspaces; I start to think that one key aspect that makes human beings distinct from other creatures is making as creation for God. When God stands first on the rank and takes the lead in the creation, God's replica man followed suit over the path through the skills and talent to 'invent'. I see the desire and aspiration to create, accomplish and share as a part of human nature that has stood there for ages. "Making is so central to what makes us human that the term Homo faber was coined to describe that sets us apart from other animals" (Dougherty, Conrad, & O'Reilly,2016, p.1). Hence, in line with this approach, I am deeply inspired with Rodgers & Roslund's (2014) vivid elaboration on how the process of making has been there for ages, at least in its informal way. For them, something we try to demonstrate in our kitchen or garages and yet fail to get the results because of limited resources are considered as parts and parcels of the processes of making. By default people involved could be characterized as "...makers without a space" (Rodgers & Roslund, 2014, pp.4&5).

2.3.1. The Origin of Makerspaces and the Makerspace Movement.

Before they appeared in their current forms and shapes, and start to effectively use digital media and emerging technologies in leaps and bounds, makerspaces have been around for centuries, assisting the day-to-day activities of people and fulfilling basic institutional goals. As historical accounts have described them "hundreds of years ago, [when] makers such as painters or blacksmiths had professional clubs called guilds", which could be considered as the basis for the current time makerspace (Rodgers & Roslund, 2014, p.14). Most scholars also believe the current makers' movement originated from craftworks in earlier times (Rosner & Fox, 2016, p.560).

A few decades back, the "hacker" movement created a firm ground for the currently emerging popular revolution of our time that is based on the legacies of craftworks, but applied to digital technologies. In fact, a German-based technology club called Chaos Computer, founded in the 1980s, first promoted the concept and practice of hacking. The hacker movement was first initiated by renowned German engineers who tried to build and introduce what is called an "open information infrastructure" culture (Rosner & Fox, 2016, p.560). The term "open" is

widely used in other contexts to emphasise public access and participation. For instance, in public libraries, an open-access library system refers to a process where borrower's card is provided free to everyone (Babiak, 2013, p.23).

2.3.2. Current Trends, Developments and Rhetoric of Makerspaces.

At present, makerspaces are serving diverse members of societies, while their purposes have started to expand and get popular among different institutions. Due to their ever-increasing demand and their successes over the past few years, experts are considering the appearance and expansion of makerspaces as a new era of "industrial revolution", and different institutions are embracing them full-heartedly (Willett, 2016, pp.313-4). For Corrigan (2014), makerspaces are formulating themselves in a manner that enables the community to "quickly gather information on what others are doing" and at the same time provide the chance for "individual ideas and creativity" (p.217). In the process of setting up makerspaces, scholars like Einasto (2015) advise libraries and other institutions to consider the basic "theoretical and cultural-political comprehension and reassessment" (p.247). Hence, Einasto (2015) applied Marshal McLuhan, Denis McQuail, Yuri Lotman and Michel Foucault's communication theories on "disciplinary power and governmentality"; a concept that guarantees the power of libraries over its users mainly in imposing access over knowledge (p.253).

This is where concepts like monopoly, power or impositions of governments on people comes and democracy is buried. In this context, libraries dictate the society as opposed to responding to the real demands of citizens. Fourie and Meyer (2015), on the other hand, believe that makerspaces are usually established with the intention of providing "things of making and spontaneous informal learning" in libraries (p.519). Fourie and Meyer (2015) also state that these social spaces in libraries are creating an opportunity for the public to develop and produce their own materials using resources that are not easily available in their homes (p.520). Today, "what we once called hobbyists, tinkerers, artists, inventors, engineers, crafters -- all of them are makers" (Dougherty, Conrad, & O'Reilly, 2016, p. xv).

2.3.3. The North American Makerspaces; Old and New Trends.

The first modern North American makerspace was observed in the USA. LeGrand (2013), who considers makerspaces as places to learn from one another, collaborate and share ideas believes "the first makerspace to appear in a public library was at Fayetteville Free Library in New York State" (p.16). With regards to Canada, the writer mentions some of the makerspaces created in "Victoria, Vancouver, Calgary, Edmonton, London, Hamilton, Kitchener, and Guelph, as well

as two in Winnipeg and four in Toronto" prior to 2013, and other newly established makerspaces all over the nation.

The appearance of similar concepts and forms could however be traced back for couple of decades. Loertscher (2012) consider makerspaces as places to "…do and express all kinds of both personal and collaborative products" including designs, entrepreneurial ideas and technological innovations (p.45). In the case of the old forms and the new appearances, Loertscher (2012) compares two eras in time: (1) how kids used to create posters, slide shows and morning shows with sound studios back in the 1960s; and (2) very recently patrons start to create videos, do mash-ups, build models, create dazzling presentations and turn their projects into digital formats (p.45).

2.3.4. Agreed Definitions and Widely Accepted Concepts of Makerspaces.

In more specific terms, scholars describe makerspaces as "community shared facilities with tools and equipment such as 3D printers, enabling participants to learn from the process of designing and manufacturing their own creations" (Corrigan, 2014, p.216). Makerspaces are also considered as places within the context of a library, which allows interested patrons to learn new skills and create tangible projects related to new and emerging technologies (Kiser, 2014, p.55). Other scholars describe the space interchangeably with "hackerspaces, fab labs, or media labs" while still agreeing on the fact that it is a "collaborative and creative" venue (Barniskis, 2014, p.6).

For scholars like Bagley (2014), makerspaces are awkward because patrons have demands for more help rather than simply confronting the sophisticated technology and the abundant information from different sources (2014, pp.2-4). Basically, Bagley (2014) believes that makerspaces "… are set as places for groups to come together to work and learn, pooling their mental resources" (p.1). Some researchers in fact fully agree on their role in fostering creativity and smoothly transform the library set up into the computer age (Barrett, 2014, p.44). EPL's CEO Linda Cook, who retired in 2016, also has some aligning philosophies. As it is mentioned in Babiak's (2013) book, she called for libraries to turn from places of information to places of culture.

Developing one's own resources, like self-publishing a book, learning how to make a film, sharing ideas, and developing a project with others are some of the trends she wanted to observe. "We have to be ready for that [kind of activity], provide space for it, and develop a business model that works for us" she said once (Babiak, 2013, p.200).

2.3.4.1. The Concept of Hackers in the Context of Makerspaces.

Unlike what most people think, the word "hacking" has a positive connotation in the context of makerspaces. In the makerspace context, most hacking is perfectly legal. Today a "hack" or "hacking" is a term used describe "any quick, functional fix to a problem or a need, such as using a book to prop up a computer" (Rodgers & Roslund, 2014, pp.12 & 13). On the same note, "what we once called hobbyists, tinkerers, artists, inventors, engineers, crafters -- all of them are makers" (Dougherty, Conrad, & O'Reilly,2016, p.xv).

Makerspaces are viewed, interpreted and explained in different ways depending on their services and applications. I found the way they are explained in terms of context to be very interesting. Scholars agree that makerspaces in libraries involve many issues but there are some key factors that binds many things together. Makerspaces in libraries involve people, tools, technologies, and structure. The concept is all about making (Burke, 2014, p.xv). In the context of makerspace, the term hackerspace is used to refer to something positive, as opposed to the current day negative implications of that term. Computer hackers are users "who are dedicated to learn about computer system", individuals who use the space as a venue "to talk about their individual projects, suggest solutions to one another, and then perhaps collaborate on larger programing efforts" (Burke, 2014, p.3). Currently, making is "the process of being transformed by technology into something different from the making that existed before" (Burke, 2014, p.9).

2.3.4.2. Makers Movement and its Key Values.

With this emerging phenomena, there are values under construction. Here are the major values I identified in the literature. I have labelled them as the "ten commandments of the makers' movement (the 'arc' of the makerspace)", based on the views of contemporary scholars in the field:

1. The Makerspace arose to "combine digital tools and open-source sharing to create physical and digital objects" (Burke, 2014, p.16).
2. The most incredible library makerspace is "not a creation unto itself; it needs to reflect the interest of the library's community" (Burke, 2014, p.21).
3. Users or makers as they are called "love to create, tinker, and play with the world and the resources around them" (Rodgers & Roslund, 2014, p.6).
4. Today "the desire to make stuff by hand hasn't gone away. Makers continue the long tradition of tinkering with, changing, and improving their inventions as well as things made

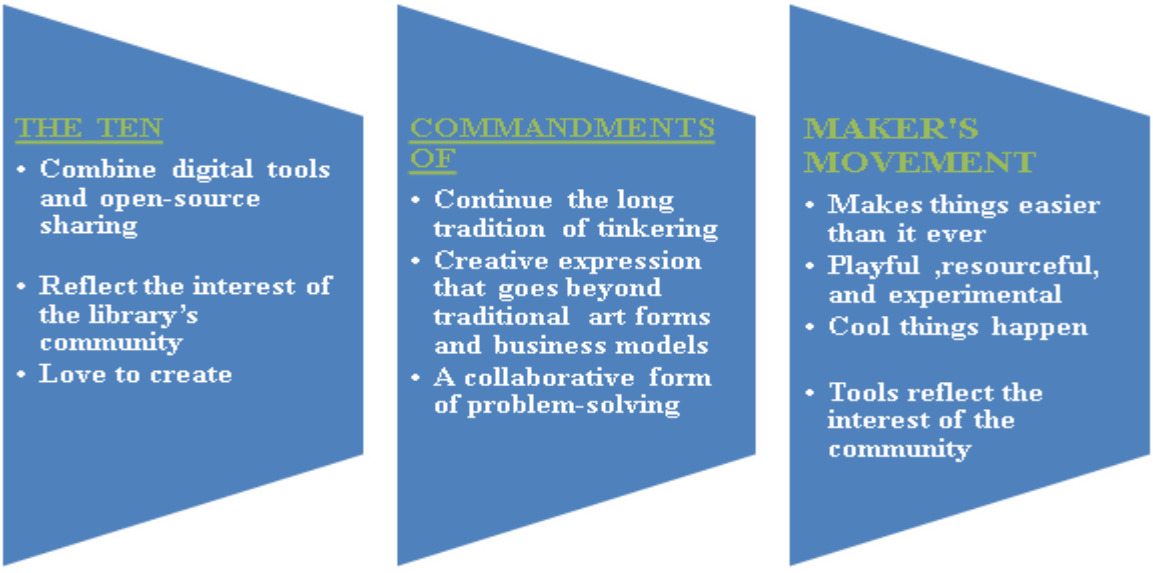
by others"(Rodgers & Roslund ,2014, p.7).

5. The Makerspace is a platform "for creative expression that goes beyond traditional art forms and business models" (Dougherty, Conrad, & O'Reilly,2016, p.xv) .
6. "It is a collaborative form of problem-solving, from the practical to the hypothetical, leading to new products, new ways of learning, and new ways of doing science" (Dougherty, Conrad, & O'Reilly, 2016, p.xv).
7. Making today is easier than it ever was. "The tools are better, with software reducing complexity of many tasks. If you want to make, there has never been better time" (Dougherty, Conrad, & O'Reilly,2016, p.xvi).
8. "Makers are playful, resourceful, and experimental. They not only help themselves but they help others" (Dougherty, Conrad, & O'Reilly,2016, p.xvii).
9. "In fact, really cool things happen when makers combine materials and ideas from different kinds of skills and tools" (Rodgers & Roslund, 2014, p.9).
10. "The kinds of tools found in makerspaces reflect the interest of the community" (Rodgers & Roslund ,2014, p.6)

Here is how I summarized these values in just three boxes:

Figure 2. 1: Public Library Makerspace Major Values (Commandments) Posters -

"The Three Arcs of the Makerspace"



2.4. The Makers Movement.

It is very hard to detach makerspaces' ideals from those of the maker movement. They are both believed to encourage creativity, innovation, research, educational activities, and community engagement. Scholars in fact argue that makerspaces could be taken as the subset of the maker movement. Martin (2015), for example, describes the maker movement as a process that "represents a growing movement of hobbyists, thinkers, engineers, hackers, and artists committed to creatively designing and building material objects for both playful and useful ends" (p.2). Martin (2015) justifies and elaborates this concept using three key expression (1) the "digital tools" that help facilitate the making of projects; (2) the "community infrastructure" like online resources, the space and events; and (3) the "aesthetic principles" of considering the platforms as common places within the community.

As I go deeper into reading and understanding the maker movement, I found other correlations with the ideals of makerspaces too. Makers in fact "share a mind-set – and that's why the Maker Movement has emerged as a global counter cultural phenomenon, inviting everyone to join in and make something. It is this generation's rock-and-roll, a contagious DIY spirit that echoes the "do your own thing" mood of the 1960s, captured in the song by The Mamas and The Papas that says, "Make your own kind of music/Sing your own special song" (Dougherty, Conrad, & O'Reilly,2016, p.xv).

Viewing makerspaces in the eyes of the maker movement, we see how these models provide a fresh perspective and start to change the process of re-evaluating their role in different institutional setups. One of the documents from the USA, for example, comes up with "a brief overview of the maker movement and its connection to public libraries, focusing on the experiences of the Louisville Free Public Library of Louisville, Kentucky" (Dixon et al., 2014, p18). This document presents the early experiences of makerspaces such as "…filmmaking, video game creation, and other forms of digital storytelling". Such experiences, according to this analysis, leads to categorizing makerspaces into three major divisions: (a) dedicated or enterprise; (b) travelling or wheel-out; and (c) online (Dixon et al., 2014, p.18). With such rhetoric, in view of their interpretation, makerspaces in public libraries, which is the focus of this research, falls under the dedicated or enterprise type (Dixon et al., 2014, p.18).

In what is labelled as the open source maker moment, in line with the ideals of the 1970s punk movement, some scholars believe that even amateurs can become agents of change. Richardson, Elliot and Haylock (2013) analyze how different production (making) sites started to recognize contextualizing their work with new technologies. They see "the possible impacts

of distributed making on the urban landscapes" (2013, p.141). They view this through three angles: domestic, industrial and retail zones. According to these researchers these adjustments "…have been conceptualized as 'open design'" (2013, p.141) concepts.

