# Dimensions of Digital Inclusion: A Review of Research and Practice, Part 2

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**Revised May 2021**

**Prepared for the City of Toronto Research Project**

**Digital Access: Who is underserved and why**

## Introduction

This report offers insights on programs designed to increase digital inclusion, through a dual focus on digital literacy and on options to make services more affordable. Although digital literacy does not explicitly encompass affordability concerns, the two go hand in hand – without affordable services, the skills acquired through digital literacy programs would remain underutilized or completely untapped, leaving people digitally excluded. Recognizing the importance of digital access as an enabler of economic and social inclusion, many have argued that the Internet should be a basic human right, provided publicly to those who cannot afford it (United Nations, 2016; Reglitz, 2020). Subsequently, certain municipalities have explored the possibility of treating broadband access like a public utility, leveraging private-public partnerships to provide next generation access in a specialized manner that is not currently available in the market (City of Seattle, 2015). Against this backdrop, this report consists of three distinct, yet interconnected sections. The first section identifies, outlines and evaluates a series of digital literacy programs providing services in Canada and the US. To underscore the importance of cultivating a coordinated effort towards digital literacy objectives, the framing of the first section is centred around the question: What types of digital literacy programs are being offered to the most vulnerable and underserved cohorts? The second part of this report highlights several different subsidy schemes throughout North America, and by doing so, illustrates the institutional precedent for subsidizing access to public utilities and broadband. The third section considers possible recommendations and offers conclusions.

## The Contours of Digital Literacy

### *Digital Literacy*

The American Library Association's (ALA) 2013 definition of digital literacy—"the ability to use information and communication technologies to find, evaluate, create and communicate information, requiring both cognitive and technical skills"—is a widely circulated and oft cited rendition of what it means to be digitally competent (ALA, 2013). Despite the pervasive nature of this definition (e.g. 2017 Toronto Broadband Report, Nordcity's 2018 report for the Toronto Public Library, National Digital Inclusion Alliance, and a myriad of academic resources), it fails to address the contextual complexities that foreground the execution of effective digital literacy programs. In practice, effective digital literacy programs must have a deep understanding of the communities that they serve, equipping these communities with relevant digital skills, a greater degree of digital confidence, and access to a range of contextually-appropriate and affordable devices (ADIA, 2020). At the same time, it is equally important to strive for increased coordination between digital literacy efforts throughout the various organizational levels (e.g. Federal, Provincial, Municipal, private interest and non-profits) in order to amplify the ameliorative potential of digital literacy strategies (ADIA, 2020). Increasingly, key societal, civic and economic processes are becoming digitized, accelerated in large part due to the COVID-19 pandemic. As the Australian Digital Inclusion Alliance recognizes, the "COVID-19 pandemic has not only accelerated the digitization of our daily life, but has moved it from a convenience to a necessity" (ADIA, 2020).

### *Digital Literacy in Canada*

In Canada, there are many federally funded digital literacy programs, however it is important to note that none of these programs are offered in every province. Moreover, Canada

has yet to develop an overarching national digital literacy framework, despite the protestations from key stakeholders (e.g. Media Smarts) and industry experts (e.g. Brookfield, 2017). Without an overarching digital framework in place, efforts to address digital literacy remain fragmented throughout the various organizational levels (Brookfield, 2017). In lieu of an explicit national digital strategy, in 2017 the Government of Canada invested $29.5 million in funding (over a five-year period) in the Digital Literacy Exchange Program (DLEP), supporting the Innovation and Skills Plan (Innovation and Skills Plan, 2017). The DLEP supports non-profit organizations in developing and implementing digital literacy initiatives at "pre-existing facilities such as public libraries, refugee housing complexes and senior homes", thereby targeting groups that traditionally have lower than average digital literacy skills (Innovation and Skills Plan, 2017).

## What is Being Offered, and to Whom?

### *Flexible Programs for Adult Learners*

The Youth Teaching Adults program offers any organization the opportunity to run a digital literacy workshop, supplying interested organizations with online training, a free digital literacy lesson plan, and $100 honorarium for the first 100 applicants (ABC Life Literacy Canada, 2021). As the title of this program suggests, the one-on-one digital literacy training is predominantly conducted by student volunteers, with supplementary supervision from a program facilitator (i.e. a staff member from the interested organization). Interested organizations need to bring together adults who want to upgrade their digital literacy toolkit and youth volunteer-tutors who want to assist adults in learning relevant digital skills (ABC Life Literacy Canada, 2021). Additionally, interested organizations are required to procure a place for workshops to be run, either physically (e.g. schools, libraries, community centres, after-school programs etc.) or online. The cornerstone of this initiative is the flexibility it affords, allowing adult learners to

choose the digital skills and devices that are most relevant in their lives, while also granting the interested organization complete control in terms of where, when and how the program is run.

