The Digital Divide: An Annotated Bibliography

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Introduction and Scope

The following bibliography includes peer-reviewed and scholarly journal articles covering the topic of the digital divide. The articles include information on varying definitions, aspects, and factors connected to the digital divide, specifically the populations most affected. The discussion of the digital divide’s social implications are also included, particularly policies and their influence on bridging gaps and supporting public libraries’ role in assisting the digital divide. Most articles included date from 2007 to the present, representing current perspectives and research of the digital divide. Emphasis was put on selecting recent published works since the definition, social, and political implications have changed since its original naming in the mid to late 1990s (Jaeger, 2012). All articles focus on the United States and Canada.

Description

The “digital divide” is an umbrella term used to describe the gap between the “haves” and the “have-nots” in terms of computer and Internet access (Kinney, 2010). However, the definition is continually in flux because of changing technologies, the narrowing and closing of some gaps, and the growth and development of new gaps. Presently, the “digital divide” includes broadband, wireless, and remote Internet access, digital information literacy abilities and skills, and digital inclusion and outreach (Jaeger, 2012). The official definition of the “digital divide” may be adapting and changing, but overall the “digitally disadvantaged” populations remain the same; minorities, disabled, elderly, rural areas, non-English speaking and low socio-economic groups (Alston, 2011).

Summary of Findings

The “digital divide” has been an economic, social, and political issue since the introduction and adoption of the Internet in the mid-1990s (Kinney, 2012). Therefore, research and reports written on the topic cover a variety of topics; populations effected, influence on public libraries, and policy development. Most research conducted included both qualitative and quantitative methods, with a focus on referencing Census data and Falling Through the Net reports by the National Telecommunications and Infrastructure Administration of the United States Department of Commerce.
Digitally disadvantaged populations include low-income households, only high school educated, rural communities, the mentally and physically disabled, the elderly and minorities (Blacks, Hispanics, non-English speaking, Native Americans) (Plumb, 2007). Since 2005 Internet usage among genders has diminished almost completely, there is only a 2% difference between male and female use of the Internet (Plumb, 2007). Since the mid-1990s the digital divide has evolve. It not only includes lack of access, but lack of education, usage, and skills (Jaeger, 2012). The disparity of connectivity and access to Internet-connected computers or devices has diminished but the gap between knowledge and skills of utilizing the technology has grown (vanDijk, 2003). The aforementioned populations are “catching up” in access, but are falling further behind in their digital literacy; “an individual’s ability to locate, evaluate, and use digital information, encompassing both technologies and services” (Jaeger, 2012).

“Public libraries were identified early on as important players in the task of equalizing computer and Internet access. In 1993, Vice President Al Gore suggested that public libraries could serve as a “safety net” in providing Internet access” (Kinney, 2010). Almost all public libraries provide free Internet access across the United States, serving all ages, races, incomes and levels of education (Becker et al, 2010). Maintaining a public community access center presents challenges of infrastructure, broadband connectivity, equipment upgrade, and high level of services (Mandel, 2010). Along with troubleshooting technical issues library employees are expected to offer instructional technology programs for adults (Plumb, 2007).

The pressure on libraries to offer technology-based services are coming at a time of budget cuts. Libraries report having insufficient public-access Internet workstations, Internet speed is insufficient, lack of electrical outlets and cabling, and lack of space for necessary expansion (Jaeger, 2010). Although the need for funding and support are evident public libraries continue to struggle in gaining assistance through policy. Libraries are funded at the local and state level, which continually reduce library budgets. It is proposed that federal support and policy writing is essential to the improvement of public libraries and their continued contribution to improving the digital divide (Epstein, 2011).
Entry 1:


**Abstract:** “The purpose of the study reported here was to determine the perception of North Carolina County Cooperative Extension Directors in relation to the North Carolina Cooperative Extension Service roles in bridging the digital divide. To accomplish the aforementioned purpose, the following research questions were developed: 1. What are the general perceptions of North Carolina county Extension directors in relation to the socio-demographics characteristics that impact the digital divide in North Carolina? 2. What are the general perceptions of the North Carolina county Extension directors in relation to extension roles in bridging the digital gap? 3. What are the demographics of the North Carolina Cooperative Extension county directors?”

