2020

Libraries and Digital Information: How Library Services Impact Digital Equity

Sheila Walton

Cristine Fowler

LIBRARIES AND DIGITAL INFORMATION: HOW LIBRARY SERVICES IMPACT

DIGITAL EQUITY

BY

Sheila Walton and Cristine Fowler

A dissertation submitted in fulfillment

of the requirements for the degree of

DOCTOR OF EDUCATION

SEATTLE UNIVERSITY

2020

Approval Signatures:

_____

Colette M. Taylor, Chair, Ed.D   Date

_____

Nicole Franklin, M.A.   Date

_____

Ted Kalmus, M.P.A.   Date

_____

Trenia Walker, Ph.D.   Date

ACKNOWLEDGEMENTS

DEDICATION

For Cris, this dissertation is dedicated to the three strong women who are her role models in life:

to her mother for pushing her to reach for success, to her wife for supporting her in achieving her

goals, and to her daughter for all that Gen Z will accomplish in creating equity in all its forms.

For Sheila, this dissertation is dedicated to her family. Her husband and sister who have been her

support and inspiration throughout this process. They have made her a better person and

educator. Additionally, this dissertation is dedicated to the members of the Cohort 41 LDG3

group, whose love and support kept us going.

ABSTRACT

LIBRARIES AND DIGITAL INFORMATION: HOW LIBRARY SERVICES IMPACT

DIGITAL EQUITY

BY

Sheila Walton and Cristine Fowler

Supervisor: Colette Taylor, Ed.D.

This mixed-method study explains how public library services impact patrons' access to digital technology. Working with a county stakeholder, the research team developed an online questionnaire for distribution to library staff in two public library systems. The King County Library and Seattle Public Library executive administration representatives worked with the research team to determine the sample of participants: those library staff who regularly interface with patrons needing or requesting access and use of digital technology. Participants provided demographic, Likert scale agreement, and narrative responses to 29 questions. Using statistical software and hand-coding processes, responses were categorized to find alignment with the conceptual framework Informational Justice. Quantitative data suggested moderate strength relationships between independent and dependent variables, especially related to "computer access is the most popular service my branch provides." Six overall themes were developed from qualitative data: Ability to Access Technology, Identity Based Skill, Interpersonal, Technology Training and Knowledge, Digital Equity in Systems, and Advocacy. Results from the study indicate that computer access is a popular in-branch library service. However, it was also found that library resources are equally distributed to branches in each system, which does not indicate equitable distribution.

Keywords: digital access, digital divide, digital equity, informational justice

Contents

List of Tables

CHAPTER ONE

LIBRARIES AND DIGITAL INFORMATION: HOW LIBRARY SERVICES IMPACT

DIGITAL EQUITY

Introduction

A historical connection exists between how patrons access knowledge and library

systems. This is the defining purpose of a library. Individuals, school groups, scholars, and

researchers require libraries to provide multiple kinds of foundational knowledge bases, and have

for centuries in the United States (Cuban & Cuban, 2015). While most people think of a library

as a collection of books and magazines waiting to be accessed by the interested patron, there are

more to libraries than just those resources. The format of these knowledge bases has changed

over time. In the last 100 years in the United States the format in which information is accessed

has changed considerably. Books and magazines are still available, but historically they have

been available in multiple formats. For example, the Library of Congress, since 1931, has been

printing books in braille, or has them recorded for audio listening. Additionally, as the country's

zeitgeist turned from classic novels, shorter pulp fiction and comic books grew in popularity, so

library collections adapted to those societal interests (Congress.gov, 2020). These are two

examples of how libraries adapted to patron's needs when knowledge formats changed over

time. In response to the pressure to these types of changes (Lynn, 2018), libraries have been

increasingly digitizing collections for several decades.

During the last 50 years, digital technology cemented itself as a way of both accessing

and possessing information, and libraries adapted to this change by collecting information in

traditional and digital formats, and computing devices (Bertot, 2009). In addition to digital

information collections, libraries invest in services, programs, equipment, and infrastructure to

provide patrons and scholars access to digital information. Therefore, a unique relationship has developed between patrons using technology to access digital information and the types of services, collections, and equipment available in a public library to address both the need and the access. The ways governmental policies impact access to technology in libraries has a direct effect on digital equity, which has been the focus of studies, articles, and reports. Fundamentally, these studies, articles, and reports continually updated society's understanding of using libraries for specific or general purposes. For example, articles and studies examine: (a) how services offered in libraries change when funding models change (Mulvihill, 2011; Christou, 2017); (b) how librarians need digital skills to serve their patrons while using library services based on technology trends (Enis, 2014; Harrison, Burress, Velasquez, & Schreiner, 2017); and finally (c) how librarians, through service delivery and program development, alters the public's perception of using libraries as a tool for accessing digital technology (St Lifer & Rogers, 1996). These contexts address how the public library continually fulfills the mission of being a knowledge base for the community, while simultaneously they grow to meet technological demands. Part of this context includes how digital information is utilized in a library setting.

The County, Digital Equity, and Libraries

Conceptually, digital equity is the ability of an individual to take full advantage of all that society has to offer in an online environment (Kinney, 2010; Martzoukou & Elliott, 2016; Rideout & Katz, 2016). For example, more information related to job searching or workforce engagement, civic involvement like voting, management of personal health care, or community and family socialization is accessed more than ever through the Internet (Bertot, Jaeger, Gorham, Greene, & Lincoln, 2012; Harrison, et al, 2017). Digital equity, then, describes an individual's ability to access and analyze online resources to services such as healthcare, employment, and

news and information (National Telecommunication and Information Administration, 2000;

Rideout & Katz, 2016; Bertot, Real, Lee, McDermott, & Jaeger, 2015; Oehlke, 2016). These

concepts are similar to regional library systems in King County and are outlined in the King

County Equity and Social Justice Plan (ESJP). This plan outlines a broad range of equity focused

activities in King County, located in the Pacific Northwest, but also states that more cross-sector

coordination is needed "to match the scale of inequities" faced by King County (KC) residents

(King County Office of Equity and Social Justice, 2016, p. 4).

Broadband data for the Pacific Northwest has indicated some of the highest accessibility

rates nationally yet approximately 16% of KC residents still do not have in-home Internet access,

and those with an income of $50,000 or less annually are significantly less likely to have this

access (King County Information Technology, 2016). Although the County made efforts to

increase digital access to information for its residents (King County Information Technology,

2019), research within the County's major metropolitan city identifies a significant gap between

access to the Internet and an individual's skills to use it (City of Seattle, 2016). Further, digital

equity as a scale of achievement (county goal), outlined by King County Information Technology

department (KCIT), an agency within the County's government, considered this achievement a

major social justice goal (King County Department of Information Technology, 2016). In KCIT's

2019 annual report, it is noted that digital equity will have an impact on future generations.

Specifically, the County wants digital equity to "have the greatest impact so that today's youth

are not left behind in our digital society" (King County Information Technology, 2019). This

social justice goal, county mission, and outlined strategic directions converge on how libraries

serve the general public because libraries have a long history as providers of information to the

public (Scott, 2011). Further, the history of libraries adapting to the larger society's need for

consuming different and unique kinds of knowledge bases directly connects the county's mission

and this social justice goal. Therefore, examining the evolution of using digital technology in a

library environment, adds to research that may impact policy level decision making processes

and development of future library services (Jaeger, Bertot, & Gorham, 2013; Kinney, 2010). City

and County library systems in King County engage community members in digital learning

through access to computer classes in public libraries (Kershner & Becker, 2017). This

engagement is connected to social justice goals, where services are intended to be equitably

available for all residents.

   Social justice and libraries. The following social contexts will be examined in this

research study explaining library services and access to library technology. (a) patron's access to

digital technology; (b) digital literacy; (c) and digital equity. Each social context is considered

background to the main research problem--factors that impact a community member's ability to

fully access digital technology in public libraries, thus achieving digital equity. In this study, the

following terms will be used: digital divide, digital access, broadband connectivity, digital

literacy, digital equity, and social justice. Each will be defined later in this chapter.

<h2 style="text-align:center">Statement of the Problem</h2>

   Taking these contexts and applying them to a specific county in the Pacific Northwest

may assist the county's government agency in enhancing library-based services and programs for

residents. Providing free access to digital information for county residents is particularly

important to King County, in an effort to achieve digital equity, defined in the next section.

Achieving this social justice goal is important to the County, especially its Department of

Information Technology which serves as a digital information curator. In order to provide digital

information to its residents, the County wants to know more about what access to technology is

available in its public library systems and how that access contributes to the County's digital

equity plan.

KCIT acknowledges that residents need a fundamentally basic access to digital

information, which they can receive within library branches, to fully engage in county society.

(King County Information Technology, 2016). Yet residents without in-home access lack the

opportunity to fully engage in online society (King County Information Technology, 2016).

Given this fundamental need, the problem King County wants to investigate is how digital

information is provided equitably to residents in public spaces, like library branches located

throughout the County.

The King County Library System (KCLS) and Seattle Public Library (SPL) act as both a

repository for and generator of digital information, open to anyone and everyone to use.

Branches are positioned geographically in order to serve County residents in metropolitan, rural,

and small city areas. For many King County residents, digital technology is accessed through

library services, and libraries remain popular locations to gain online access to use the Internet

(National Telecommunication and Information Administration, 2011; Kinney, 2010). However,

there may be factors which impede residents' ability to access digital information in their specific

neighborhood library branch, regardless of policies outlining eligibility requirements for library

card ownership. This relationship between access and the county's digital information for all

residents was a problem in need of explanation. Understanding this relationship is important

because government agencies are pushing more and more services and information online for

residents to access. These can include unemployment or social security benefit information,

government agency job searching and application processes, or professional development

training (Jaeger & Bertot, 2011; Bertot et al., 2012; Strover, 2014).

Since the early 2000s, Internet access has concerned policy makers, educators, librarians, and technology experts because access was not considered universal. That concern about access has been studied by government agencies, library associations, and social scientists. These studies showed that a lack of access to technology and the ability to use the Internet to find information has had a direct impact on people of color, the elderly, people with lower socio-economic status, people with less education, and those living in rural areas (National Telecommunication and Information Administration, 2011; Cancro, 2016). At the local, County level this was an identified problem because the County acknowledged the need to remain competitive in the 21st Century (King County Office of Performance, Strategy and Budget, 2015; King County Information Technology, 2019) by ensuring residents used the Internet for technology training, job searching, civic engagement, or socialization (McConnaughey, Nila, & Sloan, 1995; National Telecommunication and Information Administration, 2011; Jaeger et al., 2013).

The County's ability to remain competitive connects to providing free access to the Internet for those residents who cannot afford broadband connectivity. A study was designed to determine factors related to the disconnect between digital access and information to help the County better address the issue of providing Internet access for all residents through in-branch library services. For example, the County maintains services for the unemployed. These services are available online or by phone. However, online access was identified as being available 24 hours a day, whereas landline phone access had specific locations and times for use. It was further identified that the County funds both KCLS and SPL, to a certain degree. This included identifying a series of revenues used to support both organizations' strategic plans; both of which include social justice goals. Revenues which support these plans include residential tax bases,

levies, and donations. If residents are unable to pay taxes due to unemployment, or residents do not vote to approve levies, the County cannot continue to substantially fund both systems. For example, in 2018, the County used property taxes to fund approximately 95% of KCLS's overall library budget. In that same year, SPL used levy fees as 24% of its overall budget, 60% from a real estate excise tax, and16% from gifted donations. As public library budgets are continually reduced by local governments, the prevailing funding model increasingly views libraries as consumer entities; to be funded by the consumer, i.e.: the patron (Cuban & Cuban, 2007). With expenses outpacing revenues due to salary and benefit increases, the County library must operate at a deficit in order to bring services to residents; including providing in-branch access to the Internet for free to patrons (King County Library System, 2020).

Internet engagement is also associated with civic engagement. When residents have Internet access, researching local government officials, learning about voting issues, or otherwise looking up government information that might impact their life directly becomes possible (Kinney, 2010; Scott, 2011; Jaeger et al., 2013). Additionally, County residents accessing the Internet in a public library afford the opportunity to engage in continuing education. Workshops have been offered by both KCLS and SPL for residents to learn new languages, access learning databases, or receive online tutoring. There were eight program areas identified as being maintained by KCLS, all accessible through KCLS online. These included job and career information, business and fundraising, and science and health, among other hobby related activities. Similarly, SPL maintained services for online access to information, and had programs for residents to learn about how to use services available in its library branches; including computer basics classes, technology tutoring, or word-processing. Residents not having access to

these programs or knowledge bases to improve their lives, the County will unlikely maintain its competitive edge as stated in its strategic plan.

Purpose of the Study

The purpose of this explanatory research study was to gain a current understanding of how regional public library services support public facing digital equity, defined as digital access to information. This work aligned with enhancing the library branches' ability in serving community members in useful ways when creating policies, policies, and strategic directions; keeping digital equity and social justice at the forefront of program planning and implementation.

Research Questions

Two research questions guided this study:

1. How do King County's public library services impact residents' access to digital technology?

2. How are individual library branches providing equitable access to technology?

Conceptual Framework

Informational Justice Framework

When evaluating how libraries addressed digital equity, the researchers applied an Informational Justice Framework as a guide. Introduced by Mathiesen (2015), Informational Justice is multifaceted and relevant to digital equity in its grounding in social justice. The framework consisted of five social justice aspects and approaches that were relevant to information professionals (the academic term for librarian): two elements of a social justice orientation, and three interrelated and mutually reinforcing social justice foci (Mathiesen, 2015).

The first social justice orientation element was the institutional perspective. This means having an awareness of how unjust society and its institutions can be while recognizing how institutional and cultural forces directly impact "the life prospects of individual persons and communities" (Mathiesen, 2015, p. 205). The second social justice orientation element represented relational perspectives. Foundational to Informational Justice was having an ethic of care, solidarity, and respect for both the work created by Information Professionals, and the individuals they served (Mathiesen, 2015). The Framework identified three social justice foci: iDistributive justice, iParticipatory justice, and iRecognitional justice; (the lowercase "i" represents "information" and its relationship to each element).

As explained by Mathiesen (2015), 'distribution' distributes goods and services, like societal resources and opportunities. iDistributive justice, then, was specific to the equitable distribution of information goods and services. Because distribution is socially constructed, Mathiesen (2015) suggested it "should be evaluated in the LIS professions from the perspective of justice" (p. 205). Applying the Informational Justice framework to evaluate library and information services, Mathiesen (2015) closely examined the sufficientarian principle as an important part of iDistributive justice. Sufficientatiransim "focuses on ensuring that all members of the community are guaranteed sufficient access to information" (Mathiesen, 2015, p. 217). Sufficientarianism, therefore, informed iDistributive justice because resources are prioritized as equitable for all, regardless of level of access.

The second Informational Justice Framework focus was iParticipatory justice. In this context, participation means recognizing an individual's agency while also avoiding passively treating people as recipients of generalized assistance (Mathiesen, 2015). This was interpreted as giving space and place to all community members while encouraging participation in

organizations and systems that directly affected community members (Mathiesen, 2015).

Therefore, community members should be included in decision-making and distribution of

information resources.

The third focal point is iRecognitional justice. Mathiesen, (2015) referenced this as not

using cultural symbols or imagery that reinforced oppression or domination. The specific

connection to libraries was found imperative when considering how people and communities are

presented and represented in databases, materials, programs, or advertisements. When these

resources are considered, and cultural symbols or imagery is not representing systematized re-

oppression or re-domination of members of society, members are considered included and

represented fairly and accurately (Mathiesen, 2015).

Interrelationship. This study used the interrelationship of these three foci, the

Informational Justice Framework, to explain the impact library services have on digital access.

One way the study contextualized the three foci was through their interrelationship, which could

be evidenced in socially just information systems and services. iDistributively just systems and

services contribute to iParticipatory justice through the provision of "informational resources to

develop and support…[patron] voices in public discussions" (Mathiesen, 2015, p. 207).

Additionally, iDistributive justice promoted iRecognitional justice through socially just systems

and services when a welcoming library environment was created. An example of this

interrelationship would be represented by a library that contains materials appropriately

representative of the whole community, such as demographically and historically accurate

information resources and data. Another example of this interrelationship occurred when libraries

created space for marginalized individuals and communities (Mathiesen, 2015). iParticipatory

justice, then, contributes to iDistributive justice in the equitable provision of relevant information

sources for all community members, especially individuals in underserved and marginalized

communities. iParticipatory justice and iDistributive justice were interwoven to give

communities voice in how information services are designed and implemented (Mathiesen,

2015). When inclusive information environments are created in libraries, iRecognitional justice

and iDistributive justice are interconnected because patrons more readily access information due

to feelings of inclusion (Mathiesen, 2015, p. 208). By disallowing the "stereotypes that

contribute to the silencing and ignoring of marginalized populations," iRecognitional justice also

contributes to iParticipatory justice (Mathiesen, 2015, p. 208). Included in this description is the

interrelated nature of these i-justices, exemplifying how a library environment works toward

digital equity. These three foci, reinforce, interrelate, and interconnect the Informational Justice

Framework and demonstrate how they connect to library services the County wants for its

residents. See Figure 1.
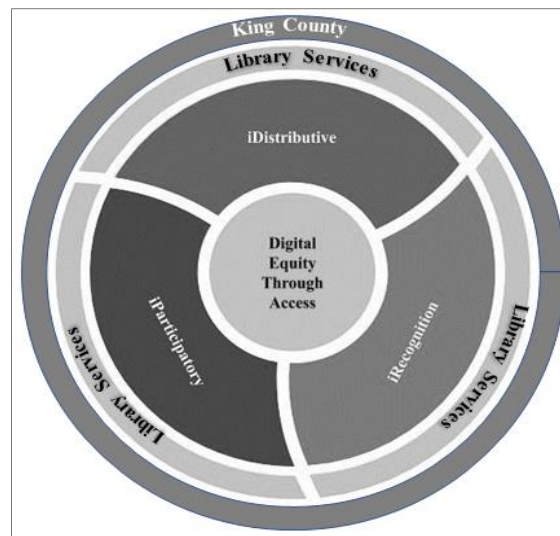
Figure 1: Conceptual model of informational justice
Three components of informational justice are interconnected (Mathiesen, 2015). The library
system is supported by the County through funding and policy directives. If library services
interconnect with all three informational justice components, digital equity through access to
digital information may be achieved for patrons, realizing the County's strategic mission.

Context of the Study

Library Systems Within King County

There are two library systems this study examined. First, the King County Library System. This system has a long history of serving residents. In 1943 the County Library Rural District was established in response to a vote of rural residents, "who lacked access to existing libraries" (Becker, 2011). As the need for access to library services grew throughout that year, the library system adopted a new mobile service approach. In 1944, the library system began a mobile service with a single vehicle and brought books to the County's rural communities. This service was so important to rural residents a special vehicle was designed and adapted for delivering books. At that time, "reading for pleasure remained the biggest draw for most bookmobile patrons" (Kershner, 2017). Throughout the decades, residents continued supporting the unprecedented development of library buildings and services. For example, in the 1960s a 6-million-dollar bond passed by 63% of voters to increase library funding. In the 1980s and 1990s more libraries were annexed through resident vote, and in 2004 a 172-million-dollar bond was passed to perpetuate local funding throughout the subsequent decades. Eventually, through these successive tax campaigns to increase library funding and branch annexing, KCLS grew to support 50 in-community branches. These branches served the diverse residents of the geographically disparate King County. Lastly, to bring more services to these residents KCLS relied on on-going funding from the County, which continues today

It was discovered that the KCLS is primarily funded by the county's tax revenues and provides a variety of resources for today's residents, which act to meet the County's mission of creating equity-based services. These resources assist King County residents with information and knowledge acquisition via physical, mobile, and online locations. The unique and more

modern component related to information acquisition is the KCLS online delivery system. KCLS has three forms of online delivery for its residents, which provide many resources within those systems. First, KCLS supported in-library equipment which included computers with internet access available during open hours. For example, a library card was required to use computers and the computer use policy outlined various rules, including the ability to reserve computers for specified amounts of time. These rules outline how long patrons may use computers for their purposes, which indicated the importance of having computers for patrons' use. Second, KCLS offered online resources through online portals. These included applications, databases, magazines, audiobooks, and classes available through the KCLS website if a patron had a library card and registered through the portal. Third, the mobile learning lab offered computer workshops on various topics throughout King County (King County Library System Foundation, 2016).

Other identified policy level approaches that supported patron's learning while also making resources available, was the library system's statement of diversity, equity, and inclusion. This statement declared support for patron's learning in diverse and equitable environments that removed "barriers so that all [could] reach their potential" (King County Library System Foundation, 2019). Each of these policies, rules, or services were supported by KCLS in service to its mission and values of providing knowledge bases to support community growth and prosperity. The second public library system in this study is the Seattle Public Library (SPL).

SPL was established as early as 1868, as a department of the City of Seattle. In 1891, it operated as an organization for patrons throughout the city. It was a single reading room in what is now the city's historical district. After burning down in 1901, the city received a grant from Andrew Carnegie to rebuild the fledgling library. In 1914, SPL opened its first branch location.

SPL has since grown to what is now a system with 27 library branches within the city limits of

Seattle. SPL has served Seattle residents and was noted as distinctly different from KCLS.

Seattle city residents are requested to only use Seattle Libraries and non-Seattle residents are

requested to only use King County Libraries. Throughout its history, SPL has provided materials,

and sometimes shelter for unemployed residents, and has regularly attended to other patrons'

needs in times of regional crises. In return, residents have approved levies and bond measures,

including the largest bond passed in the nation, in 1998. In 2012, another bond passed with the

specific intention of supporting four program areas identified by the community: "keep libraries

open, more books and materials, improve computer and online services, and maintain buildings"

(Seattle Public Library, 2020a) Today, it was discovered that SPL maintains a strategy with three

foci: individual growth, community impact, and institutional performance. The community

impact focus included similar language to online support for residents to access technology and

learn about computers. Specifically, the technology and access objectives are supposed to assist

residents, serving "as Seattle's primary point of access to information, lifelong learning,

economic development and creative expression through innovative use of technology and digital

resources" (Seattle Public Library, 2020d). To this end, several programs and services were

identified that assisted patrons in accessing digital information, learning about computers, or

learning how to use the Internet.