Media Smarts, with funding from DLEP and in collaboration with the YWCA, developed the DigitalSmarts program, consisting of a series of eight, one hour-long workshops (Media Smarts, 2019). The course material, which was designed through community consultation, covers a wide range of broad topics including, protecting privacy and security, job searching, shopping and online banking, using social media, searching the Internet effectively, and managing screen time for children. The workshops are divided into three skill levels: Discover (beginner users and basic skills), Explore (extending the practical use of the Internet), and Navigate (designed for active Internet users). Before designing the workshops and course materials, Media Smarts and the YWCA conducted a series of focus groups aimed at understanding the most relevant needs, challenges and topics. Roughly, 66 percent of those who participated in the focus groups had access to their own devices (with the majority being smartphone users only), while only one in five had an at home Internet package. This data underscores the importance of leveraging existing community spaces that offer publicly accessible devices and Internet connectivity. Moreover, this data suggests, that in the context of the pandemic, when public access venues and community spaces are closed, only 20 percent of potential participants would be able to take advantage of online digital literacy workshops.

### *The Intersection of Multiply Excluded Cohorts*

Altered Minds, another beneficiary of DLEP funding, has established the Computers4Life program. Computers4Life, which is exclusively offered in Manitoba, focuses on building digital competencies for adult clients with no computer experience and limited English ability (i.e. Canadian Language Benchmark 1-4) (Altered Minds, 2021). These workshops are comprised of

a two-level digital skills building curriculum wherein the first level covers basic digital skills (e.g. how to use a keyboard and mouse, create documents, digital translation skills etc.) and the second level covers more technical or practical skills (e.g. store information online, complete online forms, practice video conferencing etc.). The novel component of the Computers4Life program is that after participants complete level one, they are eligible to receive a completely free or low-cost desktop computer. Although it is reasonable to assume that many participants will be without an at-home broadband subscription, desktop recipients will still be able to strengthen offline digital skills (i.e. typing, mouse control and organizing documents), while in some cases, the free or low-cost desktop may spur at-home broadband adoption. The Computers4Life program could be enhanced by offering mobile hotspots to, or finding low-cost home Internet options for, those who complete level one, so these participants can more fully benefit from the low-cost or free desktop computer.

The Immigrant Seniors Go Digital (IMSGD) program, developed by the S.U.C.C.E.S.S social service organization in British Columbia, also falls under the DLEP funding umbrella. This program offers immigrant populations, aged 55 and older, the opportunity to enhance their digital readiness in a more inclusive environment (S.U.C.C.E.S.S, 2021). Classes are structured around age-appropriate digital competencies, including basic device use, emails, text messaging, digital photos and how to locate online services. All classes are conducted in English, with support services in Cantonese, Mandarin, Korean and Farsi. The approach implemented by the IMSGD program addresses the needs of a niche population that identifies with multiple digitally excluded cohorts. This targeting enables participants to benefit from a more curated curriculum that addresses the intersectional needs of immigrant populations.

### *Programs for Homeless, Low Income and Unconnected Populations*

In recent years, socially progressive organizations working within Vancouver's Downtown Eastside, in particular the Downtown Eastside Literacy Roundtable (DELR), have shifted and expanded their focus from traditional literacy education towards digital literacies and providing digital resources (Booth, 2017). Project Linkvan.ca[1], a web-based application designed to connect Downtown Eastside community members with Internet service hubs and other digital resources, is a product of this shift in focus. Project Linkvan.ca was created by the DELR in collaboration with the University of British Columbia's Learning Exchange (UBCLE) and Downtown Eastside community members. The underlying assumption that informed the creation of Project Linkvan.ca is that although similar online resources are available, "they are complex and often only accessible with strong digital and essential literacy skills". To address this issue, Project Linkvan.ca provides "an easy to navigate icon based platform designed for all literacy levels". The Linkvan.ca platform uses Google's location services to provide users with a list of services that are sorted by proximity and integrated with walking directions to their desired facility (Booth, 2017). Additionally, the analytics that are generated from using the application, afford digital service facilities, all levels of government and other relevant stakeholders a comprehensive insight into the most in-demand services, and which geographical areas represent critical junctures for these in-demand services (Booth, 2017).

