Bridging the digital divide

A strategic vision for Canada's nonprofit sector

CANADIAN CENTRE FOR NONPROFIT DIGITAL RESILIENCE

CANADIAN CENTRE FOR NONPROFIT DIGITAL RESILIENCE

2 St Clair Ave E., Suite 300
Toronto, Ontario
M4T 2T5

1-800-263-1178

ccndr.ca

media@imaginecanada.ca

The Canadian Centre for Nonprofit Digital Resilience (CCNDR) works to create a digitally-enabled nonprofit sector, where Canada's nonprofits use data and tech to multiply their impact.

Credits

Author:
Leena Yahia

Design:
Elaine Stam, Universe Design Studio

French Translation:
Cornelia Schrecker

Acknowledgements

Imagine Canada is grateful for the knowledge and perspectives provided by: Dr. Cathy Barr, Liz Weaver, and Wilfreda Edwards.

ISBN: 978-1-55401-453-8

© 2025 Canadian Centre for Nonprofit Digital Resilience. This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. For uses not covered by this license, please contact us. All other rights reserved.

Date published: March 2025

Contents

Executive Summary 1

Introduction 4

The Canadian Context: An Overview 8

Findings 10

- The Nature of the Digital Disparities in Canada 10
- International Perspective on Digital Equity 13
- Digital Inequity and Education 15
- Digital Inclusivity and Healthcare 17
- Digital Inequity and Cultural Interactions 18
- Digital Inequity and the Canadian Economy 19
- Digital Inequity and the Legal System in Canada 20
- Organizational Insights and the Impact of COVID-19 21

Analysis 24

- A Need for Comprehensive, Collaborative, and Cross-Sectoral Strategies 24
- Notable Gaps in the Discussions on Digital Equity 29

Recommendations 31

- A Vision for the Sector 31
- The Digital Equity Iceberg 32
- Other Recommendations for Advancing Digital Equity 34

Appendix 36

References 38

Executive Summary

Digital equity is a critical issue in Canada, impacting access to essential services and opportunities. This report aims to inform nonprofit leaders about digital equity and highlight their crucial role in bridging the digital divide. Nonprofits are uniquely positioned to foster digital inclusivity and support marginalized communities, making their involvement vital to achieving a more equitable digital future.

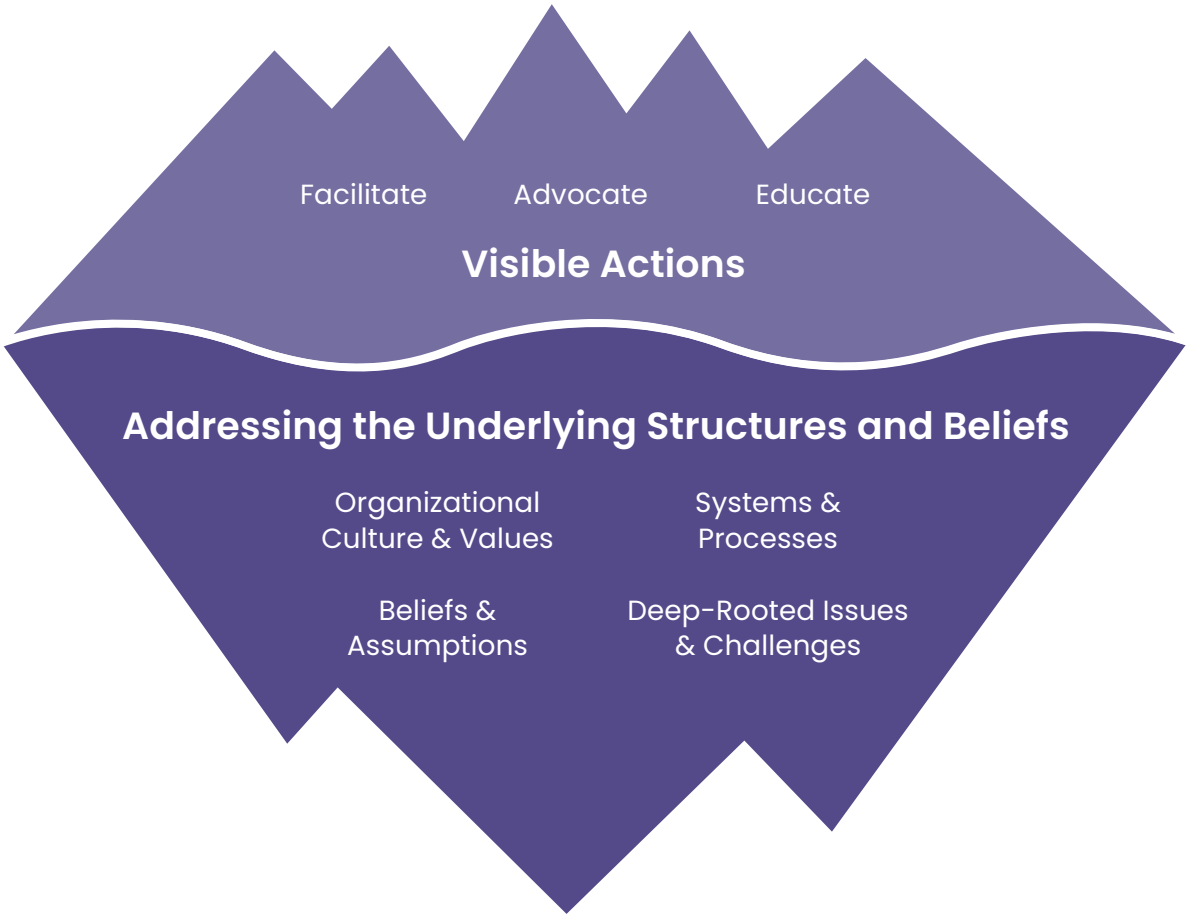
This report aims to inform nonprofit leaders about digital equity and highlight their crucial role in bridging the digital divide.

Anchored in a scoping review that utilizes a methodological framework developed by Hilary Arksey and Lisa O'Malley (2005), the report synthesizes insights from literature on "digital equity" and the "digital divide" within the Canadian context. It reveals the complexities of digital inequity influenced by cultural, socioeconomic, and geographical factors. It also explores the implications of these disparities across education, healthcare, the economy, and legal access.

Drawing on insights from our comprehensive review, we introduce the Digital Equity Iceberg as a strategic framework specifically designed for the nonprofit sector. This sector is essential in addressing digital equity and ensuring all Canadians benefit from digital advancements.

The Strategic Framework – The Digital Equity Iceberg

The Digital Equity Iceberg illustrates the need for both visible actions and underlying structural changes to advance digital equity.



Above the Waterline: Visible Actions

Facilitate

Broker collaborations to provide resources, essential digital tools, and internet access. Spearhead community engagement to ensure digital solutions meet diverse needs.

Advocate

Influence policy change and secure funding for digital equity initiatives. Conduct public campaigns to raise awareness and drive change.

Educate

Offer digital literacy programs and capacity-building initiatives. Raise awareness about the significance of digital equity, enabling progression from digital literacy to proficiency and from digital consumption to creation.

Below the Waterline: Addressing the Underlying Structures and Beliefs

Organizational Culture and Values

Commit to digital equity with a decolonial and inclusive mindset.

Systems and Processes

Regularly assess digital needs and integrate stakeholder feedback to create responsive strategies.

Beliefs and Assumptions

Recognize the importance of digital equity, challenge biases in technology, and advocate for community transformation from consumers to creators.

Deep-Rooted Issues and Challenges

Address historical and systemic disparities, socioeconomic and geographic factors, language barriers, and ableism. Ensure cultural responsiveness and respect for Indigenous perspectives.

By focusing on both visible actions and underlying structures, nonprofits can effectively advance digital equity in Canada. This approach ensures that every Canadian, regardless of their background or situation, has the opportunity to fully participate in, and benefit from, the digital world. Nonprofits play a pivotal role in this endeavor, significantly impacting the fostering of a more inclusive and equitable digital future. Ensuring that the benefits of digital technologies are equitably shared is imperative for building a more inclusive, empowered, and connected Canada.

By providing a nuanced understanding of Canada's digital landscape and offering targeted recommendations, this report aims to catalyze efforts towards a digitally inclusive society. Nonprofits, through strategic actions and deep structural changes, are essential in driving these efforts.

Introduction

This report aims to present a strategic blueprint for the nonprofit sector to advance digital equity throughout Canada's broad and diverse landscape, ensuring that the digital revolution's benefits are equitably shared among all Canadians. Digital Equity (DE) encompasses not only access to technology but also meaningful content and the ability to create and share knowledge (Willems, 2019). DE is fundamental to ensuring that all individuals can participate fully in society, access necessary services, and benefit from the opportunities provided by digital technologies. It ensures that everyone, regardless of their background or location, has equal access to digital resources and opportunities, which is crucial for participating in education, healthcare, economic opportunities, and civic engagement.

Achieving digital equity requires concerted efforts from governments, nonprofit organizations, and communities to address the multifaceted barriers to digital access and use. As this report demonstrates, nonprofits are uniquely positioned to play a pivotal role in advancing DE. They can utilize their capabilities to *facilitate* access to digital tools and other resources, *advocate* for equitable policies, and *educate* communities to ensure everyone can navigate the digital landscape.

The report utilizes a "scoping review" research approach to explore the topic of DE in Canada. This approach seeks to provide an overview of available research in a given domain. It is particularly useful for strategy development (Arksey & O'Malley, 2005).

This scoping review was guided by the following research questions:

- What insights can be drawn from the literature on DE in Canada?
- How can these insights inform the development of a nonprofit sector strategy to advance DE and bridge the digital divide?

We began the review with a targeted literature search (details on methodology can be found in Appendix A), focusing on "digital equity" and "digital divide" in relation to Canada, and then selected unique papers and literature to enrich the discussion. This resulting report aims not only to clarify and contextualize key terms and concepts, but also to spotlight uneven access driven by cultural, socioeconomic, and geographical determinants. It discusses current challenges, identifies actionable strategies to foster digital inclusivity, and underscores the significant roles of diverse stakeholders in narrowing the digital divide.