The history and current status of both systems identified through researching, suggested a

strong relationship among growth of library services, resident's support of those services, and the

County's desire to continually fund programs for residents. In the context of this study, both

library systems are committed to digital equity through service delivery to residents for the

purpose of learning about technology or accessing digital information using library technology. This relationship conceptually tied to King County's values and strategic planning efforts.

King County

King County was identified as a rapidly growing technology hub, and home to many well-known technology companies and numerous start-ups, all of which offered high paying jobs for county residents. A regionally based technology cooperative called the Washington Technology Industry Association (WTIA) viewed the technology industry as the primary employment sector in King County. One of WTIA's guiding principles was noted as assisting residents in accessing high-wage tech-industry jobs (Washington Technology Industry Association, 2020). These examples paint a picture of a county focused on the utilization of technology. It was found that three organizations relevant to this inquiry included the King County Information Technology Department (KCIT), the King County Library System (KCLS), and the Seattle Public Library (SPL). Each organization has provided technology training and resources for residents, either online or in-person. The County's economy is growing, unemployment remains low and the technologically sophisticated core remains expansive, yet access to digital technology devices is a persistent issue for residents. Access to digital technology devices is also a perennial issue for people of color, lower-income residents, the elderly, the undereducated, and those living in rural areas. King County contains a mix of these variables. According to a County website, 9.7% of the County population lives below the poverty level and 24.7% of Black or African American residents live below the poverty line. These figures are based on the 2009 Census and obtained through the King County Executive office (King County Office of Performance, Strategy and Budget, 2015).

The intersection of race and income is another factor related to the issue of access to digital technology where median incomes for white and Asian households far exceed those of black or Latino households. While this is true across all of King County's peer counties, the gap between white and black incomes in King County is among the widest in the group. In 2018, the median household income for a Black household was $55,152–or 55% that of a White household's median income of $100,298.

Given that library funding comes from residents' property taxes, disparity or gaps between income levels is a potential impact on library funding. In 2009, residents making less than $24,999 a year made up 69% of the rental market. Additionally, Black or African American home-ownership rates were 31%. King County states that "educational attainment is strongly correlated with wages" (King County Office of Economic and Financial Analysis, 2017). High school drop-out rates in 2015 for Black and Hispanic students was 20.8% and 24.2%, respectively (King County Office of Economic and Financial Analysis, 2017). The County also acknowledges there are "significant gaps in educational attainment by race or ethnicity" (King County Office of Economic and Financial Analysis, 2017). Asian and White county residents hold 53% or higher rates of college degrees "while only 25% of Black and 22.3% of Hispanic residents hold a degree" (King County Office of Economic and Financial Analysis, 2017).

Geography, demographics, and economy. As a geographic region, the County spans a large geographic area in the Pacific Northwest encompassing one dense metropolitan city, surrounded by small to medium cities, large expanses of forests, and mountains. These forested and mountainous areas are dotted with rural communities. In total, it was shown that the County covers 2,132 square miles, with approximately 1,000 people per square mile. In 2017 King County was identified as having a population of over 2 million people, who spoke over 170

different languages (Felt, 2017). In 2018, the county's labor force was 1.29 million people, where

1.22 million people were employed (Constantine, 2018). Industry jobs in the county totaled 1.44

million, mainly in the technology sector. It was further found that the King County government

as an agency offered up to 21 services to residents, described as regional, sub-regional, and local,

while over 100 departments offered to deliver these services to provide residents with quality and

equitable life experiences (King County, 2019). To achieve that goal, extensive strategic plans

outlined intended outcomes and are described in King County's Determinants of Equity Report

(King County Office of Performance, Strategy and Budget, 2015). This plan was developed

because King County determined that "county residents do not enjoy the same health, resources,

and opportunities because of their race and where they live. [This] inequity threatens the region's

ability to remain globally competitive" (King County Office of Performance, Strategy and

Budget, 2015). To achieve this goal for residents, one strategy identified the ability to access

digital information, including county data, using library services. King County has declared an

economic interest in achieving digital equity among its residents so they may access this type of

information to improve their online social lives and contribute to the County's overall economy.

This economic interest was shown to be driven by the support residents received from the King

County Information Technology department. Yet, KCIT documents note a continued concern

with whether digital equity is being achieved for county residents. This concern is highlighted

through different County statistics and directives. For example, County statistics related to

economic growth, resident diversity, income, rurality, and education attainment painted a picture

of accelerated growth. It was also found that the County maintained the mission of providing

access to digital technology for residents (King County Office of Equity and Social Justice,

2016). This might have been in part due to the increased immigrant population searching for language skills.

      Language learning. For example, in 2017 the number of foreign-born residents who lived in the County was documented at 23.6% (King County Office of Economic and Financial Analysis, 2017). This figure did not indicate if all residents spoke English. However, a public health authority publication outlined language barrier as an issue for county residents. It was identified that over 170 languages were spoken in the County in 2018 and "more than one of every four...County residents [spoke] a language other than English at home" (King County Hospitals for a Healthier Community, 2018, p. 43). Additional evidence of language learning need included the library system's offering of several programs to assist residents with language learning. The KCLS documented that at least three programs throughout the library branches assisted 35,632 patrons with language learning (King County Library System, 2018). In the 2018 report, the library system also reported it had 10 million visitors and that 774,505 patrons attended KCLS sponsored programs. While this service number was small, these resident learners represented an opportunity for the County to invest in their success, assisting with the county goal to become an economic competitor for the 21st Century. Conversely, the SPL documented in its 2018 Annual Impact Study (Seattle Public Library, 2020c), over 2 million computer and Wi-Fi (wireless fidelity) sessions were held by patrons using in-library computers. Events and programs were also scheduled. Those were attended by over 300,000 patrons who attended over 10,000 events; among them were over 400 technology classes. These statistics were furnished to report progress made with funding from the 2012 Levy. To support local business development, connecting the County's goal of being competitive in the 21st Century, in 2018 SPL held over 200 help sessions with local business leaders (Seattle Public Library,

2020b). Additionally, to support marginalized community members accessing digital

information, SPL circulated Wi-Fi hot spots. This is technology allowing temporary access to the

Internet without using an in-house broadband network. These devices were circulated over 8

thousand times during the year and within that circulation "42 percent of hotspot users [had] no

home internet access and 37 percent earn[ed] less than $20,000 a year" (Seattle Public Library,

2020c). This statistic is important when considering the health of the County's overall economy,

currently.

The City of Seattle

City of Seattle history began in the mid-1800s when White settlers colonized the area on

the historic lands of the Indigenous Suquamish society. The name of the City comes from the

anglicized version of the Suquamish's leader, Sealth. In 1865, the Town of Seattle was

incorporated by the Territorial Legislature. However, residents voted to un-incorporate the Town

in 1867. In 1869, Seattle was once again incorporated as the City of Seattle. Geographically, the

area is located in the Pacific Northwest and has 147 miles of fresh water border where City

jurisdiction exists. Overall, the city occupies approximately 89 square miles. In the year 1870,

Census data counted 1,107 residents and by the year 2018, it has been estimated that 730,400

residents are living in Seattle. The current demographic makeup of Seattle, according to tourism

information, indicated that White people make up the majority of residents (69.2%), followed by

Asian (14.1%), then Black/African American (7.1%), Hispanic/Latino (6.6%), Mixed Race

(6.5%), Native American (.6%), and finally Pacific Islander (.4%). These estimates are from the

U.S. Census 2012-2017 American Community Survey 5-Year Estimates database.

Seattle, in its history, underwent an economic development initiative that had lasting

impact on today's libraries and neighborhoods and is an important context in which this study is

being conducted. This was the practice of redlining (KCTS9, 2018). This practice was initiated

from the Federal Housing Association (Cohen, 2018). During the Great Depression, millions of

homes were foreclosed upon and as a way to assist renewed development of the banking industry

was to ensure housing investment. Banks in the area created residential maps that carved up the

municipality in areas that were on a spectrum of safe to hazardous in which to invest bank

monies. This was the practice of redlining. Banks make loans to men with secure incomes to

purchase property with the criteria of age and condition of the house. A red zone was identified

as the hazardous part of town, largely inhabited by "non-Whites" and banks would not lend to

purchase houses in these areas; nor lend to people of color to purchase homes. This practice then

deprived families the ability to accumulate wealth over the generations through property

ownership. The practice was not voted out of city policy until 1968. This practice had a lasting

impact on two issues. First, property tax development is the major contributor to the County's

library funding and, through redlining, properties were inequitably assessed. Second, investment

in public resources, like libraries, occurred infrequently in neighborhoods. Zoning laws heavily

focused on single family development, often occupied by White residents from generational

wealth gain. Today libraries are concentrated in single-family neighborhoods, leaving a walkable

public resource unattainable to most residents due to past redlining and zoning laws (Cohen,

2018). Although these struggles continued for residents, the City of Seattle developed a thriving

economic center.

Today, the City of Seattle is home to several corporate headquarters of Fortune 500

international companies with a diverse economy supported by aerospace, manufacturing,

advanced technology in "computer software, biotechnology, electronics, medical equipment, and

environmental engineering" (Advameg, 2020).

King County Information Technology

As an organization, KCIT determined its intent to provide technological support and services for county residents. It was found that since its inception in 2001 KCIT has evolved its mission and purpose to meet County and technological development demands. In 2001 the County adopted an ordinance which created information technology governance groups, intent on advising policy development for the County's planning and oversight of technological investments. In 2003 KCIT developed its first three-year Strategic Technology Plan (STP) as part of that initial ordinance creation, and aligned its work with the County's identified strategies. However, KCIT also adopted a technology business plan which formally adopted a tactical approach to help the Department achieve its vision and goals. KCIT continued this strategic planning process into 2009, which detailed the shift from navigating siloed organizations using decentralized and uncoordinated technological efforts, to understanding the intent behind the technology such as access, support, and advancing business processes. In the 2013-2015 strategic plan the word "equity" described how technology could support citizens' access to court records; this being the first time the idea of digital equity was noted in any of the Department's strategic plans.

Through research it was discovered that KCIT maintains two councils, two boards, and three divisions. Further, KCIT has remained responsible for managing the vision of technology use for county residents and fully commits to eliminating digital inequity, according to their 2016-2019 strategic plan. However, KCIT underscores the continual need to address digital inequity and, through its strategic planning processes, further addresses how the County responds to digital inequity for County residents. For example, examining what services exist in King

County library branches that may impact digital equity, like providing basic access to digital

technology for those who do not have Internet access in their living situation.

Overview of Methods

This study was designed as an explanatory mixed method online survey from a

questionnaire developed by the research team. The team developed the survey based on the

conceptual framework and measures of digital equity from other studies. The instrument

included measures of descriptive statistics, and Likert scale measures related to frequency and

agreement, and narrative questions. The survey was also broken into three separate sections. The

first section focused on library services, the second on library technology, and the third on digital

equity. Open and close ended questions were developed for each section in the survey. This

methodology was developed with the intent to provide King County data related to how

respondents, library employees regularly interfacing with patrons, contextualize which library

services, technology, or digital equity foci address access to digital information.

Significance of the Study

This study was significant because it furthered research done on highlighting public

libraries as a focal point for designing equitable practices for their patrons' access to digital

information using digital technology. It also contributes to the narrative of access to digital

information through technology for marginalized populations in the context of a County's public

libraries.

Background and Role of the Researchers

Sheila Walton has a background in both college and university student development.

After receiving a Bachelor of Arts in Anthropology with a concentration in Museology, and Art

History Minor, she applied that inquisitive spirit when achieving her Master of Arts in Student

Development Administration. Currently, she engages with students from a variety of intersectionalities at a regional technical college. As a direct service provider, focused on student development and success, she is acutely aware of digital equity. Because students come from all backgrounds, they are able to achieve different levels of scholastic success based on their exposure to or ability to afford in-home digital infrastructure. This is knowledge she uses as a member of the Vice President's direct staff by providing the student's perspective when policies are being developed or edited that may adversely impact their ability to be successful on- or off-campus.

Cristine Fowler is the Director for Academics at University of Washington Information School where she provides curricular oversight of four degree granting programs, working to integrate social justice into curriculum and pedagogy. She also manages several academic services teams, including learning technologies, and human resources for adjunct faculty and student employees. Her areas of interest are social justice for marginalized communities, management, librarianship, organizational development, cross-cultural leadership, and Indigenous studies. She holds a BA in English Teacher Preparation with a minor in teaching English as a Second Language from Humboldt State University, and a Master of Library and Information Science from University of Washington. After working in higher education for over 20 years, she is completing an Educational Doctorate in Educational Leadership at Seattle University, with a concentration in higher education. Both researchers have long-standing connections to King County and are passionate about libraries as a public service, social justice, digital equity. Both researchers are collaborating on every aspect of this study.

Definition of Terms

In the context of this study, the following terms were foundational to address the relationship among libraries, patrons, and their ability to access digital technology.

Social Justice

Social justice was defined as the recognition of social group differences and the understanding of how social group differences are connected to inequality (Adams, 2018) and the inequitable distribution of resources. Social Justice requires an examination of society's systemic injustices in the political, economic, and cultural domains (Mathiesen, 2015).

Digital Equity

Digital equity was defined as the ability of all individuals to use equipment and have access to the Internet to engage in e-commerce, search for jobs, look up health care information, or become civically engaged (Solomon, Allen, & Resta, 2003). Digital equity is achieved when individuals are digitally literate and possess digital agency (Passey, Shonfeld, Appleby, Judge, Saito & Smits, 2018).

Digital Divide

The digital divide was defined as a gap between those who have ready access to the Internet and equipment, and those who do not. This results from economic, political, and policy actions (McConnaughey et al., 1995; Real, Bertot, and Jaeger, 2014; Cuban & Cuban, 2007).

Digital Literacy

Digital literacy was defined as the ability of an individual to apply critical thinking skills to understand how to use a respective digital tool and to critically analyze digital information (Passey et al., 2018; Murray & Perez, 2014; Cuban & Cuban, 2007).

Digital Access

Digital access was defined as operating on two levels. First, that physical access to computers and modems to use the Internet enhances one's life (McConnaughey, Nila, & Sloan, 1995). The second level was defined as the additional concept of how access can go beyond having a computer and using the Internet and include digital literacy and digital agency to achieve digital equity (Passey et al., 2018; Jaeger, Bertot, Thompson, Katz, & DeCoster, 2012).

Broadband Connectivity

Broadband connectivity is a high-speed bandwidth level of Internet access necessary for many online activities (Jaeger & Bertot, 2011; Real et al., 2014).

Limitations and Delimitations

Limitations

The limitations of this study included the following considerations. First, the study was limited to current in-branch library employees who had experience interacting with the public in accessing digital information. Second, this study was conducted during the COVID-19 pandemic lockdown. Libraries were closed to the public during the time of this study and employees were mandated to quarantine work. It is unknown how many employees were not eligible to complete the survey due to being laid-off. Third, sampling strategy was limited by access, time, and resources, but the overall sampling strategy is an effort to reduce bias and enhance credibility because sample selection is not predicated on the outcome of the study (McMillan, 2016). The sample size will place limits on the generalizability of the results, which may not be applicable beyond the context of these organizations. Fourth, the instruments used in the study were modified and localized by the researchers from original valid and reliable instruments. Fifth, the

participants who responded to the survey self-selected to participate and their responses were self-reported.

Delimitations

The delimitations of this study include the following. First, this research was delimited to the urban, Pacific Northwest Community in which this study was conducted. Second, the present study design was chosen in recognition of time and resource constraints. Third, the study did not extend beyond the branches that exist in these library systems, like school or college libraries. Fourth, the study did not extend to other library and community agency perspectives, including school, college, university, or private library collections.

<div align="center">

Summary

</div>

Public libraries are an access point for residents needing to use computers to fulfill their particular needs. Beyond the typical public library resources, like books or DVDs, computers with broadband connectivity are now made available for patron use, for free. Another available resource is library staff expertise to assist patrons in answering their questions which may be related to inquiries such as job resources, civic government, socialization, and community building (Cuban & Cuban, 2007; Scott, 2011; Kinney, 2010). Learning more about residents' access to digital information by using digital technology in regional library systems may assist King County in moving toward digital equity.

Based on research of various documents and reports, King County expects its residents to have access to online resources through the Internet for their daily lives, for the County to remain competitive in the 21st Century (King County Office of Performance, Strategy and Budget, 2016; King County Information Technology, 2019). A location where residents may learn about using online technology is through their local public library branch. As a stakeholder, KCIT

wants to know what factors impact residents' ability to access online technology in a public

library setting. An explanatory non-experimental mixed-methods case study using concurrent

quantitative and qualitative measures may assist the County in learning more about factors that

challenge residents' ability to access digital information and fully engage with digital technology.

Organization of the Dissertation

   This dissertation is organized by chapters to assist readers with understanding the study's

flow. Each chapter addresses research components associated with producing ethical, reliable,

valid, and replicable research. Chapter one outlines the issue being studied and includes the

background of the issue, the problem statement, research questions, significance of the problem

and why it is important to study, the informational justice conceptual framework to examine the

problem, and defines terms used throughout the study. Chapter two contains a literature review

that identifies the nature and necessity of policy-level relationship building for cross-sector

collaboration. Chapter three outlines the researchers' methodological approach. The researchers

used a non-experimental, mixed-method, explanatory design to analyze data collected through

surveys completed by library employees who interacted with the public on a regular basis, when

they accessed digital information.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Chapter two is a review of literature relevant to the research question, how do library services impact residents' access to digital technology to obtain information. Within the literature review, the following concepts will be examined: access as a concept, libraries as conveners of civic engagement, and information justice as a framework for studying access to technology in libraries.

Restatement of Purpose of the Study

Library systems provide both physical and virtual services to residents. In King County, although the "library system is a completely separate entity from…King County government" (King County, 2018), the library maintains several resources which help residents access information and engage in the larger society. Specifically, residents may use the library to check out materials, in addition to acting as a location for civic engagement. It also provides an avenue for marginalized communities to access free digital technology, county information via its website, and free technology training.

Each of these services supports the County's mission of digital equity for King County to remain competitive in the 21st Century. This study researched how public library services supported digital equity, through digital access to online information, for its residents. Additionally, policy level decisions by King County officials working with public library leadership may be influenced by the findings. Finally, the findings of this study may further impact the strategic direction for King County to improve or increase its support for the public library system's services that provide access to digital technology.

Historical Perspective of Digital Access

As an important consideration in the Digital Age, the topic of digital equity requires explanation. Historical inequities rooted in racism and economic disparities came to a head in the 1960s with the civil rights movement, the assassinations of Martin Luther King, Jr, President Kennedy and his brother, Senator Bobby Kennedy, and the detrimental impact of the Viet Nam War on the American psyche. "The political, social, and economic consequences of these events rippled through American society and culture" (Cuban & Cuban, 2007, p. 21). The last decades of the 20th Century saw economic crises that eroded public trust in the government and saw many failed tax referenda--taxes that helped support public services like libraries (Cuban & Cuban, 2007).

As the Industrial Age gave way to the Digital Age with the introduction of the personal computer in the late 20th Century, the American economy shifted focus to a knowledge-based society. Within this knowledge-based society, new inequities developed in the form of the digital divide. The reality of using in-home computers became more feasible for high-income households, and obtaining knowledge online was becoming a standard way of accessing information, especially government information (Bertot et al., 2012; Strover, 2014). It was also during this time that a shift in perception occurred regarding public services, with societal expectations that institutions serving the social good--such as public libraries--should prove their worth. Cuban and Cuban (2007) describe this new perspective as "market-based solutions to governmental problems" (p.27). Government and society wanted measurable outcomes that tax dollars were being used effectively.

First examined by the National Telecommunications and Information Administration (NTIA) in 1995, the digital divide was described as the inability of youth, rural communities, and

communities of color to access data in the information age due to the lack of a computer or modem (Rodino-Colocino, 2006). Primarily associated with long standing government surveys on household telephone usage, the national survey determined that some individuals did not have computers or modems to access information on the Internet (McConnaughey et al., 1995; National Telecommunications and Information Administration, 2000). This lack of access came to be known as the digital divide (McConnaughey et al., 1995; Warschauer, 2003); accentuating the difference between the 'information-haves' and the 'information-have-nots' (McConnaughey et al., 1995). This report was the first of many government reports to establish an inequity in individual ownership and use of digital technology. Initially described as a binary way to look at a complex problem (Gunkel, 2003; Rodino-Colocino, 2006), this characterization gained momentum across the literature, and access became an initial focus for examining digital inequity. Yet the digital divide is not a straightforward binary issue that can be remedied through simplistic means, such as direct access to computers and the Internet. Compounding this issue is described by Kinney (2010) as multiple digital divides from the result of new gaps developed with every new technological innovation. Generally, this could be considered a systemic issue.

The Digital Divide and Digital Literacy

Lack of access is a symptom of the digital divide which is a systemic issue, resulting from political and policy decisions at the national, state, and local level (Jaeger & Bertot, 2011; Jaeger et al., 2012). It is closely tied to socio-economic status, generally documented as income level, and the complexity and intersectionality of age, race, cognitive and physical ability, and geographic location (Carlson, 2016). In this research, access means the ability to get online using digital equipment and a broadband connection to use the Internet with the intent of engaging in work, life, and social circles. Such access is also valuable for King County citizens to be

civically connected to their immediate community and the world. The literature maintains this definition for the term access.

Conceptually, the Digital Divide found its way into literature and became the foundation for describing how some individuals have access to digital technology and some do not. What became apparent to researchers when examining the divide was not only how individuals used their equipment, but also how they interpreted the information they found online. Specifically, when using a computer and the Internet to engage in online life such as accessing government forms, finding election information, socializing, or shopping, researchers became concerned with how individuals were understanding and contextualizing this information. This behavior was described as digital literacy. Digital literacy is based on the idea that individuals need more than the functional skill set of using a computer. They also need collaborative, critical-thinking, and socialization skills to use online resources to their advantage (Martzoukou & Elliott, 2016). Through digital literacy, that critical skill set of finding and using online information, King County residents can be fully informed and engaged in an online society.