Leveraging the synergistic benefits of Project Linkvan.ca, the DLER and UBC Learning Exchange (UBCLE) have partnered with Carnegie Learning Centre, Oppenheimer Park and Vancouver Public Library to "offer peer-supported, pop-up, tech cafes located in parks, local shelters and other places where people gather" (Booth, 2017). "Rather than suggesting people to

[1] Project LinkVan.ca. (2021). Linkvan, Retrieved from https://www.linkvan.ca/.

seek out training in places where they felt vulnerable", this series of innovative digital literacy events were planned, "to bring training to the community". These community ambassador-led tech pop-ups seek to bridge individualized technology education with non-traditional gathering places, thereby forging new relationships with adult learners in welcoming and familiar environments. The peer-supported, pop-up model for participatory digital learning is the focus of on-going user experience explorations and interviews conducted by Simon Fraser University (Booth, 2017; Smythe, Pelan & Breshears, 2018).

In response to the COVID-19 pandemic, the US-based National Digital Inclusion Alliance (NDIA) created, implemented and oversees various iterations of the Digital Navigator concept. Digital Navigators is a COVID-friendly adaptation of traditional digital literacy programs, supplying one-to-one dedicated technological support via phone services (Roach, 2020). Encompassing a full range of support solutions and resources (e.g. basic digital literacy education, assisting digitally excluded populations to find affordable devices and broadband options), Digital Navigators represents a crucial lifeline for unconnected communities and individuals. In essence, the Digital Navigators model functions as a flexible framework that can be implemented by various organizations (with nationwide reach) to suit the needs of their communities (hyper-local deployment). Funding for this initiative takes many different forms, and some implementations are federally-funded (e.g. Salt Lake City Public Library), privately-funded (e.g. Local Initiatives Support Corporation or Rural LISC) or a combination of both (e.g. a workforce development program in Ohio is partially funded by the Department of Labor) (Balboa, 2021). For example, the Salt Lake City Public Library (SLCPL) has strategically partnered with community-based organizations (e.g. University Neighbourhood Partners, Suazo Business Centre and Catholic Community Services) to bring the Digital Navigators model to

neighbourhoods that have been traditionally underserved. Through these strategic hyper-local partnerships with trusted organizations, the Digital Navigators framework offers flexibility to best serve these already disadvantaged communities in the most relevant way possible.

## Affordability and Subsidy Schemes

### *Affordability Challenges for Low-income Canadians*

The CRTC Communications Monitoring Report shows that Canadian households in the lowest income quintile (less than $32,914 per annum) spend an average of 9.1 percent of their income on communications services, including 2.2 percent on broadband (CRTC, 2019). Affordability challenges put low-income Canadians in precarious financial positions, often having to sacrifice leisure, food, clothes, gas and even medication, in order to pay for Internet access (ACORN, 2019, based on 2017 statistics Canada data). Canadian broadband subsidy programs, which are discussed in more detail later in the report, still leave a large portion of low-income Canadians without an opportunity to access more affordable Internet. Subsidy programs are an important part of a robust digital strategy, ensuring that poor households can access basic or essential services, however the eligibility determinants (e.g. poverty line or poverty criteria) can directly impact who is able to take advantage of these social benefits (Komives, Foster, Halpern & Wodon, 2005). For example, Canada's Connecting Families Initiative, a program that offers a $10 a month Internet plan, is only available "to families who currently receive the maximum Canada Child Benefit", thus excluding some low income families (ACORN, 2020).

### *Internet and Device Subsidies for Canada and the United States*

Established in 2018, the Connecting Families Initiative is another component of the Innovation and Skills Plan, presenting eligible low-income Canadians with a refurbished desktop and a more affordable home Internet option (starting at $10 a month) (ISED, 2021). The

Connected Families Initiative relies on a mix of private, non-profit and public sectors efforts to ensure that more Canadians have Internet access at home (ISED, 2021). In regard to private sector broadband subsidy programs, Roger's Connected for Success offers low-cost Internet to subsidized tenants, seniors and individuals receiving disability or income support (Rogers, 2021). Through this plan, eligible participants receive "high-speed Internet" (25 Mbps download and 5 Mbps upload) for $9.99 plus tax (Rogers, 2021). Similarly, TELUS' Internet for Good program offers low-income households currently receiving the maximum Canada Child Benefit, Internet connectivity for $9.95 per month for 24 months (TELUS, 2021). The Internet for Good provides qualified households with "high speed" Internet (25 Mbps download), unlimited data, and access to digital literacy support (TELUS Learning Centres) and other digital safety resources (TELUS Wise) (TELUS, 2021).