The youth in North America, mostly students, are currently actively participating in making and other community development programs. These programs are assisting the youth, especially those growing in poverty, avoid the barriers in learning STEM (i.e. Science and Engineering fields) (Barton, Tan & Greenberg, 2016). Litts' (2014) well-refined doctoral thesis also explains how the maker movement is transforming the teaching learning process in schools by creating an active platform that encourages the community to both "build, design, and innovate" materials and "share" their products.

Maker movements are also hugely contributors to the economy. Thilmany's (n.d.) survey conducted in the US describes this movement as "the third-wave industrial revolution". Quoted as the key informant, Martha Stewart used this term "…because it celebrates the values of self-reliance, skilled labour, and creative expression" (Thilmany, n.d., p.28). The article refers the 2013 *State of the Maker Report*, which "estimates that about 135 million US adults are makers", of whom 90 percent have been enjoying the process (p.28). This survey also comes up with important statistics like: (1) "The crowdfunding investment market expected to hit 92 billion USD by 2025" (p.28); and (2) "3D printing industry is poised to grow to 4 billion USD" by 2025 (Thilmany, n.d., p.29).

In addition, about "three million people pledged over 480 million USD to crowdfunding projects in 2013" (p.29).

When it comes to Canada, there are institutions that encourage the use and advancements of digital tools. Canada's Centre for Digital and Media Literacy (CCDML) is one such institution. This centre provides digital and media literacy resources to citizens (mostly youth) who are actively participating in digital media. Today's youth, describes one of the recent articles at the website (Digital Literacy Fundamentals), are called 'digital natives' (CCDML, 2016). The article describes how Canadian youth live in an interactive, "on demand" digital cultures. For this contributor, instant messaging, photo sharing, texting, social networking, video streaming, and mobile Internet use are all examples where youth have led the charge in new ways of engaging online (CCDML, 2016). Similarly, the Edmonton New Technology Society (ENTS) offers its members a place to create, build, repair and work on projects through financial and other assistance (ENTS, 2015).

Despite their increasing demands and relevance, maker movements also witnessed some challenges, mostly attached with issues of inclusiveness. As Moeller, Bastiansen, Gates, & Subramaniam (2015) describe, "the maker movement is showing signs of gaining popularity as it matures" but still "…many products do not include accessible design, which hinders the significant population of potential inventors who have disabilities" (p.33). According to one of the key findings of this research; "accessible makerspaces make it possible for anyone to exercise creative endeavours by providing equipment and materials that encourage innovation regardless of ability" (Moeller et al., p.33).

This movement is also changing who gets to make things, what gets made, and where and how things are made.

It is a prototyping revolution that seems to follow from the desktop publishing revolution, allowing more people to turn an idea into tangible object. Economist Jeremy Rifkin called it "the third industrial revolution"; *Wired* editor Chris Anderson called it "the new industrial revolution" (Dougherty, Conrad, & O'Reilly,2016, p.xx). For these writers, the Makers movement also signals:

> A societal, cultural, and technological transformation that invites us to participate as producers, not just consumers. It is changing how we learn, work, and innovate. It is open and collaborative, creative and inventive, hands-on and playful (Dougherty, Conrad, & O'Reilly, 2016, p.xxi).

By the same token, Anderson (2005) argues that current western societies are striving towards transforming the societies dominated by "one cultural cannon" to that of the humanity where multicultural expressions and values are tolerated and supported. Anderson (2005) considers this as a revolution which could predominantly be materialized using public libraries and applications of modern technology (pp.430-434).

2.5. Forms and Features of Makerspaces. In terms of their specific format makerspaces are now appearing in different models. Maketec is one such model. According to Bar-El & Zuckerman (2016), this is a model designed as "…. public drop-in for children, run by teens promoting making and socializing opportunities for girls and boys of ages 9-14" (p.380). This model is also considered as a "culture of self-driven learning" without formal instructors; "…autonomy afforded by the space" as opposed to the "regular learning settings" and a place that balances "between too much and too little instruction" (Bar-El & Zuckerman, 2016, p.384). The following discussion covers some of the common forms, settings and features of makerspaces.

2.5.1. Mobile Makerspaces.

Mobile makerspaces are the types of makerspaces taking roots and appearing with both challenges and opportunities. As Moorefield-Lang (2015) describe, these types of makerspaces are preferred for their simplicity and convenience and yet they come with some challenges. These challenges are directly attached with the "mode of transportation: buses, cars, trucks, and vans all require gasoline and patrol, and that requires funding…" (p.469).

Horvath and Cameron (2015) use two metaphors to elaborate the true essence of makerspaces; the gym and garage. For these scholars, makerspaces are neither gyms (where you pay to be a member) nor garages or basements (where you act individually rather than with the community). Hence, for Horvath and Cameron (2015) "makerspaces are more about the community than the tools" (p.59) and anyone can establish them investing from "almost nothing to millions of dollars in construction" (p.71). However, there are scholars who believe that there should be instances where "…libraries need or must consider funding, staffing, promotion/marketing, and the demographics of the interested users" (Kiser, 2014, p.55).

Howard and Slatter (2013), whose research helped reshape my capstone project format, address two questions: "...the (a) issues and (b) challenges of creating makerspaces within Australian public libraries". They highlighted the "substantive benefits" of makerspaces. These include community engagement, development of new forms of library and transforming public libraries and their role as 'uncharted territory' and the concerns over copyright, liability and ownership (Howard and Slatter, 2013, p.277). They suggest, "forging partnerships, the need for awareness and advocacy and value creating" in creating makerspaces as the best approaches of creating makerspaces (Howard and Slatter, 2013, p.279).

In summary, best practices in makerspaces currently reaffirm the importance of "professional development" both in establishment and successful implementation of an "authentic context of making" (Oliver, 2016, p.160). In fact, librarians have now developed a strong interest on "user or maker agreement" (a document that leads library patrons towards common goals), to smoothly operate their tasks in makerspaces and effectively serve the public (Moorefield-Lang, 2015, pp. 361-365).

2.5.2. Academic Libraries' Makerspaces.

One of the fertile grounds for makerspaces is the academic library. In the advent of the 21st century, university communities at all levels are effectively utilizing these facilities. In this

regard, veteran librarians are of the opinion that makerspaces should create learning and creating opportunities for students and teachers with diverse interests. One renowned librarian, Ackroyd (2014), for instance recently came up with a preliminary idea "to convert the equipment room into a media lab, thereby affording students and staff the opportunity to use newer technologies to create digital products" (p.25). Ackroyd's idea basically deals with transforming makerspaces into spaces, which possess "utility, comfort, and flexibility", and making it "as a display area for performance-based lessons" (Ackroyd, 2014, p.27).

Recent research also reveals that academic libraries contain some distinctive features. With the intention of identifying if makerspaces could work in academic libraries, Burke (2015) found out their stronger impact serving as a platform for creativity like website creation, digital photo arrangements, carrying out some programs, apps and games. Appearing with different names and designs, these spaces continue to become popular among academia. Tinkering Studio; a dedicated "making" space at San Francisco Exploratorium is, for example, meant to help patrons "design and make things themselves" and it is "a new kind of public learning experience" (Petrich, Wilkinson & Bevan, 2013, p.2). People spend time "constructing, testing and tinkering with their projects" (p.4). According to these scholars, "...engagement, intentionality, innovation and solidarity are the basic principles of Tinkering Studio" (Petrich, Wilkinson & Bevan, 2013, pp. 4-5).

Some scholars also believe the introduction of makerspaces to the academic environment to come up with reforms and developments in their activities. Kompar (2015), for example, comes up with some core principle of transformation; "change in the form of a systemic, participatory evolution of the school library must be planned, shared, slowly implemented, communicated, and celebrated" (p.20). The reform is basically essential as the role of these spaces is transforming mainly in assisting innovation and supporting "… by providing access to a wealth of information, resources, and technology to anyone …" (Purpur et al. 2016, p130). In addition, some "multidisciplinary" makerspaces in the academic contexts are also intermingling the formal learning with the informal socio-cultural activities of communities (Owens, 2014). Along with this interest for creating, maintaining and expanding makerspaces, some issues and challenges are appearing in leaps and bounds.

In some instances, the experiences of students in makerspaces are not only confined to their own physical environments. In some academic environments, makerspaces are also building and addressing the already existing less known social connections and minimal contributions (Litts et al., 2016, p.1041).

These platforms are helping the youth "…connect and learn in online maker communities and design online maker tools for learning" (Litts et al., 2016, p.1041). This movement is also leading to "collaboration and willingness to try new things" (Luthy, 2015, p.7).

New content creation concepts like the DigiBook MakerSpaces are also encouraging early learning systems and adult literacy in China. According to Man, Bei, Bo, & Gang (2014), this approach is helping readers "…to create and publish original content" by providing "simple writing tools that are integrated with an easy to use digital publishing platforms" (p.1). These issues and challenges that professionals face are among the most interesting issues I came across in exploring the issues and challenges of makerspaces.

In some contexts, lack of resources, including human resources, are not hindering the implementation of makerspaces. The Nigerian University case is one good example. The university community is implementing the basic objectives of makerspaces despite some challenges including absence of proper set ups. According to Okpala (2016) the library with its only "theoretical concepts of makerspace" at the University of Nigeria Nsukka is currently serving as "…the heartbeat of the university ...by ensuring equal access to information" (p.6). This mobile makerspace "has practically started to create a movement" (Okpala, 2016, p.7).

2.5.3. Public Libraries' Makerspaces.

Public library makerspaces, the main focus of this study, are now becoming very popular and attached with multifaceted issues and challenges. Starting with the core principles enshrined in some internal documents of this research site, EPL. In this library, makerspaces have built programming ideas, staffing, 3D printers and Espresso Book Machines.

With this move, these makerspaces are adequately responding to people's need for new technologies by allowing people to create their own print and audio-visual products, providing access to materials, tools, and technologies to allow for hands-on exploration and participatory learning (Hordal, 2013, p.3).

On the other hand, Klipper (2014), a Youth Services librarian, consultant, and promoter believes that makerspaces are both the "rage in the library world" and "wonderful ways to introduce new technologies and to provide new outlets for creativity, learning, and community engagement" (pp. 5&6). Library accessibility and the use of wheelchair via a ramp is one scenario she used to illustrate her own personal challenges to access libraries, which she again said could be addressed through innovations in makerspaces.

Koh and Abbas (2015) also view makerspaces in public libraries as learning labs, which serve as favourable environments for the use and application of traditional and contemporary technologies. Their research found out that makerspaces are assisting patrons to "interact with mentors and peers, and engage in creative projects" and opportunity for enhancing competencies and skills (Koh and Abbas, 2015, p.114).

Describing the role of teacher librarians, Loertscher (2012) magnified how makerspaces have recently started to help different sections of the society as a trend to encourage the making process in public libraries (p.45). This trend, according to this article, has cemented the process of transforming libraries into multimedia centres i.e. documenting "photograph records, sound filmstrips, and 8-mm silent loop films" (Loertscher, 2012, p.45).

Makerspaces of this form are assisting children to make "hand-drawn transparencies, posters, and to use different types of cameras to create slideshows" (Loertscher, 2012, p.45).

Accessibility is one of the pressing issues in the public libraries. Timony's (2015) case study, for instance, investigates the basic roles makerspaces play in upholding "accessibility for and inclusion of library patrons with disabilities." (p.55). In his recent study, Timony (2015) highlighted the contributions of makerspaces mainly in creating a culture of "creativity" and assisting people with disability mainly in gaining "both accessibility and innovative solutions from the maker movement" (pp. 55 & 56). The research found that makerspaces have immensely helped people with disabilities by introducing "Adaptive Technology Program". In addition, makerspaces have been helping the community in "bringing innovative technology support, training, and events that act as models for further innovation in the community" (Timony, 2015, p.57).

2.6. Summary: Contribution to the Literature, Limitations and Future Considerations

This Capstone Project passed through a number of stages from its inception to the current level. The research design includes input from instructors and cohort members, followed professional standards and principles, and most importantly supervisor's close follow ups. Titles were changed; research methods and strategies were adjusted; more sources were referred in the due course and most importantly the standard was constantly improved in the process from beginning to the end. Here is the summary, some of the ideas/points on the contributions of this piece to the literature; the limitations I encountered as I went through all the stages; and future considerations for myself and other researches following suit.

2.6.1. Summary of Literature.

In a nutshell, the makerspace, at least in its new shape, is a recent and yet very vibrant and dynamic phenomenon. The technological, economic and social effects of makerspaces have now started to be visible among different sectors and communities. As an emerging movement, it is appearing within diverse social settings and faced with peculiar challenges.

This new culture is also creating opportunities and some new values/trends that the 21st century technological, innovative and structural transformations have to offer. As to my impressions so far, makerspaces are affecting many people and getting integrated with several institutional setups. They are also appearing with different forms, objectives, missions and visions - taking a leap in creating and maintaining organizational values. Their services, significance and values are mostly dependent on their contexts, which are extensively summarized above.

The makerspaces at public libraries, which are the focus of this project, look to be very close to the heart of the community and immensely add to the needs of patrons, and also reflect traditional and contemporary cultures or values of public libraries. My literature search found that Makerspaces in public libraries reflect the following basic roles: (a) responding to people's technological needs; (b) serving as new outlets for creativity and technological innovation; (c) assisting community engagement; (d) smoothening the informal teaching learning process; (e) serving as learning labs; (f) becoming venues for multi-media center; (g) diversifying their services and working on inclusiveness; and (h) trying to help people with disabilities with adaptive technological programs.

These along with other major trends and roles that the both makerspaces of public and other forms of libraries, are introducing new ways to reflect traditional and modern values of libraries. These changes are mainly driven by the libraries themselves and the patrons who are voracious consumers of the services.

