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Digital Equity in the 21st Century Library: Implications for Academic Libraries

Presenter:

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Abstract

All libraries must continue to play a leading role in closing the digital divide. This poster will present highlights from the research literature incorporating important **statistics, a brief history of libraries and the digital divide, the importance of addressing the digital divide, how libraries address the digital divide through digital equity and digital inclusion, recent ways the U.S. government has addressed the digital divide, strategies that libraries can implement to bring about digital inclusion, and the importance of public-private partnerships to support libraries that address digital equity gaps.** Libraries that focus on digital equity will contribute to the growth of their students' technology skills that contribute to their overall student success and empower students to become 21st century digital citizens.

Brief History of Libraries and the Digital Divide

- **Historically, libraries have played a crucial role in connecting communities to the internet for decades to bridge the digital divide.**
- Findings from a national study conducted in the United States in 1994 found that only 21% of public libraries at the time had an internet connection; 10 years later (2004), more than 99% of public libraries had offered connectivity to their communities (Wong, 2022).
- According to a 2004 report from the Seattle-based Bill & Melinda Gates Foundation, the resulting digital divide between those with advantaged and disadvantaged backgrounds was closed in part by public libraries that provided free access to computers and the internet.
- **To be clear, the digital divide as it exists today continues to be a moving target as technologies continue to change over time with almost everyone today having a mobile phone capable of connecting to the internet.**
- Individuals with mobile phones have found them to be inadequate for many tasks including typing and formatting a resume or working on a PowerPoint presentation.

Brief History of Libraries and the Digital Divide

- **Three scholars** produced some of the most cited scholarship (Cullen 2001; Cullen, 2003; Norris 2001; Warschauer 2002; Warschauer 2004) on the digital divide to date.
- **Pippa Norris**, the McGuire Lecturer in Comparative Politics at the Kennedy School of Government, Harvard University, is considered to be the world's seminal scholar on the digital divide. Her book published in 2001 titled *Digital divide: Civic engagement, information poverty, and the Internet worldwide* has been cited 9,131 times and counting.
- **Mark Warschauer**, a Professor of Education and director of the Digital Learning Lab at UC Irvine with affiliated appointments in Informatics, Language Science, and Psychological Science, published *Technology and social inclusion: Rethinking the digital divide* in 2004 which has been cited 4,423 times.
- **Rowena Cullen**, an emeritus professor in Information Management at the Victoria University of Wellington, New Zealand, wrote extensively on how to address the digital divide in her 2001 publication titled *Addressing the digital divide* in the journal *Online Information Review* which was cited 689 times.
- Other previously published scholarship called the digital divide a **civil rights issue** (Carvin 2000; Kim and Kim 2001; Thierer 2000) with recent scholarship identifying the digital divide as an **information poverty issue** (Marcella and Chowdhury 2020), an **inclusion issue** (Jaeger et al. 2014; Perez-Escolar and Canet 2022; Real et al., 2014; Reisdorf and Rhinesmith 2020) and even explicitly citing it as a **human rights issue** (Sanders and Scanlon 2021).

A Recent Snapshot of the Digital Divide in the United States

- About three-quarters of adults in the U.S. (over age 18) use broadband internet at home, according to the Pew Research Center (2019).
- Factors that influence an individual's use of the internet include income, race, and community type, with Black and Hispanic adults using the internet much less than white adults. Overall, minorities, low-income, and rural households have the least access (56–63%) to broadband internet (Pew Research Center 2019).
- The percentage of adults that use broadband internet at home has increased in recent years as a result of people working remotely throughout the COVID-19 pandemic.
- A 2021 survey by Pew Research found that among households earning less than \$30,000 per year, 43% did not have a home broadband connection, and 41% did not own a computer (Vogels, 2021). For 27% of adults in those households, their only internet access was through a smartphone (Vogels, 2021).
- The lack of broadband internet in these households greatly impacted K-12 students' learning during the COVID-19 pandemic with minority and rural students experiencing the greatest levels of learning loss (Kuhfeld et al. 2022).
- Additionally, the lack of in-home broadband internet was strongly correlated with COVID-19 deaths. Researchers at the University of Chicago published a research study (Lin et al., 2022) in the journal *JAMA Network Open* that showed one of the factors most consistently associated with a high risk of death due to COVID-19 in the U.S. was the lack of internet access, whether broadband, dial-up, or cellular. This was regardless of other demographic risk factors like socioeconomic status, education, age, disability, rent burden, health insurance coverage, or immigration status.