**Annotation:** Who the digital divide impacts, how to begin bridging the gap and the directors’ qualifications are discussed. The authors provide recommendations and implications for how organizations can help build quality communities, while citing additional research on broadband access in socially disadvantaged communities. The study is limited, but other research referenced is applicable.

**Search Strategy:** I selected ERIC from a list of Library Science related databases on the Drexel University Library’s electronic catalog.

**Database:** ERIC (EBSCOhost)

**Method of Searching:** Controlled vocabulary - I used the thesaurus within ERIC and searched “digital divide” and chose both suggested terms: access to computers and disadvantaged.

**Search String:** ((DE "Access to Computers") AND (DE "Disadvantaged")) OR (digital divide)

**Scholarly/Referred Status:** A search of *Journal of Extension* in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.
Entry 2:


**Abstract:** “Access to the Internet has become a central part of American society, helping all of us in many areas of our daily lives. Over the past twenty years, libraries and community technology centers have taken on the role of public access centers for those who are unable to reach the Internet at home or work, for reasons ranging from lack of financial resources to personal preference. The U.S. Impact Study is examining the users and use of these public services to better understand the impact of free access to computers and the Internet on the individuals, families and communities served by these public and private resources.”

**Annotation:** Although the report is about two hundred pages, it demonstrates the importance of public libraries to their communities as public access points to computers, the internet and assistive services. This is uniquely the first study done on this large of a scale reporting the uses of public libraries around the country, specifically focusing on the use of technology and the internet.

**Search Strategy:** While reading Kinney’s article this study was referenced. At the end of the article I used the link to this study in the footnotes. Through the U.S. Impact Study website I was able to access the full report.

**Method of Searching:** Footnote chasing

**Search String:** N/A

**Scholarly/Referred Status:** The Institute of Museum and Library Services is a professional organization supporting the advancement of museums and libraries across the nation through research, grant making, and policy development.

Entry 3:

**Abstract:** “Public libraries were early adopters of Internet-based technologies and have provided public access to the Internet and computers since the early 1990s. The landscape of public-access Internet and computing was substantially different in the 1990s as the World Wide Web was only in its initial development. At that time, public libraries essentially experimented with public access Internet and computer services, largely absorbing this service into existing service and resource provision without substantial consideration of the management, facilities, staffing, and other implications of public-access technology (PAT) services and resources. This article explores the implications for public libraries of the provision of PAT and seeks to look further to review issues and practices associated with PAT provision resources. While much research focuses on the amount of public access that public libraries provide, little offers a view of the effect of public access on libraries. This article provides insights into some of the costs, issues, and challenges associated with public access. It then concludes with recommendations that require continued exploration.”

**Annotation:** Bertot surveyed thirty-five libraries across the country both geographically and demographically diverse. His findings show that public libraries cannot sustain the demands for increased public access service and provides some solutions. This article was included to give perspective on the public library’s role in bridging the digital divide; however the author does not explicitly make the connection.

**Search Strategy:** Kinney’s article, “The Internet, Public Libraries, and the Digital Divide” proved to be very relevant. Within the Library, Information Science & Technology Abstracts database, where Kinney’s article was located, I was able to access articles which cited Kinney. A full-text version of Bertot’s article was available through LISTA.

**Database:** Library, Information Science & Technology Abstracts (ProQuest)

**Method of Searching:** Citation

**Search String:** N/A

**Abstract:** “The purpose of this article is to propose a fruitful analytical framework for data supposedly related to the concept of the so-called "digital divide." The extent and the nature of this divide depend on the kind of access defined. Considering the possession of hardware, growing divides among different categories of income, employment, education, age, and ethnicity can be proved to have existed in the 1980s and 1990s according to official American and Dutch statistics. If only by effects of saturation, these gaps will more or less close. However, it is shown that differential access of skills and usage is likely to increase. The growth of a usage gap is projected. Multivariate analyses of Dutch official statistics reveal the striking effect of age and gender as compared to education. The usage gap is related to the evolution of the information and network society. Finally, policy perspectives are discussed.”