It is against these backdrops that my project will dwell on investigating and organizing a strategic research design to find out if these values are really fulfilled. My research applies a "triangulation" approach where I get the views of patrons, policy makers and real service providers (technicians) at Edmonton Public Library Makerspace. My research is mainly grounded by Users and Gratification Theory (U&G); which intends to identify the psychological needs of individuals that motivate their use of a particular medium.

2.6.2. Contribution to the Literature.

My Capstone Project has initially drawn its format from Howard and Slatter's (2013) research entitled "A place to make, hack, and learn: makerspaces in Australian public libraries". This research helped reshape my Capstone project format by addressing two questions: the (a) issues and (b) challenges of creating makerspaces within Australian public libraries. They highlighted the "substantive benefits" of makerspaces. However, after I had an intense discussion with some instructors at MACT, University of Alberta, especially Drs. Gordon Gow and Thomas Barker, I added two basic components into my research: maintaining and growing. My title then turned out to be – "Issues and Challenges in Creating, Maintaining and Growing Makerspaces in Edmonton Public Libraries". Despite its new branches and perspectives, the limited research conducted on makerspaces on EPL also make my work fresh.

Having exposed my research to many people outside the contexts mentioned above, I further reshaped my research changed the title to: "How do the traditional and new trends of makerspace translate the real values of contemporary public libraries: The Case of Edmonton Public Libraries". I found this topic to be the perfect way to tie up essential ideas pertaining to the makerspace. This approach actually gave me a perfect lens to look at what libraries mean to the community and what they need to deliver through their makerspaces.

2.6.3. Conclusions and Limitations.

As the phenomenon (makerspace) in its new form is new to both the world and Edmonton, scarcity of resources has been inevitable. However, the interactions the author had with some librarians, instructors and fellow cohorts at EPL and the University of Alberta gave the author the chance to explore predominantly more online and some offline sources. As the first attempt, the author exhaustively looked through the different sources and came up with newly released materials especially research papers. As the list can tell, most of the sources are less than five years old and I even used good deal of materials from 2016. In short, I had some loopholes when I started writing my literature review. However, I kept this process as an ongoing one, which turned out to be both achievable, and a fruitful process.

2.6.4. Future Considerations.

My focus on makerspaces is limited to public libraries. Such research could be duplicated in other institutions embracing the concepts of makerspace. In addition, due to their contribution

for public participation, collaboration and economic advancement, many research ideas could be generated from makerspaces of different forms and objectives. Hence, I consider duplicating this research in other makerspaces. I hope that other researchers will take my research as a good source of information and consider duplicating these topics in different settings.

Chapter 3. Methodology

The contemporary environment is becoming more convenient for the use and applications of digital technology. These opportunities have created a fertile ground for many to become makers. What used to be called hobbyists, tinkerers, artists, inventors, engineers and crafters are now considered to be makers (Dougherty, Conrad, & O'Reilly, 2016, p.xv). Institutions are now extensively working in adopting the concepts of makerspaces. As my literature review revealed, the culture of makerspaces is currently taking root in different organizations including libraries. Institutions, including commercial firms, are currently integrating this model in their programs with the firm belief that they encourage creativity. This is the reason this phenomena is considered by some scholars as the new era of "industrial revolution" (Willett, 2016, pp.313 & 314). Makerspaces are also assisting businesses by allowing a quick way of gathering information (Corrigan, 2014, p.217).

In public libraries, makerspaces are supporting patrons to "interact with mentors and peers, and engage in creative projects" and in creating an opportunity for enhancing competencies and building skills (Koh and Abbas, 2015, p.114). In a way, this trend is leading to familiarizing new values among libraries by exhibiting, documenting, preserving and maintaining their activities. EPL's largest branch, the Stanley A. Milner Library, in Edmonton (which is now in 'exile' at 10212 Jasper Avenue for a three years renovation project -2017-2019), where my research project is based, has adopted, continuously implemented and updated (maintained and expanded) the basic concepts of makerspace. EPL claims its makerspace is a "creative and collaborative environment where ideas are shared, expanded and brought to life" (https://www.epl.ca/faq/library-resources/#makerspace-faqs).

Based on my review of literature about the emerging trends and practices of makerspaces, I will examine how they are taking shape (or not) at EPL. In this context, my project poses four basic overarching questions aimed at learning how the focused group patrons are using the makerspace, and what they think about it, and comparing their answers to the EPL's strategic plan, related policies and the thoughts of the current management running the library:

RQ1: What are the major values of public libraries and how are these values best described (translated) in relation to the activities of the makerspace? (How EPL make a reference to values Values).

RQ2: Is the Edmonton public library adopting and effectively materializing these values of libraries in their day-to-day activities at the makerspace? (The Process

of Adopting)

RQ3: How are makerspaces assisting patrons in exploring their potential (as expressed in library values)? (The Process of Application)

RQ4: How effective are EPL makerspaces in supporting Edmontonians in adopting, maintaining and preserving the traditional & contemporary values in reference to makerspace services (The Effectiveness of the System)

These queries will be posed to an EPL (makerspace) executive as a way of generating information on makerspace and understanding key concepts to be used as parameters to be tested with users' responses. These questions possess some underlying elements like:

- What are the major challenges in implementing the concept of Makerspace at EPL?
- What is Makerspace adding to the library? How has it changed EPL's service delivery in line with its vision and mission statements?
- What does the digital literacy movement in Alberta and the Digital Literacy Initiative (DLI) within EPL look like, mainly with reference to the makerspace?

In this chapter I will extensively discuss my research design based on the above stated framework. Accordingly, I will first and foremost briefly explain the key components of my research design: the goal, the conceptual framework, research questions, method and validity. As part of providing detailed information, I will also briefly explain how I have identified my informants (the users and an EPL executive).

Though the actual users of makerspace resources and systems are one set of informants, I also decided to conduct a one-on-one interaction with an EPL management team representative. The whole idea of collecting my data is finding out how the new trends of makerspaces are translating the values of contemporary public libraries within EPL. I believe users' experiences in this setting provide genuine, appropriate and detailed information.

Based on these given backgrounds, this chapter will thoroughly discuss the type of research design I am using. This chapter also looks at the techniques and the selection criteria for recruiting my interview participants. Additionally, I will briefly explain my research instruments; the procedures I go through to process the inputs and the system I go through in processing my data. The limitations I encounter, future considerations and the summary will also be placed at the final segment of this chapter.

3.1. Features of the Research Design.

Qualitative research methods have some peculiar features. Some scholars consider this to be disadvantageous. Others have the opposite view. They say it is the most favourable technique to conduct certain types of research. Considering my research question and what I aspire to investigate, I favour this method and apply it here. Some renowned scholars justify their constructive premises towards qualitative research method by breaking its basic components. I found Joseph A. Maxwell's (2012) theoretical framework in his book *Qualitative Research Design: An interactive approach* to be very practical. Maxwell (2012) says research does not commence its approach with a predetermined sequence of steps but rather evolves by making "interconnections and interaction among the different design components" (Maxwell, 2012, p.3).

3.2. Research Design - The Qualitative Method

3.2.1. Qualitative Research

As stated above, I chose a qualitative research method as it is a perfect fit for addressing my research question. It is in fact challenging and yet intense and rewarding. Qualitative research, as I perceive it, deals more with people's feelings, perceptions and interpretations rather than something we can count. That makes the task very daunting. Scholars believe that all qualitative researchers share two important areas of interest. These interests are: (1) a mutual respect for intricacies associated with the life of human beings; and (2) a desire to incorporate quality features into their research designs to maximize the ultimate usefulness of their research outcomes (Roller & Lavrakas, 2015, p.v). It is also apparent that qualitative research embraces the complexities of human thought and behaviour. As experts in the field also agree, this type of research method accepts and welcomes the challenges generated during the research process.

These challenges are incorporated or attached with "...what people say, what they do, and how they think" which are the results of a mosaic of influences that contributes to individuals' life events (Roller & Lavrakas, 2015, p.1.). In addition, qualitative research methods are unique in their subjective accounts and rich details which will give me room for scrutinizing this subjective idea: library values vs makerspaces trends (Miner-Romanoff, 2012, p.1).

Identifying, connecting, and finding meaning in these often vague, fleeting qualities of human reality comprise what it means to conduct a qualitative research study (Roller & Lavrakas, 2015, p.2.). Likewise, I will apply a research design that is open and involves "tracking" back and forth between the different components of the designs and at the same time testing and

following up their interrelations between one another (Maxwell, 2012, p.3).

3.2.2. Qualitative Description.

Participants in qualitative interview research methods are believed to actively participate in the process of providing information and making meaning out of a certain context (DiCicco- Bloom & Crabtree, 2006, p.314). On the other hand, the stages of relationship between the researcher (interviewer) and the interviewee basically incorporate apprehension, exploration, co-operation and participation (ibid, p.316). As a researcher who was highly attached to the site (the EPL makerspace) for about three years and interacted with customers on a daily basis, the initial stage is not of concern to me especially in purposely recruiting interviewees. I believe this experience along with this data gathering strategy will give me the chance to have full control over the interaction with the interviewees and obtain their cooperation (ibid, p.317).

In addition, by applying qualitative description, I will take the opportunity to peel new layers of questions or ideas during my interaction with the interviewees. As scholars in the field clearly elaborate, the kind of inquiries made to the interviewees using these techniques are generally organized around a set of predetermined open-ended questions, with other questions emerging from the dialogue between interviewer and interviewees. This approach results in obtaining valid and concrete outcomes (ibid, p.315). The following discussion outlines my data gathering technique.

3.3. Data Gathering Techniques.

The predominant technique I use for collecting my data is the interview. Semi-structured in-depth interviews are the most widely used interviewing format for qualitative research. The interviews can occur either with an individual or in groups that lasts from 30 minutes to several hours and in my case an individual in-depth interview is the procedure intended (DiCicco- Bloom & Crabtree, 2006, p.315). I chose an individual one-on-one in-depth interview with a firm belief that it will adequately provide me with the necessary information related to my research question (ibid, 2006, p.316).

In the case of choosing between a group and individual in-depth interviews, I picked the latter for it is the widely accepted technique and allows researchers to understand and delve deeply into social and personal matters (ibid, 2006, p.315). This technique also helps me understand what patrons believe to be important and how their activities and the resources they use at the makerspace translates the emerging values of public libraries. Scholars also believe this type of

technique has the advantage of discovering the shared understandings of a particular group who should be fairly homogenous (DiCicco- Bloom & Crabtree, 2006, p.317).In addition, selecting participants in an in-depth interview is based on an iterative process referred to as "purposeful sampling that seeks to maximize the depth and richness of the data to address the research question" (DiCicco- Bloom & Crabtree, 2006, p.317).

3.3.1. Participants.

In terms of selecting the participants to be interviewed, active resource and program users of the EPL makerspace are my ideal targets. These participants meet the major objective of this research: to learn how patrons of the EPL makerspace feel about it. As scholars in the field agree, the basic research question needs to be sufficiently focused in this kind of research technique so that the sample group of participants will adequately share their experiences about the topic. It is also well agreed among pertinent scholars that the basic research question may well serve as the first interview question, but between 5 and 10 more specific questions are usually developed to delve more deeply into different aspects of the research issue. Most importantly, the situations on the spot dictate some of my approaches and further actions. This is also in accordance with scholarly evidence which states that "...the iterative nature of the qualitative research process in which preliminary data analysis coincides with data collection often results in altering questions as the investigators learn more about the subject" (DiCicco- Bloom & Crabtree, 2006, p.316).

3.3.2. Criteria for Selection.

I used some of the library's working procedures as a means to recruit my informants. Edmonton Public library has an open data system where anyone could access information attached to the library. In the case of the makerspace, the sophisticated multi-purpose computers (DELL and Mac), are strictly reserved for creating or making, addressing professional problems and sharing personal and group projects. The space has professionals who help patrons to design, revise, make, share and preserve their projects. Makerspace users at EPL are very distinct and regular.

With this this background, my informants are strictly makerspace customers. They are makers, users of makerspace resources and active participants of the programs at the makerspace. My informants are recruited only from this group. In selecting my informants, I first made an announcement through posters. Participation in my research is on voluntary basis. Everyone in the space is welcomed and granted freedom to withdraw anytime if they wish to.

3.3.3. Groups (members) not to be considered.

"Active" is the term I use in selecting my five intended users of EPL's makerspace. Active in this context means the number of days my possible informants come to the makerspace, the number of hours they spend and the types, numbers and quality of projects in which they are involved or make. This is done through three different ways. First, I apply my personal observation (the bond I created with them over three years). Second, I ask their consent to reveal to me the products they created or made since they started using the facility. Third, I consult and generate information from the technical staff as to how often the customers use the makerspace resources before asking.

3.4. Site Recruitment.

Out of the over twenty branches across Edmonton, the Stanley A. Milner library branch is one of the oldest and is currently serving as EPL's headquarters. According to the Library's Community Profile (2014), Milner, which is temporarily at 10212 Jasper Avenue for three years between 2017-2020, provides service to a total of seven communities: Boyle Street, Downtown, Glenora, McCauley, Oliver, Riverdale, and Rossdale (p.3). Though Milner is now temporarily moved to Enterprise Square (10212 Jasper Avenue) as of January 2017, it is home to all the tools, expertise and spaces of EPL's makerspaces. In addition, it is anticipated that Milner's revitalization project, which costs over $62 million and which will take three years (2017-2020), will have more makerspace area, tools and expertise.

3.5. Research Instruments.

To make the process of data collection a success, I will use interviews as the best instrument. In addition, I will take important (key) notes during the interviews or interactions with informants.

3.5.1. Interview.

As it is stated above, interview (semi-structured type) is my predominant technique used to collect my data. The method of recording I use for this interview for documentation and later for analysis is therefore an audiotape recording. I will conduct the interview in accordance with the agreed principles of scholars, predominantly qualitative researchers. As these scholars state, interview types in qualitative research are in most instances regarded as structured. Some interviews types, which are characterized as relatively unstructured, are more or less equivalent to guided conversations (DiCicco- Bloom & Crabtree, 2006, p.314). Semi-structured interviews are often the sole data source for a qualitative research project and are usually scheduled in advance at a designated time and location outside of everyday events

(DiCicco- Bloom & Crabtree, 2006, p.315).