Importance of Addressing the Digital Divide

- The **digital divide** generally describes the “**disparity that exists among individuals and communities in the U.S. and around the world with varying degrees of access to digitally mediated information and communication technologies (ICTs) and the ability to benefit from digital resources**” (Pazurek and Feyissa 2015 para. 1). The resulting gap from the digital divide amongst people has socioeconomic and educational implications within the United States and throughout the world. The division which results from the digital divide raises serious concerns about the need for digital equity.
- The National Digital Inclusion Alliance (NDIA) defines **digital equity** as “**a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy, and economy**” (Tesfaye and Miller n.d., Definitions section).
- Digital equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services.**
- In the United States, there is a need to address the technology skillset of our nation’s Black and Latino populations as a 2020 study from Deutsche Bank called America’s Racial Gap and Big Tech’s Closing Window has shown that 76% of the nation’s Black residents and 62% of Latino residents are slated to be shut out of or underprepared for 86% of U.S. jobs by 2045.**
- According to this study, “**If this digital racial gap is not addressed, in one generation alone, digitization could render the country’s minorities into an unemployment abyss**” (Trussell, 2020, p.2).
- From providing access to public computers and Wi-Fi to technology classes and resources, **libraries** have created lifelines for disconnected communities through their ongoing work toward **digital equity** (Barbakoff, 2022; Fallows, 2022; Fowler and Watson, 2020; Guernsey et al., 2021; Guernsey et al., 2023; Kosmicki, 2020; NTIA, n.d.; PLA, 2020; ULC, n.d.).

Importance of Addressing the Digital Divide

- **“The State of American Jobs” survey (Pew Research Center, 2016) found that 87% of workers believe it will be essential for them to get training and develop new job skills throughout their work life to keep up with changes in the workplace.**
- The survey further noted that employment is much higher among jobs that require an average or above-average level of preparation (including education, experience and job training); average or above-average interpersonal, management and communication skills; and higher levels of analytical skills, such as critical thinking and computer skills. The jobs of the future will require individuals who are both highly educated and highly skilled lifelong learners.
- **In the 21st century, libraries and librarians continue to be essential partners for a more equitably connected world to help close the digital divide that currently exists in communities across the United States and the world.**
- **The availability of reliable broadband, devices, and digital literacy training remains critical for every community across America (and the world) – whether for schoolwork, employment, public services, telehealth visits, social connections, or civic participation (American Library Association, 2023; American Library Association, 2022a).**
- This need for more broadband access, devices, and digital literacy training will grow exponentially as technology infrastructure continues to evolve and there are specific sources of funding available from the U.S. government to address the digital divide and disconnected communities in America (U.S. Department of Labor, 2023).

How Libraries Address the Digital Divide through Digital Equity and Digital Inclusion

- **Digital inclusion consists of the following five elements: affordable, robust broadband internet service; internet-enabled devices that meet the needs of the user; access to digital literacy training; quality technical support; and applications as well as online content designed to enable and encourage self-sufficiency, participation, and collaboration (Barbakoff, 2022).**
- **All libraries should set digital equity goals (Frank et al., 2021; Strover, 2019) and establish digital inclusion strategies (Barbakoff, 2022; Frank et al., 2021) to strategically address the digital divide in the 21st century.**
- The needs of communities in the 21st century are being served by making digital equity and digital inclusion planning a central part of libraries' mission and strategic planning moving forward.
- New federal programs and resources through the Infrastructure Investment and Jobs Act (IIJA) provide an unprecedented opportunity to build on the existing infrastructure and expertise of our nation's libraries to inform state digital equity plans and accelerate broadband adoption and skills building for all nationwide (ALA, 2022b).
- When libraries become an integrated part of digital equity and digital inclusion planning, they can share knowledge about the communities they serve and potentially receive significant funding to serve them.