Digital Terminologies and Concepts

Despite numerous attempts to clearly define DE and identify the risk factors of the digital divide, reaching a consensus on these key terms remains challenging. The concept of universally applicable digital literacy is particularly elusive, with varied and subjective interpretations across different contexts, complicating its measurement and enhancement. This lack of agreement hinders the development of standardized approaches and strategies to effectively address the digital divide. However, for the readers of this report, we offer the following definitions of key terms to provide clarity and facilitate a more structured approach to discussing these complex issues.

These terms encapsulate the core aspects of digital interaction in modern society, highlighting the need for equitable access, literacy, and inclusion to ensure everyone benefits from the advancements in digital technologies.

- **Data Sovereignty:**
  Individuals and communities have control over their own data. Crucially, this empowers marginalized groups by giving them ownership and control over their information (Rolan, 2020). This is particularly important in the context of human-computer interaction, where it can help to strengthen the position of users (Lawo, 2023). Data sovereignty goes beyond privacy, encompassing the ability to share information in a controlled manner (Hummel, 2018). In the digital age, it is essential to understand and apply the concept of data sovereignty to ensure that individuals and communities are not exploited and that power relations are balanced (Aydin, 2019).
- **Digital Agency:**
  An individual's ability to control and adapt to the digital world, encompassing digital competence, confidence, and accountability (Passey et al., 2018).

- **Digital Colonization:**
  The monopolization of markets and the transformation of people's daily lives by digital platforms (Gavrilenko, 2020). This phenomenon is a key factor in the digital divide (Crampton, 2004). The importance of digital equity is underscored by the need to address the negative impact of digital colonization.

- **Digital Divide:**
  The unequal distribution of information and communication technologies across different segments of society, characterized by disparities in access and usage influenced by industrialization, socioeconomic status, and political factors, leading to social inequality and knowledge gaps (Schweitzer, 2023). In other words, it is the gap between those who can effectively utilize digital tools and those who cannot (Crampton, 2004).

- **Digital Equity:**
  A state where all individuals and communities can participate fully in society, democracy, and the economy, having the necessary information technology and capacity for its effective use. This encompasses aspects such as hardware, software, internet connectivity, content accessibility, digital content creation, and digital literacy among educators and the public (Association, 2023).

- **Digital Inclusion:**
  Initiatives and activities aimed at ensuring all individuals and communities have access to information and communication technologies, fostering participation and access across the board (Reisdorf & Rhinesmith, 2020).

- **Digital Literacy:**
  An ongoing process that defines the range of skills and social practices enabling individuals to navigate, understand, and engage effectively with digital technologies and digital culture (Pangrazio et al., 2020).

- **Digital Mastery:**
  Access to technology and the ability to use it effectively (Willems, 2019). It is a critical component of digital equity and can be influenced by an individual's readiness and leadership skills or an organization's digital initiatives (Nasution, 2020). Digital Masters, or highly mature organizations, play a key role in applying advanced digital technology and fostering a digital mindset (Zhu, 2015).

- **Freedom of Connection:**
  Recognized by UNESCO as a facet of the freedom of expression, this principle advocates for unrestricted access to the global data stream, enabling individuals to acquire and disseminate information via broadband Internet without facing structural or political barriers (Dutton, 2011).

- **Information and Communications Technologies (ICT):**
  An umbrella term that includes any communication device or application. It encompasses mobile phones, computer and network hardware, software, the Internet, satellite systems, and so on (Mobile Security and Privacy, 2017). These technologies have been increasingly utilized in various sectors where they facilitate information flow and improve delivery and extension of services (Zahedi, 2012).

The Canadian Context: An Overview

According to the 2022 Canadian Internet Use Survey (Statistics Canada, 2023), Canada has seen progress in digital equity with a rise in internet usage across various age groups and improved home internet speeds. The data, however, also indicates a reliance on mobile data plans as the sole Internet source for a segment of the population, rising cybersecurity incidents, and prevalent skepticism towards AI technologies. These challenges highlight key areas requiring further attention to advance digital equity in Canada.

The papers we analyzed provide a comprehensive understanding of the state of digital equity in Canada, highlighting the multifaceted challenges in achieving universal internet access and digital literacy, and revealing the depth of the digital divide. Marginalized groups such as low-income families, older adults, Indigenous populations, people with disabilities, newcomers, and residents of rural areas are most impacted.

The papers we analyzed provide a comprehensive understanding of the state of digital equity in Canada, highlighting the multifaceted challenges in achieving universal internet access and digital literacy, and revealing the depth of the digital divide.

Rural and remote areas in Canada face pronounced connectivity challenges due to the nation's vast and diverse geography. This situation is compounded by the demographic concentration in urban centers, often leaving rural regions digitally underserved and highlighting the need for targeted interventions (Abdelaal & Andrey, 2022).

Socioeconomic status significantly influences digital equity, with the cost of Internet services being a major barrier for low-income Canadians. This economic factor, combined with varying levels of digital literacy, underscores the necessity for comprehensive strategies that address both access and skill-building (Deloitte, 2023a).

Canada's cultural diversity, including its Indigenous and immigrant communities, adds layers to the digital equity challenges, necessitating culturally sensitive approaches to ensure inclusivity in digital access (Deloitte, 2023b; Klyne, 2023).

Canada faces multiple hurdles in ensuring DE, challenges that were further intensified by the COVID-19 pandemic, which also accelerated the need for digital transformation across diverse sectors. A growing number of initiatives aimed at fostering an inclusive and equitable digital environment are needed to alleviate this situation.

Findings

The Nature of the Digital Disparities in Canada

The digital divide in Canada is influenced by the country's geographic vastness and diverse demographic composition. The literature we reviewed discussed challenges in achieving digital equity, particularly for Indigenous populations, minorities, immigrants, young people, lower-income families, refugees, and rural inhabitants (Abdelaal & Andrey, 2022; Turin et al., 2022).

Indigenous communities in Canada, often situated in remote locations, experience digital gaps, which impacts their access to education, healthcare, and economic opportunities. Initiatives that integrate Indigenous perspectives, self-governance, and ways of knowing are essential in promoting digital inclusivity and empowerment for these communities (Winter & Boudreau, 2018). First Nations communities also face unique challenges, where a lack of culturally relevant digital platforms contributes to a widening divide (Gilliland et al., 2019).

Similarly, minorities and immigrants face digital barriers that are exacerbated by language barriers, economic status, and a lack of familiarity with Canada's digital infrastructure. Targeted programs aim to address these groups' unique challenges, fostering digital literacy and access (Murray, 2021a).

Youth and low-income families are particularly vulnerable to the digital divide, with their access often dictated by economic circumstances. Public libraries and educational programs play a crucial role in closing this gap, providing vital digital literacy training and access to necessary technologies (Panzarella, 2020). Gender disparities are also evident in the digital realm, especially in STEM fields, where female graduates face higher unemployment rates and challenges in technology-based roles compared to their male counterparts (Bailey & Nyabola, 2021).

In rural and remote areas, the challenges of providing digital infrastructure are compounded by high costs and logistical difficulties. Innovative approaches such as low Earth orbit (LEO) constellations and regional broadband initiatives are critical to enhancing connectivity in these regions, ensuring that residents can participate fully in the digital world (Ahmmed et al., 2022; Gaspard & Baker, 2022).

The elderly are significantly impacted, with notable gaps in digital access despite increased technology adoption over the past decade (White, 2023). In fact, data from the 2018 Canadian Internet Use Survey reveals a nuanced Internet usage typology, categorizing Canadians into five groups based on their online engagement and digital skills. This categorization shows that 24% of Canadians have minimal or no Internet involvement, with a stark contrast observed across different age groups and educational levels, indicating a significant digital literacy gap (CIUS, 2018). Additionally, factors like religiosity influence digital engagement, with more religious individuals often showing less internet use for social networking (Dilmaghani, 2018). Political ideologies can also influence digital equity.

The advancement of artificial intelligence (AI) and emerging technologies offers potential benefits but also raises concerns about exacerbating existing inequalities.

The high cost of digital access also remains a pervasive barrier across all demographics, restricting access to essential digital services and technologies. Policy measures to reduce these costs and enhance accessibility are needed to promote digital equity in Canada. However, as Birdsall (2000) pointed out, the effect of these policies is often limited in a market-driven economy. This is a significant reason digital inequity persists despite numerous connectivity enhancements and other initiatives.

Looking ahead, the advancement of artificial intelligence (AI) and emerging technologies offers potential benefits but also raises concerns about exacerbating existing inequalities. Ensuring that AI development is inclusive and equitable is paramount in preventing the emergence of new digital divides (Ragnedda & Ragnedda, 2020). The rise of AI in Canada poses additional challenges, as biases in design and development can lead to outcomes that do not accurately reflect or serve minority needs (Brandusescu, 2021; Ragnedda, 2020). Tele-education, tele-

medicine, e-commerce, and online payment systems are pinpointed as critical components of digital equity, emphasizing the necessity for inclusive digital services (Neogi, 2023). The global aspect also further complicates the scenario, potentially impacting Canada's international relations and necessitating a comprehensive, globally-informed approach to digital equity (Chen & Wellman, 2004).

Our review shows that addressing Canada's digital divide requires a comprehensive and holistic approach that takes the country's unique geographic, demographic, and socioeconomic variables into consideration. Strategies must be customized to the unique needs of Canada's diverse population and organizational landscape. By confronting these intricate challenges, Canada can advance towards a digitally equitable society, ensuring all citizens have equitable access to digital opportunities (Abdelaal & Andrey, 2022; Deloitte, 2023a, 2023b).

Collaborative efforts among the government, the nonprofit sector, and the business sector are essential to developing and implementing inclusive, sustainable, and responsive solutions. These endeavours should not only focus on providing infrastructure, but should also ensure that all Canadians have the necessary skills, tools, and opportunities to succeed in a digitalized world. This scoping review of digital equity in Canada serves as a foundational step in understanding these challenges and opportunities, guiding strategic planning, and informing future research and policy-making to bridge the digital divide effectively.