3.5.2. Note Taking.

Note taking is the other approach I apply. In fact, the new application on my phone, which simply helps translate words or phrases (voice) in to script form, help me simplify my job. However, depending the pronunciations or dialects of the informants, the tool cannot be relied upon all the time. Accordingly, note taking, checking and double checking with the recorded voice of the informants and transcription has to be strictly done.

3.6. Procedure.

After generating my ethics approval from the University of Alberta, the first two people to approach were: EPL Main Branch manager (Milner and now Enterprise Square) and Associate Manager of the Makerspace.

In the process of collecting my data, the first thing I did was identifying the basic questions I was focusing on in my research. I then contacted the Digital Literacy Initiative (DLI), a department in charge of looking after the activities of the makerspace at EPL. The library, mainly the makerspace, was highly appreciative of my endeavour in taking the experience I had in the space into this scope/level of the research. However, the ethical procedures were the main concerns posed to me as a guarantee for not intruding customer privacy, intents and interests.

I was accordingly asked by EPL management including the makerspace to contact the Planning, Assessment and Research Department of EPL (moved from Stanley Milner and currently situated at MNP Tower-10235 101 STREET NW, EDMONTON, ALBERTA, CANADA T5J 3G1). This department is in charge of checking, examining and allowing people to conduct research at EPL. After I received a green light from the Ethics Department at the University of Alberta, I had to inform, submit a letter and get the approval to conduct a research at the makerspace. The process of generating an approval from the University took me about two months. I also had to submit a letter to EPL to get a permission for conducting a research, which again consumed three weeks of my research schedule.

In accordance with the agreed principles of conducting an interview for this purpose (research), I first scheduled the designated time in advance based on the interest and convenience of my respondents. Furthermore, I conducted my interviews outside of ‘everyday life’; late from my set schedule and less than the planned informants (DiCicco- Bloom & Crabtree, 2006, p.315). Instead of finishing my research in the Summer of 2017, the time was extended to the Winter

of 2018. Also, only four of the five users of the makerspace were interviewed.

The management representative at the makerspace was interviewed. As Milner is under renovation, my interview was conducted at ESQ branch which has limited space and resources. Announcement was made through posters notes and the interview process consumed a month and two weeks.

Approximately 52 pages of transcription were extracted from the five informants (four users and the associate manager). The data analysis (interpretation) is therefore mainly based on these transcriptions.

3.7. Data Analysis (Interpretation).

In gathering the data from my interviewees, I pose a similar set of questions (about five to ten) and some additional comments, questions and suggestions that emerged during the interviews. In view of this process, I believe I amply generated information or reached "the level of saturation". The data I intend to generate is therefore collected based on the designated questions that were crafted and the categories developed and somehow considering the emergence of new themes to erupt (DiCicco- Bloom & Crabtree, 2006, pp. 317-8). After interviewing my informants, I transcribed the interactions and did a thematic qualitative content analysis. Based on the responses generated, I compared, contrasted, and analysed the responses and comments raised under the thematic area: how the emerging trends of makerspaces are translating the real values of contemporary public libraries.

This process, according to social science scholars, is making sense of the responses given by the informants. The scholars advise researchers to code or put into thematic areas the ideas (information) generated by the informants. These are phrases, expressions, or ideas that are common among research participants. This helps alleviate researcher biases or potentially eliminate over-analyzing the data obtained. Many researchers may choose to employ an iterative review process where a committee of non-participating researchers can provide constructive feedback and suggestions to the researchers primarily involved with the study (Turner & Daniel, 2010, p.759). Coding is therefore my core way of analysing the data generated (the interview responses).

Scholars describe coding and the process of analysis in different ways though the ultimate goal is to simplify meanings. Following is a brief summary of the concepts of coding and how I apply them in my research process.

3.7.1. Coding:

Analysis through coding is not an end by itself and not predominant in my research. I did a rigorous and evocative analysis and interpretation based on the findings or the reports I made in the following chapter (Chapter 5). As pertinent scholars in the field reaffirm coding is not only about labelling ideas or concepts. Coding is rather the linking of thoughts and ideas. As some prominent scholars describe, "this process leads you from the data to the idea, and from the idea to all the data pertaining to that idea" (Richards & Morse, 2007, p. 137). Based on this thought, I will go through a comparing and contrasting, and further managing, filtering, highlighting and focusing the salient features of my recorded data. These are meant to generate categories, themes and concepts, grasp meaning, and/or build theory (Saldana, 2013, p.8).

3.8. Limitations.

This research is conducted at a time when EPL's main branch, Stanley A. Milner library, was in its temporary location ("exile") at ESQ building (10212 Jasper Avenue) with a limited space for the makerspace to perform its duties and responsibilities. Resources are limited, space is limited and staff are few.

In addition, the process of recruiting interviewees was not very easy as the number of visitors of the makerspace has dwindled and the space is not providing its full services. The diversity of my informants would have been wider and the responses generated broader had it been in a bigger space with a greater number of users. As the process of recruiting is based on willingness and the frequency of customers' visit to the space and the resources they produce, the contents of responses might have some discrepancies. Hence, the content of some of the responses are very deep while others are shallow. Part of the questions are adequately addressed while others are either ignored or not fully described. These created some loopholes in the research analysis and findings (outcome).

3.9. Summary of Methodology.

The process of designing and conducting this research was painstaking and successful due to the commitment by the researcher and supervisor, the cooperation of the staff at EPL and the cordial relationship built with the users. The basic principles of the research method, qualitative description, and the relevant data gathering technique (interview) were carefully applied. The process thereafter is well designed and implemented to generate a viable outcome and logical patterns of thoughts.

I was very careful in making sure my interview followed the appropriate procedure for one of

the well accepted interview techniques, semi-structured interviews. Semi-structured interviews are often the sole data source for a qualitative research project and are usually scheduled in advance at a designated time and location outside of everyday events (DiCicco- Bloom & Crabtree, 2006, p.315).

Makerspaces are taking up greater portions of public library spaces, consuming much time of the daily services of libraries including EPL, demanding high tech and experienced expertise and sharing much of the values, vision and mission of these libraries. Whether we like it or not, whether we embrace it or not, whether we are ready or not, new trends are emerging and new values are appearing.

I believe daily users are the genuine reflectors of the needs of the majority of society and the newly appearing values. I believe understanding these trends and planning accordingly helps to truly respond to society's needs. Accordingly, using the methods explained and techniques described, this research will technically present, systematically analyse and generate new findings in the following chapters.

Chapter 4. Findings

Makerspaces are deeply rooted in communities and playing a catalytic role in translating the values of different institutions including public libraries. Research on makerspaces is now coming in leaps and bounds, revealing some emerging trends of makerspaces in these different contexts. Despite an emerging scholarly consensus on how makerspaces in the contemporary world are highly impacting public institutions such as libraries, they do not seem to be highly promoted and well understood among their owners and users. The fact that "creative librarians are translating public libraries' mission of ensuring access to information into more tools and hands-on classes, as well as books and videos" (Barniskis, 2014, p.9) apparently calls for more research and investigation. My yearlong investigation at EPL's makerspace witnessed the importance of better understanding public library makerspaces' policies, and procedures, as well as the intent, objectives and future aspirations of both management and daily users.

To understand the trend on how the emerging values of the makerspace are helping meet the objectives and mission of EPL mainly from the users' perspective, I interviewed active users of the makerspace. I in fact intended to interview about five willing customers but only managed to get four responses. With the exception of missing one (due to time constraints and full satisfaction of the responses generated from the other four), the process was a success. The respondents are of varied professional background, different age groups and inclusive of both genders (male and female) as later described in this chapter. Before getting in to this long process of recruiting and interviewing users (about one and a half months in total) and interacting with them, I contacted the management team representative of the makerspace. That interview helped me understand how the makerspace is currently operating, its genesis and its way forward - as the space and its programs grow and expand. That information answers my RQ1. My interviews with the patrons answer my RQ2, RQ3/RQ4.

In this chapter I will address four major subtopics pertaining to my findings from these two sets of interviews. The four subtopics are: (1) justifications and testing process of the research namely the goals, conceptual framework, research question(s), method and validity; (2) the major challenges related with qualitative description and the applications of interview for the data; (3) brief descriptions of the informants (interviewees) or profiles of my interviewees; and finally (4) systemic presentation of the findings. The findings of this research could immediately and directly be implemented in the context of EPL's makerspaces.

I also believe the findings from this research could help as an input to the process of crafting (designing) new public library makerspaces and revise existing similar spaces.

4.1. Justifications and Testing the Process.

Apart from the brief description of the basic features of the research design at section 3.1. of this research, I organized my research and test my process in line with Maxwell's (2012) approach. His five major components, each addressing a specific set of concerns and questions, summarized below, also drive my research method.

Table 4.1. 1: Goals.

Why is the study worth doing?	The topic is emerging and highly expanding.
Issues the study wants to clarify?	One basic/key and yet important topic which is valuable.
Why is it necessary to conduct the study?	Adds value to the ever-growing makerspace at EPL.
Why should people care about my study?	Serves many metropolitans (5.6 million ppl visit EPL/yr)

Table 4.1. 2: Conceptual Framework.

What is going on with the issue?	Value is binding and becoming visible.
What is going on with the setting?	Many at EPL are starting to use the resources.
What is going on with the people I am going to study?	Busy, spending many hours creating, have both concerns and appreciations of the makerspace.
What theory do I draw to understand?	Users and Gratifications Theory

Table 4.1. 3: Research Question (s).

What specifically do I want to better understand about setting/people?	The new emerging values and peoples' or users' thoughts about the resources/ services.
What is it that I don't know about and want to learn?	Peoples' feelings, perception and interests and ideas for improvements in the future.
What questions better	How are the values that EPL would like to

capture these learnings?	implement being translated at the makerspace?

Table 4.1. 4: **Validity**

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How might my results and conclusions be wrong?	Number of informants, time frame, and one site based research and temporary setting.
What are the possible alternative interpretations and validity threats?	Generalizations based on the four selected users and manager and temporary setting.
How my data could support or challenge my ideas of what is going on?	There is no better witness than users when it comes to public services including EPL.
Why should my readers believe my results?	I derived my results from users and tested the answers with the manager's responses.

4.2. Challenges & Opportunities of the Research Process.

The discussion at section 3.2.1 and 3.2.2. of this research clearly described the challenges and opportunities of qualitative research and the use of interviews as a data gathering technique. Despite some fruitful interactions with my research's actual data providers, there were some challenges that deterred the process of my research.

4.3. Brief Descriptions (Profiles) of Informants.

As is elaborated at the beginning of this chapter, the informants (interviewees) of this research are of two groups. The first group represents the management of EPL's makerspace and the second are the users of the space at the Enterprise Square branch. Following is the full description of informants' backgrounds, profiles and representations.

4.3.1. EPL Makerspace Management.

The EPL Makerspace is administered under the technology services of the library mostly concerned with the information technology and Digital Literacy Initiative (DLI), described in more details in Chapter 2 of this paper. As the representative of the management team describes it, at EPL, the digital literacy initiatives department has a couple of different roles.

According to the description of my informant, for EPL, digital literacy means being able to find, use, communicate, navigate, and create information using digital devices. At EPL, digital literacy is understood as embracing the idea that library staff can help people with technology,

and can help them learn how to use their devices and help with basic troubleshooting. The Digital Literacy Initiatives department at EPL therefore helps develop public programming, as well as designing and delivering training for staff.

Apart from the Director of the Technology Services, EPL's makerspace is also run by two management team members, one of whom I had the opportunity to interact with, and about five makerspace assistants. To understand EPL's makerspace management perspective, I managed to interact with the associate manager of the makerspace at the ESQ branch. This young energetic manager has worked in different positions for the library and the makerspace. She has been and is still engaged in the planning and implementation of different makerspace programs. The following paragraph, generated from the interview, summarizes this associate manager's basic profile and the information provided by her.

4.3.2. Group #1-Makerspace (EPL) Management Representative.

My primary informant, representing the makerspace management, has been working with EPL since 2009. My informant graduated from the Library and Information Studies program at University of Alberta. My informant started working at EPL in the reference section of the library in a position named Internet librarian, a position focused on technology programming for the public. In that department, my informant in different technology related programs for EPL. My informant also served as an intern librarian; an employee to be called one of the next generation readers and information services intern librarian at EPL. In 2010 and 2011 my informant did a qualitative study of the customer service questions the library was receiving. I was also glad that my informant was willing to share with me the findings of the research which indicated that in half of the EPL branches, 1/3 of the questions the library was receiving were about technology. This, according to my informant, gave her the chance at that time to participate in the strategic planning process the library was pursuing. That process lead to the formation of the term digital literacy at EPL and the makerspace project. She then accepted assumed the position of digital literacy librarian, which was a new position in 2011. She participated at that time in the design and implementation of the makerspace. She actively worked as a librarian for the first two and half years of the makerspace's existence. Now, she is serving in a temporary role since the beginning of 2017 as an associate manager focusing on the operations of the makerspace at ESQ (main branch) and operations of maker services throughout the branches. She mainly supports and supervises staff, helps EPL and staff set directions for programs, and helps evaluate all sorts of logistical considerations for the makerspace daily operations. Currently, my informant is also actively involved in the long term

planning of the library including what the makerspace and the digital literacy should look like by 2020 and beyond.

4.3.3. Group #2-Makerspace Users (Four Informants).

My second set of interviewees, from which I generated most of the information, are the users who extensively utilize the technology services at the makerspace. My informants in this group have diverse professional, gender, ethnic, and age backgrounds. Here is how I briefly describe their profile in both a prose and table format.

4.3.3.1. Group Two Informants' Profile.

Professionally, the first respondent for this research, is a music composer, music instructor (teacher) and performing artist. He is an African American. He is in his mid-forties. My first informant is one of the frequent users of the space where he predominantly utilizes the resources of the makerspace as a way of preparing his lesson plans for his students and his customers (hotels) where he performs at night. He usually edits audio-visual materials, mainly music lessons generated from different online services and from places where he performs. The music scripts and other resources are believed to be very important for providing lessons to his private students.