**Annotation:** vanDijk presents dynamic aspects of the digital divide by dissecting it into four types of access and providing evidence-based descriptions. His work is not based on original research conducted, but uses decades of surveys relating to technology use and ownership in reference to income, employment, education, age, and ethnicity. The conclusions illustrate the flux of the digital divide’s aspects while suggesting policy solutions.

**Search Strategy:** This article was referenced by Epstein et al. The citation was located in the end notes and it was published in *The Information Society*. I searched the journal title in the e-journal collection on Hagerty Library’s website. The full-text journal was available through *Informaworld Journals*. I searched the title of the article and located a full-text electronic copy.

**Database:** N/A

**Method of Searching:** Footnote chasing
The digital divide as a complex and dynamic phenomenon

Scholarly/Referred: A search of *The Information Society* in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

**Entry 5:**


**Abstract:** “Addressing the reasons for—and the solutions to—the “digital divide” has been on the public agenda since the emergence of the Internet. However, the term has meant quite different things, depending on the audience and the context, and these competing interpretations may in fact orient toward different policy outcomes. The goals of this article are twofold. First, the authors unpack the term “digital divide” and examine how it has been deployed and interpreted across a range of academic and policy discourses. Second, through a framing experiment embedded within a nationally representative survey, the authors demonstrate how presenting respondents with two different conceptual frames of the digital divide may lead to different perceptions of who is most accountable for addressing the issue. From this, they discuss the dynamic relationship between the construction and communication of policy discourse and the public understanding of the digital divide, as well as implications for effective communication about the digital divide and information and communication technology policy to the general public.”

**Annotation:** Epstein et al explain their research on people’s perceptions of the digital divide when presented information from each frame; access inequities and lack of skills. The opinions formed based on each frame influence the opinion of who is responsible for solving the digital divide. The authors’ analysis provides conclusions and implications for future policy development.
**Search Strategy:** I originally had done a topic search in Web of Science and located a relevant article by Stevenson. In Web of Science I clicked on the cited articles link. In the list of ten articles this was the most relevant. A full-text electronic version was available in the *Informaworld Journal* through the Hagerty Library’s e-journal collection.

**Database:** Web of Science

**Method of Searching:** Citation

**Search String:** Topic=("digital divide") AND Topic=(public librar*)

**Scholarly/Referred Status:** A search of *The Information Society* in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

**Entry 6:**


**Abstract:** “The terms digital divide, digital literacy, and digital inclusion have been widely used in discourse related to the Internet over the past two decades. Even though these terms are rarely defined and their meanings shift with changes in technology, these concepts have driven many Internet-related policy decisions in public libraries. This article examines what has happened in the gap between concepts and policies, as public libraries organize to provide Internet education, access, and assistance. Following an examination of the meanings assigned to these terms and policy efforts based on these concepts, this article examines the roles of public libraries related to the concepts and the ways in which these roles have been shaped by policies that impact access to information that is increasingly embedded within a range of technologies. The article then explores the ways in which policy could better support public libraries in these roles and the ways that these roles can contribute to public library advocacy and a voice in policy making.”
Annotation: An excellent, in-depth look at the digital divide, digital literacy, and digital inclusion. Jaeger includes the definitions, history, changes and developments of each, while highlighting the challenges of public access for public libraries and implications for policy changes.


Database: Library, Information Science & Technology Abstracts (ProQuest)

Method of Searching: Subject search - I focused this search on the subject of the digital divide in connection with libraries. A full-text copy was available in Informaworld Journals through the Hagerty Library website.