International Perspective on Digital Equity

Digital equity transcends national borders, reflecting a global imperative to ensure that everyone, regardless of their location, has equitable access to digital technologies and the benefits they offer. This international perspective on digital equity examines the efforts, challenges, and collaborative measures undertaken across different nations to bridge the digital divide.

Internationally, organizations like the Organisation for Economic Co-operation and Development (OECD) and the United Nations have recognized the importance of digital equity as a fundamental aspect of social and economic development. These organizations advocate for global standards that ensure the quality, speed, affordability, and functionality of internet connections, which are essential for fostering digital equity across various geographic territories (Neogi, 2023).

Annual gatherings—such as the Telecommunications Policy Research Conference and EDUsummIT—bring together experts, policymakers, and educators from around the world, including Canada, to share insights and to develop strategies that enhance digital equity. These forums highlight the global nature of digital challenges and the importance of international cooperation in addressing them (Searson et al., 2013). The significance of digital equity is underscored on occasions like the International Day of Older Persons, where the United Nations emphasized "Digital Equity for All Ages," highlighting the need to ensure digital inclusivity across different age groups (Adopt, 2022).

Countries worldwide are grappling with various forms of digital inequities, influenced by factors such as socioeconomic status, age, geography, and cultural background. The global digital divide is not only about access to technology but also about the ability to use it effectively, demonstrating the need for comprehensive strategies that address both hardware access and digital literacy (Dutton, 2011; Sciadas, 2002).

Digital equity plays a pivotal role in education, healthcare, legal systems, and the economy. During the COVID-19 pandemic, the necessity for digital access became even more pronounced, as many essential services and educational activities shifted online. The pandemic shed light on existing digital disparities and accelerated initiatives to address them, illustrating the interconnectedness of global health crises and digital equity (Laferrière & Cox, 2021; Shade, 2024).

Addressing digital equity requires a multifaceted approach that includes enhancing infrastructure, improving digital literacy, and ensuring inclusive participation in the digital world. This approach is not only vital for individual nations but also for the international community, as digital technologies continue to shape global interactions and development (Singh & Chobotaru, 2022).

By sharing knowledge, resources, and best practices, the global community can work towards eliminating the digital divide and fostering a more inclusive digital world.

In conclusion, the international perspective on digital equity emphasizes the collective responsibility to ensure that the benefits of digital technologies are accessible to all. By sharing knowledge, resources, and best practices, the global community can work towards eliminating the digital divide and fostering a more inclusive digital world.

Digital Inequity and Education

In an era when information processing and automation are pivotal, the ability to utilize technology effectively is a critical determinant of wealth, power, and knowledge acquisition (Rogers et al., 2018). Education is intertwined with digital accessibility and literacy; thus, a deficiency in digital education restricts the utilization of digital platforms, while limited digital literacy obstructs access to educational resources and achievement. In Canada, ensuring all students have access to information and communication technology (ICT) and the requisite skills is fundamental for success in the global, information-driven economy (Looker & Naylor, 2010).

The dimensions of equity in education—learning equity, resource equity, participation, and digital equity—highlight the multifaceted nature of modern education systems (Ozmusul, 2013). The importance of digital equity is magnified for special populations, where assistive technologies can significantly impact the educational experiences of students with disabilities (Bucci, 2023). The OECD recognizes digital technologies as essential for the educational inclusion of diverse student groups, enhancing accessibility, personalization, and distance learning opportunities (Fortner et al., 2018).

Digital equity strategies in classrooms aim to accommodate the varied learning needs of students, including those with physical or mental disabilities. Advanced computer systems can translate visual information and text into accessible formats, bridging the digital gap for these students (Treviranus, 2018). As learning environments evolve to include both physical and virtual spaces, it is crucial that teaching methods are equitable, culturally sensitive, and attuned to the diverse digital capabilities of students (Hardaker et al., 2010).

Professional development programs, like those offered by the Social Sciences and Humanities Research Council and the Government of Canada's Future Skills program, seek to sensitize teachers to the nuances of digital equity, particularly concerning race and gender disparities (Simmonds et al., 2021). Observations across Canadian provinces indicate that educators are increasingly applying these principles in digital literacy education (Baroud, 2020).

Research in Canadian elementary schools emphasizes the vital role teachers play in identifying and addressing digital inequities, with disparities in device availability, online engagement, and skill development impacting student experiences

Research in Canadian elementary schools emphasizes the vital role teachers play in identifying and addressing digital inequities, with disparities in device availability, online engagement, and skill development impacting student experiences (Ventrella & Cotnam-Kappel, 2024). Initiatives in Saskatchewan demonstrate the effectiveness of student-centered approaches in imparting equitable digital skills, emphasizing the need for comprehensive teacher training, adequate resource provision, and informed policymaking (Reilly et al., 2017; Godlewski-Faltynski, 2023).

Digital Inclusivity and Healthcare

Digital inclusivity is critical in healthcare because technology significantly impacts both service delivery and education. Online learning has become a cornerstone of medical education, particularly in nations like Canada that have advanced educational infrastructures. However, unequal access can disrupt the uniformity and quality of medical training, potentially leading to inadequate preparation and increased risk of malpractice (Murdoch et al., 2022).

During the COVID-19 pandemic, telemedicine—including access to digital mental health services—rapidly expanded, highlighting the digital divide. Many clinical services became inaccessible to underserved populations. To address these gaps, experts advocate for user-centered app development and the integration of digital health knowledge into mainstream care practices (King & Gonzales, 2023; Torous et al., 2020). In eldercare, one goal of digitalization is to ensure a seamless transition from hospital to home care, a critical challenge. (Kokorelias et al., 2022).

Emerging models strive to link digital health determinants (the design, implementation, and use of technology in health) with actual health outcomes to create effective and applicable healthcare platforms.

A range of technologies supports parenting training, coaching, and scheduling, facilitating continuous care and reducing the need for travel. These technologies also support peer networks for parents and children with disabilities, showcasing the broad potential of digital tools to enhance care and support systems (Gerlach et al., 2023).

Emerging models strive to link digital health determinants (the design, implementation, and use of technology in health) with actual health outcomes to create effective and applicable healthcare platforms. A comprehensive approach—encompassing policy, systems, community, individual, and intervention levels—is essential to achieve digital health equity (Lyles et al., 2023; Petretto et al., 2024). Moreover, partnerships between the technology sector and healthcare providers have the potential to foster a foundation for digital health equity, intertwining technological advancements with broader health equity goals (Durocher et al., 2021).

Digital Inequity and Cultural Interactions

Digital equity plays a crucial role in supporting intercultural education and fostering social justice in multicultural nations like Canada. Digital exclusion, conversely, leads to knowledge discrimination and limits intercultural connections and interactions, which are vital in diverse societies (Resta & Laferrière, 2015). Cultural participation, deeply influenced by digitalization, affects how communities engage with cultural experiences.

A case study in Quebec demonstrated the impact of digital participation on cultural policies, showing that digital initiatives influence not only cultural but also economic, educational, and youth policies, incorporating civic, commercial, and industrial aspects of societal interactions (Casemajor et al., 2021). Furthermore, resistance to digital adoption in organizations, driven by underlying digital inequity, poses challenges to the utilization of knowledge-sharing technologies. Analyses using models like the Unified Theory of Acceptance and Use of Technology (UTAUT) suggest that reluctance to use digital tools is often rooted in factors related to digital inequity.

Regarding digital equity, Lambrechts, Sinha, and Mosoetsa (2021) emphasize the necessity of inclusive, ethical, and value-sensitive technology development and deployment. Such approaches ensure that digital progress promotes equity and fairness, avoiding the deepening of existing disparities across diverse societal contexts. This perspective is crucial in ensuring that digital strategies are comprehensive, addressing not only the technological aspects but also the ethical and social dimensions, fostering a more equitable digital landscape.

Digital Inequity and the Canadian Economy

Canada's Connectivity Strategy is a foundational component in addressing digital inequity, aiming to provide every Canadian with access to minimum internet speeds essential for modern digital engagement. This strategy, integral to "Rural Opportunity, National Prosperity: An Economic Development Strategy for Rural Canada," seeks to level the playing field, especially for residents in rural and remote areas, allowing them to partake in, and benefit from, the digitalized national economy. By enhancing connectivity, the initiative not only tackles immediate access issues but also facilitates the participation of local businesses in the global market, reinforcing the country's economic competitiveness (Government of Canada, 2023).

At the system level, recognizing digital connectivity as a fundamental right would follow Canada's historical approach to essential services, which has been to ensure that all citizens, regardless of their geographic location, have equitable access to the tools necessary for economic and social engagement (Walker, 2021). At the individual level, digital inequity impacts individuals' ability to seek employment and engage in economic activities, highlighting the crucial interplay between digital access and economic stability (Reydellet, 2021).

Businesses also face the repercussions of digital inequity. A notable example is the impact of Netflix's stock prices, which were affected by the company's failure to address digital inclusivity in its service offerings and pricing strategies, particularly for marginalized groups. This highlights the broader economic consequences of neglecting digital equity (Mandal et al., 2017). The rise of blockchain technology in real estate illustrates another aspect of digital transformation, where tokenization introduces innovative data management and investment methods. However, the complexity of these digital tools can pose significant challenges for individuals unfamiliar with the technology, potentially widening the digital divide if inclusivity is not a central consideration in their deployment (Crandall, 2023).

Overall, Canada's commitment to enhancing digital connectivity and addressing the multifaceted impacts of digital inequity is crucial for ensuring that all Canadians can fully participate in, and reap the rewards of, the evolving digital economy.

Digital Inequity and the Legal System in Canada

Similar to other fields, digital platforms play a pivotal role in democratizing legal education and access to legal resources, serving as vital conduits for knowledge transfer and public legal awareness. The Internet offers Canadians, particularly those distanced from legal services or unable to afford private legal advice, invaluable access to governmental and provincial legal resources. Online services such as access to legal documents, application forms, step-by-step legal process guides, live chats, guided pathways, and online dispute resolution services are revolutionizing how individuals engage with the legal system, reducing the need for travel to access free legal consultation (Murray, 2021b).