Libraries and Civic Engagement

One cornerstone of democratic societies is the idea of civic engagement. Civic engagement encourages involvement and empowerment of community members to find their own connection to the larger, surrounding society. Library leaders have roles to play in the development of that engagement, and public libraries are spaces and places where this engagement and involvement happen. However, the literature defines civic engagement several ways and notes different generations have different definitions for civic engagement.

Adler and Goggin (2005) examine how civic engagement is defined by generations, in a meta-review of studies comparing how people contextualize and practice civics. Their study

determined that younger generations are interested in civic engagement, defined as a mechanism for social change through community service. Both are examples of civic engagement. Older generations considered civic engagement as a politically motivating experience through voter registration or collective action for a greater good through volunteerism. In another review, Coward, McClay, and Garrido (2018) brought together thought leaders to learn more about civic engagement in libraries where several concepts and ideas were recorded. It was determined that two areas of focus were important to consider: civic infrastructure and civic practices. Both constructs influence how a library involves itself in the work of civic engagement.

The first concept, civic infrastructure, aligns itself toward conditions that exist in a society to propel a library to consider involving itself in civic engagement work. For example, civic infrastructure is a focal point because the focus of a library's intent and mission has been internally focused. This internal focus is related to library collections, determining how the collection would serve the community. With the evolution of the library to a more external locus, the public library is seeking from community members how it can support their learning needs; this is civic practice. These are categorized as "the actions public libraries can take to promote civic engagement" (Coward et al., 2018, p. 5). For example, designing programs for the community, or hosting voter registration drives, or encouraging volunteerism. Civic practices are becoming more exemplified in programming and services as libraries are creating for their communities, especially at the behest of national library leaders (Kranich, 2000; Kranich, 2005).

In a study specifically focused on the library as a location for civic engagement, or library-as-place, Cocciolo (2013) completed a four-year, quantitative study designed to measure whether libraries could be considered places for promoting civic engagement by showing socially and culturally significant documentaries to diverse audiences. After librarians were

surveyed about the experience of showing the documentaries, and patrons were surveyed about

the films and their likelihood to engage in civic oriented activities, findings showed that libraries

do act as a place for continued civic engagement activities. More importantly, these ideas and

concepts reflected the idea that libraries needed to be represented and representative of the

surrounding community. If eventually a library considers civic engagement important, whichever

concept of civic engagement a library decides to engage in, it will be doing outreach.

While community outreach is a necessary component of a library's responsibility, civic

engagement is a subset of that outreach. Specifically, civic engagement must be representative of

the surrounding community and therefore outreach is necessary to find representative community

input (Coward et al., 2018). This new role as a place for civic engagement while also maintaining

representative civic action, is becoming more common due to the library's ability to be a free and

politically and ideologically neutral knowledge center for a community and its patrons (Kranich,

2000; Kranich, 2005; Coward et al., 2018; Young, 2013). This ideal is exemplified by this

comment from Young (2013):

> In many localities across the country, libraries are a vital part of the
> community social fabric. Their outward focus and community
> outreach enables them to generate information about public
> services that engages the community not just as patrons but as
> participants (p. 30).

Libraries support community priorities because they are a "trusted community hub"

(Urban Libraries Council, 2016, p. 1). Part of that trust is formed when libraries are able to

integrate technological approaches through program and service development for patrons

needing to engage civically. As has been reported for several decades through research, popular

media, and review articles, technology is a necessary component of daily life, and has become

more so over the last few years. The Internet is where residents find information about daily life, and also interact with civically oriented experiences.

Because technology can assist residents with accessing information about civic life, regardless of whether a physical library is entered, having integrated technology into library services is critical. The current technology landscape and environment includes high-speed broadband, opportunities to engage in new educational experiences, and engagement with civic leaders. Because of that status as a trusted community hub, the library is the place, either in a physical or online reality, where these connections are being made (Urban Libraries Council, 2016). However, civic engagement is more than mere participation. Civic engagement requires a consistency, where all residents are respondents to library outreach efforts to assist them in having an active voice in their lives.

Libraries incorporate voice into the programs and services being developed and delivered to residents, including families needing civic support for their own learning and development (Lopez, Caspe, & McWilliams, 2016). King County recognizes its role in addressing these outreach and program development efforts, which is why KCLS has the programs and services it does to assist residents to actively access information online using library technology. For example, in a 2010 National League of Cities survey, 95% of city official survey participants reported that "public engagement processes contributed to a stronger sense of community, built trust between the public and city hall, and produced better solutions to local problems" (Urban Libraries Council, 2011, p. 1). As continued by the Urban Libraries Council (ULC), the library is a physical location that can assist with this community building and ultimate civic engagement environment because the library is trusted, stable, and politically neutral. Regardless of those characteristics though, the ULC (2011) notes that government agencies continue to have the

responsibility of pushing consistent civic engagement goals in order to support the larger society.

One engagement strategy, community bridge building, as noted earlier, has significant connections to the current research question. Three particular strategies make this connection. The first is to seek out populations that are disengaged. Their needs must be identified and then programs designed in order to bring them into community life, online or otherwise. The second is creating significant partnerships with organizations that are supporting diverse community groups. Given KCLSs role and purpose to serve all who use their physical or online services, this action falls to library leadership. In the King County Library System, that leadership is connected to King County because the KCLS Board is selected by King County. In the Seattle Public Library, funding comes from the community through property taxes and levies. Third, is acknowledging that a library is designed as a comfortable and safe place in which marginalized community members can receive services to help them engage in civic oriented environments. This could include accessing the delivery of government services, online or in person.

Some examples of civic engagement may also include designing activities which seek connection and common understanding between disparate or fractious groups. When engaged in library experiences, like being civically engaged, libraries are "ideal resources to forge strategies that strengthen civic life and respond to emerging challenges" (Urban Libraries Council, 2017, p. 1). Challenges might include digital access, as this proposal suggests. The Urban Libraries Council holds this position and has written several white papers and published studies examining libraries as civic engagement locations. One element aligned with this study discussed in this proposal is the idea that libraries are a place where "technology resources…broaden access and create connection" (Urban Libraries Council, 2017, p. 2).

Digital access to technology is one version of this access. However, the libraries continue to examine the role public libraries can play in the development of civic engagement. In the ULC description, libraries can be a place for conversation starting, education base for civics, a community bridge, a visionary leader for residents' voice, and a center for actionable democracy. It is this final piece which is important to the stated research question, how library services impact King County residents' access to digital information. The role as community bridge libraries can play means bringing all residents together in order to access information about their local government. For example, a library can develop programs, services, or information links to "connect residents with state and local elected leaders and vital community services, libraries demonstrate that everyone is part of the community" (Urban Libraries Council, 2017, p. 2). It can support civic action by reaching out to the surrounding community to identify how library services and programs can support residents' and patrons' learning.

Libraries, Access, and Digital Equity

Literature, including peer reviewed articles, strategic plans, popular media, white papers, annual reports, and policy statements were examined to better recognize connections between libraries, access to digital information, and digital equity. Each literature type maintained the important connection between those three ideas. In an overview of their key focus areas, the American Library Association (ALA) released a statement in 2004 examining the importance of access to information for everyone. Specifically, the ALA noted that libraries act as purveyors of information and knowledge, and have ensured a level of access to anyone seeking it.

Over time, libraries have expanded their access and now focus their work on access as an equity-based experience. The ALA cites the NTIA 2000 annual report noting that people of color, older adults, and those living in rural areas within the U.S. have difficulty either accessing the

internet or having the skills to utilize the internet as a search tool. The ALA continues stating that

libraries, because of their historical responsibility as being "places where people of all ages and

backgrounds come to learn, enjoy and better their lives" (American Library Association, 2007, p.

2), must take up access as an equity-based issue. In addition to maintaining this responsibility of

providing access, changes in knowledge acquisition through technology are driving librarians to

ensure everyone has this access in a digital environment. As research has evolved over the last

two decades since that report was written, the ALA remains committed to equitable access for

all. However, the reasoning is more sophisticated than representing numbers from the NTIA. The

2013 ALA statement on equitable access recognizes:

> the critical need for access to library and information resources,
> services, and technologies by all people, especially those who may
> experience language or literacy-related barriers; economic distress;
> cultural or social isolation; physical or attitudinal barriers; racism;
> discrimination on the basis of appearance, ethnicity, immigrant
> status, housing status, religious background, sexual orientation,
> gender identity, gender expression; or barriers to equal education,
> employment, and housing. (p.18).

This statement is highlighted because it outlines a strategic direction that is more

inclusionary and extensive than previously examined. This statement contributes to the difficult

nature of serving the public, while also providing equitable access to information. The ALA has

outlined a strategic direction for public libraries. The question then becomes, how are these

libraries engaging in equitable access as a strategic direction in county library systems, and what

factors are impacting that access?

The issue of digital equity is vast and predicated upon many years of scholarly literature,

white paper reports, and main-stream media analysis. More specifically, the literature shows that

digital equity has been written about in several contexts by "journalists, scholars, governments,

and non-governmental agencies" (Robinson & Crenshaw, 2010). This literature has included how

people access information via the internet from home, work, or public venues via a functioning

computer, smartphone, tablet, or laptop. This initial premise, that access is really about

connecting to the internet, is called a first-order divide (Elliott & Earl, 2018). More recently,

digital equity has developed into categorized approaches, or second-order divides.

Digital equity goes beyond the ability to achieve a significant level of connectivity via a

digital device. Digital equity includes gaining the ability to use critical thinking skills to engage

in online discourse, fully understanding and being digitally literate enough to use the technology

to advance one's life goals. Digital equity is also representative of breaking down barriers or

eliminating gaps in order for all people to use digital technology to receive the full benefit of

society in an online format.

As technology and equity concepts have changed over the decades, information gaps

have widened for the populations initially identified in early studies. In the 1990s, the need to

establish personalized usage of modems and computers in households was paramount. Fast

forward 30 years, households are still reporting a lack of broadband connectivity or an inability

to pay for broadband access. This is a way libraries provide a public service, by providing access

to computers with broadband Internet for communities.

Digital equity is a social justice concern for individuals who lack access to digital

equipment and the knowledge, skills, and abilities to use that equipment (Warschauer &

Matuchniak, 2010; National Digital Inclusion Alliance, 2019). Often, these individuals represent

demographic circumstances like age, race, or economic status living in interurban or rural

geographies (National Telecommunications and Information Administration, 2016). In both

instances, having physical access to digital equipment, like a computer and broadband, and the

knowledge, skills, and abilities to use it, play a part in individuals accessing and engaging in

various online activities. More specifically, engagement could include civic inclusion, online

shopping, small business development, reviewing medical records, finding health resources,

searching for jobs, or otherwise engaging in work-oriented activities.

Each of these components are part of an individual's life, whether online or not. Yet a

convenient and sometimes singular way to engage in these components is using online

technologies. State and county governments support online engagement but are continuously

challenged by issues of access to online services (King County Office of Performance, Strategy

and Budget, 2015; National Telecommunications and Information Administration, 2011).

Industry sectors in urban areas like schools, non-profits, businesses, and government

organizations support technical innovation and digital equity for their users (Robinson &

Crenshaw, 2010). Policy makers may also play a role in developing digital technology solutions,

which may or may not contribute to digital equity (Passey et al., 2018).

As technology rapidly evolves, librarians and libraries are increasingly being held

responsible for providing more sophisticated mechanisms to access online information (Jaeger &

Bertot, 2011). Also, as technologies continuously change, libraries are faced with challenges

related to providing access for individuals (Kinney, 2010). Without digital equity, individuals

from all backgrounds and abilities are not able to fully engage with the totality a society has to

offer and take advantage of online services or resources (Jaeger et al., 2012). By eliminating

barriers to access, equipment, connectivity, and digital literacy, county residents can fully

participate in their society online.

Conceptual Framework Connection to Literature

Informational Justice Framework Review

The concept of information justice began with Chatman and Pendleton (1995) who coined the term 'information poverty'. This phenomenon focused on marginalized communities lacking access to information, resulting in a knowledge gap. Information poverty described the differences between first- and second-hand knowledge. First-hand knowledge related to knowledge of things. Yet second-hand knowledge related to knowledge gained from lived experience, specifically "knowledge that originates outside our lived experience" (Chatman & Pendleton, 1995, p. 143). Gaining traction within the literature, information poverty then evolved, especially regarding the breakdown of how justice related to accessing information. Building on Chatman and Pendleton's approach, Britz (2004) postulated that information poverty did exist but the kind of information necessary to thrive and grow in a society was thought of as basic, and therefore "essential information" (p. 193). Effectively, information poverty stemmed from foundational causes. People lacked the necessary skills to access information when it was available, and also "assign appropriate meaning to it" (Britz, 2004, p. 195). Socio-economic causes also contributed to information poverty. This was represented by the phenomena of moving from a product-based society to an information-based society, resulting from globalization. Other contributing factors causing information poverty included infrastructural issues found in library settings, considered contextual factors. Additional contextual factors included relationships between information and the individual and information and a community. For example, two individuals could be exposed to the same piece of information. If they have different lived experiences, knowledge of different words, symbols, or messages, they will view the information differently. In this case, one person might be information-rich, and the other

information-poor. This analogy extends to a community as well, bringing to light the connection

between information poverty and information justice. When a community is not exposed to the

switch from product-based to information-based experiences, they lose a connection to

information due to globalization. In turn, globalization leads to unregulated capitalism resulting

in forms of social injustice "in the creation and distribution of, and access to information" (Britz,

2004, p. 197). Information justice, stemming from information poverty, is therefore based in

social justice. Grounded in social justice, the informational justice framework provides public

libraries and other information organizations a basis upon which to address social injustices

regarding accessing all forms of information. The multifaceted framework addresses ways

institutions perpetuate social injustice and applies an ethic of care and respect for the

communities that libraries serve.

Library and information science "scholars have long grappled with issues surrounding the

concept of social justice in the context of information" for different groups such as immigrants,

youth, or the homeless (Dadlani & Todd, 2015, p. 330). Public libraries "are institutions that

value the free flow of information" (Loeb, 2016, p. 31) driven to promote and preserve "a liberal

democratic ideal" (Hoffmann, 2016, p. 86). Beyond books and media, public libraries also

provide technology and computing services to citizens in equitable and socially just ways

(Dadlani & Todd, 2015). Libraries exist to meet the informational needs of their communities

and so must address their responsibility in providing access to technology (Loeb, 2016). Yet

inequalities continue in both iDistribution of and access to information and technology resources,

as well as the ability to effectively use these resources (Britz, 2008). This scenario creates

informational injustice.

Another aspect related to Informational Justice is providing library services with an ethic

of care and respect for the patrons that libraries serve (Mathiesen, 2015). "Justice should allow

the recognition that we are all human beings with equal values" and a respect for all people

(Britz, 2008, p. 1175). Informational justice, then, applies a social justice lens to information

access. In reference to the work of Johannes J. Britz (2008), Hoffmann (2016) suggests:

> Social justice and information should go beyond distributions to
> include, among other things, appropriate recognition of the equal
> worth and dignity of all people (justice as recognition), the active
> facilitation of opportunities for people to meaningfully participate
> in economic or political activities (justice as participation), and an
> understanding of the generative role principles of justice can play
> in fostering a sense of justice among a population (p. 81).

Here, Hoffmann is noting the importance of information distribution. In this sense,

library distribution means having information available and distributable to individuals

regardless of their ability to access or understand the information. This emphasis on iDistribution

presents a limited view of Informational Justice, as all that remains are distribution issues

(Hoffmann, 2016); like having enough information sources. As a construct, Informational Justice

attempts to address and correct this limited view by linking participation and recognition to the

concept of distribution.

iDistributive justice. Principles of iDistributive justice guide the equitable distribution of

information and technology services. Yet Loeb (2016) suggests that barriers are an important

consideration in this equation. Just providing access to some information can have the effect of

barring information for others. Revisionist history, or whitewashing history, might be an example

of these barriers. Loeb (2016) goes on to suggest that libraries may also provide access to some

technologies that do not align with the values of the public library. For example, a library may

choose a kind or type of technology to accentuate digital information. Computer kiosks or

laptops only might be an example. However, it is important for the library to determine how the technology will impact the space. The technology, with the appropriate curation by library staff could be used to confer change within and for the community, or be used as another way to advertise to that community (p. 23). However, "the value of information stems from its value for free and equal citizens" (Hoffmann, 2016, p. 87) and therefore, by providing equitable distribution of technology services, libraries are serving their communities.

iParticipatory justice. iParticipatory justice refers to the inclusion of library patrons in decision-making about the acquisition of library resources, such as technology, and how it is distributed within the library for patrons. "The technologies within a library are part of a discussion between the library and the public it serves" (Loeb, 2016, p. 22). Dadlani and Todd (2015) suggest that participation in an information-based society is key to promoting social justice. In addition, Britz (2008) proposes that "the purpose of participatory justice is to ensure that each person in a particular community has an equal opportunity not only to gain access to essential information but also to receive education to benefit from information" (p. 1178).

iRecognitional justice. iRecognitional justice addresses the library's community members and the ways they are portrayed in library materials, programs, and databases (Mathiesen, 2015). Loeb (2016) points out the unfortunate reality of knowledge organization in the American public library system. Loeb (2016) posits:

> the cataloging and classification languages one encounters in a library (the Dewey Decimal System, Library of Congress subject headings) cluster power in the hands of those who can "classify" instead of restoring power to those who are "classified," while many library collections display a bias towards the cultures and histories of only certain segments of the "human community. (p. 32).

This points to the long-standing injustices marginalized communities continue to face in local public libraries across the nation. The lack of ability to understand these power structures, due to lack of experience or exposure, continues to marginalize the marginalized; what Chatman and Pendleton (1995) considered the systemic continuation of information poverty. iRecognitional Justice seeks to challenge such systems of oppression through more accurate representations of all members so that they may recognize themselves in the library services they seek (Mathiesen, 2015).

The greatest benefit of the Informational Justice Framework is the way in which distributive, participatory, and recognitional justices interact and interrelate to one another to address social justice for individuals and communities. Through the equitable distribution of technological resources, encouraging participation of library patrons in decision-making, and ensuring that patrons can recognize their community in the services libraries provide, libraries can partner with the communities they serve to achieve digital equity.

Summary

This literature review demonstrates how information access has developed over time for marginalized communities, how county public libraries have provided access to technology, and how they have developed over time as civic engagement centers. The inequities described in this chapter are based on race and place as well as socio-economic status and are an issue of social justice. Further, the social justice focused Information Justice framework supports the need for an interrelated, systemic approach to breaking down barriers developed by information poverty and the digital divide. Technology continues to evolve at a rapid pace, increasing the digital divide even further. Public libraries are active in eliminating barriers to access to digital

technology for county residents so they may either continue to learn to enhance their lives, or

access online information in order to fully participate in online County life.

CHAPTER THREE

METHODOLOGY

Introduction

This study sought to explain how library services impacted residents' access to digital information in King County's public library systems. Of particular interest was what services were offered, whether they were designed to reach a diverse mix of patrons, and if library staff were able to equitably assist patrons with accessing digital information. To that end, this study was designed as mixed-methods explanatory. The research team developed a questionnaire instrument informed by the Informational Justice conceptual framework, and other studies researching digital equity. The following sections of this chapter describe the research methodology in more detail, including the research design, protocols, and procedures.

Overview of Purpose and Research Questions

The study was intended to explain how public library services impacted residents who accessed digital technology at their local library branch. Further, the study was designed to explain how results might inform King County's future policy or strategic direction development at the County level, in supporting digital equity through access in its public libraries. To learn more about King County's two public library systems' abilities to provide access to digital information for patrons to utilize online resources the following questions were developed:

1. "How do county public library services impact residents' access to digital technology?"

2. "How are individual library branches providing equitable access to information through use of digital technology?"

Methods

The study was mixed-method, where both quantitative and qualitative measures were developed in a survey questionnaire. The research team developed the survey based on the Informational Justice Framework and other questions included in different surveys measuring digital equity. The survey instrument included measures of descriptive statistics, Likert scale measures related to frequency and agreement, and six narrative questions. Those questions are listed in Appendix A. The survey was sent to all library staff in both the KCLS and SPL systems who regularly interfaced with patrons needing access to digital technology.

Research Design

The context of the study occurred online with public library employees completing the survey. The survey provided the opportunity for respondents to anonymously provide data based on their experience working in a library branch, or assisting patrons via a service center. The primary decision to use an online survey approach was to more closely examine the larger issue of digital access to information within the County's public library systems in the hopes of receiving a large amount of returns. Further, given the number of variables discussed below, the study design was intended as correlational, assessing residents' ability to access digital technology through services offered by public libraries in King County. This study attempted to explain issues associated with residents' access to digital information through free-to-use, in-library technology.

For this study, a mixed methods approach was appropriate because it provided multiple types of data to address the research question (Creswell & Guetterman, 2019). Specifically, the study began with quantitative data collection and analysis. The research design allowed the research team to work together while designing the survey that was informed by the conceptual

framework, collect and analyze data, and then infer any findings from data analysis (Ivankova, 2015). Finally, a mixed methods design helped build a more complete understanding of the nature of the problem of practice and it provided alternative perspectives from various data points (Creswell & Guetterman, 2019).

Because digital access was seen as a broad topic area, the mixed-methods study assisted in developing alternative data sets to closely examine any phenomena found during analysis (Ivankova, 2015). Additionally, the research question of "How are King County's library services impacting residents' access to digital information by using technology in the library" is intended as explanatory, to simultaneously conduct quantitative and qualitative data collection. This study's stakeholder was interested in learning why digital inequity persists when significant access to digital technology through library branches is available to all King County residents. The mixed-methods design generated credible inferences or discussions during and after data analysis (Ivankova, 2015). Finally, this method was used to limit or eliminate alternative explanations for findings uncovered during data analysis instead of using only one method (Ivankova, 2015).