My second respondent is a hobbyist game designer. He has been engaged in the gaming business for 20 years. Designing games and making video games are his fun activities and spends hours upgrading his skills with new softwares and gaming tools. He uses the makerspace to update himself with new gaming softwares. This softwares also helps him resolve difficulties while developing new games. He is a self taught young caucasian who wants the makerspace to have more computers and softwares for facilitating his duties more effectively.

The third respondent identifies himself as a professional who contributed his share to the health sector in Canada. He is a disability case manager who engaged extensively in writing government healthcare policies. He also used to run a clinic in Ontario. He has also been passionate about music throughout his entire life. He uses music as soul responder and a way to facilitate his profession in the health sector.

My last respondent, young Caucasian, is a poet, graphic designer and a painter engaged in community advocacy. She is an entertainer on roads and does wall paintings. She intensely

uses social media (mainly Facebook and Instagram).

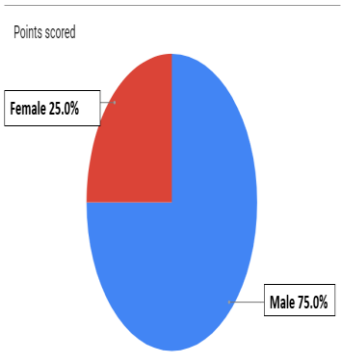
4.3.3.2. Group Two Informants' Profile in Table.

For the sake of simplifying things and to easily use the data for later analysis, here is how the profile of the informants is summarized:

Informant #	Race	Profession	Resource Use	Frequency	Satisfaction	Remark
1.	African American	Music Composer, Instructor + Performer	Computer or PC (MAC) and Recording Studio	4-5 Days (Times) a Week	Fully Satisfied	
2	Caucasian	Gaming-Designer, Hobbies	Gaming PC, Computer (MAC) and Recording Studio	Everyday (Seven Days a Week)	Needs Additional Softwares	
3.	Indian (Asian)	Health Care+ Music Player	Computer or PC (MAC) and Recording Studio	3-4 Days (Times) a Week	Needs More Recording Studio Time	
4.	Caucasian	Painter, Musician and Graphic Designer	Computer or PC, 3D printer and Digital Painting Tool	4-5 Days (Times) a Week		

4.3.3.3. Representation of Informants

Gender Representation



4.4. Presentation of the Findings

In order to systematically and smoothly analyse and discuss the theme of the research and respond to the major research question, I believe it is important to first present the summary of

the basic understanding about the core values of public libraries. Accordingly, in this chapter, I will (1) present the summary of EPL's major values; (2) briefly discuss the agreed ideas and principles pertaining to values of public libraries; (3) highlight the content and procedures of the interview processes; and (4) thematically present the responses from the two respondent groups.

4.4.1. Summary of EPL's Major Values.

EPL among others, wants to introduce and build major values that could help its customers fulfil its core objectives. According to its strategic plan and my interview with management team representative, the EPL library is passionate about sharing (EPL Business Plan, 2013). It wants to be an idea champion open to the public. EPL is committed to opening a lifetime experience of learning, engagement and possibility for all Edmontonians. It is committed to sharing its information and expertise with everyone. EPL places its passion of sharing at its epicentre. EPL also shares its experiences and stories among its customers, stands up for ideas and knowledge. It wants its staff to be helpful, empathetic and compassionate. The employees are also expected to be responsive, responsible stewards, efficient, committed, prepared, engaged, clever and smart. The library also wants its space to be easy to use, friendly, adaptable, convenient and universal. EPL's programs are also entertaining, valuable, exciting, enlightening, cheerful and current.

4.4.2. Ideas and Principles Pertaining to Public Libraries' Values.

As stated in Chapter 2 (Literature Review) of this research, there are several agreed upon principles, widely accepted ideas and major shared values among public libraries. In the ten commandments of maker's movement, extracted from my literature in the topic, I have identified six that are most relevant to mention here. These are the following values: (1) love for creating; (2) combining digital tools and open source sharing; (3) creative expressions beyond traditional art forms and business models; (4) collaboration; (5) making things easier; and (6) reflections of the interests of the community. These are currently the predominant emerging values at the EPL makerspace.

In addition, as my literature review in Chapter 2 of this research describes, makerspaces in public libraries have the following basic roles: (a) respond to people's technological needs; (b) serve as new outlets for creativity and technological innovation; (c) assist community engagement; (d) smoothen the informal teaching and learning processes; (e) serve as learning

labs; (f) become a multi-media center; (g) diversify their services and work on inclusiveness; and (h) try to help people with disabilities with adaptive technological programs.

4.4.3. Contents and Procedures of the Interview Process.

In accordance with these agreed principles and based on the four overarching questions stated in the preceding chapters (chapters 2 and 3), this study managed to interact with four out of the intended five users of the makerspace and makerspace management representative. I posed between seven to ten questions to each of the respondents. The following two sets of questions were therefore thoroughly and adequately addressed. In the first set of questions well about ten questions were posed to EPL management representative while other seven sets of questions were forwarded to the users of the makerspace (Please see in the Index for the details of questions).

4.4.3.1. First Set of Questions.

On the other hand, about ten questions were forwarded to EPL makerspace management representative. These questions intend to generate a road map to understanding the policies and procedures of the library towards the makerspace. It will help the researcher to both compare with some of the basic well accepted principles of the makerspace. It will also give a perspective and help easily generate meaning out of the interactions with users slotted to be conducted right after this interview.

4.4.3.2. Second Set of Questions.

On the other hand, separate set of questions were forwarded to four frequent users of the EPL makerspace. These questions are meant to provide deeper understanding of users' perceptions in line with what the literature had to say. The inquiries are intended to test theories about makerspaces in relation to the real perceptions of the daily users of the space. These are also a set of seven to ten questions (Please See the Appendix for the Eight of the Major Frequently Asked Questions at the Interaction).

4.4.4. Thematic Presentation of Responses.

Many scholars firmly believe the importance of categorizing and presenting data thematically. They believe this approach facilitates correlations and analysis in a systematic and easy manner. For a social science expert such as Saldana (2013), who mainly specializes in coding,

"..when the major categories are compared with each-other and consolidated in various ways, you begin to transcend the 'reality' of your data and progress toward the thematic, conceptual and theoretical" (p.11). Based on these theoretical concepts and agreed roadmaps, the following are some of the major ideas generated from the respondents. In presenting these responses, I categorized them into two groups. The first part of the presentation includes responses of the associate manager while the second part deals with responses of the four users of the makerspace at EPL.

4.4.4.1. Responses of Management Representative.

Of the 10 Interview Questions (RQs) posed, RQ1 deals with understanding her role as the associate manager. The Associate Manager along with other management team members take the lead in executing the programs. Hence, tasks of the associate manager, as described by my informants, are enormous. The summary of the major tasks of EPL makerspace's associate manager are: (a) supporting and supervising staff; (b) helping staff plan through two way program designs ===> public demand → study or research→ programs and policies; (c) logistical planning; and (d) planning for 2020 vision.

RQ2 deals with Digital Literacy Initiative's (DLI) roles described by the associate manager as follows: Through the application of digital technologies and along with the principles of DLI, EPL wants to: (a) find, use, communicate, navigate, and create information using digital devices; (b) embrace the idea that library staff can help people with technology; (c) help develop public programing; and (d) design and deliver trainings to the staff to make the makerspace's duties a success.

RQ3 addresses the major activities executed by the makerspace. These included the following major activities executed at the makerspace: Making music, photo editing and illustration, creating video, playing instruments and recordings, green wall and photography equipment, vinyl cutter, gaming PCs, 3D and book printing services. One of the principles of the makerspace that depicts the space's work in progress, as the associate manager explained it, is: "We don't always know all of the answers to all the questions. But we try to let them know that we're willing to learn with them and to help them figure it out".

The space has also community programs like: (a) Make Music Monday, a community music jam program; (b) gaming nights on Fridays; (c) robotics club on Saturdays; and (d) a program engaging and empowering women and LGBTQ individuals on Tuesdays.

RQ4 intends to understand the predominant programs at the makerspace. According to the manager, the two popular services are: (a) recording studio and (b) gaming PCs which are acquired through bookings and are booked throughout the day.

The major tasks (the mission of EPL) is addressed through RQ5. The associate manager has the following to say on this: EPL's mission is - "we share". Everything from books to films, music, magazines and public programming are shared. By offering more access to technology and access to makerspace resources relevant to the public, the library wants to demonstrate that its services and spaces are beyond lending books. Through customer service excellence it wants to achieve this goal.

RQ6 is focused on whether the makerspace is assisting the library in meeting its major objectives. According to the associate manager, EPL wants the makerspace to be "a laboratory in which it can test its services and technologies and determine if there is a demand for those things".

In RQ7 ideas were thoroughly explained by the associate manager as to how the makerspace serves as an experimental venue for EPL. Here it was stated that the space serves the community as a place for: (a) addressing financial barriers by providing access to equipment and resources; (b) for creativity; (c) checking if the library's services are the right fit for the public; (d) providing popular softwares for staff to help customers; (e) assisting public in robotics technology; (f) digital storytelling; and (g) special events.

RQ8 attempts to see if programs are adjusted at the makerspace based on needs and how they are adjusted. "Yes, adjustments are made based on people's' needs" was the answer. These programs, according to the associate manager, among other things include: (a) new potential technology; (b) community-led service philosophy; (c) recruiting community librarians; (d) listening to what the customers say and the needs they express; and (e) getting feedback based on media reports.

With regard to inclusiveness, as mentioned in RQ9 above, the response goes as follows: At EPL's makerspace, everybody is welcomed. Its challenges in terms of realizing inclusiveness are (a) perceptual, which include: not considering potential users, not using the technology, safety issues attached to juvenile delinquencies, considering oneself a professional out of context and vehicle parking which for the most part is expensive; and (b) strategic, which is not balancing between digital and traditional crafts.

Placing the makerspace on people's radar, opening the programs to everyone, free attendance of the programs and working with the newcomers are some of the designs in place to address these problems. The last idea RQ10 deals with are the major roles of the makerspace in responding to the needs of the community against all these odds.

Here is the response from the associate manager. She says, registration and limit of the number of spots for some of the programs is the number one challenge at the makerspace. There are no such problems for general lectures and mass programs. Video gaming and university lectures are areas without problems now. High demand is coming up now at the makerspace for 3D printing, book making, robot programming, recording album and film editing. As the library moves to its new location in 2020, the library has a plan to revamp its makerspace, as the associate manager described it:

> "The plan for the makerspace for the expansion project is for it to grow. The makerspace in the newly renovated library will grow to 10, 000 ft². There will be a children's version of the maker space as well. And there is going to be a gaming space for PC gaming, for community gaming, throughout the day. In growing the makerspace, we are looking for adding some services and expanding others."

4.4.4.2. Responses of the Users.

Similarly, four of my respondents had the chances to express their views through answering eight similar questions posed to them. The four respondents are coded as #1, #2, #3 & #4 respectively. The eight points jotted under each question below summarizes the basic ideas I discussed with each respondent:

4.4.4.2.1. <u>How they first heard about makerspace (RQ1).</u>

According to my respondents, they first heard about the makerspace through different ways. All were delighted but unaware about the space until they visited the public library. Their excitement is mostly because the services are free of charge. Following is the brief summary of the responses from each of the respondents

Respondent #1 and #4 found out that the space could be useful to them. They were happy to know about the space with the resources they needed, which otherwise would have cost too much money. The former knew about the services as he simply roamed around while the latter got the information as she was intending to use a computer at EPL.

Respondent #2 also said: "while using resources at EPL, my computer was once crashed and limited itself in its services. I came across the makerspace which then was sufficient enough in providing adequate service to my needs".

Respondent #3 was first attracted by the sound of a guitar. As a musician and of multiple talents himself, the sound from the guitar was both a surprise and a delight, as well as a means to explore other latest technologies in the space. His responses in this regard were a bit of a surprise to me as it also addressed my other issues too. At first he said:

> "Some of the projects in writing and music I had put off because of financial barriers were possible now. Further, 3D printing, coding, and robotics activities were very appealing to my client with disability as many of the programs in the community lacked tangible STEM development for those facing disability….Myself and other creatives have realized a music work (www.lovesetsfire.com) that we hope to bring to an audience with advancing opportunities. Without the makerspace I would never have completed this music project or undertaken it as the financial cost was the most significant barrier."

4.4.4.2.2. Reason or objective for visiting the makespace (RQ2).

All my respondents are now active users of at least one of the resources at the makerspace. Respondent #1 visits the space to: (a) use the music software; (b) build websites for music instruction and education; (c) get music notation software; (d) use editing software; (e) consistently post resources on Youtube; (f) get potential students; (g) develop a music book; and (h) create PowerPoint slides. Respondent #2 uses the resources for: (a) game designing; (b) learn basic arts of gaming; (c) modeling of characters; and (d) learning simple role playing. For Respondent #3, the makerspace is: (a) a music production venue; (b) a collaboration place with local artists; (c) a way and means to assist vulnerable people; and (d) a place to record and edit own music. This person told me:

> "The space is a safe meeting place; especially when I audition and meet female musicians and marginalized individuals at greater safety risk; who often have experienced different forms of harassment or infringement in public and private creative spaces. The safety of the public space grants more equitable access to creatives in the community who have experienced historical barriers in the past."

Respondent #4 is also using the space as: (a) another important outlet to express herself

creatively; and (b) performing her duties mostly art in a cheaper way.

4.4.4.2.3. What does making (producing) mean to users (RQ3).

Producing is a matter of existence for Respondent #1. For Respondent #2 it is fun, while Respondent #3's response is more philosophical. In that, it is a greater human development, way of breaking stigma, discrimination and racism, a way of avoiding social barriers and a place of avoiding pains and health symptoms. As an African American, he was open to share his own personal and family experience, saying:

> "For most of my life I have experienced barriers of health, discrimination, and racism, I have watched my family toil from racism, discrimination, and inequality. I always believed an opportunity to be creatively fulfilled was only possible for 'Whites' in Canada.
>
> My parents reinforced this idea and prevented me from pursuing musical or writing aspirations as from their experience it would never lead to a sustainable career for a second generation immigrant."