Digital inequity, however, poses a significant challenge to this digital democratization of legal services. A 2021 Council of Canadian Academies study highlighted a pronounced digital divide between Indigenous and non-Indigenous communities, with a notable discrepancy in connectivity between urban and rural/remote areas. This divide is not just a matter of geography but also intersects with ethnic and provincial lines, affecting access to remote legal services. For instance, while about 90% of Indigenous family legal aid clients in British Columbia have smartphone access, in Alberta, digital inequity is a recognized barrier, preventing many from accessing necessary remote legal assistance (Roberts & Associates Consulting, 2023).

A 2021 Council of Canadian Academies study highlighted a pronounced digital divide between Indigenous and non-Indigenous communities, with a notable discrepancy in connectivity between urban and rural/remote areas.

Addressing the digital divide is crucial for ensuring that all Canadians, regardless of location, ethnicity, or economic status, can access the legal resources and services they need. The gap highlights the need for targeted policies and initiatives to enhance digital connectivity and literacy, particularly in underserved Indigenous communities, to ensure equitable access to legal services across Canada.

Organizational Insights and the Impact of COVID-19

The papers we reviewed suggest that the COVID-19 pandemic has profoundly impacted digital equity, accelerating the transition to digital platforms across various sectors and magnifying existing disparities. The pandemic served as a catalyst, revealing hidden vulnerabilities and prompting the development of strategies to mitigate digital inequity (Laferrière & Cox, 2021; Shade, 2024). It has also highlighted the critical nature of digital connectivity, with increased reliance on digital technologies for education, healthcare, and employment, thereby magnifying the urgency to address digital divides (Deloitte, 2023a).

The adoption of digital technologies varies significantly across different sectors and organizational sizes. According to Deloitte (2023a), small and medium-sized enterprises, in particular, face barriers to digital adoption, impacting their competitiveness and growth, while the public sector struggles with digital talent acquisition and retention. Nonprofits experienced a crucial transition during the pandemic, necessitating a shift to digital-first strategies, which highlighted the benefits of digital technologies for operational efficiency and community impact. They also encounter unique cost-related hurdles and cybersecurity risks, underlining the need for specialized support (Deloitte, 2023a).

Research Highlights

Our **Sector Monitor report** (2021) highlights that charities have significantly increased their focus on information technology due to the pandemic. This shift emphasizes the importance of digital equity, ensuring all organizations and their beneficiaries have necessary access to digital tools and resources.

Similarly, our **Voices of the Sector** (2022) highlights the significant digital divide within the nonprofit sector. The sector, despite its substantial contribution to Canada's GDP, struggles with outdated technology and a lack of government support for digital innovation. The report calls for enhanced funding and strategic support for digital transitions and connectivity. This shift is critical for expanding service reach and improving operational efficiency, drawing attention to the urgent need for a targeted approach that addresses unique challenges like funding limitations and cybersecurity risks.

The **Digital Skills Survey Results (2023)** from CanadaHelps indicates that Canadian charities face considerable challenges in becoming digitally enabled, primarily due to gaps in skills, knowledge, and resources rather than access to technology. Many organizations struggle to adopt technologies that could significantly enhance operational efficiency because they lack the necessary in-house skills and resources. This deficit prevents them from experiencing the benefits that digital tools offer, which hampers their motivation and momentum. The survey results highlight that while charities are eager to utilize digital tools and are prepared to invest effort, they often face obstacles such as insufficient funding, lack of human resources, and a shortage of strategic leadership in digital transformation. These factors contribute to their struggles with effective digital adoption.

The **Charity Insights Canada Project Newsletter** (2024) dives deeper into how charities currently use digital tools and the specific areas where they face skill gaps. The newsletter points out that while charities have a solid foundation in basic digital functions, they still face significant challenges in specialized areas such as data analysis and strategic digital implementation. As charities look forward, there is a recognized need to enhance data management capabilities and integrate AI technologies to streamline operations and extend outreach, highlighting the ongoing journey towards digital proficiency in the sector.

Economically, the pandemic triggered a rapid expansion of digital employment and business platforms, introducing challenges for those lacking digital access or skills. As society navigates the aftermath of the pandemic, it is evident that the shifts induced by COVID-19 have lasting effects on social and occupational infrastructures. These changes have left digitally underserved groups facing compounded challenges: not only must they contend with ongoing digital inequity, but they also face diminished visibility and support as the immediate crisis recedes (Middleton, 2021).

There is a critical need to sustain and enhance efforts toward digital equity in the post-pandemic landscape. Ensuring continued support and resources for disadvantaged populations is essential to bridge the digital divide and to create a more inclusive, resilient digital environment for all Canadians.

Ensuring continued support and resources for disadvantaged populations is essential to bridge the digital divide and to create a more inclusive, resilient digital environment for all Canadians.

Analysis

A Need for Comprehensive, Collaborative, and Cross-Sectoral Strategies

Our review reveals that addressing digital equity requires a nuanced understanding. The analysis also highlights the interplay among policy and governance, innovation and access, and community engagement and support, illustrating the multifaceted approach necessary to tackle digital equity, and the digital divide, effectively. The analyzed papers draw from cross-disciplinary insights, spanning fields such as technology, social sciences, health, law, and cultural studies. The studies also reflect a mix of global and local focus, which underscores that digital equity is a global challenge that often requires local solutions.

Figure 1, below, is our attempt to illustrate the vast and interconnected nature of the digital equity stakeholder ecosystem and the wide range of stakeholder engagement needed to bridge the digital divide effectively.

Policy and governance are crucial in promoting the potential for digital equity, with stakeholders from various governance levels setting actionable frameworks. The Innovation and Access sector thrives on continuous change and growth, where developers and service providers sometimes operationalize policies into tangible outcomes, and continuously innovate. Community Engagement and Support ties back to the lived experiences of beneficiaries, ensuring digital solutions are contextually relevant and responsive.

The evidence highlights the ecosystem's dynamic and evolving character, emphasizing the necessity for policies and initiatives that are both implementable and shaped by community input. Comprehensive, collaborative, and cross-sector partnerships that address the multifaceted aspects of digital equity are needed. These strategies must take into consideration the technological, social, economic, and cultural interdependencies of this challenge in order to promote inclusive and sustainable progress.

FIGURE 1

Digital Equity Stakeholder Ecosystem

Our analysis shows that various efforts to improve digital access come together in several key strategies aimed at removing barriers to digital inclusion. These strategies highlight different types of initiatives across sectors. They range from improving internet infrastructure in rural areas to creating programs that are culturally relevant for Indigenous populations. These efforts demonstrate Canada's strategic and comprehensive commitment to achieving digital equity.

While more comprehensive research is needed to fully develop this typology, the initiatives highlighted below offer a glimpse into the breadth of approaches being employed. From leveraging advanced satellite technology to enhancing connectivity in remote areas to fostering digital literacy among underserved populations, each initiative uniquely contributes to the overarching goal of digital inclusivity. These examples not only demonstrate the strategic efforts but also emphasize the crucial role of cross-sectoral cooperation in developing effective digital equity solutions.

Following are a few examples from our analysis that demonstrate the strategic, multifaceted, and collaborative efforts across various sectors to ensure comprehensive and equitable digital access across the country. These initiatives are only illustrative, not exhaustive, and demonstrate how cross-sectoral cooperation is crucial in developing effective digital equity solutions. The effectiveness of these specific initiatives has not been evaluated.

Examples of Initiatives that Contribute to Digital Inclusivity

Context-Specific Initiatives:
Initiatives like Southwestern Integrated Fibre Technology (SWIFT) and Eastern Ontario Regional Network (EORN) demonstrate strategic efforts to enhance internet access in rural areas, addressing geographical and economic barriers to connectivity (Gaspard & Baker, 2022).

Infrastructure Initiatives:
The adoption of satellite technology through low earth orbit (LEO) constellations for internet access in remote areas showcases innovative approaches to overcome infrastructural barriers, ensuring digital inclusivity (Ahmmed et al., 2022).

Sector-Specific Initiatives:
Initiatives such as Legal Aid British Columbia's ADE Project focus on enhancing sector-specific digital accessibility and workforce engagement, reflecting a nuanced approach to digital equity and support mechanisms that empower effective digital resource utilization (Murray, 2021a).

Access-Focused Initiatives:
Aimed at healthcare access, initiatives such as the PHONE CONNECT Program leverage digital tools to improve essential service access, especially in crisis situations, underlining the importance of digital equity in public health and safety (Kazevman et al., 2021).

Cost Reduction Initiatives:
Cost-reduction is identified as vital for digital equity to ensure widespread access to essential digital resources. O-Net in Alberta is an example of a community-built initiative, providing advanced telecommunications through a fibre-optic network, aimed at eliminating the digital divide.

Culturally Relevant Digital Initiatives:
Tailored digital initiatives—such as Aboriginal Territories in Cyberspace, Initiative for Indigenous Futures, and First Nations Technology Council—supporting Indigenous engagement and storytelling highlight culturally sensitive digital equity approaches, integrating unique community needs into the digital space (Winter & Boudreau, 2018).

Digital Literacy Programs:
Various initiatives focusing on advancing the digital literacy of underserved groups highlight the role of cross-sector collaborations and the increasing demand for such programs to reduce digital disparities. For example, CyberSeniors focuses on seniors utilizing an intergenerational volunteer model. The Neil Squire Society improves the lives of Canadians with disabilities through accessible technology and digital literacy programs, while The Digital Moment focuses on youth. Finally, ODLAN focuses on digital literacy at the 2SLGBTQIA+ communities' level, and Immigrant Services Association of Nova Scotia (ISANS) focuses on immigrants and newcomers.

Organizational Capacity Building Initiatives:
Initiatives such as Charity Growth Academy focus on organizational capacity building within the charitable sector, aiming to strengthen the capacities of charities in Canada to foster digital equity at the organizational level, thus promoting digital inclusivity and creating resilient, connected communities (Deloitte, 2023a).