Instrument Design

The survey was developed by the research team based on both the conceptual framework and other studies where digital equity was a focus. The survey is outlined in Appendix B. The survey was broken into three parts with a mix of both quantitative and qualitative questions. The first section was titled Library Services and measured respondent's agreement level with eight presented measures on a Likert scale, focused on access. This section also included three categorical questions and one open-ended question. The categorical questions asked about available library services like the use of laptops, how many computer kiosks are available, and

how many days a week those computers are available. The second survey section focused on

library technology. This section had six Likert scale measures focused on the use of technology

by patrons. One categorical question was asked about how many hours a patron may use library

computers. Two open-ended questions were also included, which focused staff interfacing with

patrons on the use of technology resources. The third section focused on digital equity and

included 11 Likert scale measures, and included two open-ended questions and one close-ended

question. The survey was not pre- or post-tested.

Sample

Survey participants were made up of a convenience sample, and included public library

staff. Specifically, the participants were front-line library staff representing a variety of different

positions. For the purposes of this study, participants had a role in working with the public to

access library services and information in a public library within King Co. The final sample held

position titles of: (a) Librarian; (b) Library Assistant; (c) Library Page; (d) Manager; and (e)

Student Intern. Library staff were the convenience sample in this study because research

indicated these groups work with patrons as individuals or groups to access digital technology.

Library staff also tend to work regular shifts, in different branches, and see trends over time.

Further, research has indicated that librarians' and library staffs' thoughts and experiences,

specifically, have been left out of policy development. Yet, libraries are consistently asked to

implement policies related to access (Jaeger et al., 2012).

Discussion of Variables

The researchers determined several library services as independent variables. Digital

access is the dependent variable because literature notes that libraries and library staff have more

responsibility to provide a wide variety of services to patrons with various needs for online

access (Jaeger & Bertot, 2011). The associated stakeholder invested in this study defined digital

access as part of digital equity, the definition for which is noted in Chapter One. In this study,

services offered by both KCLS and SPL constitute a collection of independent variables because

they serve as an access point for patrons. The survey's independent variables included the

following: (a) library hours; (b) hours computers are available for use; (c) number of computers

available in the library branch; (d) staff education; and (e) number of laptops available for check-

out. These variables were chosen because they represent the current digital or technological

services offered through both library systems. It was unknown how these services impacted

resident's ability to access digital technology.

Treatment of the Variables

The mixed methods study treated the variables as explanatory, to determine relationships.

Variables were both demographic questions and measures assessing library staff's perceptions

about what the organization or branch offers to library patrons needing access to digital

technology.

Table 3.1

Definition of Independent Variables

Branch Region	Branches within both KCLS and SPL
Number of Library Laptops	Laptops available in the library for check out
Number of Computer Kiosks	Number of computers available for patron use
Hours Computers are Available	Respondents indicated the number of hours computers are available to use
Days Computers are Available to Use	Respondents indicated the days of the week computers are available to use in the branch
Library Service 1	"Computer access is the most popular service my branch provides."
Library Service 2	"Patrons come to our library branch because broadband connectivity is free to them to access online information."
Library Service 3	"Library computers are an important resource for patrons to access online information."
Library Technology 1	"Laptops are regularly checked out by patrons to use in the library."
Library Technology 4	"Patrons bring in personal devices to the library to access the broadband connectivity."
Digital Equity 2	"Digital access to information as a library service is an important issue for my branch's patrons."
Digital Equity 3	"The library system provides the resources patrons of color need to succeed in a digital world."

Data Collection Protocols and Procedures

The research team reached out to both King County Library System and Seattle Public

Library administrative Executive Directors. With the assistance of library leadership, the

research team drafted email communication which included the link to the online survey. Data

collection occurred through this invitation. Participants that received the email were identified by

library leadership, using their internal distribution lists based on the directive that participants

should have direct connection to patrons through in-branch activities. Collected data was not connected to information that could identify a respondent, a safeguard that provided anonymity. Responses were securely stored and curated in the password-protected Qualtrics system and a local database with access restricted to the principal researchers.

Data was collected over two-weeks and used the Qualtrics software platform. Access to the file was managed by the research team. Survey questions were inputted by the research team and then tested to avoid participants having technical difficulties due to any software issues, logic skipping being an example.

Data Analysis and Procedures

This explanatory mixed methods study employed both quantitative and qualitative research to strengthen the accuracy of findings and deepen the understanding of King County's public library systems. Specifically researched were services thought to impact residents' access to digital information through technology, and how library branches provide equitable access to that technology using those services.

Quantitative Analysis

Quantitative analysis used statistical software, SPSS specifically. After data was scrubbed for incomplete answers and lack of consent agreements, a codebook was established to ensure confirmability (Pallant, 2016). Both categorical and continuous measures made up the codebook. Specifically, frequencies will include both categorical and continuous variables; race/ethnicity, titles, system of employment, and branch location, and types of degree attainment, age, and length of employment, respectively. Further analysis included group comparisons and significant relationships using statistical tests.

Independent and dependent variables were analyzed in descriptive frequencies, correlation, factor analysis, and then a One-Way Analysis of The Variance (ANOVA) to determine group relationships. Normality of results will also be assessed for skewness and kurtosis. An element used for checking bias and internal consistency on measures will be the Cronbach alpha-statistic.

Qualitative Analysis

Qualitative analysis will occur after answers are coded and themed through both inductive and deductive methods. The inductive method will include three rounds of hand coding to form descriptive phrases, then categorized, then themed. This will include bracketing data and using descriptive phrases to describe data (Creswell & Creswell, 2018; Saldana, 2016). Deductive coding occurred using Qualtrics Software where a priori codes associated with the conceptual framework were developed and entered as word. Overall themes were developed based on data returned from respondent's narratives.

<div align="center">

Summary

</div>

Methodology for this study was non-experimental, mixed-methods. The research design included the development of an online survey, sent to all library staff who interfaced with patrons when seeking access to digital technology. The convenience sample was made up of Librarians, Assistants, Pages, Student Interns, and Managers. Data collection happened over a two-week period and was analyzed using both statistical software, hand-coding, and intuitive coding via Qualtrics. While the study had strengths, limitations, and delimitations, discussion and final analysis may assist King County with better understanding the factors which impact residents' access to digital technology.

CHAPTER FOUR

FINDINGS

Introduction

The purpose of this study was designed to explain how library services impact digital access in regional libraries in King County Library System (KCLS) and Seattle Public Library (SPL). Using mixed methodology this study assessed library staff's opinions about how they served patrons, related to their needs for digital access to information using library technology. Additionally, the conceptual framework, Informational Justice, was used to center collected data on determining whether that framework is aligned with staff experience. An online questionnaire was used as a research instrument to gather data from currently employed staff in the KCLS and SPL. This chapter presents a description of the sample using descriptive statistics followed by the results of the data analyses that addressed the research questions. The statistical procedures used included a One-Way Analysis of The Variance (ANOVA). Narrative responses provided by respondents were simultaneously hand-coded through inductive and deductive processes. Quantitative data analyses were conducted using SPSS, inductive coding was hand-coded in a spreadsheet, and deductive coding was performed using Qualtrics. Finally, there were two research questions that guided this study:

1. How do King County's public library services impact residents' access to digital technology?

2. How are individual library branches providing equitable access to technology?

General Characteristics of the Sample

Descriptive statistics were calculated for the general characteristics of the entire sample. Table 4.1 summarizes the results of frequency distribution for gender, age, ethnicity,

years employed, education level, employment status, position group (title), branch region (North,

East, South East, and West), and system of employment at the time of data collection (spring

2020).

The sample for this study consisted of 577 respondents who identified themselves as

library employees over the age of 18. Of those responses ($n = 73$) did not consent to the survey

and their responses were not recorded. The remaining responses ($n = 570$) were scrubbed for

completeness. A final quantitative respondent count (N = 417) was used for quantitative analysis.

Even though some of the answers within this sample were incomplete, they were complete

enough to justify inclusion in the overall data set. Those answers were calculated as separate

groups versus missing. Overall, given the mix of both quantitative and qualitative questions,

respondents spent considerable time answering questions, or as little time as possible. For

example, the average time it took respondents to complete the survey was over one hour; the

least amount of time being seven minutes to the most being 26 hours. This indicates respondents

either left the survey open to complete later, took time to provide detailed narrative to qualitative

questions (covered in the section below), or both. Respondents were not required to answer every

question, and they had the ability to change their answers. Supporting this idea of length

completion time is how many respondents answered open-ended questions.

Qualitative responses dropped from the first open-ended question answered by

respondents ($n = 316$) to the last qualitative question being answered by fewer respondents ($n =$

144) by 172 responses; of course, these answers are not matched by individual case, but are

representative of the overall data set. The description of the quantitative sample follows.

Sample Description

Sample Specifics

Demographics. Table 4.1 summarizes the results of frequency distribution for: gender, age, race, length of time in position, type of employment, location of branch, and system in which the respondent worked. The complete sample for this study consisted of quantitative respondents (N = 417). The sample was heavily represented by females, (*n* = 333, 79.9 %) in the predominant age range of 55 years of age or older (*n* = 117, 28.1%), who identified as White (*n* = 295, 70.7%) and held higher education degrees (Associates at *n* = 218, 52.3% and Master of Library Science at *n* = 113, 27.1%).

Gender. Other gender category demographics included respondents choosing the male category, which were significantly fewer in the sample (*n* = 58, 13.9%). Respondents could also choose a non-binary gender category (*n* = 14, 3.4%), or they could prefer not to answer the question (*n* = 12, 2.9%). The question of age was represented with six different categories beginning with the grouping of 18-24 years of age (*n* = 24, 5.8%), 25-34 years of age (*n* = 92, 22.1%), 35-44 years of age (*n* = 93, 22.3%), 45-55 years of age (*n* = 80 19.2%), and 55 years or older (*n* = 117, 28.1%). The blank, no response group were also counted (*n* = 11, 2.6%).

Race. The majority of participants identified as follows: Asian (*n* = 51, 12.2%), Black or African American (*n* = 12, 2.9%), Hawaiian and Pacific Islander (*n* = 4, 1.0%), Mixed Race (*n* = 27, 6.5%) and White (*n* = 295, 70.7%). None responses included (*n* = 28, 6.7%). Due to the number and category of respondents replying with mixed race, respondents were categorized into one group of one.

Education levels. Related to personalized demographics, different educational levels were measured in five categories: Associates (*n* = 218, 52.3%), Masters level (*n* = 32, 7.7%),

Masters in Library Science (n = 113, 27.1%), Doctorate (n = 4, 1.0%), and professional degree (n = 5, 1.2%). Some preferred not to answer the question (n = 45, 10.8%). The second main category of demographic questions related to employment within the library. There were four questions about employment.

  Employment. Questions asked respondents about the type (described by title) of job, length in position, employment status, and location of employment; system and specific branch. Participants listed several job titles, versus choosing from a list of titles. This choice was made due to the survey's design. For example, initially, the research team asked both KCLS and SPL executive leadership to assist with data collection by identifying who, from their systems and within their branches, could participate in this study. The research team asked the library's executive leaders, from both KCLS and SPL, to send the survey link to employee groups who spent a significant amount of time interfacing with the public when accessing digital information in the library. The research team did not have full access to job descriptions which would have clearly demonstrated the choice to include or exclude certain titles in a drop-down list. Therefore, the choice was made to ask employees to self-disclose their title. Some titles, upon further review of public website employment data, were official titles, and some were abbreviated or personalized. This discrepancy was discovered while cleaning the title categorical data. To assist with data cleaning and accurately report analyses, the research team categorized titles according to the basic functions found in both job description and title. For example, job descriptions for the KCLS are available online. When there was a question about the difference between the title of "Page" and "Student Librarian Intern", for example, the research team reviewed the general responsibilities and coded groupings as necessary. To that end, five categories of employment title were assigned to participants.

The highest represented title was Assistant ($n = 222$, 54.0%). The fewest represented title was Student ($n = 10$, 2.4%). The three other categories were Page ($n = 95$, 22.8%), Librarian ($n = 60$, 14.4%), and finally Manager ($n = 27$, 6.5%). After reviewing job descriptions, a high representation of Assistant made sense. That job classification spends much of their in-library time assisting patrons with accessing digital technology. Librarians and Pages, on the other hand, usually refer patrons to Assistants for more extended assistance with accessing library technology.

Other sample information. The length of time respondents had in their respective positions were reported in four different segments. The categories included: 1-3 years ($n = 153$, 36.7%), 4-6 years ($n = 89$, 21.3%), and 7-10 years ($n = 158$, 37.9%). Respondents could also prefer not to answer the question ($n = 14$, 3.4%). Lastly, there were a few missing cases ($n = 3, 7$%). Another group descriptor included the level of respondent education. The question of employment status was also asked, to determine the kind of employment, full- ($n = 137$, 32.9%) or part-time ($n = 269$ 64.5), temporary ($n = 9$, 2.2%) or contract ($n = 1$, .2%). Only one respondent chose not to answer the question. Branch location information was spread out with respondents including their branch location ($n = 327$), outlined more in Table 4.2. Although the branches were extensive, only two public systems within King County were surveyed. KCLS respondents represented just over half of the sample providing an answer to the system question ($n = 240$, 57.6%), and SPL represented just under a quarter of respondents who provided an answer ($n = 97$, 28.8%). Slightly under 20 percent of respondents did not answer the question ($n = 80$, 19.2%). Another important decision was made by the research team concerning the grouping of individual library branches. The team was interested in this grouping to see if differences existed between regions and services offered to patrons. They considered how to

group the individual library and took a county map and drew lines from a starting point, the

middle of the City of Seattle, on the waterfront; the location of the region's first library. From

that point, four lines were drawn to ensure a mix of both KCLS and SPL libraries. The lines

formed for regions in the shape of a long triangle. Four regions were developed: (a) North; (b)

East; (c) Southeast; and (d) West. This region assignment practice also mirrored how the region

was settled over time. Finally, Overall, the sample was large, but skewed and non-parametric.

Table 4.1

Sample demographic frequencies

Measure	Frequencies	Percent
Female	333	79.9
Male	58	13.9
Non-Binary	14	3.4
Gender Blank	12	2.9
Age 18-24	24	5.8
Age 25-34	92	22.1
Age 35-44	93	22.3
Age 45-54	80	19.2
Age 55+	117	28.1
Age Blank	11	2.6
Race: Asian	51	12.2
Race: Black/African American	12	2.9
Race: Mixed-Race	27	6.5
Race: Native Hawaiian/Pacific Islander	4	1.0
Race: White	295	70.7
Race: Blank	28	6.7

Years Employed: 1-3	153	36.7
Years Employed: 4-6	89	21.3
Years Employed: 7-10	158	37.9
Years Employed: Blank	17	4.1
Education: Associate	218	52.3
Education: Master	32	7.7
Education: Master of Library Science	113	27.1
Education: Doctorate	4	1.0
Education: Professional Degree	5	1.2
Education: Blank	41	10.7
Employment: Full-Time	137	32.9
Employment: Part-Time	269	64.5
Employment: Temporary	9	2.2
Employment: Contract	1	.2
Employment Blank	1	.2
Position Group: Librarian	60	14.4
Position Group: Assistant	225	54.0
Position Group: Page	95	22.8
Position Group: Manager	27	6.5
Position Group: Student	10	2.4
Branch Group: North	138	33.1
Branch Group: East	50	12.0
Branch Group: South East	28	6.7
Branch Group: West	104	24.9
Branch Group: Blank	97	23.3
System of Employment: KCLS	240	57.6
System of Employment: SPL	97	23.3

System of Employment: Blank	80	19.2

Results of Inferential Statistics

The following results addressed each of the research questions that guided this study, how library services impact patron's ability to access digital technology. Several One-Way Analysis of the Variance tests (ANOVA) were conducted to evaluate the relationship between library services and patron access to digital technology. The independent variables selected for the ANOVA were: demographics, branch region (identified in Table 4.2), number of laptops available in a branch, hours a computer is available, and days of the week computers are available in an individual branch. Each variable had between five and seven groups to compare against the dependent variable, access. Hypothesis tests were conducted to determine if the null hypotheses were rejected using the one sample Kolmogorov-Smirnov Test. Results were significant at the .005 level to reject the assumption for: (a) the System respondents worked in; (b) Time Computers are Available; (c) Days of the Week Computer are Available; (d) race; and (e) Branch Regions. Hypothesis test results are listed in Table 4.4. After reviewing the assumption and rejecting it, ANOVA results were then calculated for between variable relationships. Those results follow.

The between groups ANOVA for the System of Employment and the measure, "computer access is the most popular service my branch provides" was reported as $F(2,414) = 8.19$, $p = .000$. The magnitude for this effect was reported at $\eta^2 = .038$, suggesting a medium strength relationship between the variables library system and computer access. This suggested respondents from both KCLS and SPL library systems supported computer access as an important service available to patrons while in the branch. When reviewing the variable of Time Computers are Available, there were four groups of hours, and included no responses as a group of blanks. The groups were reported as no limit, 1-3 hours, 3-6 hours, and Blank. The ANOVA

between these groups and the measure "computer access is the most popular service my branch provides" was reported at $F(3, 413) = 5.61, p = .001$. The main effect comparing the two was reported at $\eta^2 = .039$ suggesting a medium strength relationship between the variables. The second ANOVA using the variable Time Computers are Available, compared the relationship with "laptops are regularly checked out by patrons to use in the library." This was reported at $F(3, 412) = 94.24, p = .000$, with an effect size of $\eta^2 = .407$. This effect size also fell within the range of a medium strength relationship, suggesting a connection between the variables. The last two between group relationships for this independent variable that showed significance was "digital access to information as a library service is an important issue for my branch's patrons" and "library branch services meet the technology needs of community members of color". Those ANOVA tests reported $F(3, 413) = 46.67, p = .000$ with an effect size of $\eta^2 = .253$ and $F(3, 412) = 35.61, p = .000$ with an effect size of $\eta^2 = .206$, respectively. These returns suggested a medium strength relationship between the variables, that time patrons spend on computers has a relationship to the library service of accessing digital information, and that library branch services meet the technology needs of community members of color. The final two groups that found significance with measures related to the variables Race and Branch Regions. The ANOVA focused on Race and dependent measures reported a significance between groups. Specifically, $F(5, 411) = 3.84, p = .002$, with an effect size of $\eta^2 = .045$; a medium effect. The next ANOVA focused on the relationship between Branch Regions, and significance was found at the .000 level: $F(4, 412) = 5.28, p = .000$. The effect size for this relationship was reported at $\eta^2 = .049$, suggesting a medium strength relationship between the variables.

ANOVA Findings

Overall, each ANOVA test resulted in significance at the $p = < .005$ level with medium effect sizes, indicating the magnitude between the independent variables and the dependent variable access as moderately impactful. Independent variables: the system respondents worked in, time computers are available, days of the week computers are available, race, and branch regions, showed they have an impact on patron access to digital technology while using library services. Initially, race was not conceived as an independent variable, only the services offered by the library. However, the significance result may indicate that race plays a role in the delivery of services to patrons. How that occurs is undetermined in this research but worth further investigation.

Table 4.2

Individual branch location sorted by region, including frequency and percentage of sample

North Region (1)	East Region (2)	Southeast Region (3)	West Region (4)	Blank (5)
Ballard (4, 1.7%)	Alder (1, .2%)	Beacon Hill (2, 1.0%)	Algona Pacific (3, .7%)	97, 23.3%
Bothell (11, 2.6%)	Bellevue (2, 1.0%)	Columbia City (2, .5%)	Auburn (7, 1.7%)	
Broadview (6, 1.4%)	Issaquah (7, 1.7%)	Fairwood (12, 2.9%)	Boulevard Park (2, .5%)	
Capitol Hill (6, 1.4%)	Lake Hills (4, 1.0%)	Maple Valley 2, .5%	Burien (14, 3.4%)	
Carnation (2, .5%)	Mandrona - Sally Goldmark (3, .7%)	Mercer Island (3, .7%)	Covington (5, 1.2%)	
Central (22, 5.3%)	Newport Way (1, .2%)	Newcastle (3, .7%)	Delridge (2, .5%)	
Duvall (5, 1.2%)	North Bend (7, 1.7%)	Rainier Beach (1, .2%)	Des Moines (3, .7%)	

Fremont 4, 1.0%)	Sammamish (9, 2.2.%)	Renton Highlands (2, .5%)	Enumclaw (7, 1.7%)
Greenlake (3, .7%)	Service Center (1, .2%)		Federal Way (1, .25)
Greenwood (5, 1.2%)	Snoqualmie (1, .2%)		Federal Way 320th (5, 1.2%)
Kenmore (2, .5%)			High Point (1, .2%)
Kingsgate (1, .2%)			Kent (12, 2.9%)
Kirkland (6, 1.4%)			Kent & Des Moines 1, .2%)
Lake City (6, 1.4%)			Kent Library (1, .2%)
Lake Forest Park (4, 1.0%)			Kent Panther Lake (3, .7%)
Magnolia (4, 1.0%)			Muckleshoot (1, .2%)
Montlake (1, .2%)			Renton (9, 2.2%)
Northeast (4, 1.0%)			Skyway 3, .7%)
Queen Anne (2, .5%)			South Park (1, .2%)
Redmond (12, 3.1.%)			Tukwila (5, 1.2%)
Richmond Beach (1, .2%)			Vashon (4, 1.0%)
Shoreline (13, 3.1%)			West Seattle (5, 1.2%)

Skykomish
1, .2%)

White Center
(4, 1.0%)

University
(3, .7%)

Woodmont
(1, .2%)

Wallingford
(2, .5%)

Woodinville
(7, 1.7%)

Table 4.4

Non-Parametric One-Sample Kolmogorov-Smirnov Test with Group Branch Region, measuring Access from Library Services, Library Technology, and Digital Equity.