Respondent #4 boldly answered this question saying: "it means everything". She said: "it would be very hard and quite a bit of time without the makerspace. To express yourself and to do it in a cheaper way means everything". This shows how it is playing an essential role.

4.4.4.2.4. Experiences prior to EPL makerspace (RQ4).

Respondent #1 lauds the makerspace's resources and services. He said it triggered his interest to engage in many activities. He explains this by saying:

> "Well, prior to the makerspace, I didn't really do things to this extent. It was more just private instruction piano teaching and some stuff for a new technology. With these resources I have now turned my profession in to an online business. These resources really helped me."

Respondent #2 didn't properly address this question. He stated that he was simply a game designer and that for this he used his own personal computer. It was a bit of surprise for Respondent #3 to learn about the makerspace. He noted that he had numerous projects at hand and yet didn't properly implement them because of financial and resource constraints.

> "Some of the projects in writing and music I had put off because of financial barriers were possible now. Further, 3D printing, coding, and robotics activities were very

> appealing to my client with disability as many of the programs in the community lacked tangible STEM development for those facing disability."

Respondent #4 used to perform the usual tasks prior to coming to the makerspace. She said she was less engaged, less productive, and less interested to performing some of her hobbies prior to exploring the makerspace.

4.4.4.2.5. How the makerspace assists with executing their tasks (RQ5).

All my respondents are positive about the makerspace assistants. Respondent #3's response is even a bit of a surprise. He says the space has a therapeutic benefit, serves as a means to communicate with the public and is helping as a creative hub to customers. He says:

> "A lot of the community in the creative business have some technological barriers, barriers to access. People in the creative arts, a lot of them are understanding its therapeutic benefits. They are also serving as a chance to try to communicate with the public in ways that are basically not able to communicate normally in that manner."

According to Respondent #1, with the use of the resources and services at the makerspace, advertising his services are much quicker as opposed to word of mouth and he can reach a broader scope of people for it instant web based not door-to-door. But still, he says, staff are taken (occupied) sometimes and the PCs are already booked. He is also happy in a sense that, unlike other places, he didn't observe some false self-esteem towards the profession, "where people who specialize in computer technology get the sense that they are elevated above other human beings". Though he still needs updates on some of the softwares, Respondent #2 is happy how customers develop programs efficiently, people make music very simply and customers use most of the resources effectively.

Respondent #4 is also grateful for most of the resources like Adobe Illustrator, Virtual DJ and 3D modelling, but still requests space for painting including practices/ activities that may "mess up" the area.

4.4.4.2.6. View on Makerspace Inclusiveness (RQ6).

All except one of my respondents (Respondent #3) have a totally positive attitude towards inclusiveness. Respondent #3's greatest reservation is about the diversity of employees as a representation of the community. As a second generation African American, he observed a totally different situation towards discrimination at the space as opposed to the city- Edmonton.

He says: "Edmonton is not a fully realized inclusive space as other cities in Canada" and it is a nice break from such environment. He however, sees homogeneity in the staff and believes ethnic minorities are neglected regarding employment opportunities:

> "A lot of their staff may not be coming from diverse ethnic and religious backgrounds. They really need to push in to that so that they can or we can involve more multicultural aspects with them. Staffing, skills and development programs."

Be this as it may, current staff at EPL are admired by both Respondent #3 and Respondent #1 who said:

> "...if you talk about resources, in terms of the human resources, the staff that are working in there, the thing that struck me from the 1st day was ,you don't have like sometimes when you go into a place that's computer based,.. there's someone of a condescending attitude. None of these people have that. They're very accessible and they are very patient. If you are ignorant of particular technical things, or how do I do this or that they are very helpful. I've seen them sit and explain the same thing to somebody for 5 to 10 times and they don't reflect any agitation or aggravation or anything of that."

4.4.4.2.7. Additional needs (RQ7).

All need different services at EPL.

Respondent #1 wants: (a) softwares that play keyboards; (b) more units; and (c) more computers.

Respondent #2 needs: (a) more modeling tools and (b) gaming PCs.

Respondent #3 demands: (a) more minorities and ethnic groups; (b) multicultural staffing; (c) employees with global cultural perspectives; (d) more accommodation for people with disabilities; and (e) more outreach to people with low socioeconomic status.

Respondent #4 aspires to have simply more open spaces for people to bring their own staff and execute their routine work or engage in activities that match their greatest interests like painting.

4.4.4.2.8. Aspirations on Makerspaces (RQ8).

For most of my respondents, the makerspace is becoming their second home. They want it to

grow and expand, and provide more services and resources especially as it moves back to the main Stanley Milner branch location after renovations are completed.

Respondent #1 wants the library to grow. He especially needs: (a) practice rooms and (b) studio rooms with Pianos and other musical instruments for people to come and practice.

Respondent #2 needs: (a) to get more assistance from more staff and (b) more computers.

Respondent #3 future aspirations are:
(a) collaborating more with people in the industry; (b) developing community; (c) collaborating with stakeholders like media and creative arts; (d) fulfilling dreams; (e) reaching more audiences; and (f) meet people of different backgrounds and explore their shared potential. Personally, he already started the journey but still is interested in more:

> "I would like to see the makerspace help my own personal journey being fulfilled. I want to interact with an audience, have more participation in the music making or creative process. I have actually requested the makerspace staff and administration to maybe include more technology elements, software elements, to actually enhance some of the production and creative arts work that is happening in the space."

In addition to the space at the makerspaces, as she had mentioned in the preceding part or question (RQ7), Respondent #4 also wants to have: (a) more studios as the current ones are booked most of the time; and (b) finding more ways of using the existing resources at the space.

Chapter 5. Discussion

In the preceding chapter, through the information generated from the interview with the management representative, this research shed light on what the Edmonton Public Library (EPL) wants to introduce, expand and maintain in one of its key and emerging spaces, the makerspace. My findings also revealed some important ideas on what the users of the makerspace feel about and demand of the services of the EPL space. This chapter analyzes the data and findings that were vividly presented in Chapter 4. I will search for patterns in the data, look for the ideas that help explain why those patterns are explained the way they are described and analyse each of them accordingly (Bernard, 2006, p.452).

With persistent, similar, focused and well-designed questions, the active users or makers were also approached and asked to express their views on the services and materials provided by the EPL makerspace. In addition to the raw data presented earlier, their views and responses will be more systematically documented and presented in this chapter. With this systematic and scientific approach, this study is better equipped to understand the new trends observed at the makerspace. The study also enlightens readers on how the EPL makerspace translates the basic public library values into practice. This is done in congruent with the objective of this study.

Accordingly, in this chapter, I will discuss each of the thematic research questions forwarded to the makespace users along with the EPL's objectives, principles and goals. To deeply understand the thesis and adequately respond to the research question (how traditional and new trends of makerspace translate the values of contemporary public libraries), I will first analyse how EPL's management representative explained each of these questions.

The discussion of this research also makes further reference to what the contemporary literature behind making ('creating') and sharing had to say.

In one of the primary questions (MRQ2), related with the role of the EPL Digital Literacy Initiative (DLI), the exploration, usage and communication of digital devices or technology both by the users and staff (library makerspace assistants) is stressed by the management representative. This, according to the representative, is meant to assist and respond to the needs for technology expressed by users of the space. This idea is well articulated in the responses of the makerspace users too. In responding to the question regarding the major reason or objective for visiting the space (UQ2), users all said they visit the makerspace mainly to access

technology they could not otherwise use. Music notation and jamming or game designing software, power point slide creation, music recording and editing as well as sharing the products of working with these tools are accordingly described as their main reason to visit the makerspace. In other words, as far as my observation is concerned, most of the ideas described and the phrases and words used by these respondents focus on planning, creating, modifying and sharing resources using the technology, both hardware and softwares, available at the EPL's makerspace.

The idea of qualitative inquiry, which demands meticulous attention to language and deep reflection on the emergent patterns and meanings of human experience, is well considered and very well observed in my analysis of user responses to this question (the role of the DLI), as well as the subsequent research questions to be discussed in the following parts (Saldaña, 2013, p.10). As the data from my interviewees clearly attest, three of my four respondents (¾ or 75 per cent of the informants), are in one way or the other attached with music playing, recording, editing, and sharing, which are for the most part are all assisted by access to and use of cutting edge technology, irrespective of some limitations which will be described in the subsequent parts of this chapter.

In line with the overarching research question, this work also examined in detail the major activities executed by the makerspace (MRQ3). As stated in my answer to the preceding question, the programs at the makerspace are predominantly technology driven and technology focused. Making music, photo editing and illustration, creating videos, playing instruments and recording music, green wall and photography, vinyl cutting and book printing are all assisted by technology: software (editing, creating and designing) and hardware (vinyl cutter, PCs, book printing machines and recording studio). Events provided by the EPL Makerspace, such as Music Mondays, Friday gaming nights and robotics club on Saturdays, are also ways that users can learn how to access and use emerging technology and the latest equipment.

The above programing concept alludes or harmonizes with public libraries' ideas of responding to people's needs for new technology by providing access to materials and tools and allowing hands-on-exploration and participatory learning (Hordal, 2013, p.3). This programing model at the makerspace is also considered as a great opportunity for introducing new technology and providing fresh outlets for creativity, learning, and community engagement (Klipper, 2014, pp. 5-6). As the literature review of this research has explained, makerspaces in the library context allow interested patrons to learn new skills and create tangible projects related to the use of

new and emerging technologies (Kiser, 2014, p.55).

On the other hand, makerspaces in public libraries are also considered favourable environments for encouraging creativity through the process of interacting with mentors and peers (Koh and Abbas, 2015, p. 114). For some scholars, some of the long standing making practices happen outside of formal spaces within the communities, like kitchens and garages (Rodgers and Roslund, 2014, pp.4-5). This understanding of social activities needs to be augmented at EPL's makerspaces if it is to contribute in promoting and preserving social values. I believe Edmonton should not be an exception in this area, but rather an exemplar. With the ever increasing diversity of the city, the EPL should even think out of box and see what the relatively new communities could bring to the city. However, while the importance of having such social activities is well described in the EPL's planning documents, it is less observed at EPL's current makerspace.

Even before the creation of the makerspace, there were long standing making practices that bring people - 'makers' - together. In the old days, in some cultures, women congregated to do some knitting. Men also collaborated when they executed some duties. Preserving and promoting those existing traditions is one of the approaches highly recommended by pertinent scholars. While describing future intents and aspirations of library users, the management perspective stressed the importance of introducing, promoting and executing the process of making at EPL.

The representative and users both deeply highlighted and emphasized the importance of this approach. In stating additional needs from the makerspace, while responding to my seventh question (URQ7), my fourth respondent highlighted the importance of getting more space for people to bring their own staff and engage in activities that match with their interests and frequent practices, such as painting.

This for me reveals users' interest in using the space for translating their well acquainted cultural and professional values - that is, for social and community-building activities, as well as for accessing new technologies. Respondent #4 in URQ5, for example, demanded space for practices of painting, that at times might end up in "messing up" or leaving some stains in such corners of the library - with paintings and inks of course. I believe these kinds of activities will not only create opportunities to have the full freedom for creating, but also enhance collaborations and cooperation among artists, which is the case with the recording studio, for example.

The Management representative, on the other hand, highlighted EPL's great interest and plans to expand and grow the makerspace (MRQ #10). In the response provided by the management representative, it is implied that the library puts more emphasis on specific areas and services. According to the response I obtained from the management representative, the library still prioritizes making sure that the technology-related resources are adequately available, and that the needs in this sector are fully addressed. In line with the overarching research question, this process should also include knowing or understanding the major social activities executed at the makerspace (MRQ #3).

As is stated in the answers to the preceding question, most of the programs at the makerspace are predominantly technology driven and technology focused. Making music, photo editing and illustration, creating video, playing instruments and recordings, green wall and photography, vinyl cutting and book printing are all assisted by technology. The software (editing, creating and designing of different programs and software) and hardware (vinyl cutter, PCs, book printing machines, recording studios, the 3D printer and gaming screen) available at the makerspace are all technology-based.

To me, this indicates that EPL in general and its makerspace in particular are interested in predominantly preserving and promoting new (digital) technologies.

The old tradition of 'making', which is deep rooted in society and social activities, is also considered as an important focus area of the EPL. However, the focus for these social practices, seems to be less - despite its importance in contributing to community-building.

This same trend can be seen in the daily and weekly programs provided at EPL's makerspace. Music Mondays, Friday gaming nights and robotics club on Saturdays, among others, are all fully assisted or facilitated by and large using emerging technology related software and cutting age equipment at the makerspace. These highly visible phenomena at EPL's makerspace allude to the public libraries' programing ideas, as stated in the previous parts of this research. Specifically, this aims to respond to people's needs for new technology by providing access to tools, allowing hands-on exploration and participatory learning (Hordal, 2013, p.3). However, these activities importantly extend the EPL Makerspace into areas of social interaction, peer learning and community-building - helping address and promote the non-technology benefits of the Makerspace.

As my research indicates, makerspaces in library contexts allow interested patrons to learn new skills and create tangible projects related to new and emerging technologies (Klipper, 2014,

p.55). In addition, makerspaces are considered favourable environments for using and applying traditional technologies and creativity (Koh and Abbas, 2015, p.114). Some scholars believe the practices we see in kitchens and garages, which are there for ages within the community, need to be adopted in spaces like public libraries (Rogers & Roslund, 2014, pp. 4-5).

Moving forward, I believe this is a key issue that EPL can focus on. The theoretical concepts and some agreed approaches on the importance of translating public values in library programming is visible in the day to day lives of the users of public libraries. However, the findings in this research show that the cultural practices in the current makerspaces at the Edmonton Public Libraries focus more on the availability and use of new technologies - and while social and community activities are included in services, they are not spoken about as much.