Policy and Advocacy Initiatives:
Frameworks such as The City of Toronto's Digital Infrastructure Plan aim to advance digital equity in Toronto by identifying and addressing systemic barriers to digital access. The plan advocates for universal digital connectivity, emphasizing the need for evidence-informed policies, cross-sectoral collaboration, and a human rights approach to ensure all residents, particularly marginalized groups, have equitable access to digital infrastructure and services (Abdelaal & Andrey, 2022).

Notable Gaps in the Discussions on Digital Equity

Through our analysis, some gaps in the literature became clear. These gaps can be grouped into three categories: research to understand intersectionality, research to understand the effectiveness of initiatives, and utilizing the lens of resilience.

Digital Equity Gaps

Understanding Intersectionality

Understanding Effectiveness

Utilizing the Lens of Resilience

Understanding Intersectionality

To effectively tackle digital inequality, it is important to explore the intricate interactions among various elements such as age, income, cultural and linguistic diversity, and location. A key aspect of this exploration involves understanding how digital footprints—the data trail one leaves on the Internet—interact with these factors, highlighting the complexity of digital inequity (Micheli, Lutz, & Büchi, 2018). Investigating intersectionalities, digital equity, and the connections between digital footprints offers the potential for deep insights that would be beneficial in creating targeted and effective solutions.

Understanding Effectiveness

There is a critical need for thorough evaluations of digital equity initiatives to understand their long-term impact on educational outcomes and policy effectiveness. These evaluations should extend beyond assessing the direct outcomes to include an analysis of cost-effectiveness, ensuring that initiatives provide value for money. This means assessing whether the initiatives are economically viable and sustainable while effectively reducing the digital divide and enhancing inclusivity in digital access and education (Aguilar, 2020).

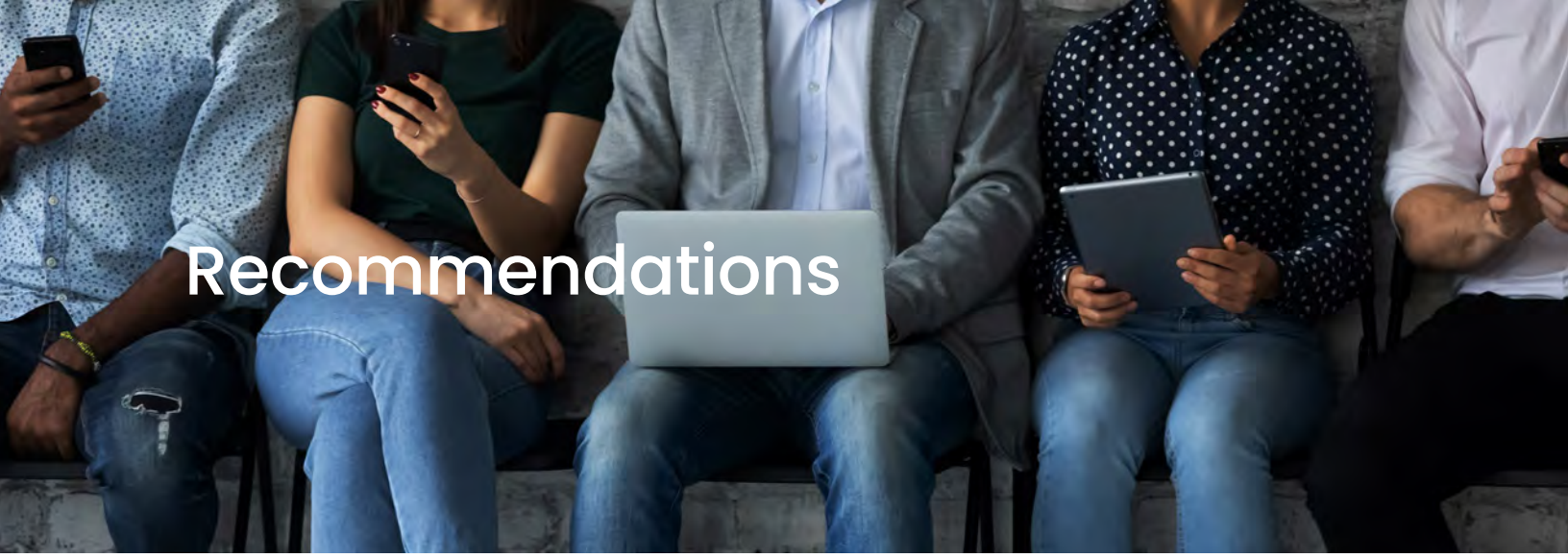
By incorporating the value-for-money perspective, policymakers and educators can make informed decisions about scaling up or modifying initiatives, ensuring that investments in digital equity yield substantial and sustainable benefits. Additionally, developing digital literacy assessment tools is crucial for monitoring progress toward digital equity (Hagerman et al., 2020).

Incorporating and drawing on insights from fields such as dissemination and implementation science can inform and enhance the evaluation and future planning of digital equity initiatives. Baumann et al. (2023), for example, highlight the value of leveraging dissemination and implementation science principles to advance healthcare equity. This approach would be very informative in understanding the multifaceted aspects of healthcare, or other, interventions and their implications on diverse populations. It offers a comprehensive framework that stakeholders in digital equity can adapt to assess and refine their initiatives for broader and more inclusive impact.

Utilizing the Lens of Resilience

As digital technologies continue to advance rapidly, integrating a resilience perspective into digital equity research is crucial. This approach goes beyond immediate access and literacy, focusing on how individuals and communities adapt to and thrive amidst digital transformations. Understanding resilience in the context of digital equity helps capture how people navigate technological disruptions and maintain digital engagement. Without this focus, policies may fail to fully address or leverage the dynamics of digital evolution. By incorporating resilience, research and initiatives can develop comprehensive and actionable strategies that ensure digital equity evolves in alignment with technological progress.

Addressing these gaps means laying the groundwork for advancing digital equity in Canada. Ensuring that every Canadian, regardless of their background or situation, has the opportunity to engage in the digital world is imperative in creating an inclusive and equitable digital future.



Recommendations

A Vision for the Sector

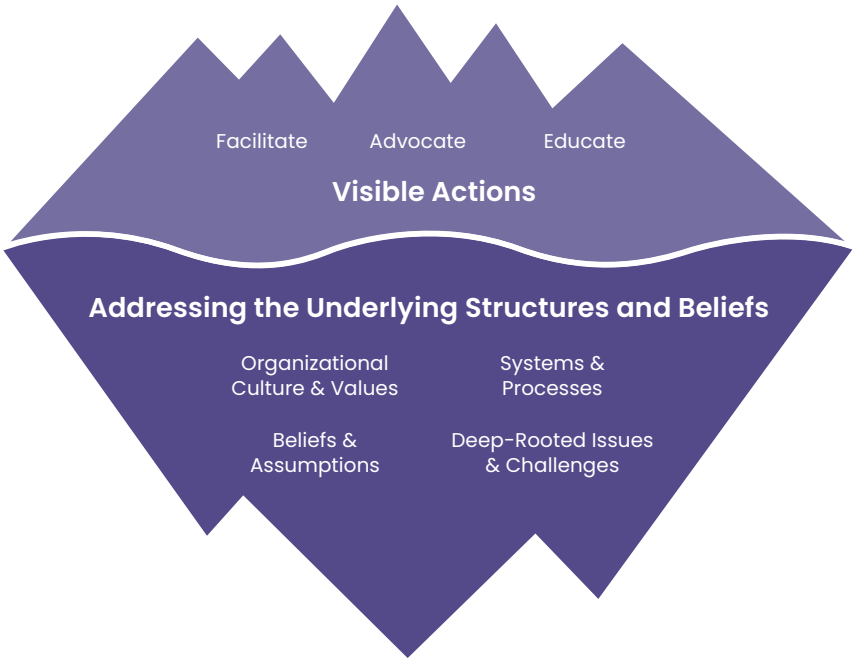
Drawing on the insights from our comprehensive scoping review, we introduce the *Digital Equity Iceberg* as a strategic framework designed for the nonprofit sector to bolster its efforts in relation to digital equity. This sector is crucial in bridging the digital divide and actualizing digital equity.

The Iceberg model is selected to reflect the multifaceted nature of digital equity, highlighting the necessity of visible actions that are simultaneously supported by more extensive, often invisible, systemic changes in structures and philosophies.

Figure 2 shows the *Digital Equity Iceberg*, and the subsequent section offers an in-depth look at its various components, demonstrating how each element contributes to a holistic strategy for advancing digital equity.

FIGURE 2

The Digital Equity Iceberg



The Digital Equity Iceberg

Above the Waterline: Visible Actions and Policies

The Iceberg's visible portion represents actions that organizations can take to advance digital equity internally and externally.

Facilitate:
Broker collaborations and partnerships with public, private, and nonprofit organizations to provide resources, essential digital tools, and internet access; spearhead community engagement to ensure digital solutions are responsive and appropriate to diverse needs; and demonstrate impact and identify gaps.

Advocate:
Influence policy change and development to promote digital inclusion and secure necessary funding for digital equity initiatives; conduct public campaigns to drive change and raise awareness; and champion evidence-informed practices.

Educate:
Offer digital literacy and capacity-building programs to individuals and communities; raise awareness about the significance of digital equity, inclusion, and participation; enable individuals and communities to progress from digital literacy to proficiency and from digital consumption to creation; and leverage research and analysis to identify inequities, tailor interventions, measure impacts, and shape digital equity initiatives.

Below the Waterline: Underlying Structures and Beliefs

Submerged below the surface is the foundational base of the Iceberg, which includes issues critical for sustaining and reinforcing the visible actions.

Organizational Culture and Values:
These include the intrinsic commitment to advancing digital equity, embracing a decolonial and inclusive mindset.

Systems and Processes:
These refer to the institutional mechanisms to regularly assess digital needs and integrate stakeholder feedback to create responsive, targeted, and adaptable strategies.

Beliefs and Assumptions:
These include recognition of digital equity's importance, critical examination and challenging of power dynamics and biases in technology, advocacy for community transformation from digital consumers to creators, and commitment to dismantle societal norms that obstruct digital access.

Deep Rooted Issues & Challenges:
These include tackling historical and systemic disparities, socioeconomic and geographic factors, language barriers, ableism, and ensuring cultural responsiveness and respect for Indigenous perspectives.