Measures	*Sig*
Computer access is the most popular service my branch provides.	.000
Patrons come to our library branch because broadband connectivity is free to them to access online information.	.057
Library computers are an important resource for patrons to access online information.	.123
When using computers patrons know how to get online and search for information.	.056
Computer assistance for patrons is a significant (70% or more) part of my daily job.	.000
King County Information Technology Department shares digital information with the my library branch so patrons may access county data in the library.	.009
The library home page has a link for residents to access county information like voter registration or count health care information.	.729
The library home page has a link for residents to access information about King County government.	.138
Laptops are regularly checked out by patrons to use in the library.	.001
My library branch offers programs to learn how to use technology for different community groups. Examples include the elderly, non-native English speakers, or people living with disabilities.	.762
My branch has one-on-one computer help scheduled regularly.	.094
Patrons bring in personal devices to the library to access the broadband connectivity.	.229
Internet enabled computer kiosks are rarely empty or unoccupied.	.091
My branch consistently offers a variety of technology classes that are well attended.	.655
The library is inclusive and welcoming to all community members.	.746
Digital access to information as a library service is an important issue for my branch's patrons.	.423

The library system provides the resources patrons of color need to succeed in a digital world.	.437
Library leadership communicates the importance of addressing digital equity.	.716
My library branch conducts technology-related training sessions in languages other than English.	.678
There is racial diversity among the patrons at my library branch.	.592
Racially diverse patrons make up a large percentage (50% or more) of my branch's patron base.	.040
The library system is effectively addressing digital access issues with the services currently offered (tech-tutoring classes, free computer use, etc.)	.260
Library branch services meet the technology needs of community members of color.	.151
I have received training focused on diversity in order to assist all patrons with their needs.	.806
Patrons seek out civic oriented information when searching online; like voting, volunteering, or researching elected officials.	.265

Table 4.5

Means and Standard Deviations for Race and "Computer access is the most popular service my branch provides" for between groups ANOVA

Race by Group	*n*	*M*	*SD*
Asian	51	5.73	1.37
Black/African American	12	5.75	2.61
Mixed-Race	27	5.04	1.37
Native Hawaiian / Pacific Islander	4	4.75	1.50
White	295	4.88	1.40
No Response	28	4.75	1.53

Table 4.6

Means and Standard Deviations for Time Computers are Available for between groups ANOVA and "Computer access is the most popular service my branch provides"

Hours	*n*	*M*	*SD*
No Limit	16	4.75	1.44
1-3 Hours	167	4.70	1.55
3-6 Hours	181	5.31	1.27
No Response	53	5.06	1.60

Table 4.7

Means and Standard Deviations for Time Computers are Available for between groups ANOVA and Laptops are regularly checked out by patrons to use in the library.

Hours	*n*	*M*	*SD*
No Limit	16	9.81	23.85
1-3 Hours	167	5.89	12.80
3-6 Hours	181	.37	1.72
No Response	53	53.44	47.82

Table 4.8

Means and Standard Deviations for Time Computers are Available for between groups ANOVA and Digital access to information as a library service is an important issue for my branch's patrons.

Hours	*n*	*M*	*SD*
No Limit	16	6.44	.63
1-3 Hours	167	12.24	23.14
3-6 Hours	181	11.61	21.20
No Response	53	57.06	46.55

Table 4.9

Means and Standard Deviations for Time Computers are Available for between groups ANOVA and Library branch services meet the technology needs of community members of color.

Hours	*n*	*M*	*SD*
No Limit	16	10.81	23.54
1-3 Hours	167	14.17	28.78
3-6 Hours	181	10.77	22.54
No Response	53	57.06	56.51

Table 4.10

Means and Standard Deviations for System of Employment for between groups ANOVA and "Computer access is the most popular service my branch provides."

System of Employment	*n*	*M*	*SD*
King County Library System	240	5.25	1.30
Seattle Public Library System	97	4.73	1.51
No Response	80	4.63	1.69

Table 4.11

Means and Standard Deviations for Branch System for between groups ANOVA and "Computer access is the most popular service my branch provides."

Region	*n*	*M*	*SD*
North Region	138	4.78	1.40
East Region	50	5.12	1.35
Southeast Region	28	4.80	1.42
West Region	104	5.54	1.29
No Response	97	4.78	1.64

Qualitative Data

The following section provides the themes derived from the collected and coded data. Six different questions were posed for respondents to describe their experiences with patrons using library services, library technology, or respondent's general knowledge of digital equity connected to similar County or System goals. Questions were developed by the research team and not pre-tested. What follows is a review of documents used in the analysis of the research question, description of the inductive and deductive coding processes, and the overarching themes that resulted from the coding analysis.

Qualitative Data Analysis

Any qualitative data provided by the respondent answered at least half of the first section of Likert scale questions. Therefore, a respondent could choose to not finish their quantitative questions but include narrative answers to qualitative questions; the researchers did not require respondents to answer every question. Therefore, the research team decided to include narrative answers in the final sample, after consent and level of survey completeness was considered, even though respondents did not answer all quantitative questions. This decision was made because of the considerable response rate with narrative answers. In the end, there were six narrative questions to code.

Coding is a practice of re-coding respondents' narrative answers to develop a rich story or perception of the respondent's experience (Saldaña, 2016; Ivankova, 2015; Stringer, 2014). The research team used two coding procedures simultaneously. This allowed for a systematic approach to limit both bias and interpretation complications arising from two different people using the same coding process in two different ways. Also, the team chose to use two different coding approaches simultaneously to provide the respondents' lived experiences as well as to determine alignment with the Informational Justice conceptual framework. The inductive, descriptive coding method employed hand coding where short phrases were used to describe the sometimes-lengthy responses. This descriptive coding process provided an inventory of codes for indexing and categorizing (Saldaña, 2016). It was chosen as an appropriate analysis method due to the length of answers provided by respondents. The other a priori, deductive coding process utilized Qualtrics software to find and categorize words the research team derived from the conceptual framework. Codes were drawn from each of the three Informational Justice pillars based on words found in literature and the definitions provided by Mathiesen (2015).

The deductive codebook is outlined in Appendix F. This coding process was used specifically to identify alignment between narrative answers and the conceptual framework. The coding that occurred for the inductive, descriptive process took place over three cycles. First, data were read completely and coded using phrases. Then a second cycle occurred where each of the codes were arranged and then categorized to find emergent codes. A third cycle occurred which further categorized the emergent codes into final themes. This process was used to determine six overall themes for findings to then inform discussion and recommendations.

Inductive Based Descriptive Coding and Theming

After a first round of coding, phrases were identified, categorized, and synthesized into cohesive themes for each question. Emergent themes were further reduced to overall themes, which inform these findings. The overall themes were: Ability to Access Technology, Identity Based Skill, Interpersonal, Technology Training and Knowledge, Digital Equity in Systems, and Advocacy.

Theme One—Ability to Access Technology

The first narrative question was: "What has been your experience when assisting patrons with accessing digital information while they use Internet enabled computer kiosks or laptops?" After a first round of coding for phrases, further categorization and synthesis evolved into six emergent themes: Technology Access, Ability to Access, Spectrum of Skill, Identity Based Skill, No Engagement, and Emotional Component. The data revealed that patrons come to the library because often it is the only outlet to access information. For example, technology access meant printing food handlers permits, reading and printing email, applying for jobs or unemployment, printing plane tickets, or using the Internet for various entertainment. The word "email" represented 59 different entries in respondent data. The word "print" and its variations "printed,"

"printing," and "printer," was found 262 times out of 315 entries. This is a heavily used service within the library.

The second category is Ability to Access. There were significant responses associated with patron's ability to access library technology with low, medium, and high abilities. The highest response in this theme focused on the need to access library technology but not having the basic ability to access and then use technology. As one respondent noted:

> It has been my experience that patrons have exhibited a wide range
> of proficiency when accessing digital information on computers.
> Though some use our services with little to no help, there are
> others who would rather we accessed the information for them
> because they struggle to type or use a mouse.

Answers described patrons needing basic knowledge to perform functions with library computers, while at the same time needing basic assistance to operate library technology like accessing print services. The majority of responses, however, focused on the patrons' need for basic skills to operate a computer; many not knowing how to type, operate a mouse, or understand how to use the Internet.

An additional phenomenon, although less noted, was the patron's ability to move between using a smartphone and a computer as explained in this response, "patrons have a highly varied level of literacy on computers. Many are more familiar with phones and do not know how to use a desktop or laptop computer." This was a subsection of the Ability to Access theme. This theme was closely linked to the Spectrum of Skills theme in that a patron might need basic skill to access their information, but respondents included observations about those with low, medium, and high ability of skills to find their information. That is coupled with the idea that, for this respondent, "people know a lot less about computers and tech than I previously thought". So, while patrons know they may use library technology they often call upon library staff to assist

them due to low skill level. Responses included ideas like "limited," "basic," "wide range of ability," "vast range of ability," or "various skills." These levels of ability then translated, for respondents, into how much time was needed to assist patrons. The less skill they had the more time they would need. This led to the overarching theme of Identity Based Skill.

Theme Two—Identity Based Skill

The next category was oriented toward patron identity. This quote sums up a generalized theme reported by respondents.

> A lot of the population (mostly 60+) lacks basic knowledge of
> using the computer. This applies to using the internet or Word
> mostly. Patrons need a lot of one on one help on the computers,
> which can be hard to give when working in a library.

This quote includes an age specific category, 60+. However, words like, senior, elderly, retired, older, or other age specific categories (40—50 for example) were used to describe this age-based identity. Another identity described by respondents included immigrants and language learners, and they offered their own thoughts about serving marginalized communities when accessing library technology. Respondents included their perceptions as to why accessing technology with limited skill was a precursor to having issues, language and age being barriers to that access. Knowing that impediments to accessing technology might be from either age or limited language ability, another theme emerged related to how staff interacted with patrons needing more "hand-holding", as it was often described.

Theme Three—Interpersonal

An unusual phenomenon was noted in that many respondents included how a patron or staff might feel when assisting patrons with technology. Most respondents only included the extrinsic experience of assisting patrons with accessing digital information in the library. However, respondents included an intrinsic experience associated with either staff or patron

feelings; and there was a spectrum. Words like "frustrated" were used by staff to describe

patrons. For example, patrons are so "frustrated that they are crying and beating their head on the

computer." Words like "positive," "proud," "grateful," "successful," and "good" were also used.

This emotion spectrum is called out because of the intensity of experiences respondents

included. The question did not ask about how they felt about the patron's experience, but some

chose to include that component of assisting patrons; the emotional side of assisting people with

little to no skill with technology. Words like "patient" or "patience," were represented 73 times in

the data (sometimes multiple times by the same respondent), "curiosity," "communication

skills," and "teaching" were included as the initial descriptive codes.

One respondent noted the interpersonal connection to patrons with their "ability to

reassure and encourage very intimidated computer users. Listening, listening, listening. Patience,

patience, patience." Overall, there were 121 duplicated codes that described interpersonal

connections in the datum. This quote provides a summation of the Interpersonal theme:

> First, one has to be a good <u>listener</u> and know what questions to ask
> a patron to find out what the real problem is. One needs the ability
> to think critically and fast, because patrons expect quick help to get
> on their way. Knowledge of not only your machines, but how to
> navigate a variety of websites. A good memory is needed so that
> you can answer questions that tend to be asked over and over.
> <u>Patience, patience, and more patience</u>! It helps to <u>empathize</u> with a
> patron's plight or their <u>frustration</u>. <u>Calmness</u>. An ability to show
> someone how to do a task, and teach them so that they end up
> <u>feeling successful</u>!

Overall, the first narrative question revealed the first three themes described above. This

response includes almost all of the overarching themes noted thus far:

> <u>Young</u> adults require little assistance accessing digital information.
> <u>Older</u> adults require the most assistance, and their <u>frustration level</u>
> at learning and retaining is usually <u>higher</u>. Staff have been
> instructed to attempt to keep <u>hands on assistance</u> with digital
> equipment to about <u>10 minutes per patron and then referring</u> them

> to a computer coach. This <u>time limit</u> is often exceeded in order to assist patrons in getting <u>needed information, documents, job applications, printing, even email access</u>. Some patrons clearly <u>require more time</u>, and when they have a <u>good result</u>, <u>they are so grateful</u> of the help and <u>proud</u> of what they have accomplished.

Theme Four—Technology Training and Knowledge

The next two narrative questions focused on the kind of training respondents received to assist patrons with technology. After first cycle coding, two sub-themes emerged. The first was Limited. Respondents reported having never received training on technology, training as a new hire only, then limited training on new library technology roll-outs. A respondent quote emphasizes this point with, "Training? No. People ask, we figure it out. We spend work time using applications and devices (if we're lucky) and learn how to use things." Or this respondent who stated, "almost none - only what we can google or scrounge for ourselves." This quote notes that training is lacking and staff must use whatever tactic they can to assist patrons:

> I think this is one thing that is lacking at KCLS. KCLS gave training on the essential tech needed, such as a timekeeping program or email. Still, when it came to using the patron facing technology and the applications offered on patron computers, we were left to learn from each other or on our own. Being tech-savvy has been a benefit to working at the library, but it was not a requirement to get the job.

Several respondents reported receiving no training ($n = 40$).

The second theme aligned with this sentiment was Ad Hoc. This was slightly different than the Limited theme in that it reported the kind and type of training a respondent received, versus whether they received it at all. Respondents reported the types and kinds of training, including on the job, hands-on experience, peer to peer sharing, shadowing, online, and classes. In this theme, the word "peer" was noted 41 times. This respondent notes that "all staff have access to training. Generally we learn from experience." There was sentiment that staff could

take training at any given time, due to the amount of training available to them. However, given

patrons' basic needs to understand and use technology and the time one has during a giving shift,

respondents do not have time to learn more complicated hardware or software. Instead, they are

only trained on new library technology at roll-out ($n = 40$). The sentiment about training is best

summed up by this respondent:

> "Very little. I had a fair amount of technical experience before this
> position, which was essential. I got less than 10 minutes of training
> on the printers (which is our biggest technology support), it also
> took over 2 years to get training on our online services - such as
> overdrive. I have gotten no or very little follow up training and
> frequently am asked technology questions by coworkers."

Library staff were also asked about the knowledge, skills, or abilities (KSA) needed to

assist patrons with technology and accessing digital information. After initial coding, a second

round of coding found several emerging themes. These themes include Government,

Employment, (small scale themes), Training, Accessing, Literacy, Hardware, Troubleshooting,

(medium scale themes), Software Familiarity (large scale theme). A contributing factor to the

number of codes is how respondents answered the question. For example, respondents included

the reasoning for the KSA, like this quote which states:

> if a patron asks about a software program or app that I am not
> familiar with, I always check with my co-workers to see if they
> have the ability to help. I always feel that I can ask a co-worker for
> assistance when I am unfamiliar with something that a patron is
> asking about.

This indicated how respondents included the context for why one or more KSA's are

necessary. The Government and Employment themes also align to the literature stating why

patrons use a library, for accessing governmental information and employment resources.

Although, these themes had a smaller representation in the data.

Next, were the medium scale themes: Training, Accessing, Literacy, Hardware, Troubleshooting, which included printing, scanning, and using Library specific technology to find information. If viewed as a timeline of events, these themes are representative of assisting a patron. The first necessary theme is Training, because of the need to train on topics in order to assist patrons, noted by this respondent's quote, "ongoing training. Technology and information change continually so training has to be continuous to keep up as well. Our patrons pretty much depend on us to know how to do everything when it comes to technology." Then a patron must Access the information; which includes knowing library resources and knowing how to ask for help. However, patrons need Literacy to interpret their findings. In this data, Literacy included digital, information, and visual constructs, as well as language proficiency. However, Hardware was also was also included, like printing, scanning, and using library specific technology to find information. Troubleshooting, found 44 times in the narrative, related to the ability to troubleshoot Hardware when it was not functioning properly. This combination could represent a likely scenario when assisting a patron with accessing digital technology.

> Skillful and tactful troubleshooting is the primary skill, regular predictable skills with software are not enough, constant self study [training] to keep up with the merry-go-round general novelties a must, some idea about government forms is an asset.

The final theme most presented by the datum was Software Familiarity. This was closely tied to an accessing function. The codes that developed into the Software Familiarity theme were duplicated over 300 times, with respondents using words like MS Office, Adobe, Word, Internet, Email, search engine, and software.

Theme Five—Digital Equity in Systems

The final questions focused on inquiring into the relationship between King County and the library systems and their perceptions of digital equity and service to communities. Responses

revealed three themes: No Knowledge, Library Commitment, and Opinions. The first theme, No

Knowledge, was the largest theme, identified that respondents knew little, very little, had no

knowledge of, knew nothing, had no idea, or answered N/A or nothing. This theme culminated

from these codes that appeared 130 times in the narratives out of 221 responses. A good example

of this theme is summed up by this respondent:

> Honestly, <u>I know very little</u>. I assume that is a goal of theirs,
> because why not? I know its a goal of the library's, but I <u>have no
> idea</u> what priority the county outside of the library system places
> on digital equity.

The next two themes were almost tied in the number of codes but in need of separate

themes. Respondents were eager to identify they might know nothing about the county but knew

their library was actively engaging and investing in programs, activities, or equipment that

specifically addressed various forms of digital inequity. For example, respondents noted various

library programs or activities with words like "hotspots," "webpages in different languages,"

"mission and vision within the organization," and "supporting training for employees." For

example, this respondent did not know about County based activity but stated that:

> I know that <u>our libraries do offer</u> <u>computer usage</u>, <u>laptops</u> to check
> out and use in the library, <u>gaming pads</u> for children to check out
> and use in the library, <u>free wifi</u>, and at least one offers <u>charging
> cords for devices</u>. Additionally, we do <u>outreach</u> and have mobile
> libraries and <u>computer labs</u> that will park <u>near camps of people
> experiencing homelessness</u> to provide access there as well. With
> that exception, though, patrons do need to come to the library to
> access our technology, so patrons that aren't able to come are at a
> disadvantage.

The third theme was Opinion because many respondents had opinions about digital

equity and wanted to respond to the question with their personalized thoughts but lacked a

statement about their library's or County's specific commitment to digital equity through

technology access. One respondent's Opinion was "I know that the county relies on Library

systems to provide this information in the most equitable way possible. Doing so is a challenge

in so many ways." Another respondent included this Opinion: "my branch is in the City library

system. There is at least a semi-consistent level of lip service paid to the notion of equity, digital

and otherwise, but implementation is somewhat less vigorous."

With regard to libraries providing equitable services to diverse communities, the question

was asked if respondents noticed patrons being served differently based on race, age, or ability.

After coding and theming, several themes and sub-themes were identified. The Yes theme

included Bias and Bias Because. The No theme included Equal and Awareness. The other three

themes were Systematic, Resigned, and Training. Bias was called out as a theme in this

respondent's experience: "definitely, I think the library is guilty of a lot of implicit bias incidents,

and that most staff is not aware of it." Another statement was, "yes - implicit bias and racial

discrimination exist and it shows up in many different ways."

This is an example of the qualifying statements provided by respondents. Bias Because

was the other sub-theme deserving of attention because it was specifically called out by

respondents. Bias was identified as necessary in order to address patron's needs Because their

needs are so diverse, a biased response is necessary. For example, one respondent noted that:

> Yes, in a fruitful way. Communication barriers exists for all people
> when you look at computing as a language in of itself. Add into the
> mix, difference of lifetime experiences, different languages,
> different cultural expression, staff and patron alike are
> translating/interpreting to get answers.

This indicates the respondent engages with patrons based on the need of the patron, and

therefore could be construed as bias. This difference was noted throughout responses enough to

create the theme and exemplified by this response:

> Yes, based on various barriers related to ability, language,
> economic situation, etc. - there is so much out there that is less

accessible to many patrons, thus blocking their participation in
civics or attaining certain skills to help them succeed, etc.

The No theme was similar. The largest response to this question fell into the No theme.

The two sub-themes, Equal and Awareness, provided insight as to why respondents felt No bias

exists. First, the Equal theme consists of several answers relating to how all patrons are served

equally, and sometimes equitably; these two words were used interchangeably. A respondent

example that couches this idea well is, "I see library staff White/Black/Brown using humility,

stamina, and empathy on a daily basis to ensure patrons are served equitably" or, "in my library

we are very diverse but equal." However, the No-Equal theme had responses like, "No-all

patrons are treated equally", or "No Everyone to my knowledge despite their race, age or ability

is treated the exact same, with respect."

The second theme, Awareness, included responses that called out how the respondent was

aware of equity issues but did not qualify them in a Yes or No form. Concepts like, the staff are

majority White, the library is in a diverse neighborhood or an affluent neighborhood, adaptive

devices are available, or isolated patrons need access to technology, were types of generalized

observations of what is happening in the library with or to a patron. The last three themes were:

Systemic, Resigned, and Training.

The theme Systemic was developed due to respondents specifically calling out either the

specific structure of leadership, or the library system in general. This powerful quote relates to

the Systemic theme associated with administrative leadership:

Yes. [KCLS] has racist leadership whose white leaning priorities
trickle down to branch services. Many library staff members do
work for equity and making sure we are lifting up vulnerable
populations but, unfortunately, our system does not empower its
employees to make localized decisions.

Alternatively, this quote more quietly describes their version of the library by stating that, "yeah of course. The library is as entrenched in systemic racism as any organization."

The next theme is Resigned, coming from responses which examined the idea that, most likely patrons were treated differently. Codes included "most likely," "probably," "it's a human thing," "that is the nature of diversity," or "staff do their best," or "sometimes." For example, this respondent noted that, "sometimes. I hope that it's because of the time problem, in that sometimes library staff just don't have the time to teach the patron all the skills they need to do the task they want to do that day." This response does not have any emphatics that would lead to a strong Yes or No qualified answer; hence the Resigned theme. Similar responses are: "we do the best we can to serve these different groups as asked, but we don't have specific programs that are geared towards them", or "sometimes we just don't have the staff to help patrons with lower ability levels." These two responses seem to indicate the acceptance of bias for reasons out of their direct or immediate control and therefore acknowledge differential treatment might sometimes exist. The final theme is Training.

Several respondents noted that Training had occurred around understanding differences, that staff need more training, that training needs to be made a priority, or there has been an increased focus on training in recent years. This respondent noted that "we're not provided with extensive equity training which would expose unknown biases and allow us to do our best to truly serve patrons as well as possible." Another respondent noted that they "think it's very important for staff to have consistent, ongoing implicit bias training." Finally, this respondent thinks "the system needs to have more anti-racist and internal bias training as well as cultural competency training that's not optional."