How Libraries Address the Digital Divide through Digital Equity and Digital Inclusion

- The American Library Association presents digital equity resources and encourages public libraries to share their stories toward achieving digital equity (ALA, 2023b).
- To further address digital equity, libraries need to work toward digital inclusion by providing the necessary services, programs, and partnerships (Castek et al., 2017) that meet the needs of the diverse populations in their communities. Libraries that work toward digital inclusion will give all members of their communities the best chance at being equipped with the technology skills needed for success.
- A source of likely collaboration for libraries in America to bring about digital inclusion while incorporating the four recommended aforementioned digital inclusion strategies is the **Digital Equity Act (DEA)**, a - **\$2.75 billion component** of the federal **Infrastructure Investment and Jobs Act** (Ewen, 2022; Frisque, 2021).
- From 2021–2026, the DEA will provide grants to states to create and implement digital equity plans.
- Libraries are good partners in bringing about digital equity in disconnected communities, which are typically found in rural and urban areas across the United States. As individual states create committees and solicit input to develop their digital equity plans, librarians can help legislators and other government officials understand the value that libraries bring to their communities.

Recent Ways the U.S. government has addressed the Digital Divide

- In recent years, the U.S. federal government has actively worked to address the digital divide through the Bipartisan Infrastructure Law which includes a historic \$65 billion investment to expand affordable and reliable high-speed Internet access in communities across America (United States Department of Commerce, 2023b).
- The breakdown of the funding for this law and the specific areas of investment as well as the management of resources by the Department of Commerce's National Telecommunications and Information Administration are provided for librarians to get a better sense of how this new law will be managed (United States Department of Commerce – National Telecommunications and Information Administration, 2023).
- This program is available through the Federal Communications Commission and more information is provided on [GetInternet.gov](https://www.getinternet.gov).
- **June 26, 2023:** The Department of Commerce's NTIA announced the allocation of funding to all 50 states, the District of Columbia, and five territories to deploy affordable, reliable high-speed Internet service to everyone in America (United States Department of Commerce, 2023c).
- **The “Internet for All” initiative is a key component of President Biden’s “Investing in America” agenda according to Commerce Secretary Gina Raimondo. All 50 States, D.C., and territories will use funding from the \$42.45 billion Broadband Equity, Access, and Deployment (BEAD) program from President Biden’s Bipartisan Infrastructure Law to administer grant programs within their borders (United States Department of Commerce, 2023c).**

Strategies that Libraries can implement to bring about Digital Inclusion

- When libraries become an integrated part of digital equity and digital inclusion planning, they can share knowledge about the communities they serve and potentially receive significant funding to serve them.
- Libraries that work toward digital inclusion will give all members of their communities the best chance at being equipped with the technology skills needed for success. Digital inclusion consists of the following five elements: affordable, robust broadband internet service; internet-enabled devices that meet the needs of the user; access to digital literacy training; quality technical support; and applications as well as online content designed to enable and encourage self-sufficiency, participation, and collaboration (Barbakoff, 2022).
- According to Barbakoff (2022), libraries can implement four important strategies to bring digital inclusion to their communities. They are: **1) digital navigators, 2) community networks, 3) facilitated access, and 4) community organizing and advocacy.**
- Strategy 1: Digital navigators** are “trusted guides who assist community members in internet adoption and the use of computing devices” (Balboa et al. 2021, p. 4).
- The Digital Navigators model has already been adopted by libraries in many communities across America. This model involves a librarian meeting with a patron and conducting a reference interview. Through the interview, the librarian as digital navigator will learn “about the patron’s goal(s) and what types of digital access or skills they might need to accomplish it” (Barbakoff 2022, p.11).
- This model is effective because it addresses broadband access, computer ownership, and digital literacy in the same service. It also emphasizes the importance of being a digital citizen.
- One of the earliest libraries to fully adopt this model was the **Salt Lake City Public Library System** (Barbakoff, 2022). This library system, in partnership with NDIA, the Institute of Museum and Library Services, and the Urban Libraries Council developed a freely available **Digital Navigators Toolkit** (Balboa et al., 2021) for libraries to use to address digital equity and inclusion. This toolkit can guide librarians to become better digital navigators in meeting the needs of members of their communities.