The *Digital Equity Iceberg* approach ensures that efforts to facilitate, advocate, and educate in pursuit of digital equity are informed by, and address, deeper societal challenges and structural inequities. It provides a holistic strategy that organizations can utilize both internally to empower their teams and externally to enhance the work they do with individuals, communities, or at a system level.

Other Recommendations for Advancing Digital Equity

Other recommendations aimed at various stakeholders to advance digital equity emerge from the review:

- **Enhance Infrastructure in Underserved Areas:**
  Governments and private entities must focus on improving digital infrastructure in rural and remote areas to ensure equitable access to digital resources (Gaspard & Baker, 2022).
- **Invest in Digital Literacy and Education:**
  Educational institutions and policymakers should prioritize digital literacy programs to empower individuals and communities to effectively navigate and benefit from the digital world (Resta & Laferrière, 2015b).
- **Promote Digital Health Equity:**
  Healthcare providers and policymakers should leverage digital technologies to bridge gaps in healthcare access, with a particular focus on underserved populations, as highlighted during the COVID-19 pandemic (Murdoch et al., 2022).
- **Empower Indigenous Communities:**
  Support Indigenous-led digital initiatives to ensure culturally relevant and sovereign approaches to digital equity (Gilliland et al., 2019).

- **Advocate for Inclusive Policy Making:**
  Stakeholders should influence policy development to ensure legislative frameworks support inclusive access and meaningful use of digital technologies (Koch, 2022).
- **Utilize Data for Informed Decision-Making:**
  Data and research should guide digital equity initiatives, ensuring they are responsive to the needs of diverse communities (Shade, 2023).
- **Address Socioeconomic Barriers:**
  Efforts must be made to tackle economic disparities that influence access to and usage of digital resources, aiming to close the digital divide (Andrey et al., 2021).
- **Foster Public-Private Partnerships:**
  Collaborations between the government and private sector can enhance the resource pool and drive innovation in addressing digital equity challenges (Neogi, 2023).
- **Support Community-Driven Initiatives:**
  Encouraging community-led projects can ensure that digital equity efforts are tailored to local needs and contexts, promoting grassroots involvement (Winter & Boudreau, 2018).
- **Prioritize Inclusive Digital Education:**
  Educational policies and practices should focus on ensuring that digital education is accessible and equitable, preparing all learners for success in a digital world (Treviranus, 2018).

Appendix

Methodology

In this review, we adopted a standard framework established by Hilary Arksey and Lisa O'Malley (2005) to execute a thorough scoping review. Our investigation was guided by two research questions: What insights can be drawn from the literature on digital equity in Canada? How can these insights inform the development of a sector strategy to advance digital equity and bridge the digital divide? These questions shaped our exploration, starting with a preliminary Boolean search in the Google Scholar database using the keyword "digital equity" AND "Canada." This led to 1570 results. Focusing on the most recent publications resulted in 144 entries.

In the next step, we focused on publications that specifically addressed digital equity from a Canadian perspective. We screened all 144 identified entries by title and abstract, where available. Given the vast number of results, we limited our focus to the first 100 entries deemed most relevant. These entries were carefully reviewed, and selections were based on direct relevance to digital equity, excluding duplicates, and non-English language publications.

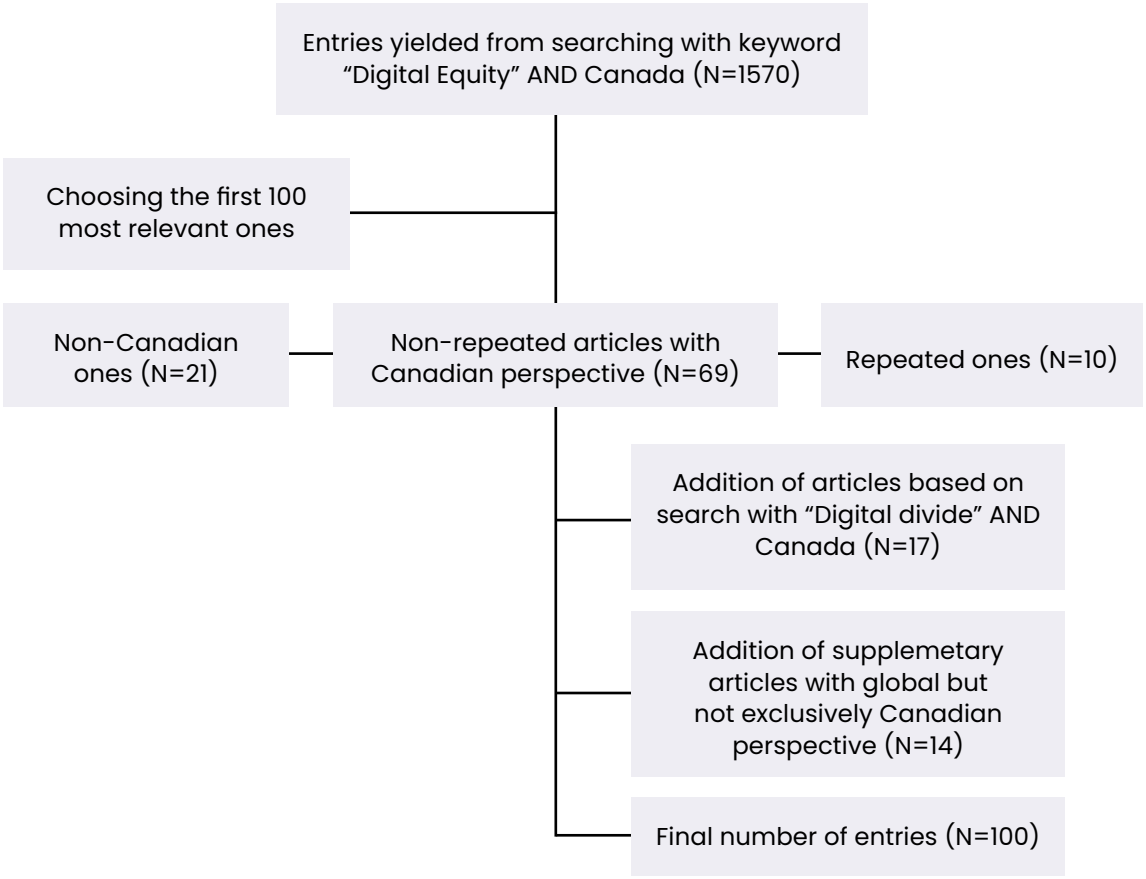
During the second screening round, after a full-text review, we excluded entries not relevant to the Canadian context or those predominantly focusing on other countries. This resulted in 69 studies. Subsequently, we expanded our search to include "digital divide" AND "Canada", incorporating selected articles into our main analysis to provide stronger justifications, aligning with Arksey and O'Malley's guidelines. This resulted in 17 additional articles.

Quality assessment during article screening adhered to a rigorous strategy, utilizing academic, official, and peer-reviewed sources. The relevance of the entries was initially confirmed by keyword matching, followed by evaluations of titles and abstracts to ensure alignment with our research questions. Purposeful selection and integration of articles of interest and relevant literature on the web resulted in the addition of 14 more studies. These 14 studies took a global perspective, enhancing the depth and breadth of our existing, Canadian-focused analysis, and enriching—as per Arksey and O'Malley's guidelines—our review.

In total, our search and selection process yielded 100 entries. During further analysis, 67 articles were included based upon the full detailed examination. These can be found in Appendix B. The majority were directly related to digital equity in Canada. We identified major and overlapping themes which are discussed in the report. Additional articles and online initiatives were manually integrated into the analysis. Figure 3 provides an illustration of our process.

FIGURE 3

Data collection and analysis process of study



References

Abdelaal, N., & Andrey, S. (2022). Towards a Digital Equity Policy. Missing publication info.

Adopt, O. A. W. T. (2022). Achieving digital equity for older persons with emerging technology: The case of North America. *Innovation in Aging*, *6*(S1).

Ahmmed, T., Alidadi, A., Zhang, Z., Chaudhry, A. U., & Yanikomeroglu, H. (2022). The digital divide in Canada and the role of LEO satellites in bridging the gap. *IEEE Communications Magazine*, *60*(6), 24-30.

Ahuja, V. (2023). Equity and Access in Digital Education: Bridging the Divide. *Contemporary Challenges in Education: Digitalization, Methodology, and Management* (pp. 45-59). IGI Global.

Ally, M., & Tsinakos, A. (2014). Increasing access through mobile learning. *Commonwealth of Learning Vancouver*.

Andrey, S., Masoodi, M. J., Malli, N., & Dorkenoo, S. (2021). Mapping Toronto's digital divide. *Brookfield Institute for Innovation + Entrepreneurship*.

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19-32. https://doi.org/10.1080/1364557032000119616

Association, N. D. I. (2023). The words behind our work: The source for definitions of digital inclusion terms. *Retrieved June 13*, 2023. https://www.digitalinclusion.org/definitions/

Bailey, L. E., & Nyabola, N. (2021). Pathfinders for Peaceful, Just and Inclusive Societies, Digital Equity as an Enabling Platform for Equality and Inclusion. (New York: Center on International Cooperation, 2021), available at https://www.sdg16.plus/

Baroud, J. (2020). Engaging the intersections of equity and technology in teacher education instruction, curriculum and pedagogies (Doctoral dissertation, Université d›Ottawa/University of Ottawa).

Birdsall, W. F. (2000). The digital divide in the liberal state: A Canadian perspective. *First Monday*.

Brandusescu, A. (2021). Artificial intelligence policy and funding in Canada: Public investments, private interests. *Private Interests*.

Brosseau, L., & Dewing, M. (2018). Canadian multiculturalism. *Library of Parliament Ottawa*.

Bucci, N. P. (2023). The Evolution of Educational Technology in Inclusive Learning Spaces from Pre to Post Pandemic. *Integration of Instructional Design and Technology: Volume 3*.

Casemajor, N., Bellavance, G., & Sirois, G. (2021). Cultural participation in digital environments: goals and stakes for Quebec cultural policies. *International Journal of Cultural Policy*, *27*(5), 650-666. https://doi.org/10.1080/10286632.2020.1825403

Chen, W., & Wellman, B. (2004). The global digital divide–within and between countries. *IT & society*, *1*(7), 39-45.