Search String: digital divide AND public libraries

Scholarly/Referred Status: A search of Public Library Quarterly in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

Entry 7:


Abstract: “Virtually every public library in the United States provides public access Internet computers as a role central to its mission. This article addresses the issue of why the Internet matters for public libraries, both in terms of impacts on the general public, particularly the digitally disadvantaged (part one of the article) and impacts on libraries themselves (part two of the article). Each part of this report begins with an extensive literature review, followed by a data analysis section. In part one, the author uses the 2000 United States Census dataset to evaluate library efforts to bridge the digital divide, by analyzing differences in the growth of public terminals in library systems serving counties with different levels of household income, households in poverty, non-white households, and non-English-speaking households. The analysis finds no disparity in the number of public computers available in areas with high and low incomes but finds a significant—and widening—disparity in the number of computers
available in areas with a higher versus lower percentage of non-white and non-English-speaking households. In part two of the report, the author uses a random effects linear regression model to estimate the effects of Internet access on library usage. This analysis finds that having Internet terminals (versus having no Internet terminals) has a significant positive effect on a library’s visits and reference transactions, but not on a library’s circulation. An increase in the number of Internet terminals has no significant effect, positive or negative, on visits, reference transactions, or circulation.”

**Annotation:** Part one of Kinney’s article reports a concise history and development of the digital divide in the United States. Kinney describes detailed statistics and draws conclusions about the digitally divided populations focusing on race, income, education, age, disability and location. He also highlights the change in disparities and divides as new technologies are introduced.

**Search Strategy:** I selected Library, Information Science & Technology Abstracts from a list of Library Science related databases on the Drexel University Library’s electronic catalog.

**Database:** Library, Information Science & Technology Abstracts (ProQuest)

**Method of Searching:** Subject search - I focused this search on the subject of the digital divide in connection with libraries. A full-text copy was available in Informaworld Journals through the Hagerty Library website.

**Search String:** digital divide AND public libraries

**Scholarly/Referred Status:** A search of Public Library Quarterly in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

**Entry 8:**

Abstract: “The purpose of this study was to explore the current state of information literacy (IL) training and to identify the strategies and methods used by Canadian public libraries in improving IL skills for their staff and patrons. Also, the study sought to identify problems associated with the development of IL training. This study employed document analysis, observations, and focus group interviews to collect research data. The focus group interview consisted of six library staff members. The research findings revealed that Canada’s public libraries valued their roles as IL training providers and paid careful attention to staff development by offering various training approaches in order to provide efficient IL instruction for the public. Another issue explored in this study is that Canadian public libraries build partnerships with other organizations to extend their IL teaching responsibilities. In addition to the financial concern, a major challenge, based on the research findings, is that public libraries need to let their staff understand the learning theories associated with IL education and adult learning in order to enhance the quality of this training. This study also proposes four guidelines for developing effective IL trainings at public libraries.”

Annotation: Lai discusses a study on one solution for lessening the digital divide, information literacy programs in Canadian public libraries. The literature review presents unique information about adult learning and implications of how to effectively teach adult patrons information literacy skills. The study focused on four main aspects of a successful public library information literacy program; infrastructure, formal training classes, improving staff’s teaching skills, and connecting with local organizations. Lai demonstrates the importance of not only internet and computer access, but training and support for employees and patrons.

Search Strategy: From prior experience, I chose Web of Science knowing it holds peer-reviewed articles and scholarly journals pertaining to library and information science. Once the article was located I was able to access a full-text copy through ProQuest Research Library.

Database: Web of Science

Method of Searching: Keyword/Topic search

Search String: Topic=(digital divide) AND Topic=(public librar*)
**Scholarly/Referred Status:** A search of *Journal of Educational Technology & Society* in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

**Entry 9:**


**Abstract:** “U.S. public libraries provide free public internet services to the communities that they serve, but require robust, high-speed broadband internet connections to continue meeting public demands. The 2008–2009 Public Library Funding & Technology Access Study (PLFTAS) illustrates challenges that public libraries encounter in achieving broadband connectivity and equipment upgrades, and maintaining acceptable levels of services as they meet continually increasing internet-enabled service demands. This article: 1) analyzes the ability of public libraries to serve as a community-based public internet access point in the context of limited funding and access to telecommunications services and equipment; 2) discusses key policy issues that affect the provision of public library internet-enabled services through broadband; 3) provides recommendations for policy makers to include libraries as part of a larger national-level telecommunications policy; and 4) identifies a number of topics and issues that need further investigation and research in this shifting policy environment.”