Theme Six—Advocacy

The final narrative question asked respondents to provide any additional information they would like to include about serving marginalized communities when they access digital information in the library branch. The question focused on the respondent's personalized opinions. No one set of responses indicated the need for any theme other than Advocacy because each of the 124 responses that were descriptively coded were completely diverse, as diverse as the experience of a library patron. Advocacy is suggested as the last theme because respondents provided suggestions, alternatives, pleas, and ideas in making the in-branch library experience better for their patrons. There was a sense that 'if only the library could do this one thing' the environment or in library experience would be better for everyone. For example, this respondent said, "I wish the library system would address the fact that people of color are typically put at a disadvantage when it comes to digital literacy or access, and how we can help close that gap." Another hope was captured that explained that "I had a black female patron ask me if we couldn't have tech classes taught by black people for black people." Additionally, a respondent thought that, "it would be nice to have more branches dedicated to helping those with high tech needs." Finally, this respondent noted that, "I wish we had the resources to provide more digital instruction/help to immigrant communities." Several responses focused on the difficulty of serving patrons struggling with housing security or working through language barriers. However, there were not enough responses to develop a focused theme around those two issues.

Deductive Coding

Grant and Osanloo (2014) established that applying a conceptual framework to qualitative responses establishes a connection between the framework and the research problem being explained. In this case, the deductive, or a priori, coding process derives codes from the

conceptual framework and applies those to the qualitative responses of the study (Ivankova, 2015). In this study, codes are derived deductively from the tenets of Informational Justice and applied to the text data regarding library services, library technology, and digital equity in the King county library systems (Grant & Osanloo, 2014). Codes were drawn from each of the three pillars of Informational Justice--iDistributive, iRecognitional, and iParticipatory--based on definitions found in Mathiesen's (2015) conceptual framework. The deductive codebook is outlined in Table 4.11. This coding process was used to identify alignment between the framework and narrative responses.

Table 4.11

Mathiesen's (2015) Informational Justice Framework with definition and codes

Framework	Definition	Codes
iDistributive justice	The equitable distribution of information and technology services.	equity, equitable, shared, provide, resource, available, services, access, accessible, information, usable
iRecognitional justice	Addresses the library's community members and the ways they are portrayed in library materials, programs, services, and databases.	represented, language, marginalized, community, materials, culture, cultural competence
iParticipatory justice	The inclusion of library patrons in decision-making about library resources, such as technology, and how it is distributed within the library for patrons.	voice, collaborate, influence, opportunity, inclusion, expression, participate, decision-making, agency

Comprehensive results from the deductive coding process show 72% of responses are aligned with the iDistributive justice pillar. However, only 23% of responses fell under the iRecognitional justice pillar, followed by iParticipatory justice represented with only 5% of responses overall.

Summary

The survey developed by the research team was initially designed to answer two research questions, how do library services impact resident's access to digital technology, and how are individual library branches providing equitable access to technology. Quantitative data analysis indicated a reliable measure of scale but did not reveal any significance between groups. The survey could have included different kinds of questions that would have more strongly matched both independent and dependent variables. Qualitative data provided a richer and more in depth understanding of the patron and library staff experience while accessing digital information, and more closely aligned with the conceptual framework introduced in Chapter One. However, findings do have some connection to the research question, while simultaneously outlining phenomena not sought during the survey design or collection.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was designed and conducted to explain King County's interest in knowing how its public library systems provide services focused on patron access to technology, and how that access contributes to the County's digital equity plan for residents. This chapter provides a review of the connection to literature, implications and recommendations based on findings, strengths and limitations of the study, and suggestions for future research.

Summary of the Study

King County's goal of remaining competitive in the 21st Century (King County Office of Performance, Strategy and Budget, 2015) is dependent upon its residents having access to broadband internet connectivity to engage in all aspects of online society (King County Information Technology, 2019). This is especially important as governmental services are increasingly available only online. Recognizing that not all residents can afford in-home internet access, the numerous branch libraries in the County's two library systems serve as primary locations for residents to gain Internet access (National Telecommunication and Information Administration, 2011; Kinney, 2010). Given this fundamental need, King County wants to determine how library services impact residents' access to digital information and achieve equity.

Through an explanatory mixed method study, the researchers developed a survey instrument based on the Informational Justice framework, and included measures of descriptive statistics (age, ethnicity, gender, educational level, and position title), Likert scale measures related to frequency and agreement, and six narrative questions. The sample consisted of public facing library staff from KCLS and SPL (N = 417) to explain their perspectives of patrons'

access to digital information and their utilization of online resources. The analytical software program SPSS was used for all statistical tests. The following research questions guided this study.

RQ1. How do King County's public library services impact residents' access to digital technology?

RQ2. How are individual library branches providing equitable access to technology?

Connection to Literature

Data results from this study aligned with the literature. Specific connections to the literature include: computing devices being introduced and used in a library setting for patron access, the library being used as a space and place for digital engagement, and patrons using library services for accessing civic or government information. Quantitative analysis identified medium strength relationships between independent variables and access. Access was assessed with the Likert scale measure, "computer access is the most popular service my branch provides." Researchers have been studying the connection between the library and computing technology for more than 40 years. The development of strategic plans surrounding the implementation of computing devices has been written about in several articles. As Bertot (2009) acknowledged, since the 1990s libraries were early adopters of both public facing computers and Internet-based technologies. Further, a guiding principle of the National Collaboration for Digital Equity (NCDE) notes that investments and initiatives to strive toward digital equity is based on a systemic approach, providing broadband and computing devices specifically (National Collaboration for Digital Equity, 2016).

The coding process, focused on inductively determining emergent codes using descriptive coding, found connections to the literature on digital equity. Respondents talked about a library

as a space and place where patrons can use technology to research information digitally to

engage in online society. The literature described this as government and civics information like

voting, employment and job searching, benefits, and social services. For example, a respondent

noted "staff…should be familiar with most used government websites to provide social services"

was submitted by a respondent supporting literature. Another respondent provided that staff

should have the skills to assist patrons so they know "how to get to the employment security

website, how to complete the Census, how to access voting information (including printing a

replacement ballot), etc." Serving patrons who might be in information poverty (Chatman &

Pendleton, 1995), was described by this respondent where they note:

> there can be a huge difference in helping patrons accessing digital
> information depending on their knowledge and experience using
> computers and their English language proficiency. Once in awhile,
> I have helped patrons with limited English who need to access
> their email account and we communicate with Google translate and
> their native language printed on the screen.

The connection to libraries serving rural districts is also noted by this respondent, who

talks about their work and that "in my main branch, I spend a lot of time assisting patrons who

are older, and often from rural/lower-education backgrounds." This demographic makeup is often

referred to in the literature focused on digital equity. The deductive re-coding process constantly

challenged ideas that the research team developed throughout the course of the study (Gilgun,

2017). The application of codes derived from the Informational Justice framework found that

KCLS and SPL as information organizations engage in each pillar of the framework, albeit in

varying degrees. Further, literature notes that having access to digital technology is only one part

of the digital equity puzzle. Necessary for the complete and equitable use of digital technology is

the need for digital literacy. Respondents made several connections to the patron experience

demonstrating the need for digital literacy.

Informational justice conceptual framework. The study results also aligned with the interrelationship of library services and the patron experience as framed by the Informational Justice framework. The deductive coding process suggested that while the three foci were present in the data analysis, the iDistributive pillar was most prominent. This is a reasonable result when one considers "*access to information* as the resource" (Mathiesen, 2015, p. 212). The second most prominent pillar represented by the data is the iRecognitional pillar. As referenced above, this pillar is aligned with ways individuals, cultures, and cultural symbols are portrayed in library materials, programs, and services. Finally, the least represented pillar is iParticipatory justice. This pillar represents the inclusion of library patrons in decision-making about library resources, such as technology, and how it is distributed within the library for patrons. This is an interesting result considering the perception of libraries as inclusive spaces. However, survey data indicates that community members are not included in the decision-making processes of which resources the library provides.

Discussion of Findings

Library Services Findings

This section tried to explain how library services impact patrons when accessing technology in library branches. The accompanying open-ended question asked for respondent's experience in assisting patrons with technology. It was found that an examination of how library services impact residents' access to digital technology supports that patrons have diverse technology needs and that computer access is the most popular service a library branch provides. This finding primarily focused on the importance of computers in the library and patrons' ability to use them, including barriers based on language, confusion between smartphones and computers, and the skill to use a computer or mouse.

Patrons come to the library because it may be the only way they can access the Internet to find civic information, check their email, or apply for unemployment or jobs, a connection also found in literature (Bertot, 2009; Bertot et al, 2012; Cuban & Cuban, 2007; Kranich, 2000, Kranich, 2005). Although patrons have a wide range of abilities when accessing technology, respondents observed that many patrons do not have the basic skills necessary to effectively access and use technology. One example from the data is the prevalence of smartphones. It was reported that most patrons know how to use them but are unable to use a desktop computer or laptop because of confusion between how the two different devices operate.

Patron identity and language abilities in relation to access to library services and technology is also a prominent finding. Respondents note that "patrons usually come in with little or no skill in computer use, so being patient, respectful and treating each person like an individual who you are willing to help is very important." This is an example of Informational Justice, where "a professional with a social justice orientation treats persons and communities with care, solidarity, and respect" (Mathiesen, 2015, p. 219). Many respondents observed that older patrons in general have limited experience or ability to access technology. This relationship between age and ability was noted as difficult to navigate for respondents because elderly patrons want extra assistance due to lack of ability. Respondents also observed that immigrants, represented in the data as English language learners, require more assistance in accessing digital information due to language barriers. Most software programs and directions in the library are written in only English, and all patrons have to accept the library computer use policy online—available only in English—before they can engage in their computer time on library computers. As reported by King County in 2017, residents spoke over 170 different languages with Spanish, Ukrainian, Russian, Vietnamese, and Chinese among the most used languages in the County.

Population growth of those with limited language skills rose by 2.3% in 14 years. And, different language speakers are found throughout the metropolitan area versus clustered in one particular County region, indicating use of libraries by language learners throughout the metropolitan area. Therefore, while technology services were found to be popular, patrons experienced complications in using those services due to ability and skill.

Implications and Recommendations

The data showed that providing library services throughout the county requires resources including staff time, technology devices and connectivity, and even volunteers to provide additional tech support. Additionally, for a diverse county representing residents who speak 170 different languages, library patrons would benefit from services being in several other languages. With additional languages provided to patrons when accessing services, they would more easily find themselves represented in library services (per the iRecognitional lens) and theoretically be learning and engaging in online society equitably. This final concept ties to the County's strategic direction and Determinants of Equity. Specifically, the County acknowledges that residents require equal opportunities in life, work, and play to achieve their full potential, "regardless of race, income, or language spoken" (survey respondent). Therefore, the County would be reaching this strategic goal by assisting the libraries to provide more translation and language assistance for patrons while accessing digital technology. Further, the history of both library systems suggests a strong relationship among growth of services, residents' support of those services, and county and city government commitment to continually fund programs for residents. Library systems provide both physical and virtual services to residents. They also provide an avenue for marginalized communities to access free digital technology, civic

information via its website, and free technology access and training. The results of this study

indicated recommendations to improve the impact library services have on digital access.

Recommendations. The first recommendation includes a redistribution of library

resources to match the unique needs of each community library branch but predicated on patron

need as represented by the patron. Mathiesen (2015) suggests a genuine understanding of the

unique communities being served is necessary to distribute information access and resources

equitably. Essentially one size, in the case of library services and technology, does not fit all.

Redistribution of resources could begin with analyzing the unique learning or life needs

of patrons in a library's community. The development of quarterly listening sessions of library

branch leadership with the community to hear their needs is a mechanism to achieve this

recommendation. However, the hierarchical nature of library management means these listening

sessions must rise to the top of library administration, to determine actionable strategic direction.

Further, more work between the County library leadership should commence, but on the local

level. The County wants to ensure equitable experiences for residents, and libraries are public

resources in which equity can occur through library services. More intentionality must occur for

those missions to be accomplished, and the patron experience is at the heart of that intention.

The Framework suggests that iParticipatory justice is necessary for patrons to feel

included in the community and to have their needs met. Mathiesen (2015) suggests libraries

move beyond traditional measurements like usage statistics and patron surveys. These

approaches only serve to yield input from those who enter the building, missing out on the

nuanced experiences of all community members. Regarding this point, Mathiesen (2015) further

recommends "encouraging staff to engage with communities outside the walls of the library" (p.

219). To accomplish this, the research team recommends the additional approach of reaching out

to the community the library branch serves to analyze the actual technology access needs of

community members. Although both library systems engage in specific outreach programs, they

are geared toward bringing books or materials to their communities, as explained on system

websites. One respondent replied that a Kurdish book display was developed in recognition of

the Kurdish community. While these outreach efforts and in-library displays are important for

community engagement, they fall short of both including patrons in policy or decision-making

processes and are not centered on digital equity specifically. An annual survey of patrons'

technology needs in the community's specific branch could identify problems not surfacing from

day to day interactions and act as a point of communication for decision-making.

Another recommendation resulting from the study is a review of library policies

regarding time limits assisting patrons, computer usage limits, and computer station assignments.

In recognition of staff time as a resource, the principle of iDistributive justice points to how staff

spending time helping patrons "is enabling people to engage in important life activities"

(Mathiesen, 2015, p. 211). Thus, to provide equitable assistance to patrons, staff must be able to

help them regardless of the amount of time it takes. The first recommendation calls for a policy

review of staff time with patrons. Data explained that the time restriction of one on one patron

assistance created frustration between library staff and patrons. Further, respondents indicated

they would ignore that restriction in order to assist patrons because the fundamental library

mission to help struggling patrons outweighed the need for time constraints.

Second, it is recommended that the policy for computer usage limits be reviewed and

adjusted due to the complex nature of accessing government websites when patrons are

accessing information for food handlers permits, job applications, unemployment, or tax

information. For library staff, those patrons with limited technology skill levels means they need

to devote more time to each individual patron interaction. Yet many respondents indicated a

sense of pressure from library policy to limit the amount of time spent with each patron,

especially in busy library branches.

Third, it is recommended that computer station assignments are reviewed. Data collected

in this study suggests computer access is the most popular service provided by a branch, from

respondents grouped by race, branch region, and system, and that computers are accessed for a

variety of purposes. Computer stations could be identified for different use types, like printing,

governmental forms, applying for jobs, or socializing, for example. This assignment type may

assist patrons in using the technology with an altered time frame, in essence taking a more

equitable approach to distributing a popular resource.

Library Technology Findings

The library technology section measured respondents' level of agreement about how

patrons do or do not use library technology or programs, like laptops, Internet enabled kiosks,

computers, or tutoring. Narrative questions focused on training respondents needed in order to

assist patrons with those technologies, as well as the skills and abilities necessary to assist

patrons. Library staff reported vastly different experiences with training to assist patrons with

technology. Some identified having consistent online access to training, some indicated training

was more ad hoc or self-taught, and yet others indicated the library staff taught each other on the

job through shadowing or note sharing. Respondents also mentioned they figure things out with

the patron and learn about technology together, when trying to solve a problem. This is a primary

example of iParticipatory justice, to include the patron in shared learning, decision-making, and

problem-solving (Mathiesen, 2015). One point that came up often was the lack of time for on-

going training. Even though it was noted that staff could engage in online training at any time,

their reported reality was that there was little time or staff coverage to pursue additional training during work hours.

Respondents indicated they needed basic computer or technology skills from the beginning of hire or branch placement. Although experience with technology was not reported as a requirement for most public-facing library staff positions, previous experience with or personal knowledge of technology was reported as extremely helpful when working with patrons. Information literacy was also reported as an important skill to use when assisting patrons in accessing digital information. This was noted by respondents commenting on patrons frequently needing individualized and personalized assistance when using library technology. Due to lack of patron skill, respondents could offer assistance based on a previously learned skill, life experience (like attending college), or experience from a previous job. Respondents also talked about another important skill, customer service. In the question asking about knowledge, skills and abilities necessary to assist patrons, customer service was mentioned numerous times. Customer service, connected to listening and patience, was described as a valuable skill set to have when assisting patrons with situations arising from frustration stemming from barriers; language, skill, or time restrictions. One respondent stated they needed "the patience and customer service skills required to not get frustrated…[as being the] most important" (survey respondent) skill.

Other key skills respondents noted was "knowledge of common social service/governmental websites and information that multiple patrons will be asking about" (survey respondent). This knowledge is further supported by literature that identifies the library as a place to find assistance with governmental and social services websites and resources (Bertot, 2009; Bertot et al, 2012; Cuban & Cuban, 2007; Kranich, 2000; Kranich, 2005). The

data also suggested knowledge of local and demographic information was valuable in serving the

patron base of a particular branch. One respondent noted it "helps for staff to know about local

issues and demographics, so they can be better prepared to provide services relevant to the

community and answer the questions these community members may have." Therefore,

knowledge of computer usage, customer service, listening skills, patience, governmental

websites, local community events, was noted as important to providing relevant technical

services to library patrons.

Implications and Recommendations

The implications of colleagues training each other on the job in an ad hoc fashion can

help to build camaraderie. However, the risk is that it can also engender dissatisfaction among

staff if they are feeling ill prepared to do their jobs successfully. Bias, as noted by some

respondents, may also contribute to which information is shared, by whom, and how. Mathiesen

(2015) points to the value in creating opportunities for marginalized and stigmatized community

members to collaborate with neighborhood library staff to develop diverse and accurate

representations in technology programming is just one way to address unconscious biases and

stereotypes.

The research team recommends library administration conduct an audit of technology

training practices for all public facing staff, including those in neighborhood branch locations.

Part of this audit may need to include an overview of staffing needs and how to create dedicated

time for staff training during work hours. A second recommendation is to review job descriptions

of those staff who are in the library but not allowed to assist patrons with technology needs. The

number of respondents that declared they could not assist patrons due to limited job

responsibility indicates there are staff available to assist patrons when needing digital access.

Pages are a likely job candidate with the ability to take shifts and assist patrons when Assistants are not available to do so.

Digital Equity Findings

Over half of respondents indicated little to no knowledge about any relationship between the County and its library systems regarding digital equity or bridging the digital divide. While they did not know about the County's involvement, many respondents did describe ways both library systems are actively engaged in programs and activities to address many factors contributing to digital inequity. For some respondents, they reported that the county relied upon the libraries to create digital equity. However, respondents also indicated that even libraries are not doing enough to address digital inequity, identifying the need for free broadband connectivity to be accessible everywhere, not just in libraries.

Respondents also identified implicit bias as something they have observed in their libraries and among their colleagues, contributing to digital inequity. Some library staff suggested that library services and technology are designed from a White perspective because bias and racism are systemic in the library infrastructure. However, "the just distribution of information also requires the just treatment of persons and communities as sources and subjects of information" (Mathiesen, 2015, p. 220). Respondents from both library systems did note that training around bias and understanding difference has increased in recent years, yet consistent system-wide training to address racism and implicit bias should be required in both KCLS and SPL. The Framework suggests that library and information professionals should be aware of embedded biases and injustices in library systems as well as our cultural fabric (Mathiesen, 2015).

Implications and Recommendations

There are several implications for KCLS and SPL in their approach to digital equity. First, respondents noted the restrictive access to technology through English only user agreements which may contribute to an environment difficult for non-English speakers to navigate, especially when trying to access computers for government forms, or self-paced learning. Second, respondents commented on the lack of staff diversity or inclusion of community members in library services. The group "race", in the quantitative data was also found to have a medium relationship to computer access as a popular service. Given this data, an implication may exist that an exclusive environment is created, particularly for communities of color. Third, local community engagement appears to be uneven. This may be due to staff time or limited resources for outreach and recruiting.

It is recommended that library administration analyze hiring practices to achieve more diversity among staff. Both hiring and volunteering processes could be reviewed. Kelley (2013) noted the example of library systems providing grant money to support students of color achieving library degrees, as an example of how to diversify the profession. Demographics from this local study reinforced Kelley's (2013) finding that the profession is "overwhelmingly credentialed, white, monolingual females" (p. 8). Further, the connection between the library and its patrons was clearly delineated in both the literature review and respondent data, especially considering race had a significant relationship to computer use as a service; associated with digital access. Acknowledging race as relevant to the discussion of digital equity is important for two reasons.

First, King County and the City of Seattle, more specifically, have a history of segregation and racist policies associated with redlining. This practice created disparate

generational wealth and community centers that did not receive equitable public resource development, like building neighborhood libraries. KCLS is primarily funded by the county's property tax revenues. SPL is funded by the City of Seattle, private sources, and library levies. Both systems use their funds to provide a variety of digital resources and services for residents, attempting to meet the County's mission of creating digital equity. Given the disproportionate development of the region, libraries and their services have grown at different rates due to property tax collection and development. Secondly, the County as a region is very diverse. 2016 County demographic data estimates that people of color were 28.7% of the county population, as compared to national percentage of 22.1%. And, the County reported in 2016 that over the past 20 years, population growth has come from people of color (King County Office of Performance, Strategy and Budget, 2015). As demographics showed, respondents were majority White serving a diverse patron base, and patrons notice. One respondent had a "black female patron ask [them] if [the library] couldn't have tech classes taught by black people for black people. She was trying to explain...that she would feel so much more comfortable with being taught that way."

Regarding volunteerism, the library branch can strengthen the relationship with its community, ensuring representation through the iParticipatory and iRecognitional frameworks. Currently, both library systems support several volunteer-oriented opportunities, yet it is unclear whether the libraries go into communities to recruit volunteers. The research team recommends that library branches actively recruit volunteers from the communities they serve, versus accepting general online applications This is an example of iRecognitional justice, where libraries can establish local volunteer programs "to include more voices within the information environment" (Mathiesen, 2015, p. 220).

Local communities need to be asked what services and technology needs are beneficial to them, and as respondents noted repeatedly, libraries and library staff need to patiently listen. Libraries have been shown to have a contributing role to play in bridging the digital divide. And, access to technology is critical to equitable online life and integration into the society of the 21st Century. Access and learning are also cornerstones of King County achieving strategic directions of being a 21st Century economy. Lastly, the research team recommends that King County, KCLS, and SPL forge a partnership to specifically address policies and procedures related to equitable distribution of digital resources to achieve digital equity.