Chowdhury, T. T., Subroto, S., Raihan, M. M., Koch, K., Chowdhury, N., Ruttan, E., Wiles, R., & Nesset, M. (2022). Addressing digital equity and the digital divide. *The University of Calgary/The City of Calgary*. https://www.calgary.ca/content/dam/www/general/documents/smartcities/addressing-digital-equity-digital-divide.pdf

Country Comparisons-Population. (2023). Central Intelligence Agency. https://www.cia.gov/the-world-factbook/field/population/country-comparison/

Crandall, J. (2023). Living on the block: How equitable is tokenized equity? *Big Data & Society*, *10*(2). https://doi.org/10.1177/20539517231208455

Deloitte. (2023a). Digital equity: Empowering all organizations to succeed in the digital era. https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/fcc/ca-catalyst_digital_equity_3_aoda-en.pdf?icid=en_report_hero_section

Deloitte. (2023b). Digital equity: Focusing on every Canadian's digital future. https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/fcc/digital-equity-2/ca-catalyst-digital-equity2-aoda-en.pdf

Dilmaghani, M. (2018). Religiosity and the digital divide in Canada. *The Communication Review*, *21*(3), 181-211. https://doi.org/10.1080/10714421.2018.1468184

DiMaggio, P., & Hargittai, E. (2001). From the 'digital divide' to 'digital in equality': Studying Internet use as penetration increases. *Princeton: Center for Arts and Cultural Policy Studies, Woodrow Wilson School, Princeton University*, *4*(1), 4-2.

Dirksen, A. (2020). *Decolonizing Digital Spaces*. University of Ottawa Press.

Drori, G. S., & Jang, Y. S. (2003). The Global Digital Divide: A Sociological Assessment of Trends and Causes. *Social Science Computer Review*, *21*(2), 144-161. https://doi.org/10.1177/0894439303021002002

Durocher, K., Boparai, N., Jankowicz, D., & Strudwick, G. (2021). Identifying technology industry-led initiatives to address digital health equity. *Digital Health*, *7*, doi: 20552076211056156.

Dutton, W. H. (2011). Freedom of connection, freedom of expression: the changing legal and regulatory ecology shaping the Internet. *UNESCO.*

Fort, C. L., & Haniya, S. (2023) Towards Digital Equity: Reimagining Digital Learning through the Lens of Bloom's Taxonomy. *The Role of Sustainability and Artificial Intelligence in Education Improvement* (pp. 168-184). Chapman and Hall/CRC.

Fortner, K., Normore, A. H., & Brooks, J. S. (2018). Digital equity and its role in the digital divide. *Crossing the bridge of the digital divide: A walk with global leaders* (pp. 3-17). Information Age Publishing, Inc Charlotte, NC.

Galbraith, D. A. (2018). Biodiversity in Canada: An Overview. *Global Biodiversity: Volume 4: Selected Countries in the Americas and Australia*, 79.

Gaspard, H., & Baker, P. M. A. (2022). Innovation and Digital Connectivity: Comparative Policy Approaches for Connecting Rural Communities in the United States and Canada. *Choices*, *37*(316-2022-1171).

Gerlach, A. J., Matthiesen, A., Bulkeley, K., & Gibbs, K. (2023). Using Technology to Enhance Services and Supports for Children and Youth with Disabilities and Medical Complexity and their Families in Canada: A Scoping Review. *Canadian Journal of Disability Studies*, *12*(2), 81-109. https://cjds.uwaterloo.ca/index.php/cjds/article/view/1012

Gilliland, A., McKemmish, S., Rolan, G., & Reed, B. (2019). Digital equity for marginalised and displaced peoples. *Proceedings of the Association for Information Science and Technology*, *56*(1), 572-574.

Godlewski-Faltynski, L. L. (2023). Emergent Digital Equity: Exploring Educators' Perspectives and Applications in Learning Technologies and Multicultural Education (Doctoral dissertation, George Mason University).

Government of Canada. (2023, December 5). *Rural opportunity, national prosperity: An Economic Development Strategy for rural Canada*. Language selection - Innovation, Science and Economic Development Canada. https://ised-isde.canada.ca/site/rural/en/rural-opportunity-national-prosperity-economic-development-strategy-rural-canada

Gonzales, A. L., Kim, Y., & Wang, L. H. (2023). Multisolving innovations: How digital equity, e-waste, and right-to-repair policies can increase the supply of affordable computers. *Policy & Internet*, *15*(2), 162-177. https://doi.org/10.1002/poi3.331

Hagerman, M., Beach, P., Cotnam-Kappel, M., & Hébert, C. (2020). Multiple Perspectives on Digital Literacies Research Methods in Canada. *International Journal of E-Learning & Distance Education*, *35*(1), n1.

Haight, M., Quan-Haase, A., & Corbett, B. A. (2016). Revisiting the digital divide in Canada: The impact of demographic factors on access to the internet, level of online activity, and social networking site usage. *Current Research on Information Technologies and Society* (pp. 113-129). Routledge.

Hardaker, G., Dockery, R., & Sabki, A. i. A. (2010). Cognitive learning styles and digital equity: searching for the middle way. *International Journal of Inclusive Education*, *14*(8), 777-794.

Heydon, R., Akiwenzie, E., Cooper, E., Ghannoum, H., Havord-Wier, D., Johns, B., MacAlpine, K.-A., McKee, L., Nagle, J., Neeganagwedgin, E., Potts, D. P., Poczobut, S., Coelho, C. R., Stooke, A., Tran, A., & Zhang, Z. (2023). Guidelines for virtual early childhood and family learning: An equity, diversity, inclusion, and decolonization-informed systematic review of the literature. *Journal of Early Childhood Research*. https://doi.org/10.1177/1476718X231188466

Innovation, S. a. E. D. C. (2022, 2022-04-11). Canada's Connectivity Strategy. Government of Canada. https://ised-isde.canada.ca/site/high-speed-internet-canada/en/canadas-connectivity-strategy

James, G. (1976). *Introduction to Canada*. *Gilad James Mystery School.*

Jun, W. (2021). A Study on Cause Analysis of Digital Divide among Older People in Korea. *Int J Environ Res Public Health*, *18*(16). https://doi.org/10.3390/ijerph18168586

Kazevman, G., Mercado, M., Hulme, J., & Somers, A. (2021). Prescribing Phones to Address Health Equity Needs in the COVID-19 Era: The PHONE-CONNECT Program [Viewpoint]. *J Med Internet Res*, *23*(4), e23914. https://doi.org/10.2196/23914

King, J., & Gonzales, A. L. (2023). The influence of digital divide frames on legislative passage and partisan sponsorship: A content analysis of digital equity legislation in the US from 1990 to 2020. *Telecommunications Policy*, 102573.

Koch, K. (2022). The territorial and socio-economic characteristics of the digital divide in Canada. *Canadian Journal of Regional Science*, *45*(2), 89-98.

Kokorelias, K. M., Nelson, M. L., Tang, T., Steele Gray, C., Ellen, M., Plett, D., Jarach, C. M., Xin Nie, J., Thavorn, K., & Singh, H. (2022). Inclusion of Older Adults in Digital Health Technologies to Support Hospital-to-Home Transitions: Secondary Analysis of a Rapid Review and Equity-Informed Recommendations [Review]. *JMIR Aging*, *5*(2), e35925. https://doi.org/10.2196/35925

Koss, F. A. (2001). Children falling into the digital divide. *Journal of International Affairs*, 75-90.

Laferrière, T., & Cox, M. (2021). Systemic Perspectives on New Alignments During COVID-19: Digital Challenges and Opportunities. *Canadian Journal of Learning and Technology*, *47*(4).

Lagacé, M., Charmarkeh, H., Laplante, J., & Tanguay, A. (2015). How ageism contributes to the second-level digital divide: The case of Canadian seniors. *Journal of technologies and human usability*, *11*(4), 1-13.

Lan Fang, M. (2022). Future of AgeTech: Transdisciplinary Considerations for Equity, Intersectionality, Sustainability, and Social Justice. *Proceedings of the 15th International Conference on PErvasive Technologies Related to Assistive Environments (pp. 536-41)*. https://doi.org/10.1145/3529190.3534757

Legal Aid Service Delivery in Rural and Remote Communities across Canada: Issues and Perspectives in the Context of COVID-19. (2023). Government of Canada. https://www.justice.gc.ca/eng/rp-pr/jr/laid-daide/literature.html

Liu, J., Cansu, E., & Campana, M. (2021). April 2021, From Silos to Solutions: Toward Sustainable and Equitable Hybrid Service Delivery in the Immigrant & Refugee-Serving Sector in Canada. https://www.tesl.ca/images/EN_Settlement_Sector__Technology_Task_Group_fina_report_recommendations.pdf

Looker, E. D., & Naylor, T. D. (2010). Digital diversity: Youth, equity, and information technology. *Wilfrid Laurier Univ. Press.*

Looker, E. D., & Thiessen, V. (2003). *The digital divide in Canadian schools: Factors affecting student access to and use of information technology*. Statistics Canada Ottawa.

Lyles, C. R., Nguyen, O. K., Khoong, E. C., Aguilera, A., & Sarkar, U. (2023). Multilevel determinants of digital health equity: a literature synthesis to advance the field. *Annual Review of Public Health*, *44*, 383-405.

Mandal, G. K., Diroma, F., & Jain, R. (2017). Netflix: an in-depth study of their proactive & adaptive strategies to drive growth and deal with issues of net-neutrality & digital equity. *IRA-International Journal of Management & Social Sciences*, *8*(2), 152-161.