**Annotation:** The 2008–2009 Public Library Funding & Technology Access Study is dissected into key aspects and discussed in detail. Statistics, tables and graphs illustrating collected data show the importance of technology and internet access provided by public libraries across the country. Although its connection is not made explicitly, this article highlights challenges libraries face in serving the digitally divided.

**Search Strategy:** Paul T. Jaeger wrote a number of works related to the digital divide and its connection with public libraries. I searched his name in Web of Science to see his other works and what other articles had cited his work. Mandel’s article was listed and discussed the issues and challenges facing public libraries in addressing the digital divide.
Database: Web of Science

Method of Searching: Author search

Search String: Jaeger PT

Scholarly/Referred Status: A search of Government Information Quarterly in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

Entry 10:


Abstract: “Today’s twenty-first-century library and information science (LIS) professionals are faced with the challenge of a growing population of individuals from diverse cultural backgrounds, many of whom are from minority and underserved populations representing the poorest segments of society with little or no experience with libraries. This article argues that although considerable efforts have been made by LIS professionals to meet the needs of minorities and underserved populations, a cultural competence framework is needed for these efforts to be successful. This article proposes a conceptual framework for developing cultural competence for LIS professionals and identifies three domains in which cultural competence is developed: cognitive, interpersonal, and environmental. The development of cultural competence within these domains is discussed, and essential elements needed to develop cultural competence within the domains are identified.”

Annotation: Overall’s article is unique in how she presents a framework for reaching digitally divided population groups. She does not specifically identify these social and racial groups as being affected by the digital divide, but highlights reason for their lack of public library use and strategies libraries can use to become more culturally competent. Reaching these potential library users will assist in bridging the digital divide.
Search Strategy: Overall’s article was cited in another paper I had previously read. I used the Hagerty Library’s list of e-journals and located *The Library Quarterly*, then searched the title of the article within the e-journal.

Database: N/A

Method of Searching: Footnote chasing

Search String: N/A

Scholarly/Referred Status: A search of *The Library Quarterly* in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

Entry 11:


Abstract: “The electronic resources (ER) librarian has a social responsibility to be knowledgeable about the digital divide. Discourse on the digital divide began in the mid-1990s and continues today. Data analysis reveals that divides still exist, particularly when considering income, education, region, disability, age, and race. Librarians face many challenges to take on the digital divide. These challenges include issues of access, content, technical literacy, privacy, civic participation, education, employment, non-use, and political debate. Yet for each challenge, there is an opportunity for the ER librarians to thrive while they face down the digital divide.”

Annotation: Plumb highlights who is digitally divided and reports these groups based on income, education, race, disability, region, and gender. As an electronic resource librarian there are ways to combat and bridge the digitally disadvantaged with more than an internet connected computer, by advocating for one’s users and understanding their needs in terms of technology and internet use.

**Database:** Library and Information Science Abstracts (ProQuest)

**Method of Searching:** Subject search - I focused this search on the subject of the digital divide in connection with libraries.

**Search String:** su((digital divide OR lack of access)) AND su(librar*)

**Scholarly/Referred Status:** A search of Collection Management in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

**Entry 12:**


**Abstract:** “As access to information technology (IT) and the ability to use it increasingly become part of the toolkit necessary to participate and prosper in an information-based society, many fear that the IT revolution is bypassing low-income, urban communities. In the absence of comprehensive public or private efforts to close the technology gap, community technology centers (CTCs) have emerged at the grassroots level. The purpose of this article is to describe the work CTCs are doing to address the economic and social impacts of the shift to an information society. In addition, we develop a typology of CTCs by organizational type and programmatic goal that is helpful in conceptualizing CTCs. This exploratory work is an important first step that must occur before answering tougher questions concerning their effectiveness, outcomes, and capacity.