<div align="center">

Conclusions From the Data

</div>

This study also attempted to find connections between this data and the County's digital equity plan. Although data supported the connection between library services and digital access, the findings show library services and patron identities have an impact on access; a connection cannot be determined how library services and access contribute to the County's digital access plan.

King County Government

This research took the County and divided it into four regions. This perspective can add another layer of interpretation of how the County may address digital equity within its library systems. As noted in chapter four, King County has a history of geographic segregation; where resources and real estate were divided in such a way that generations have developed wealth differently. Regionally speaking, respondents indicated that community make-up presented barriers for some patrons. For example, respondents working in affluent neighborhoods wanted more connection and resources for patrons with less wealth. Respondents working in neighborhoods with immigrant communities wanted resources for their patrons that were more

hands-on in the moment instead. For example, if a patron seeks access to online immigration

information and needs assistance, respondents noted wanting to assist the patron fully, without

referring patrons to tech-classes in other branches. These branch-based responses can be seen

through a cross section of the narrative data. An example from this respondent notes the

differences between working in region one and region four. Region one:

> is a wealthy, mostly white community [and] our computer stations are never full. People
> often bring their own laptops or use their phone to access the internet. We do have an
> older population that our tech tutor helps them. When I sub in other communities like
> [region four] that is more diverse and lower income, all computer station are busy and
> people need a lot more help on the computers. King county is huge and each location has
> their own needs.

This comment reflects the diversity of the county and the differing needs for each community

library branch. Yet the library systems are inclined to apply a one-size-fits all approach to

resource distribution for these very different communities.

Given the racial make-up of the survey sample--majority White--it is important to

consider how community voices are being represented in their branch library. One respondent

noted:

> I definitely think it is important to have a wide variety of staff available to patrons - the
> more diversity we can provide in our public "face" the more comfortable patrons are in
> seeking assistance. Many people instinctively look for someone who feels familiar to
> them - especially as asking for help can make folks feel like they are in a vulnerable
> situation.

This indicates that library hiring practices and training needs examination and revision to better

reflect resident's needs, whom are served by both systems throughout the County. Local,

community-based volunteering can also be an avenue used by the library systems to serve

patrons with more representative diversity.

City of Seattle

The Seattle Public Library was included in this study because its branches serve King County residents living within Seattle city limits. However, the Seattle city government was not included in this research. Numerous respondents from SPL identified ways they saw the City addressing digital equity for underserved and vulnerable residents, specifically referring to the City's Race and Social Justice initiative. One respondent stated:

> I do not know what the County's interest is in achieving digital equity. I know more about what the city of Seattle is doing to achieve digital equity for Seattle Public Library patrons, particularly in regards to hotspots that can be checked out, and an amount of hotspots that can be used longer than the 3 week check out period for those insecurely housed.

Additionally, respondents identified ways that SPL collaborates with other community organizations to advance digital equity. For example, one respondent shared that SPL "is also working with organizations with the immigrant population to get them access to internet and computer access at home. They also partner with Worksource at some locations to help with jobs digitally." This is just one example of a collaborative response to the needs of immigrant and refugee families in accessing digital information to advance their lives within the city.

Relevance for Library Systems

Throughout the course of this study, respondents indicated numerous ways they would like to enhance and improve the services they provide to library patrons. These suggestions align with the deductive data based upon the conceptual framework, indicating a need for both KCLS and SPL to focus their efforts on iRecognitional and iParticipatory justices.

iRecognitional Justice

Library community members should see themselves reflected in library materials, programs, services, and even in library staff and volunteers. This is iRecognitional justice. For

branches in diverse and multilingual communities, extra staff support and volunteers who can

speak the languages of the patron base would help create a more equitable library experience.

One respondent indicated a high level of self-awareness is also important, especially when

engaging with marginalized communities. He suggests:

> To keep in mind who you appear to be before you even engage them. As a large white
> male I will inspire reactions both positive and negative from patrons from marginalized
> communities long before I speak with them and I need to keep that in mind as I and my
> teammates serve them.

Another respondent described the necessity of outreach to the community being served, but with

more intentionality specific to patrons' technology needs. They further suggest that libraries take

that information and "craft our services and education around those factors, rather than offering

static training and services that don't work for so many of our patrons' actual needs and

circumstances." Another aspect of iRecognitional justice is for patrons to see themselves in

library materials. One respondent from region 4 provides an important perspective:

> It is difficult to access digital information on topics of interest to Native students. There is
> much less information to access for school purposes. Is it not digitized? Held in tribal
> libraries exclusively? Behind academic walls? Natives are vastly under-served in
> libraries. It is a difference of cultural expectations, social ways, and wariness borne of
> cultural appropriation, government oppression, neglect and widespread racism.

These are important factors to keep in mind when providing library services to the richly diverse

communities of King County.

Outreach is more than just gathering information on communities and patrons' needs; it

also relates to how information is gathered. This leads to iParticipatory justice and the inclusion

of library patrons in decision-making about library resources, such as technology, and how it is

distributed within the library.

iParticipatory Justice

Participation and inclusion are at the root of iParticipatory justice. One respondent recognized that some "marginalized communities don't use library resources to access digital information because they didn't know they could or that the library provided this access and they don't understand how it works or how to get started." Libraries are an Americanized institution that some immigrant and refugee communities may not realize is freely available to them. However, as one respondent gets to the core of the outreach challenge, "in order to reach those in marginalized communities, you have to ask them what they want. Too often, we assume what they want or need. Let those you are trying to serve lead the way." This observation is at the heart iParticipatory justice—to include community members in decision-making about what the library provides to the community and how the library serves community members.

Recommendations

The implications of this study are far-reaching. Respondents identified three key ways to address digital equity at the local library branch level. That included outreach to branch communities to learn what branch employees really need, recognition that equitable service means serving different communities differently, and the need for universal broadband access. Finally, the research team recommends the creation of a formal coalition of all agencies and organizations interested in achieving digital equity in King County.

Outreach

As described by iParticipatory justice, outreach to King County citizens may be a key to determining technology needs. Such outreach should go beyond surveying patrons as they enter the library. Instead libraries and the County could be going into the communities they serve, to include all residents in determining how to achieve digital equity. As noted, King County is

geographically large with a diverse population speaking over 170 languages. Respondents

indicated that community make-up did present barriers for some patrons. Outreach at the local,

community level may be vital to meet resident's learning level and learn about their technology

needs.

Equitable Service

Several respondents noted that both KCLS and SPL communicate the importance of

digital equity and act upon this value by providing technology tools and Internet access in all

library branches, including the lending of Wi-Fi hotspots and laptops. However, many

respondents reported feeling like more could be done to provide service equitably. Based on

respondent data, it is recommended that library agencies, county, and city governments place

more focus on serving communities that entirely lack Internet access. This is important during a

health pandemic because vital, health and welfare online resources, services, and programs do

not reach all residents equitably. Providing computer access and Wi-Fi inside library facilities is

crucial, but as all library buildings were shuttered during the Covid-19 pandemic, so too is

Internet access for marginalized communities. It is recommended that library branches, with

support from both county and city government, increase and expand hotspot and laptop lending

programs in addition to providing more charging stations and more Wi-Fi outside of all civic

buildings.

Universal Broadband

Throughout the narrative data, respondents noted a desire to see affordable Internet

access for all King County residents. While the concept of universal broadband access is outside

the jurisdiction of libraries, county and city governments can take note of how the Covid-19

pandemic is eroding any progress made to bridge the digital divide. County residents in rural and

low-income neighborhoods are falling further behind which in turn severely limits the region's ability to remain economically competitive. It is recommended that regional governmental agencies provide resources and infrastructure to make available broadband connectivity as a public utility.

Regional Coalition

Finally, the research shows that respondents know very little about the County's interest in achieving digital equity through technology access in libraries. Respondents could only assume the County was interested in digital equity. If there is indeed a relationship between King County and its library systems in providing technology access to all residents, then the County should be more transparent in its communication to libraries and more inclusive in its actions related to digital equity. The responsibility to address inequitable access to technology should not be left to libraries alone without engaging governmental institutions and non-profit organizations. It is recommended that the County form a coalition with the City of Seattle, KCLS, SPL, and other organizations to intentionally collaborate on digital equity efforts. Pooling resources through the intentional intersection of governmental agencies and library systems will put the County in a stronger position to achieve its digital equity goals for all county residents.

<div align="center">

Strengths and Limitations of the Study

</div>

This study had strengths worth noting. This study's strengths come from the survey design and analysis. The survey design elicited responses which found significant, if not modest, relationships between library services and access to digital technology. The measures created by the research team were found to be reliable with an overall Cronbach Alpha score of .831. This is in part due to the large number of participants ($N = 417$) that self-selected to participate in the study. The narrative respondents reported provided a rich understanding of a library staff's

experience assisting patrons indicating how that assistance contributes to digital equity. Over 700 lines of responses were hand-coded simultaneously from both inductive and deductive coding processes. This decision by the research team to utilize this coding process found connectivity to the conceptual framework and contextualized the data in order to form positive recommendations for the County.

This study also had limitations. The first, most important limitation to note is that this research was conducted during a national pandemic where libraries were closed to the public. Although respondents were available to participate in the online survey, it is unknown how many respondents may not have been able to participate due to the extended closure. That is a limitation related to the sample. Further sample limitation included surveying only participants with specific responsibilities currently working with patrons on a daily basis. The study itself was conducted on a very short time-line and the study population was limited by access, time, and resources, but the overall sampling strategy was an effort to reduce bias and enhance credibility because sample selection was not predicated on the outcome of the study (McMillan, 2016). The sample size also places limitations on the generalizability of the results, which may not be applicable beyond the context of these organizations. The instruments used in the study were modified and localized by the researchers from original valid and reliable instruments, but not all elements related to library services or access were included due to survey length. All participants who responded to the survey self-selected to participate and their responses were self-reported.

Summary and Conclusion

Data collected from participants indicated that support for patron's access to digital technology is the purpose and mission of the library, but often complicated due to patron

technological skill, time restrictions, or chosen task. Discussion was developed from six themes

derived from both quantitative and qualitative data collected from respondents. These themes,

Ability to Access Technology, Identity Based Skill, Interpersonal, Technology Training and

Knowledge, Digital Equity in Systems, and Advocacy led to recommendations for library

administration. Although the study had limitations related to generalizability and time

constraints, strengths were also present. The study engaged participants in local libraries who

demonstrated through their narrative that assisting patrons is at the heart of their personal

mission, regardless of the patron, their ability, or task. Future research is suggested in order to

build a more comprehensive picture of patron need by including patron voice in future studies.

Future Research

This study had strengths and limitations, received many responses, and generated

recommendations the County may be able to use to impact digital equity for the region's public

libraries. Although this is a snapshot of the current relationship between library services and

access to digital technology in library branches, future research is warranted. First, a research

study with patrons as participants would be recommended. This would further include their

voices in this research and be more inclusive. Second, future research should focus on how

intersectionality and identity impact the delivery of library services, especially in diverse

communities. This study suggested that race is a factor in providing library services and that bias

exists systemically and in specifically localized branches. Further evidence to support this

recommendation is the history of this region's post-Depression economic development and how

property and public services were developed over generations. Lastly, future research should

focus on how components of digital equity are changing and evolving over time for generations

who use technology differentially. Providing for digital equity and ensuring all residents are able

to effectively, confidently, and competently access digital technology for their needs will help the

whole county excel in the 21st Century. The County and its libraries are at the heart of building

the bridge over the digital divide to support residents in achieving digital equity for all.

References

Adams, M. (2018). Introduction. In M. Adams, et al. (Eds.). Readings for diversity and social

justice (4th ed.) (pp. 1-6). New York, NY: Routledge.

Adler, R. P., & Goggin, J. (2005). What do we mean by "civic engagement"? *Journal of

Transformative Education, 3*(3), 236–253. https://doi.org/10.1177/1541344605276792

Advameg, (2020). Seattle: Economy [Webpage]. Retrieved from http://www.city-data.com/us-

cities/The-West/Seattle-Economy.html

American Library Association. (March 29, 2007). Equity brochure HTML. Retrieved from

http://www.ala.org/aboutala/missionhistory/keyactionareas/equityaction/equitybrochure

American Library Association. (2013). *ALA policy manual section B: Positions and public policy

statements, B.3 diversity*. Retrieved from

http://www.ala.org/aboutala/sites/ala.org.aboutala/files/content/governance/policymanual/

Links/cd_10_2_Section%20B%20New%20Policy%20Manual-1%20%28final%204-11-

13%20with%20TOC%29.pdf

Becker, P. (4 April, 2011). King County board of commissioners establishes the King County

rural library district on January 4, 1943 [Weblog]. Retrieved from

https://www.historylink.org/File/9797

Bertot, J. C. (2009). Public Access Technologies in Public Libraries: Effects and Implications.

Information Technology and Libraries, *28*(2), 81-91.

https://doi.org/10.6017/ital.v28i2.3176

Bertot, J. C., Jaeger, P. T., Gorham, U., Greene, N. N., & Lincoln, R. (2012, June). Delivering e-

government services through innovative partnerships: public libraries, government

agencies, and community organizations. Proceedings of the 13th Annual International

Conference on Digital Government Research (pp. 126-134). Association for Computing Machinery.

Bertot, J.C., Real, B., Lee, J., McDermott, A.J., & Jaeger, P.T. (2015). 2014 Digital inclusion survey: Findings and results. Retrieved from http://digitalinclusion.umd.edu/

Britz, J. (2004). To know or not to know: A moral reflection on information poverty. *Journal of Information Science, 30*(3), 192-204.

Britz, J. (2008). Making the global information society good: A social justice perspective on the ethical dimensions of the global information society. *Journal of the American Society for Information Science and Technology, 59*(7), 1171-1183.

Cancro, P. (2016). The dark(ish) side of digitization: Information equity and the digital divide. *The Serials Librarian, 71*(1), 57-62.

Carlson, E. (2016, August 10). The state of the urban/rural digital divide [Weblog comment]. Retrieved from https://www.ntia.doc.gov/blog/2016/state-urbanrural-digital-divide

Chatman, E., & Pendleton, V. (1995). Knowledge gap, information-seeking and the poor. *The Reference Librarian, 23*(49-50), 135-145.

Christou, C. (2017). The funding battle is not over. *Information Today, 34,*(6)1, 24-25.

City of Seattle. (2016). Digital equity initiative action plan [PDF]. Retrieved from https://www.seattle.gov/Documents/Departments/Tech/DigitalEquity_PhaseII.pdf

Cocciolo, A. (2013). Public libraries and PBS partnering to enhance civic engagement: A study of a nationwide initiative. *Public Library Quarterly, 32*(1), 1-20.

Cohen, J. (2018). Rectifying Seattle's racist past requires a denser future, says report [Webpage]. Retrieved from https://crosscut.com/2018/12/rectifying-seattles-racist-past-requires-denser-future-says-report

Congress.gov (2020). Fascinating facts [Webpage]. Retrieved from

https://www.loc.gov/about/fascinating-facts/

Constantine, D. (2018). Statistical profile of King County [PDF]. Retrieved from

https://www.kingcounty.gov/~/media/depts/executive/performance-strategy-

budget/regional-planning/Demographics/Dec-2018-Update/KC-Profile2018.ashx?la=en

Coward, C., McClay, C., & Garrido, M. (2018). Public libraries as platforms for civic

engagement [Report]. Seattle, WA: Technology & Social Change Group, University of

Washington Information School.

Creswell, J. W. & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed

methods approaches* (5th ed). Thousand Oaks, CA: SAGE Publications.

Creswell, J. W. & Guetterman, T. C. (2019). *Education research: Planning, conducting, and

evaluating quantitative and qualitative research* (6th ed.). New York, NY: Pearson.

Cuban, S., & Cuban, L. (2007). *Partners in literacy: Schools and libraries building communities

through technology.* Chicago, IL: Teachers College Press.

Dadlani, P., & Todd, R. (2015). Information technology and school libraries: A social justice

perspective. *Library Trends, 64*(2), 329-359.

Elliott, T., & Earl, J. (2018). Online protest participation and the digital divide: Modeling the

effect of the digital divide on online petition-signing. *New Media & Society*, *20*(2), 698-

719.

Enis, M. (2014). Industry: Boopsie analytics spots shift from apple to android. *Library Journal,

139*(1), 22. Retrieved from http://login.proxy.seattleu.edu/login?url=https://search-

proquest-com.proxy.seattleu.edu/docview/1473535061?accountid=28598

Felt, C. (2017). King County's changing demographics [PDF]. Retrieved from

      https://www.kingcounty.gov/~/media/depts/executive/performance-strategy-

      budget/documents/pdf/RLSJC/2017/Feb23/KingCountyDemographics022317

Gilgun, J. F. (Producer). (2017). Social work: Deductive qualitative analysis and the search for

      black swans [Video]. Available from https://youtu.be/MYubj5cYlD8

Grant, C., & Osanloo, A. (2014). Understanding, selecting, and integrating a theoretical

      framework in dissertation research: Creating the blueprint for your "house".

      Administrative Issues Journal: Education, Practice, and Research, 4(2), 12-26.

Gunkel, D. (2003). Second thoughts: Toward a critique of the digital divide. *New Media &*

      Society, 5(4), 499-522.

Harrison, A., Burress, R., Velasquez, S., & Schreiner, L. (2017). Social media use in academic

      libraries: A phenomenological study. *Journal of Academic Librarianship, 43*(3), 248-256.

Hoffmann, A. (2016). Google books, libraries, and self-respect: Information justice beyond

      distributions. *Library Quarterly, 86*(1), 76-92.

Ivankova, N. V. (2014). *Mixed methods applications in action research: From methods to*

      community action. Thousand Oaks: CA. SAGE Publications.

Jaeger, P. T., & Bertot, J. C. (2011). Responsibility rolls down: Public libraries and the social and

      policy obligations of ensuring access to e-government and government information.

      Public Library Quarterly, 30(2), 91-116.

Jaeger, P. T., Bertot, J. C., & Gorham, U. (2013). Wake up the nation: Public libraries, policy

      making, and political discourse. *The Library Quarterly, 83*(1), 61-72.

Jaeger, P. T., Bertot, J. C., Thompson, K. M., Katz, S. M., & DeCoster, E. J. (2012). The

    intersection of public policy and public access: Digital divides, digital literacy, digital

    inclusion, and public libraries. *Public Library Quarterly, 31*(1), 1-20.

KCTS9. (2018, November 20). *The History of Redlining in Seattle* [Video file]. Retrieved from

    https://www.youtube.com/watch?v=mBQE5rrWDfA

Kelley, Michael. (2013). The MLS and the race line: What's the best way to approach diversity

    recruitment efforts? *Library Journal, 138*(10), 8.

Kershner, J. (June 15, 2017). King County library system mobile outreach service [Weblog].

    Retrieved from https://www.historylink.org/File/20386

Kershner, J. & Becker, P. (2017). King county library system: Part 2 [Webpage]. Retrieved from

    https://www.historylink.org/File/20441

King County. (2019). Departments, agencies, & offices [Webpage]. Retrieved from

    https://www.kingcounty.gov/depts.aspx

King County. (2018). King County boards and commissions [Webpage]. Retrieved from

    https://www.kingcounty.gov/depts/executive/boards/list.aspx?fbclid=IwAR1n4uLIkbgpv

    vLkir36TvFZa7UOsjidJen_kTBMl-ZYltGc494dZi3JXFY

King County Library System. (2018). KCLS year in review highlights 2018 [PDF]. Retrieved

    from https://d4804za1f1gw.cloudfront.net/wp-

    content/uploads/sites/20/2019/04/29095026/KCLS-Year-In-Review-Highlights-2018.pdf.

King County Hospitals for a Healthier Community (2018). King County community health needs

    assessment [Report]. Retrieved from

    https://www.kingcounty.gov/depts/health/data/community-health-

    indicators/~/media/depts/health/data/documents/2018-2019-Joint-CHNA-Report.ashx

King County Information Technology. (2016). Digital equity and inclusion: Ensuring all

    residents have the opportunity to thrive [Webpage]. Retrieved from

    https://www.kingcounty.gov/depts/it/initiatives/digital-equity.aspx

King County Information Technology. (2019). King County, Washington strategic information

    technology plan 2016 – 2019: 2019 update [Webpage]. Retrieved from

    https://www.kingcounty.gov/depts/it/strategy /~/media/depts/it/ strategy/strategic-

    reports/strategic-technology-plan-2019-update.ashx

King County Library System. (2020). Budget narrative [PDF]. Retrieved from

    https://d4804za1f1gw.cloudfront.net/wp-

    content/uploads/sites/20/2019/12/20163639/2020-Final-Budget-Narrative-for-Web.pdf

King County Library System Foundation. (2016). Computer use, booking, & printing policy

    [Webpage]. Retrieved from https://kcls.org/news/computer-use-booking-printing-policy/

King County Library System Foundation. (2019a). Mission, vision, and values [Webpage].

    Retrieved from https://kcls.org/mission-vision/

King County Library System Foundation. (2019b). Mobile learning lab [Webpage]. Retrieved

    from https://kcls.org/mobile-learning-lab/

King County Office of Economic and Financial Analysis. (2017). Household Income in King

    County [Webpage]. Retrieved from

    https://www.kingcounty.gov/independent/forecasting/King%20County%20Economic%20

    Indicators/Household%20Income.aspx

King County Office of Equity and Social Justice. (2016). Equity and social justice strategic plan

    [Webpage]. Retrieved from https://aqua.kingcounty.gov/dnrp/library/dnrp-directors-

    office/equity-social-justice/201609-ESJ-SP-FULL.pdf

King County Office of Performance, Strategy and Budget. (2015). The determinants of equity:

      Identifying indicators to establish a baseline of equity in King County [PDF]. Retrieved

      from https://www.kingcounty.gov/~/media/elected/executive/equity-social-

      justice/2015/The_Determinants_of_Equity_Report.ashx

Kinkoph, D. (2018, October 18). Five digital inclusion trends in the United States [Weblog

      comment]. Retrieved from https://www.ntia.doc.gov/blog/2018/five-digital-inclusion-

      trends-united-states

Kinney, B. (2010). The Internet, public libraries, and the digital divide. *Public Library Quarterly,*

      29(2), 104-161.