Strategies that Libraries can implement to bring about Digital Inclusion

- **Strategy 2: Community networks** are “cooperatives owned and managed by neighborhood residents, able to provide high-speed internet at low cost in other neglected communities” (Barbakoff 2022, p.13).
- The International Federation of Library Associations released a briefing in 2020 explaining the important and varied roles that libraries play in community networks, including hosting workshops, raising awareness, and sharing infrastructure.
- For example, the city of Detroit provided one of the prominent early successes using this model with the establishment of the **Detroit Community Technology Project** (Barbakoff, 2022). Detroit brought together neighborhood coalitions, nonprofits, and faith communities as part of the Equitable Internet Initiative. Detroit residents were trained as digital stewards, able to install access points and maintain the network over time. This project also recognized the need for digital literacy education, so they worked to develop a digital skills curriculum as well.
- Libraries can support the creation, delivery, and evolution of digital literacy classes for network users. The freely available **Toward Gigabit Libraries Toolkit** may be helpful to libraries and librarians’ understanding and improving their broadband and IT infrastructure (Internet2, 2021).
- **Strategy 3: Facilitated access** occurs when the library lowers the “the barrier to entry for complex technologies” (Barbakoff, 2022, p. 15).
- An example of facilitated access occurs when offering a hybrid program or class, which patrons could attend in person at the library, or connect virtually with a staff member managing the technology. This type of hybrid programming could provide a low-barrier way for libraries to begin offering facilitated access in an ongoing way; thus, increasing engagement and reach of their programs across the communities they serve.

Strategies that Libraries can implement to bring about Digital Inclusion

- Another example of facilitated access in public libraries is telehealth (Brooks, 2022; Settles, 2021). Through telehealth initiatives libraries are addressing both health equity and digital equity (Simon et al., 2021).
- A patient may want a virtual appointment with a healthcare provider and may only need a single or occasional visit. To engage in a virtual appointment video call, a patient needs a high level of broadband access, device access, and digital skills.
- The library can provide community members the privacy space and connectivity to facilitate access to the technology needed for telehealth appointments. Telehealth visits at the library can offer benefits beyond simply providing access to broadband internet and a quiet place to connect with healthcare professionals. Those benefits include access to a semi-private meeting room space, access to nearby public transportation if immediate follow-up care is recommended, and access to available library resources to learn about health care and medical topics. Telehealth appointments at the library can also address community members' mental health and wellness.
- Libraries need to be a part of the fourth practice of digital inclusion which involves **Strategy 4: community organizing and advocacy**.
- Community organizing and advocacy happens when the library is included in community-based efforts for better broadband infrastructure. The library can actively participate in these efforts by “sharing information, offering space, providing project management expertise, making connections between community groups, and more” (Barbakoff, 2022, p. 17).

The Importance of Public-Private Partnerships to Support Libraries that Address Digital Equity Gaps

- Librarians will be responsible for providing technology programming and training opportunities for members of their communities now and into the future as they work toward addressing existing and future digital equity gaps that are a part of the digital divide.
- Organizations like the **International Federation of Library Associations and Institutions (IFLA)** and the **American Library Association (ALA)** should initiate formal public-private partnerships with Silicon Valley technology companies such as **Microsoft, Apple, Google, Facebook, other private corporations** as well as well-endowed foundations such as the **Bill & Melinda Gates Foundation** or **McKenzie Scott's Yield Giving Foundation**, and with individuals including America's wealthiest people who committed to give away the majority of their wealth through signing the **Giving Pledge** (to address some of society's most pressing problems).
- These public-private partnerships can fuel the digital equity work of libraries and provide resources that address the digital divide, support digital literacy training, pilot future technology and technology skills/training initiatives in public, school, and academic libraries in countries throughout the world.
- This will show that Silicon Valley companies, international corporations, private industry, foundations, and wealthy private individuals care about addressing digital equity in the world now and well into the future and see the value that libraries bring to their communities and the role they play in addressing the digital divide and digital equity. This investment could result in a more diversified and highly skilled workplace in the computer and information sciences sector as well as other trades and professions.

The Importance of Public-Private Partnerships to Support Libraries that Address Digital Equity Gaps