In fact, while describing the future strategy, intents and aspirations of the users and the plans as the library grows, the importance of promoting, introducing and exploring traditional making was highly emphasized by most of my respondents; both the users and management representative. In stating these intended additional needs, while responding to the seventh question on the list (URQ7), my fourth respondent highlighted the importance of getting more space for people to bring their own staff (materials like brush, canvas, ink, etc.) and engage in activities that could match their interests like painting, sketching, and other artistic demonstrations. Respondent #4, in URQ5 for example, requested a painting space for practices or other activities at the makerspace that might "mess up" the scene and yet provide opportunities for patrons to learn or benefit out of the whole process. The Management representative, in the last question I posed (MRQ #10), described EPL's plan to expand and grow the makerspace in the future. However, from what has been stated, it is apparent that providing services more on technology-related activities including in its space under renovation, will remain a key area of focus. As identified by users, the EPL might also consider more focus on social elements - including involving staff and creating more opportunities to build community.

EPL aspires to be a place or a space to showcase cultural and social activities. It is expected that the upcoming makerspace of EPL at the Stanley A. Milner branch will take 10,000 ft2 area of the library. The renovated space is also expected to have a children's section and a new, stylish freshly formatted community gaming space. Additional services have also been promised. Expanding the existing programs will also remain the focus of the makerspace.

However, traditional making - and its connections to social activities - is still not stressed. In responding to the access on high demand (MRQ4), the recording studio, which is only one at the time of conducting this research, and the gaming PCs, only two of them. EPL only makes them available through bookings. Three-quarters of my respondents (75 percent) are in fact active users of the recording studio while only one quarter (25 percent) of my respondents always keep an eye on the gaming PCs playing and Mac PCs for designing. They are seen using or lining up for other public PCs or the handful of Mac PCs at the makerspace to meet their demands.

The above scene in fact somehow contradicts Rodgers & Roslund's (2014) idea that the kinds of tools found in makerspaces reflect the interests of the community (p.6). I see from the responses of my informants that their needs are immense and go beyond technology, to include social and community-building areas of interest. Makers of today, as we know, want their tools to be better and their software to reduce the complexities of many tasks (Dougherty, Conrad, & O' Reilly, 2016, p.xvi). As a public service provider to a diverse and continuously growing community, I believe it is incumbent for EPL to consider inculcating, preserving, promoting and expanding programs that accommodate and embrace all groups or members. In line with explaining EPL's mission and objective (MRQ 5 & MRQ6) the library management representative puts sharing at the centre of EPL's activities.

The makerspace, as described by the management representative, is considered a laboratory in which it can test library services and technologies. It is also a showcase to understand the needs of the community in the process of creating and sharing resources and determine what to provide.

Words and phrases like "meant to communicate with the public" (Respondent #3); "advertising services in a much quicker way" (Respondent #1); "developing programs efficiently and making music simply" (Respondent #2) and "creating resources using Adobe Illustrator" (Respondent #4)- in which all respondents provided answers to: how the makerspace could assist working on their tasks (URQ5) could be codified into what is called the value coding. This is the application of codes into qualitative data that reflect a participant's values, attitudes, and beliefs, representing his or her perspectives or worldview (Saldana, 2013, p.89). Their task is still technology driven, but I see their intent for inculcating cultural and social values as well.

As stated in Chapter 2 of this work, contemporary researchers point out inclusiveness as the major challenge of the maker movement. They tend to say that many products do not include

accessible design, as well as hindering a significant population of potential inventors or makers (Moeller, Bastiansen, Gates & Subramaniam, 2015, p.33). Though very limited in number, all except one (three-quarters or 75 percent of my respondents) demonstrated a positive attitude towards inclusiveness at EPL makerspace.

One of the surprises, described in a different way, is the angle or the way in which one of the respondents (one quarter or 25 percent of the interviewees) has portrayed their thoughts on inclusiveness. Respondent #3's greatest reservation doesn't make a reference to the users or customers of the makerspace.

It rather references the employees who are designated to facilitate the day to day activities at the makerspace, or those who have to serve the diverse members of the community who visit the space on an hourly and daily basis. Here, my respondent describes himself as a second generation member of the African American Community in Canada. Based on his own experience in the other parts of Canada, and as fairly new to Edmonton, he describes this city as a "not fully realized inclusive space". For him, the EPL makerspace is a nice break from such an environment of non-inclusiveness. His reservation with the employees is the one related to the homogeneity of their ethnic backgrounds. He believes, ethnic minorities are neglected on employment opportunities and the makerspace is of no exception. My respondent argues that, unlike Edmonton's growing diverse society, the employees at the makerspace are not from diverse ethnic and religious backgrounds. The informant believes having diverse staff would have helped accommodate multicultural aspects within the space efficiently. But for him that is hardly visible in the makerspace.

Contrary to this view, while focusing on the service delivery of the staff, rather than ethnic and religious characterization, my first respondent (Respondent #1- User) highly appreciates the help the staff provide to the customers. For him, the impartiality, patience and diligence of EPL makerspace employees is the greatest quality he could take advantage of as an active user of the makerspace and heavy user of the resources. Unlike what he has observed in other places, the readiness of employees to help customers with great motive and impartially respond to needs is the one thing he admires about the space. From what he has observed, he actually genuinely shared his thought that people with technology skills have usually "a condescending attitude towards other people who do not have the skills in the technology sector".

However, my informant noted that he has never observed such prejudices at the makerspace and highly regarded the employees as cooperatives, patient, and skilful.

The EPL management representative at one point, in fact, vividly explains the makerspace's strategy of welcoming everyone. In addition to the current major activities included at the space, the representative also described the library's readiness to adjust its services based on the needs of the community. Make Music Monday, gaming nights on Fridays, robotics club on Saturdays and the program that aims at empowering women and LGBTQ on Tuesdays are the exemplary programs that attest makerspaces' inclusiveness. In terms of adjusting its programs, the management representative briefly explained that the makerspace still looks for new potential technology based on some feedbacks mainly media reports (MRQ 3 and MRQ 8).

5.1. Limitations

I don't consider it as a real limitation, but it will be unfair at this point if I don't mention it. One of the stumbling blocks in the process of executing my capstone project was the time it took to decide on the working title of this research. It took me almost six months to decide on this working title. I roamed around and stood firm at first with an adopted title from an Australian study: "The Issues and Challenges in Creating, Maintaining and Growing Makerspaces in Edmonton Public Libraries", for almost six months. After extracting research ideas in the spring of 2016, thanks to the Annual Rundle Summit of the Communication Departments of the University of Alberta and the University of Calgary, it was only by the end of February 2017 that this current title was selected for the project. The revision of the title, introduction and the literature review took another semester, until the spring of 2017.

The other limitation has to do with the site for this research. The beginning of 2017 was a turbulent time for Edmonton Public Library's main branch, Stanley A. Milner. It was the start of a three year renovation project on its old site at Churchill Square. It was also the beginning of its temporary location in a comparatively small space at the Enterprise Square building, serving the same number and type of clientele. That process lead to some adverse effects on both the makerspace and my research. The move affected both the space of makerspace and the services it provides to the general public. In a way, it affected the scope and depth of my research. Along with the decrease in the physical space, the number of recording studios were cut in half, the computers were also half the number of the ones in the old building while the number of customers served at this new site are probably half of what they were at the old site. Irrespective of the space and the number of customers, the informants were still decided to be approximately five, which adequately serves the need. From a qualitative research point of view, to get a more valid and strong results, considering more informants in a greater space and

abundant resources like the one at Milner, would have been more instrumental. However, conducting my research during this period has limited the scope of this research.

Edmonton Public Library (EPL) is the only public library in Edmonton. This could also be considered as a hindrance for looking into other options of conducting comparative research among other public libraries. As an Edmontonian researcher confined within the city and with only one option of exploring a makerspace in a public library context, the only option of studying a public library is to choose EPL. In addition, makerspace activities and their values are predominantly manifested at EPL's main branch. Though EPL has over 20 branches in the city, the process of introducing, manifesting, growing, and maintaining makerspace values only applies to the downtown branch.

The few branches, where they have really started to engage their customers in the making business or trend, in my opinion, do not deserve to line up with that of the main branch for comparative studies or standing by themselves. This is because the services are much more limited. In addition, the study has only targeted one management representative and four users of the makerspace. Due to the time and scope of this research, the source of information is confined to the two groups. Service providers, more management team members, previous research findings and policy documents could also be considered as sources of information for this research. In terms of the theoretical framework, this research could have also been viewed and tested with wider scholarly descriptions and directions. Theoretically viewed, only one framework, users and gratification theory of mass research, was referenced in detail. However, this was the most fitting approach to the research and provided a strong framework to explain my findings.

5.2. Summary of the Discussion

It is well evident that EPL's makerspace is witnessing a new trend in terms of an increase in the number of makers. It is also well observed for users and researchers alike that EPL's makerspace is busy adding programs as well as introducing cutting age technology that facilitates the designing, planning, and making or creating of personal resources on a daily basis. As the demand for making is growing in most cities, contributions such as EPL's makerspace is, without a doubt, contributing its share. As makerspaces are new trends (phenomena) in Edmonton in particular and public libraries in general, there are some missing elements which EPL needs to reconsider too, building on the exemplary trends in progress at its spaces, mainly at the downtown library in the ESQ building, the temporary location for Stanley

A. Milner Public libraries' programing model responds to people's needs for new technology by providing access to tools and allowing hands-on-exploration and participatory learning (Hordal, 2013, p.3). Scholars believe this approach creates opportunities for introducing new technology and providing fresh outlets for creativity, learning, and community engagement (Klipper, 2014, pp. 5-6). EPL's makerspace appeared to be considering this well agreed upon principle. Digital devices and technology are the primary resources or facilitators of the makerspace's main programs and of most creative works at EPL's makerspace. As the data from my interviewees clearly attest, three of my four respondents (three quarters or 75 per cent of the informants), are in one way or the other attached with the music playing, recording, editing, and sharing, which are for the most part assisted by cutting edge technology. Making music, photo editing and illustration, creating videos, playing instruments and recording music, green wall and photography, vinyl cutting and book printing, as stated by my informant from the management representative side, among other things, are all assisted by technology.

The way ideas are built and activities are planned by the management at EPL for the most part match with what is described in contemporary literature. But still there are some gaps in translating traditional cultures and values of the communities. In stating the intended additional needs, while responding to the seventh question on the list (URQ7), my fourth respondent highlighted the importance of getting more space for people to bring their own materials (such as brush, canvas, ink, etc.). The management representative, in the last question I posed (MRQ #10), also described EPL's plan to expand and grow in the future. However, from what has been stated, it is apparent that providing technology related services in the new renovated downtown library is a clear priority.

This might create a gap in the translations of long standing informal creation practices like netting, nesting, a garage or car fixing, cooking food -replica of kitchen among other things.

As discussed above, contemporary researchers believe inclusiveness is the major challenge of the maker movement. They tend to say that many products do not include accessible design, hindering a significant population of potential inventors or makers (Moeller, Bastiansen, Gates & Subramaniam, 2015, p.33). Though very limited in number there are still concerns in terms of the inclusiveness at EPL's makerspace. Data from my research shows that, all except one (three quarters or 75 percent of my respondents) of my respondents demonstrated positive attitude towards inclusiveness at EPL makerspace. One of my respondents (one quarter or 25 percent of the interviewees) however has portrayed the thought on inclusiveness by making

references to the employees who facilitate the day to day activities at the makerspace. He believes all the service providers at EPL's makerspace are from the majority groups in Edmonton and that the hiring or staffing does not consider the inclusion of people from minority groups. This respondent appeared to be so open and genuine in expressing his personal opinion. According to this respondent, people who possess new and different culture, religion, and race such as immigrants from Africa and the Middle East are not included or not visible in the staffing. However, it is important to also note that unlike this opposing view, my first respondent (Respondent #1-User) highly appreciates the help the staff provide to the customers.

In conclusion, my study intends to understand the makerspace's basic emerging values of makerspaces and how those values are aligned with the core values intended to be implemented by the Edmonton Public Library.

I believe the findings from this research could be used as an input in the designing, planning and implementation of EPL's makerspace programs at its temporary Enterprise Square site and other EPL branches that have started to lightly implement makerspace services and programs.

The outcome of this research will also hopefully provide some insights to EPL's management as they craft and revise their strategic plan of broadening and deepening makerspace programs and services at the Stanley A. Milner branch after its renovation has been completed. Digital Literacy Initiative (DLI), the department at EPL in charge of designing and implementing technology related programs across all the branches of the library, could also use the findings of this research in their policies and strategies meant to advance makerspace values. The last chapter of this capstone project to follow intends to provide some concluding comments and suggestions by deducing some ideas from the major findings presented in Chapter 4 and the analysis provided in Chapter 5.

Chapter 6. Conclusion

Makers, makerspaces and their derivatives have been with us for ages. In fact, as scholars clearly describe the concept, it is "so central to what makes us human that the term Homo faber was coined to describe that sets us apart from other animals" (Dougherty, Conrad, & O'Reilly,2016, p.1). Be this as it may, making as a concept and the organized arrangements of makings as a practice weren't sophisticated until recently. They were not inordinately celebrated and properly promoted. They did not adequately respond or contribute their share to social transformation, cultural alterations and economic gains.

Makerspaces have now become part and parcel of many organizational structures. Makerspaces are considered as practical and artistic creation centers, laboratories that could "augment science education", practical spaces that help to "gain economic, educational, and social rewards" and "inspire innovation" (Burke, 2014, p.1). Makerspaces in libraries are also assisting patrons in making tools, innovating and inventing, storytelling, tinkering, and role-playing (Dougherty, Conrad, & O'Reilly,2016, p.3). In fact, the value of public library makerspaces is now immense. In that, these venues are considered as "a safe place, a source of educational opportunity and trusted information, as well as a place to ignite creativity in young people" (Horrigan, 2016, p.6).