Kranich, N. (2000). A question of balance: the role of libraries in providing alternatives to the

      mainstream media. *Collection Building*, *19*(3), 85-91.

Kranich, N. (2005). Civic partnerships: The role of libraries in promoting civic engagement.

      Resource Sharing & Information Networks, 18(1-2), 89-103.

Loeb, Z. (2016). Beyond the prototype: Libraries as convivial tools in action. In B. Mehra & K.

      Rioux (Eds.), Progressive community action: Critical theory and social justice in library

      and information science (pp. 15-39). Sacramento, CA: Library Juice Press.

Lopez, M., Caspe, M., McWilliams, L. (2016). *Public libraries: A vital space for family*

      engagement. Cambridge, MA: Harvard Family Research Project.

Lynn, D. (2018). What place for books? Libraries as essential laboratories. *The Kenyon Review,*

      40(4), 1-3.

Martzoukou, K., & Elliott, J. (2016). The development of digital literacy and inclusion skills of

      public librarians. *Communications in Information Literacy, 10*(1), 99-115.

      https://doi.org/10.15760/comminfolit.2016.10.1.17

Mathiesen, K. (2015). Informational justice: A conceptual framework for social justice in library

    and information services. *Library Trends, 64*(2), 198-225.

McConnaughey, J., Nila, C. A., & Sloan, T. (1995). Falling through the net: A survey of the

    "haves and have nots" in rural and urban America [PDF]. Washington, DC: National

    Telecommunication & Information Administration.

McMillan J. H. (2016). *Fundamentals of education research* (7th ed.). Boston, MA: Pearson.

Mulvihill, A. (2011, 06). Study: Libraries lose state funding. *Information Today, 28*, p. 8.

    Retrieved from http://login.proxy.seattleu.edu/login?url=https://search-proquest-

    com.proxy.seattleu.edu/docview/870512346?accountid=28598

Murray, M., & Perez, J. (2014). Unraveling the digital literacy paradox: How higher education

    fails at the fourth literacy. *Issues in Informing Science and Information Technology,11*. p.

    85-100.

National Collaboration for Digital Equity. (2016). Key principles for digital equity [Webpage].

    Retrieved from https://www.digitalequity.us/principles.html.

National Digital Inclusion Alliance. (2019). Definitions [Webpage]. Retrieved from

    https://www.digitalinclusion.org/definitions/

National Telecommunications and Information Administration. (2000). Falling through the net:

    Toward digital inclusion a report on American's access to technology tools [PDF].

    Retrieved from https://www.ntia.doc.gov/files/ntia/publications/fttn00.pdf

National Telecommunications and Information Administration. (2011). Exploring the digital

    national computer and internet use at home [PDF]. Retrieved from

    https://www.ntia.doc.gov/files/ntia/publications/exploring_the_digital_nation_computer_

    and_internet_use_at_home_11092011.pdf

National Telecommunications and Information Administration. (2016, March 25). Tackling the

      digital divide in the pacific northwest [Weblog comment]. Retrieved from

      https://www.ntia.doc.gov/blog/2016/tackling-digital-divide-pacific-northwest

Oehlke, V. (2016, Mar). Libraries lead effort to bridge the digital divide. *Public Libraries, 55*, 5-

      6.

Pallant, J. (2016). SPSS survival manual: A step by step guide to data analysis using IBM SPSS

      (6th ed.). New York, NY: McGraw Hill Education.

Passey, D., Shonfeld, M., Appleby, L., Judge, M., Saito, T., & Smits, A. (2018). Digital Agency:

      Empowering equity in and through education. Technology, Knowledge, and Learning, 23,

      425-439.

Real, B., Bertot, J. C., & Jaeger, P. T. (2014). Rural public libraries and digital inclusion: Issues

      and challenges. *Information Technology and Libraries (Online), 33*(1), 6-24.

Rideout, V., & Katz, V. S. (2016). Opportunity for all? Technology and learning in lower-income

      families. In Joan Ganz Cooney Center at Sesame Workshop. New York, NY.

Robinson, K. K. & Crenshaw, E. M. (2010). Reevaluating the global digital divide: Socio-

      demographic and conflict barriers to the internet revolution. *Sociological Inquiry, (80)*1,

      34-62

Rodino-Colocino, M. (2006). Laboring under the digital divide. *New Media & Society, 8*(3), 487-

      511.

Saldana, J. (2016). *The coding manual for qualitative researchers.* Thousand Oaks, CA: Sage.

Scott, R. (2011). The role of public libraries in community building. *Public Library Quarterly,*

      30(3), 191-227.

Seattle Public Library. (2020a). A detailed history of the Seattle public library [Webpage].

      Retrieved from https://www.spl.org/about-us/the-organization/our-history/detailed-history

Seattle Public Library. (2020b). Impact on local businesses [Webpage]. Retrieved from

      https://www.spl.org/about-us/library-impact/2018-impact-report/2018-impact-on-local-

      businesses

Seattle Public Library. (2020c). Impact on people in need [Webpage]. Retrieved from

      https://www.spl.org/about-us/library-impact/2018-impact-report/2018-impact-on-people-

      in-need

Seattle Public Library. (2020d). Our mission and strategic direction [Webpage]. Retrieved from

      https://www.spl.org/about-us/the-organization/strategic-direction

Solomon, G., Allen, N., & Resta, P. E. (2003). *Toward digital equity: Bridging the divide in*

      education (1st ed.). Boston. MA: Allyn and Bacon.

St Lifer, E., & Rogers, M. (1996). Benton study: Libraries need to work on message to public.

      Library Journal, 121(14), 112.

Stringer, E.T. (2014). *Action research* (4th ed.). Thousand Oaks, CA: SAGE Publications.

Strover, S. (2014). The US digital divide: A call for a new philosophy. *Critical Studies in Media*

      Communication, 31(2), 114-122.

Warschauer, M. (2003). Demystifying the digital divide. *Scientific American, 289*(2), 42-47.

Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing

      evidence of equity in access, use, and outcomes. *Review of Research in Education, 34*(1),

      179-225.

Washington Technology Industry Association. (2020). 2018 Annual report. Retrieved from

      https://www.washingtontechnology.org/annual-report-2018/

Urban Libraries Council. (2011, Fall). Library priority: Community-civic engagement

(Leadership Brief). Retrieved from

https://www.urbanlibraries.org/assets/ULC_Leadership_Brief_II_Full_4Pages.pdf.

Urban Libraries Council. (2016). Building connected communities (Leadership Brief). Retrieved

from

https://www.urbanlibraries.org/assets/ULC_Leadership_Brief_Building_Connected_Com

munities.pdf

Urban Libraries Council. (2017). Libraries leading civic engagement (Leadership Brief).

Retrieved from

https://www.urbanlibraries.org/assets/ULC_Leadership_Brief_Libraries_Leading_Civic_

Engagement.pdf

Young R. (2013). More than just books: the role of public libraries in building community and

promoting civic engagement. *National Civic Review, 101*(4), 30-32.

Appendix A: Seattle Public Library Site Permissions

The Seattle Public Library

April 23, 2020

Dr. Taylor

My staff recently met with Cristine Fowler and Sheila Walton, doctoral candidates from Seattle University's Educational Leadership program. We have been asked to support their efforts studying digital equity in The Seattle Public Library system and I have agreed to do so. Support will include distributing a survey to public services library staff through email, including two follow-up emails, as well as releasing a small number staff to participate in a focus group, as authorized by me in advance. To note, however, our staff participation may be impacted by library operations and priorities, as we navigate the COVID-19 closure and reopening of our libraries.

It is hoped that the results of the survey, focus group activities and the subsequent study can inform our understanding, policies and practices related to access and digital library services.

Regards,
Tom Fay
Director Library Programs and Services Division
P: 206-386-4115

Appendix B: King County Public Library Site Permissions

Support for Doctoral Students Cristine Fowler and Sheila Walton

Lisa Rosenblum <lgrosenblum@kcls.org>

Mon 4/6/2020 2:16 PM

To: Cris Fowler <crism@uw.edu>
Cc: Walton, Sheila <waltons1@seattleu.edu>

Cris, please forward to Dr. Colette Taylor

Dear Dr Taylor,

I recently met with Cristine Fowler and Sheila Walton, doctoral candidates from Seattle University's Educational Leadership program. They have asked me to support their efforts studying digital equity at the King County Library System and I have agreed to do so. My support will include assigning a project manager who will organize a survey created by the doctoral candidates, to be completed by selected branch librarians. It is hoped that the results of this survey and subsequent study may inform the impact of policy level decisions on current access to digital library services and help in determining future services.

Please let me know if you need any more information regarding my support. We look forward to working with Cris and Sheila.

Regards,
Lisa

Lisa G Rosenblum
Executive Director
King County Library System
960 Newport Way NW
Issaquah, WA 98027
425.369.3232
lgrosenblum@kcls.org

Appendix C: Institutional Review Board Approval

May 26, 2020

Sheila Walton and Cristine Fowler
College of Education
Seattle University

Dear Sheila and Cristine,

I'm following up on my May 11 email indicating that your project met exemption criteria and you could proceed. Here is the formal letter to indicate that your study **County library services and its impact on residents' access to digital information: supporting digital equity for all county residents** meets criteria for exemption from IRB review in compliance with **45CFR46.104(d)**:

2) Research that includes only interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if (i) the investigator records information in such a manner that the identity of the human subjects cannot readily be ascertained (directly or through identifiers linked to the subjects); (ii) any disclosure of the data outside the research would not reasonably place subjects at risk of criminal or civil liability or damage the subjects' financial standing, employability, educational advancement, or reputation; or (iii) the investigator records information in such a manner that the participant's identity can readily be ascertained, and an IRB conducts a limited IRB review.

Note that a letter of exemption does **not** mean IRB "approval." *Do not include statements for publication or otherwise that the SU IRB has "reviewed and approved" this study*; rather, say the SU IRB has "determined the study to be exempt from IRB review in accordance with federal regulation criteria." Please retain this letter with your study files.

If your project alters in nature or scope, contact the IRB right away. If you have any questions, I'm happy to assist.

Best wishes,

Andrea McDowell, PhD   Email: irb@seattleu.edu
IRB Administrator   Phone: (206) 296-2585

cc: Dr. Colette Taylor, Faculty Advisor

Appendix D: Participant Consent Notification

Q3 **Purpose**
You are being asked to participate in a research project that seeks to investigate the impact of in-branch library services on how library patrons access digital technology for information. There are two survey sections, demographic questions that will help the research team identify groups and questions related to digital equity and library services.

Source of Support
This study is being performed as partial fulfillment of the requirements for the doctoral degree in Educational Leadership at Seattle University.

Risks
There are no known risks associated with this study. However, you will be asked to reflect on your personal experiences regarding your perceptions of how patrons access digital information when they visit a library branch. This reflection could bring forward negative memories or experiences. To protect you, you have the option of not answering questions and/or leaving the survey at any time.

Benefits
While no direct benefits exist for completing this survey, it may help educators gain a better understanding of how library services are designed to assist patrons with accessing digital information. Researchers may also be able to expand on existing literature by researching the intersection of library services and digital equity, which adversely affects people of color, those with less education, people in lower-socio-economic status, the elderly, and people living in rural areas.

Confidentiality
Your responses will be confidential and cannot be tracked back to you. Only group data will be reported in the final study. Your participation is voluntary and you can refuse to participate. You may choose not to answer any question. Your responses will be kept in a password protected file that the research team has access to, including the dissertation chair. All research materials and consent forms will be stored using password protected electronic password and only the investigators indicated on this form will have access. Human subjects research regulations require that data be kept for a minimum of three (3) years.

Right to Withdraw
Your participation in this study is voluntary. You may withdraw your consent to participate at any time without penalty. Your withdrawal will not influence any other services to which you may be otherwise entitled.

Voluntary Consent
I have read the above statements and understand what is being asked of me. I also understand that my participation is voluntary and that I am free to withdraw my consent at any time, for any reason, without penalty. On these terms, I certify that I am willing to participate in this research project.

I understand that should I have any concerns about my participation in this study, I may call any of the Principal Investigators. If I have any concerns that my rights are being violated, I may contact Dr. Michelle DuBois, Chair of the Seattle University Institutional Review Board at (206) 296-2585.

Q4 I consent to the terms of this survey.

○ Yes

○ No

Condition: Yes Is Selected. Skip To: Choose the response(s) that best desc....

Condition: No Is Selected. Skip To: You have chosen to not agree with con....

Appendix E: Data Collection Protocol

Hello,

You are receiving this email because you are an employee of the Seattle Public Library working in a public library located in King County, WA and are invited to participate in a research study.

If you are an employee working in a library branch who regularly interfaces with the public, we are asking for your assistance in this research by:

completing the online survey
at https://seattleux.qualtrics.com/jfe/form/SV_db2B8WOlPn7sJy5

The study will begin on May 12, 2020 and will end on May 27, 2020. This two-week period will allow you adequate time to take the online questionnaire. The data collection method is a survey, distributed through the Qualtrics website. The survey consists of 29 questions and should take approximately 15 minutes of your time. Your answers will remain anonymous, and the answers will be reported in aggregate. You may stop participation at any time, even after beginning the survey. There is no compensation for this survey.

We are doctoral candidates in the College of Education at Seattle University, conducting this study under the supervision of the primary investigator, Dr. Colette Taylor. Your participation in the survey is completely voluntary, and all your responses will be kept confidential. No personal identifiable information will be associated with your responses to any reports of these data. The institutional review board of Seattle University approved the administration of this survey as part of the proposed study.

Should you have any comments or questions, please contact our research supervisor, Dr. Colette M. Taylor, Program Director, Educational Leadership at (206) 296-6061 or email taylorco@seattleu.edu.

Sincerely,

Sheila Walton & Cris Fowler - Doctoral Candidates

Appendix F: Survey Instrument

Directions: Carefully read each of the following statements and respond by selecting the response box that best reflects your opinion, when operating under normal conditions.

Many different library services impact patron access to digital information via digital technology available in the library. In the context of this study, access is defined as the ability to use computers and the Internet to enhance one's life. As a library employee, your perspectives and interactions with patrons seeking digital access will help inform our study. Carefully read each of the following statements and respond by selecting the response box that best reflects your level of agreement.

1. What is your gender identity?
    a. Female
    b. Male
    c. Non-binary/gender fluid/genderqueer
    d. Prefer to self-describe (please specify):
    e. Prefer not to say
2. What is your age?
    a. 18-24 years old
    b. 25-34 years old
    c. 35-44 years old
    d. 45-54 years old
    e. 55 years' old or older
    f. Prefer not to say
3. What is your Race/Ethnicity?
    a. Asian
    b. Black or African American
    c. Native Hawaiian or Pacific Islander
    d. White/Caucasian
    e. Mixed Race
    f. Prefer to self-describe (please specify):_____
    g. Prefer not to say
4. How long have you worked in the library system?
    a. 1-3 years
    b. 4-6 years
    c. 7-10 years
    d. 10 plus more years
    e. Prefer not to answer
5. I work for King County Library System.
    a. Yes - Skip to branch information.
    b. No - skip to disqualification statement.
6. Please identify the primary branch in which you work.
    a. Self-Describe

7. How long have you worked in your current branch?
    a. 1-3 years
    b. 4-6 years
    c. 7-10 years
    d. 10 or more years
    e. Prefer not to answer
8. What is the highest educational degree you have earned?
    a. Associates
    b. Bachelor's
    c. Master's
    d. Master's in Library Science
    e. Doctorate
    f. Professional Degree
    g. Prefer not to answer
9. What is your current employment status in the library system?
    a. Part-time
    b. Full-time
    c. Temporary
    d. Contract
10. What is your position title? Open Question:

Please indicate the level of agreement you have with the following statements.

Agreement:

1	2	3	4	5	6	7
Strongly disagree	disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Library Services
The following statements relate to your perception of either your primary branch of employment (if you work in multiple branches) or the library system as a whole. Please read the statement and determine your level of agreement with that statement based on your experience working for your library branch. When considering your answers, use your experience as if the library were open and serving the population under normal conditions.

1 2 3 4 5 6 7	1. Computer access is one of the most popular services my branch provides.
1 2 3 4 5 6 7	2. Patrons come to our library branch because broadband connectivity is free to them to access online information.
1 2 3 4 5 6 7	3. Library computers are an important resource for patrons to access online information without assistance.
1 2 3 4 5 6 7	4. When using computers patrons know how to get online and search for information without assistance.
1 2 3 4 5 6 7	5. Computer assistance for patrons is a significant (70% or more) part of my daily job.
1 2 3 4 5 6 7	6. King County Information Technology department shares digital information with my library branch so patrons may access county data in the library.
1 2 3 4 5 6 7	7. The library home page has a link for residents to access county information like voter registration or county health care information.
1 2 3 4 5 6 7	8. The library home page has a link for residents to access information about King County Government.

Use of Library Technology and Programs
1. How many days a week are Internet enabled computers available for use in the library branch?
   a. M/T/W/TH/F/S/S/

   1. How many Internet enabled computer kiosks does your library branch have available for patrons?
      a. 1 - 3 / 4 - 6 / 7 - 10 / 10 - 15 / 16 +

   11. How many laptops are available for checkout in your branch?
       a. 1 - 3 / 4 - 6 / 7 - 10 / 10 - 15 / 16 +

1	2	3	4	5	6	7	
1	2	3	4	5	6	7	1. Laptops are regularly checked out by patrons to use in the library.
1	2	3	4	5	6	7	2. My library branch offers programs to learn how to use technology for different community groups. Examples include the elderly, non-native English speakers, or people living with disabilities.
1	2	3	4	5	6	7	3. My branch has one-on-one computer help scheduled regularly.
1	2	3	4	5	6	7	4. Patrons regularly bring in personal devices to the library to access the broadband connectivity.
1	2	3	4	5	6	7	5. Internet enabled computer kiosks are rarely empty or unoccupied.
1	2	3	4	5	6	7	6. My branch consistently offers a variety of technology classes that are well attended.

Digital Equity Through Access to Technology

The following statements relate to your experience working with patrons in the library. Please read the statement and answer it based on your level of agreement, when operating under normal conditions.

1	2	3	4	5	6	7	
1	2	3	4	5	6	7	1. The library is inclusive and welcoming to all community members.
1	2	3	4	5	6	7	2. Digital access to information as a library service is an important issue for my branch's patrons.
1	2	3	4	5	6	7	3. The library system provides the resources patrons of color need to succeed in a digital world.
1	2	3	4	5	6	7	4. Library leadership communicates the importance of addressing digital equity.
1	2	3	4	5	6	7	5. My library branch conducts technology-related training sessions in languages other than English.
1	2	3	4	5	6	7	6. There is racial diversity among the patrons at my library branch.
1	2	3	4	5	6	7	7. Racially diverse patrons make up a large percentage (50% or more) of my branch's patron base.
1	2	3	4	5	6	7	8. The library system is effectively addressing digital access issues with the services currently offered (tech-tutoring classes, free computer use, etc.)
1	2	3	4	5	6	7	9. Library branch services meet the technology needs of community members of color.
1	2	3	4	5	6	7	10. I have received training focused on diversity in order to assist all patrons with their needs.
1	2	3	4	5	6	7	11. Patrons seek out civic oriented information when searching online; like voting, volunteering, or researching elected officials.

Appendix G: Narrative Questions

1. What has been your experience when assisting patrons with accessing digital information while they use Internet enabled computer kiosks or laptops?

2. Describe what you know about the County's interest in achieving digital equity through providing technology access to patrons in libraries.

3. Describe the kind of training you receive for assisting patrons with technology.

4. When it comes to ensuring that library staff is best positioned to assist patrons with technology and access to the digital world, what knowledge, skill or abilities are needed?

5. Given that King County is made up of very diverse communities, do you notice patrons being served differently based on race, age, or ability?

6. Other information you would like to include about serving marginalized communities when they access digital information in the library branch is:

Appendix H: Qualitative Coding Protocols

- Simultaneous Coding
  - The research team used two coding procedures simultaneously. Two different coding approaches were used to provide the respondents' lived experiences as well as to determine alignment with the Informational Justice conceptual framework.
    - The inductive, descriptive coding method employed hand coding where short phrases were used to describe the sometimes-lengthy responses. This descriptive coding process provided an inventory of codes for indexing and categorizing (Saldaña, 2016).
    - The deductive, a priori, coding process utilized Qualtrics software to find and categorize words the research team derived from the conceptual framework. Codes were drawn from each of the three Informational Justice pillars based on words found in literature and the definitions provided by Mathiesen (2015).
- Coding Cycles
  - The inductive, descriptive process took place over three cycles.
    - First, data were read completely and coded using phrases.
    - Second, a second cycle occurred where each of the codes were arranged and then categorized to find emergent codes.
    - Third, a third cycle occurred which further categorized the emergent codes into final sub-themes.
  - The deductive, a priori codes were uploaded to Qualtrics.
    - First cycle coding found codes from deductive codes.
    - Second cycle coding grouped narrative
    - Third cycle coding grouped narrative into sub-themes
- Finally,
  - All sub-themes were then attributed to overall themes.

Appendix I: Deductive Codes

1. Deductive Codes
    a. Provisional coding process. researcher-generated codes based on what preparatory investigation suggests might appear in the data before they are collected and analyzed.

2. Distributive
    a. Definition: equitable distribution of information and technology services
        i. Codes: equity, equitable, shared, provide, resource, available, services, access, accessible, information, usable

3. Participatory
    a. Definition: the inclusion of library patrons in decision-making about library resources, such as technology, and how it is distributed within the library for patrons
        i. Codes: voice, collaborate, influence, opportunity, inclusion, expression, participate, decision-making, agency

4. Recognitional
    a. Definition: addresses the library's community members and the ways they are portrayed in library materials, programs, and databases
        i. Codes: represented, language, marginalized, community, materials, culture, cultural competence