- As libraries work to address digital equity, they need to be aware that **“today’s Pre-K-12 students need to develop the college and career readiness skills that will enable them to be successful in the technologically driven jobs of the future”** (Grimes 2025, p.1).
- Students in higher education will need more opportunities beyond the experiences they had in Pre-K-12 to develop technology and computational skills that will successfully prepare them for the jobs of the future.
- The academic library will evolve to **be a place of access, practice, immersion, discovery, innovation, and collaboration in various new and emerging technologies.**
- Colegrove (2022) offers guidance to libraries on how to plan for, budget, select, and implement leading-edge technologies in libraries as well as the policy and ethics behind technologies.
- While Varnum (2019) provides examples of how libraries are moving beyond reality by offering examples of libraries’ uses of augmented, virtual and mixed reality.
- Libraries will continue to play a critical role in providing opportunities for people of all ages, but especially America’s youth to have access to some of the latest technologies including virtual reality (VR), augmented reality (AR), artificial intelligence (AI) and even information on or access to the existing Metaverse** (Baumgartner-Kiradi et al., 2018; Colegrove, 2022; Guo et al., 2023; Hernández-Pérez et al., 2022; Meredith, 2015; Varnum, 2019). These immersive technologies offer the promise and potential of more engaged learning experiences, the enhancement of technology skills, and better prepared students to take on the jobs of the future (Grimes, 2025).

Need for Digital Literacy and Digital Citizenship Skills

- Multiple studies have documented that massive numbers of jobs are currently at-risk (Frey and Osborne, 2017; Manyika, 2017; Manyika et al., 2017) as programmed devices – many of them smart, autonomous systems – continue their march into workplaces (Rainie and Anderson, 2017) with 14% of the global workforce projected to change their current occupation by necessity due to automation by 2030 (Manyika et al., 2017).
- Due to these advancements in technologies, individuals will need to focus more on developing their digital literacy/citizenship skills.
- **Digital literacy/citizenship skills serve the purpose of unlocking the information society (Van Deursen and Van Dijk, 2014) and addressing the existing digital divide in countries throughout the world.**
- These new digital literacy/citizenship skills may require the reskilling and upskilling of the world's workforce and are essential to achieving success in the information economy in the 21st century.
- **Moving forward, as technologies rapidly advance there is a need for individuals to learn a vast array of new skills whether on their own, through a 2- or 4-year higher education institution, or at their local library as libraries now serve as the technology hubs of their communities.**

Guidance on Digital Literacy and Digital Citizenship

The International Society of Technology in Education (ISTE) [standards](#) describe digital literacy in seven broad categories:

- **Empowered learner** (taking an active role in achieving learning goals).
- **Digital citizen** (acting and modeling the use of technology that is safe, legal, and ethical).
- **Knowledge constructor** (using digital tools to construct knowledge).
- **Innovative designer** (identifying and solving problems using a variety of technologies).
- **Computational thinker** (leveraging the power of technological methods).
- **Creative communicator** (communicating clearly and creatively across different technology platforms).
- **Global collaborator** (collaborating with others locally and globally).

• The Global Digital Citizen Foundation (GDCCF) describes digital literacy through key elements they refer to as essential fluencies:

- **Solutions fluency** (thinking to solve problems in real time).
- **Information fluency** (interpreting information in all forms and formats).
- **Creativity fluency** (adding meaning through design, art, and storytelling).
- **Media fluency** (interpreting messages contained within media of all sorts and communicating well in multiple multimedia formats).
- **Collaboration fluency** (working cooperatively with virtual and real partners in online and face-to-face environments).

What can academic libraries do to address digital equity?

1. Become familiar with the seven broad categories that the International Society for Technology in Education (ISTE) uses to describe digital literacy that aligns with digital citizenship as well as the essential fluencies described by the Global Digital Citizen Foundation (GDCF).
2. Purchase books on digital citizenship from ISTE and provide professional development on digital literacy and digital citizenship to academic librarians.
3. Have an internal discussion amongst your academic library department about how you are currently addressing digital equity and digital inclusion and how you would like to expand your department's efforts at your higher education institution.
4. Make digital equity and digital inclusion a part of your academic library's annual strategic plan.
5. Partner with other on-campus departments such as IT or IRT to offer in-person or virtual digital citizenship or digital literacy classes to faculty, staff, and students at your higher education institution.
6. Develop workshops and programming around digital literacy and digital citizenship.
7. Create a LibGuide with guidance on Digital Literacy and Digital Citizenship to be shared with your higher education institution, K-12 school districts, and beyond.
8. Move towards teaching digital literacy and being a responsible digital citizen by emphasizing elements of digital literacy in library instruction.
9. Seek out funding from local, state, or national sources to obtain funding for your library's work in meeting established digital equity and inclusion goals.
10. Share your library's success in addressing digital equity and digital inclusion through metrics in your library's annual institutional report.

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