The new, distinct roles of the makespace within the library set up has brought about fresh traditions to the space. This process is now transforming the library from its "traditional role of sharing expensive resources to increase knowledge but this time toward releasing the potential of patrons to create" (Burke, 2014, p.2). In addition, they assist patrons to "interact with mentors and peers, and engage in creative projects" and opportunity for enhancing competencies and skills (Koh and Abbas, 2015, p.114).

In order to adequately understand these new trends and better grasp the emerging concepts, this study investigated the users' experiences at EPL's makerspace, grasped the viewpoint of the management team representative at the library and consulted the current literature. Through the applications of qualitative research method and interview as data collection technique, this study mainly intends to answer four basic questions (noted above) related to the values of makerspace and public libraries.

Makerspaces are encouraging innovation, assisting the teaching learning process and supporting the growth of economies. This means, in makerspaces, priorities are given to people

than devices. People are considered as a real driving forces for the country's economy than the elegance or the beauty of the buildings including public libraries and makerspaces (Babiak, 2013, p.74). Babiak (2013) further elaborated the importance of libraries saying: they "provide generous opportunities for richer understanding of contemporary life, for mastery of circumstance, and for greater social and civic usefulness" (pp.93 & 94). Hence, we can say the old day making was not as simple as today's well-structured platforms. And yet, it is the basis for the complexities and advancements of making we observe today.

I hope the outcomes of this study help identify some of the gaps at EPL's makerspace. The results from this work could serve EPL as an input in crafting, designing, planning and implementing programs related to the makerspace.

I believe the suggestions and recommendations form this project will add value on understanding how EPL's makerspace patrons could explore their potential and preserve their values. The outcomes will add important elements towards EPL's structural objectives, missions and visions. Like all makerspaces in libraries, EPL's makerspace also involves people, tools, technologies, structure and the concept of making (Burke, 2014, p.xv). EPL's makerspaces are intended to share resources and help patrons exploit their potentials to creativity. In addition to some of the commendable comments provided by the users and the ideal policies of the library, there are some concerns related to inclusiveness and the demands for more space.

6.1. Key Findings:

The well-accepted practice of the public library makerspace programing model is one which responds to people's needs including the new technology by providing access to materials and tools and allowing hands-on-exploration and participatory learning (Hordal, 2013, p.3). In this regard, EPL has different programs in response to its objective of sharing its resources and expertise. Results from my study shows that the programs at EPL are meant to address the needs of all patrons, people of varied age groups, different genders and interests. These among other programs include, making music, photo editing and illustration, creating videos, playing instruments and recording music, green wall and photography, vinyl cutting and book printing. In terms of the daily and weekly schedules, EPL's makerspace has also a predominantly technology assisted programs. Music Mondays, Friday gaming nights and robotics club on Saturdays are to mention but few of the public programs at this library.

Responding to the needs of the customers and developing programs accordingly is a well-

accepted model. However, chances are very high for traditional practices and values to be promoted and practiced less in makerspaces that focus on new, digital technologies. Findings from this research reaffirmed this phenomena. The importance of traditional practices or values of the communities are well described but less practiced at EPL. Theoretically, the management reaffirms on the importance of introducing, promoting and exploiting traditional making at EPL. In fact, as the finding of this research indicate, both the representative and the users deeply highlighted and overly emphasized the importance of promoting and preserving traditional values. As stated in the preceding sections, most of the programs at the makerspace are predominantly technology driven and technology focused. According to the findings of my research, EPL in general and its makerspace in particular are still interested in preserving and promoting the old traditions which are deep rooted in society. However, results also show that traditional values and practices are not vigorously worked on. No practices tantamount to traditional values were referred, explained or practically observed at EPL's makerspace.

The other key finding of this research is related to inclusiveness, where some concerns have been demonstrated - although other patrons expressed great appreciation. Inclusiveness is in fact one of the greatest challenges that any institution could face in the contemporary world. Such challenges might also be attached with public libraries and maker movements. In most instances, it was indicated, in the literature, that the products coming out to the market now are not in accessible design, hindering a significant population of potential inventors or makers (Moeller, Bastiansen, Gates & Subramaniam, 2015, p.33). EPL is no exception.

With the increase in diversity of its population, it is no wonder, if accommodation and inclusiveness are placed at the heart of programs and concerns for users of the makerspace. As to the findings of this research, most of the ideals go in conformity with this agreed principles and intents. Most of the respondents approached by this research highly appreciate EPL's approach and they feel like they are part of library and the makerspace programs. In fact, it was mentioned by one of the informants that, EPL's staff did not demonstrate "a condescending attitude" unlike most groups with tech skills. In addition, from what is extracted from the findings, EPL's management is always ready to adjust its services based on the needs of the community. However, as discussed above, results also show that there are still some concerns in terms of the inclusiveness at EPL's makerspace. One of my respondents stated that the employees EPL's makerspace are from the majority groups in Edmonton. The hiring or staffing does not consider inclusion of people from minority groups. According to this result, people

who possess new and different culture, religion, and race such as immigrants from Africa and the Middle East are not included or not visible in the staffing.

My research also confirmed that customers need additional space in the makerspace to support more practices, skill development, and to get their artistic works done. The need for more space by the customers to bring personal tools and engage in activities that match with their interests and frequent practices such as painting is a good example as to how patrons are demanding more space. It is expected that the upcoming makerspace at EPL at the Stanley A. Milner branch, under renovation now, will take 10,000 ft2 area of the library. The renovated space is also expected to have a children's section and a new, stylish freshly formatted community gaming space. Additional services have also been promised. Expanding the existing programs will also remain the focus of the makerspace.

These plans respond the need for more space but there still is uncertainty in terms of responding to all the needs of the users or makers.

6.2. Study Conclusion and Final Recommendations

Like most public service providing industries, new trends for making and producing, rather than simply the process of consuming resources, are being observed in public libraries. With the expansion of makerspaces in public libraries, there are some new practices emerging. It is up to public libraries like EPL to fully understand such trends, meticulously observe if they really align with its basic values, mission and vision and respond to them accordingly. Understanding these trends will help public libraries in general and EPL in particular to revise its current plan, design new approaches and expand its programs based on the interests of the customers. In addition, understanding the needs and aspirations of the users will help EPL to prioritize programs, wisely invest on its human power and resources and encourage productivity.

As indicated by the management representative, the makerspace at EPL is meant to help the library as a laboratory (testing place) for its programs and services. This is a scientific and effective approach in planning, designing and implementing need based programs and services at the space. However, as indicated by the management representative, it is not adequate to only rely on the informal feedback generated from the general public and the reviews, commentaries and analysis by the media. It would be more effective if it is supported (assisted) by research-based information, concrete data and results followed by recommendations.

Although, for the most part, progressive and effective programs, resources and services have started to emerge at EPL makerspace, these are huge current undertakings that demand great caution. The findings of this research, from the users' side, have identified some positive signs mainly in terms of the services and some of the resources. However, there are some concerns too, predominantly on the inclusiveness and space that the library need to provide proper attention to. With this focus in mind, I hope that the outcomes of this research may help address some of these challenges.

6.2.1. Research on Space under Renovation:

This research could be adopted, modified and re-conducted in the upcoming Stanley A. Milner Library, which is under renovation at the time of conducting this research. Due to EPL main branch (Stanley A. Milner's) process of renovation, this research was conducted at EPL main branch's temporary branch at ESQ building in downtown Edmonton. This branch is limited and small in both its resources, users and the staff serving the community. Given this circumstance, only one management representative and four users (as informants) were contacted for this research. Results would have been more intense and wider had the number of informants be greater than this representation.

6.2.3. Comparative Studies:

In addition, EPL fully implements the concept of makerspace only in its main branch. Despite some makerspace activities at some few locations, the other 20 EPL branches in Edmonton do not practice. In addition, there is only one public library in Edmonton, the EPL. If these two conditions had to appear in different forms, shape and intensity, other types of researches like comparative studies between the branches or other public library would have been considered.

Furthermore, comparative studies could also be conducted between makerspaces of different forms like the academic and commercial ones.

6.2.4. Different Topics:

The process of conducting this research also observed other research topics or areas. These among other things include: the issues and challenges of the makerspace; the economic contribution of the makerspace; the social and psychological advantages of makerspace; and the role of makerspaces in promoting and assisting creativity. In general, EPL's makerspaces are intended to share resources and help patrons engage in creativity exploit their potentials. In this regard, the directions by the library to assist the patrons in their daily activities and needs

are well planned and properly implemented. This is proven by both the management team representative and active users of the space. In addition to some commendable comments provided by the users and the ideal policies of the library, there are also some concerns mainly related with inclusiveness and demands for more space.

I hope that my research will add value as to how EPL's makerspace patrons could explore their potentials and preserve their values, and that it will in some way add some elements in EPL's structural objectives, mission and vision.

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Appendix

I. The first set of questions posed to EPL's Management Representative

RQ1: What are the basic tasks you are involved in as an associate manager? And I think there is a transformation from the Stanley A. Milner moving in here. What does the process look like?

RQ2: What does Digital Literacy Initiative (DLI) or movement mean? What are the major activities of DLI at EPL look like?

RQ3: In layman terms, what are some of the activities or the services and programs executed by the makerspace on a daily basis, I usually see... the makerspace is open when the public libraries open?

RQ4: What are the predominant activities of the makerspace…? Which area for example has more traffic of all the services the makerspace offers?

RQ5: What are the major tasks you want EPL to accomplish through its services and programs?

RQ6: How do you evaluate the roles of the makerspace at EPL? Do you think the makerspace is contributing its share in fulfilling the policies and strategies of the library?

RQ7: It looks that makerspaces are an experimental place for public libraries. It is a type of place where you check or test the technology and applications, and if it works you could apply it among the general public or all EPL users.

RQ8: In terms of the daily needs. There seems to be some daily needs that come from the society. Do you always adjust yourself towards the needs of the society? Do you always adjust towards the needs of the community? Especially when new ideas come. How do you tune towards those needs?

RQ9: How do you make sure that makerspaces are open, inclusive spaces for patrons of all kinds of backgrounds? How does the Makerspace respond to diverse Edmontonian patrons (Age, Gender, Profession i.e. amateur and professional etc.)?

RQ10: What role does EPL's makerspace play in helping or assisting the community? Are its services and programs only meant to assist individual customers or groups with

common interest and background as well? (inclusiveness and accommodating).

II. The Second Set of Questions Forwarded to Four EPL's Makesrpace Users.

RQ1: How did you first hear about EPL makerspace … ?

RQ2: What are some of the objectives you would like to fulfill through the use of makerspace resources...the things you would like to achieve?

RQ3: What does producing (making) and sharing what you make or produce mean to you in this context?

RQ4: Where did you perform your duties prior to using the resources at the makerspace? So, how do you think do these resources helped you out ?

RQ5: Do you think the resources in the makerspace truly respond to the needs of the community (explore potentials) ? If so, how?

RQ6: Is the EPL Makerspace an inclusive place for you? Why / why not?

RQ7: What do you want the makerspace to include in its services and programs? (What is it that you don't like about the makerspace?)

RQ8: How do you like to grow with the makerspace? What are your aspirations…in terms of expanding your career or business or developing your skills?

III. BEYOND OUR WALLS 2015 Annual Report

MESSE

TRANMUNITIES	GITAL ENVIRONMENT	LEARNING & DISCOVERY	THE WAY WE DO BUSINESS	DONORS & GRANTS

IV. EPL 2015 STATISTICS

V. STATEMENT OF REVENUE AND EXPENDITURES

		2015	2014
City of Edmonton	Grants	$40,240,685	$38,227,480
Provincial Government		5,045,369	4,581,379
Funding for Library Capital Projects*		12,711,014	12,722,773
Fines and Charges		955,586	917,078
Other **		1,766,470	1,673,289
Total Revenue		$60,719,124	$58,121,999
Salaries, Wages and Benefits		$35,381,965	$33,102,464
Books and Library Materials		9,182,689	9,109,211
Vehicles, Machinery and Equipment		4,582,711	5,596,804
Building Operations		3,231,333	2,592,499
Utilities and Other		3,105,240	2,971,168

Material Goods and Supplies	2,076,539	1,989,404
Services	1,822,621	1,624,348
Total Expenditures	$59,383,098	$56,985,898
Revenue in Excess of Expenditures***	$1,336,026	$1,136,101

* Includes capital funding from grants and contributions.

** Includes room rentals, leases, interest earned, donations, photocopying and proceeds from sale of capital assets.

*** Funding is earmarked for 2015 commitments to be completed in future years.

VI. COLLECTIONS AND SERVICES

	2015	% change	2014
In-person Visits	5,792,615	9%	5,332,337
Virtual Visits	8,980,915	2%	8,838,449
Total Visits to the Library	14,773,530	4%	14,170,786
Adult	4,060,167	0%	4,076,513

Juvenile	2,978,603		2%	2,908,145
Renewals	1,980,148		2%	1,949,216
e-Books	756,062		19 %	35,598
eNewspapers & Magazines	465,613		15 %	404,825
eAudiobooks	179,394		46 %	122,794
eMovies & TV	50,650		38 %	36,654
eMusic — Single Song	645,794		69 %	382,730
eMusic — Album	33,996		38 %	24,634
eUsage	2,131,509	33%		1,607,235
Total Items Borrowed	11,150,427	6%		10,541,109
In-house Collections Use	1,481,900	19%		1,246,300

Public Internet Use	1,396,700	14%	1,225,478
Questions Answered	2,314,525	-9%	2,536,000
Programs Presented	16,175	20%	13,530
Program Attendance	421,663	19%	353,476
eLearning Programs Usage	371,260	329%	86,493
Physical Items Purchased	267,429	-28%	371,092
Physical Collections	1,600,064	-4%	1,674,660
Digital Collections	12,550,953	35%	9,325,000
Total Physical and Digital Collection	14,151,017	29%	10,999,660
New Memberships	76,985	10%	70,059
Total Memberships	266,679	11%	240,597
Number of Branches	19		18