Mark, J. P. W. (2015). *Video Games Around the World* [Book]. The MIT Press. https://stlawrence.idm.oclc.org/login?url=https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,uid&db=e000xna&AN=988342&site=ehost-live&scope=site

Micheli, M., Lutz, C., & Büchi, M. (2018). Digital footprints: An emerging dimension of digital inequality. *Journal of Information, Communication & Ethics in Society, 16*(3), 242–251. https://doi.org/10.1108/JICES-02-2018-0014

Middleton, C. (2021). Digital infrastructure for the post-pandemic world. *Toronto Metropolitan University*. https://www.torontomu.ca/diversity/reports/Digital-Infrastructure-for-the-Post-Pandemic-World.pdf

Murdoch, N. H., Ali, S., Anderson, A., Ahlquist, E., Chambers-Richards, T., & Langman, E. (2022). Pandemic transition to online for healthcare profession education: A webscrape seeking perspectives of innovation and digital equity. *Journal of Innovation in Polytechnic Education*, *4*(1), 91-97.

Murray, K. M. (2021a). Digital equity and digital legal resources: Workers' perspectives. Legal Aid BC. https://legalaid.bc.ca/sites/default/files/inline-files/Murray%20w-Fraser%202021%20ADE%20Workers%20Perspectives%20Report-FINAL.pdf

Murray, K. M. (2021b). Digital Equity In Access To Justice. Legal Aid BC. https://legalaid.bc.ca/about/reports/Achieving-Digital-Equity-Project

Neogi, P. K. (2023). Digital Haves and Have Nots: Why Universal Service and Digital Divide Policy Issues Have Persisted Over the Last 50 Years and Will Continue to Do So. *Available at SSRN 4527079*.

Newman L & Gurstein M (2016) Goodbye Digital Divide, Hello Digital Equity. https://www.croakey.org/goodbye-digital-divide-hello-digital-equity-and-why-we-need-to-go-the-extra-mile-to-get-it/

Ozmusul, M. (2013). Equity index in the School systems of selected OECD Countries. *Educational Research and Reviews*, *8*(18), 1722.

Pangrazio, L., Godhe, A.-L., & Ledesma, A. G. L. (2020). What is digital literacy? A comparative review of publications across three language contexts. *E-Learning and Digital Media*, *17*(6), 442-459. https://doi.org/10.1177/2042753020946291

Panzarella, L. (2020). Powering digital communities: How Public Libraries Can Foster Digital Inclusion and Digital Literacy in Ontario. *The iJournal: Student Journal of the University of Toronto's Faculty of Information*, *5*(2).

Parsons, C., & Hick, S. F. (2008). Moving from the digital divide to digital inclusion. *Currents: Scholarship in the Human Services*, *7*(2).

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*(3), 425-439. https://doi.org/10.1007/s10758-018-9384-x

Petretto, D. R., Carrogu, G. P., Gaviano, L., Berti, R., Pinna, M., Petretto, A. D., & Pili, R. (2024). Digital determinants of health as a way to address multilevel complex causal model in the promotion of Digital health equity and the prevention of digital health inequities: A scoping review. *Journal of Public Health Research*, *13*(1), 22799036231220352. https://doi.org/10.1177/22799036231220352

Pinsent-Johnson, C., & Sturm, M. (2017). Digital Opportunities and Barriers for Ontario's Vulnerable Adults. https://alphaplus.ca/wp-content/uploads/2022/07/Digital-Opportunities-Review-Ver-1.0-May-08-2017MS.pdf

Public Policy Forum. (2021). Future proof: Connecting Post-Pandemic Canada. https://ppforum.ca/wp-content/uploads/2021/09/FutureProof-ConnectingPost-PandemicCanada-OCT2021-PPF-EN.pdf

Quadrelli, B. (2017). Fundraising across digital divide: evidences from charity crowdfunding.

Ragnedda, M. (2020). *Enhancing digital equity: Connecting the digital underclass*. Springer Nature.

Ragnedda, M., & Ragnedda, M. (2020). Connecting the digital underclass. *Enhancing Digital Equity: Connecting the Digital Underclass*, 85-104.

Reddick, A., Boucher, C., & Groseilleirs, M. (2000). The Dual Digital Divide. *Ottawa: Public Interest Advocacy Centre*.

Reilly, C., Chan, C., & Gelowitz, C. (2017). Creating a Solid Foundation for Secondary Education and ICT through Technology Equitable Education. *Journal of Innovative Technology and Education*, *4*(1), 49-58.

Reisdorf, B., & Rhinesmith, C. (2020). Digital inclusion as a core component of social inclusion. *Social inclusion*, *8*(2), 132-137.

Resta, P., & Laferrière, T. (2015). Digital equity and intercultural education. *Education and Information Technologies*, *20*(4), 743-756. https://doi.org/10.1007/s10639-015-9419-z

Rogers, T., Smythe, S., Darvin, R., & Anderson, J. (2018). Introduction to equity and digital literacies: Access, ethics, and engagements. *Language and Literacy*, *20*(3), 1-8.

Roberts, T., & Associates Consulting. (2023). Achieving digital equity in the justice system: Final report. Department of Justice Canada. https://publications.gc.ca/collections/collection_2023/jus/J4-135-2023-eng.pdf

Sandoval, C. J. (2021). Technology Law As A Vehicle For Technology Justice: Stop ISP Throttling To Promote Digital Equity. *Berkeley Tech. LJ*, *36*, 963.

Schweitzer, E. J. (2023). digital divide. *Encyclopedia Britannica*.

Sciadas, G. (2002). The digital divide in Canada. *Science, Innovation and Electronic Information Division, Statistics Canada.* https://publications.gc.ca/collections/Collection/Statcan/56F0009X/56F0009XIE2002001.pdf

Scott-Dixon, K. (2008). Long (Standing) Digital Divisions: Women's IT Work in Canada. *Atlantis: Critical Studies in Gender, Culture & Social Justice*, *32*(2), 18-32.

Searson, M., Gibson, D., Myers, R., Hancock, M., Voogt, J., Knezek, G., Cox, M., Resta, P., Webb, M., & Tondeur, J. (2013). *EDUsummIT 2013 Action Agenda. Recommendations for researchers, policy makers and practitioners to address the educational challenges of a digitally networked world*.

Shade, L. R. (2024). Rethinking Digital Technology and Infrastructures in a Pandemic: Towards Digital Equity. In C. Padovani, V. Wavre, A. Hintz, G. Goggin, & P. Iosifidis (Eds.), *Global Communication Governance at the Crossroads* (pp. 283-296). Springer International Publishing. https://doi.org/10.1007/978-3-031-29616-1_16

Shafie, H. (2002). Digital equity: Issues and models. *Analisis*, *9*(1&2), 1-14.

Simmonds, E., Boyle, L., Hook, C., Lemieux, A., Lemieux, A., Simmonds, E., Boyle, L., & Hook, C. (2021). Teacher training in the digital era: Diversity, equity, accessibility and inclusion. Social Sciences and Humanities Research Council, Knowledge synthesis grant.

Singh, V., & Chobotaru, J. (2022). Digital Divide: Barriers to Accessing Online Government Services in Canada. *Administrative Sciences*, *12*(3), 112. https://www.mdpi.com/2076-3387/12/3/112

Smythe, S. (2022). Beyond Crisis, toward Justice: New Technologies in Community-Based Adult Learning (Part 2 of 3). *Adult Literacy Education*, *4*(1), 50-55.

Smythe, S., & Breshears, S. (2017). Complicating access: Digital inequality and adult learning in a public access computing space. *Canadian Journal for the Study of Adult Education*, *29*(1), 67-81.

Stevenson, S. (2009). Digital Divide: A Discursive Move Away from the Real Inequities. *The Information Society*, *25*(1), 1-22. https://doi.org/10.1080/01972240802587539

Sturm, M., & Pinsent-Johnson, C. (2021). The digital divide: An ongoing state of emergency in adult literacy programs. *Teaching in the Post COVID-19 Era: World Education Dilemmas, Teaching Innovations and Solutions in the Age of Crisis*, 71-81.

Statistics Canada. (2023, July 20). *Canadian Internet Use Survey, 2022*. The Daily. https://www150.statcan.gc.ca/n1/daily-quotidien/230720/dq230720b-eng.htm

Thomas, S., Howard, N. R., & Schaffer, R. (2022). *Closing the gap: Digital equity strategies for the K-12 classroom*. International Society for Technology in Education.

Torous, J., Jän Myrick, K., Rauseo-Ricupero, N., & Firth, J. (2020). Digital Mental Health and COVID-19: Using Technology Today to Accelerate the Curve on Access and Quality Tomorrow. *JMIR Mental Health*, *7*(3), e18848. https://doi.org/10.2196/18848

Treviranus, J. (2018). Learning differences & digital equity in the classroom. In: Voogt, J., Knezek, G., Christensen, R., Lai, KW. (eds) Second Handbook of Information Technology in Primary and Secondary Education . Springer International Handbooks of Education. Springer, Cham. https://doi.org/10.1007/978-3-319-53803-7_74-1

Turin, T. C., Subroto, S., Raihan, M. M., Koch, K., Wiles, R., Ruttan, E., Nesset, M., & Chowdhury, N. (2022). Identifying Challenges, Enabling Practices, and Reviewing Existing Policies Regarding Digital Equity and Digital Divide Toward Smart and Healthy Cities: Protocol for an Integrative Review. *JMIR Research Protocols*, *11*(12), e40068.

Ventrella, F. M., & Cotnam-Kappel, M. (2024). Examining digital capital and digital inequalities in Canadian elementary Schools: Insights from teachers. *Telematics and Informatics*, *86*, 102070.

Weeden, A., & Kelly, W. (2021). Canada's (Dis) connected Rural Broadband Policies: Dealing with the Digital Divide and Building 'Digital Capitals' to Address the Impacts of COVID-19 in Rural Canada. *Journal of Rural and Community Development*, *16*(4).

White, Z. (2023). Re-envisioning digital equity and connection literacy for older adults. *North Carolina Medical Journal*, *84*(2).

Winter, J., & Boudreau, J. (2018). Supporting self-determined indigenous innovations: Rethinking the digital divide in Canada. *Technology Innovation Management Review*, *8*(2).

Woodford, E. (2022). A Path to Decolonizing the Online Classroom. *Northwest Journal of Teacher Education*, *17*(1), 4.

CANADIAN CENTRE FOR NONPROFIT DIGITAL RESILIENCE