**Annotation:** This article is unique in its explanation of the influence of IT on urban economies and societies, specifically jobs and required skills which further divide opportunities for specific social groups. Servon provides information explaining community technology centers as a remedy for closing the technology gap for disenfranchised people by providing access and training in urban communities. Servon presents evidence of the past and current work accomplished by CTCs in urban communities and their future potential, highlighting the importance of their further examination.
Search Strategy: From prior experience, I chose Web of Science knowing it holds articles pertaining to library and information science. The author, Servon, was referenced in Stevenson’s article and the topic of her work is relevant.

Database: Web of Science

Method of Searching: Author search

Search String: Servon – Author field. About twenty articles written by this author resulted and I browsed the titles to find an article directly discussing the digital divide in public libraries.

Scholarly/Referred Status: A search of Journal of Urban Technology in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

Entry 13:


Abstract: “Within the context of the telecommunications policy environment in the United States during the 1990s, the Department of Commerce's Falling Through the Net reports can be read as a 7-year ideological project to legitimize U.S. government's deregulatory policies. This article analyzes the "digital divide" as rhetorical trope in a neoliberal ideology, which placed responsibility for social and economic success in the emerging global information economy at the level of the individual and not the system, effectively foreclosing on any class-based analyses of the problems associated with the transition from a Keynesian welfare state and industrial economy to a neoliberal and globalized information economy. Unpacking the discursive significance of the "digital divide," with special focus on public libraries and projects of the Gates Foundation, illuminates how it foreclosed on the possibility of alternative problem definitions by making the problem a technical and administrative one rather than an issue of historic class struggle. The article draws on open-source projects in developing countries to offer an alternate frame for formulating policies for equitable access to information and communication technologies (ICTs).”
Annotation: Steveson delves into the deeper definition of the digital divide and makes connections with the social groups it influences most, who have also struggled historically. She cites an analytic method of examining policy, Fairclough’s Textually Oriented Discourse Analysis, in terms of its effectiveness. Utilizing this analysis tool, the history of information and technology access policies is examined and evaluated, which provides insight into the development and growth of the digital divide.


Database: Library and Information Science Abstracts (ProQuest)

Method of Searching: Subject search - I focused this search on the subject of the digital divide in connection with libraries.

Search String: su((digital divide OR lack of access)) AND su(librar*)

Scholarly/Referred Status: A search of Journal of Urban Technology in Ulrichs International Periodicals Directory indicated it is refereed and an academic/scholarly journal.

Conclusion & Personal Statement

The process of creating an annotated bibliography was an effective way to apply the skills and sources discussed this quarter. Using a variety of databases and searching techniques tested my searching skills. The search method requirement encouraged me to move out away from areas of familiarity and pursue information in different ways and use a variety of databases to locate articles. Once a quality article was found the endnotes and references lead to other relevant, applicable articles and research. This provided the opportunity to search by title, author and journal title, which also produced additional sources. The use of Web of Science increased and improved citation searching skills, while the citation feature in LISTA was also extremely helpful.

The hunt for articles on the digital divide was challenging and fun, while choosing the best articles was not. The sources were chosen to cover the basic themes and issues surrounding the topic of the digital divide; definitions, history, shifts and changes in the digital divide,
challenges facing libraries and policy implications. The depth of this topic is great and is very pertinent today. The closing and opening of different digital divides is an interesting and telling trend, which I was unaware. I think this was an excellent topic to research for someone new to the profession. The digital divide still remains a real problem in the United States with serious consequences for many populations. It was eye-opening to see the disparities among different population groups across the nation, while the “leading” populations are driving technology and internet usage forward setting the stage for what people need to do in order to advance in society.