The Lifeline program is one of the longest running telecommunications subsidy programs in North America, beginning in 1985 as a way to help low-income families pay for telephony services (FCC, 2020). In 2016, the Federal Communications Commission (FCC) initiated a modernization reform process wherein broadband and mobile services became part of the Lifeline subsidy ecosystem. As part of this modernization reform, the FCC set out minimum standards for Lifeline-supported services, including mobile voice, mobile-broadband speed, mobile-broadband usage allowances, fixed-broadband speed, and fixed-broadband usage allowances. From Lifeline's inception in 2016 to November 2020, the minimum standards have incrementally increased year-over-year for mobile voice (500 monthly minutes to 1000 monthly minutes), mobile broadband usage allowances (500 MB to 11.75 GB), fixed-broadband speed (10/1 Mbps to 25/3 Mbps) and fixed-broadband usage allowances (150 GB to 1024 GB). The $9.25 monthly broadband subsidy provided by the Lifeline program has remained consistent

over this time period. Eligibility for the Lifeline program is determined by income (based on federal poverty guidelines) or participation in a federal assistance program, as confirmed through a National Verifier program.

The Emergency Broadband Benefit (EBB) Program, a more recent and direct example of COVID-related broadband funding in the US, was created through the Consolidated Appropriations Act (Congressional Research Service, 2021). The EBB subsidizes broadband for households that have suffered income loss during the course of the pandemic or households that qualify for other social programs (e.g. school lunch programs). The EBB is classified as a temporary measure, available until the $3.2 billion USD budget is expended or six months after the current public health emergency is terminated. When compared to the Lifeline program, the EBB offers broader eligibility criteria (for both Internet providers and low-income households) and significantly higher monthly subsidies, prompting consumer advocates to suggest that the EBB could provide a useful template to inform or completely replace the Lifeline program. In most cases the EBB can subsidize up to $50 monthly towards any residential broadband package from an approved provider, allowing recipients to choose the service that best suits their needs. The benefit program also offers up to $100 towards computing devices supplied by participating broadband providers (Congressional Research Service, 2021).

The Coronavirus Aid, Relief and Economic Security (CARES) Act is a provision of more than $2 trillion USD in economic stimulus (US Department of the Treasury, 2020). This stimulus package designates $150 billion, through the Coronavirus Relief Fund (CRF), to help state, local and tribal governments navigate the COVID-19 outbreak. Although these funds are not explicitly marked for broadband affordability, digital literacy or infrastructure development, many states and municipalities have used this funding to expand connectivity in four predominant areas:

increasing online access for K-12 and post secondary students, supporting tele-health services, deploying more public Wi-Fi access points and investing in residential broadband infrastructure (PEW, 2020). At a statewide level, Alabama, through the Alabama Broadband Connectivity for Students program (ABC Students), used CARES funding to increase online access for K-12 students by offering vouchers to eligible low-income families for free Internet access (ABC Students, 2021). The free Internet vouchers were exclusively designated for families who have a child enrolled in the National School Lunch Program. Similarly, the State of Connecticut, through the Everybody Learns Initiative, also used CARES funding to better facilitate the transition to distance learning for K-12 students (Noonoo, 2020). The Everybody Learn Initiative distributed 140,000 devices (mostly Chromebooks), negotiated discounts with five Internet service providers for 44,000 at home connections, and assisted districts in purchasing 13,000 mobile hotspots for children with more precarious living environments (e.g. moving between households, insecure housing and long commutes to school).

At a local level, municipalities in Houston, Sacramento and Charlotte have each used CARES funding to bridge the digital divide in a unique way. In Houston, the Health Equity Response (H.E.R) Task Force partnered with Comcast to provide approximately 5000 free Internet vouchers to qualified households (Office of the Mayor, 2020). To be eligible to receive a free Internet voucher, interested families needed to demonstrate that their income was lower than 80 percent of the median area average, while also identifying with one of the following groups: over 65 years of age, differently-abled, have children less than five years of age, or an "opportunity youth" (i.e. persons aged 16-24 who live on their own). In response to the pandemic, Sacramento allocated $1 million in CARES funding to provide 10,000 qualified households (i.e. focusing on low-income households with children and/or seniors) with three

months of free Internet and a refurbished Dell Chromebook for up to 1000 households (City of Sacramento, 2020). Additionally, after the completion of the initial three months of completely free Internet, the City of Sacramento attempts to bridge any disruption in affordable services by advising and assisting the participating households in registering for subsidized Internet ($10 per month for 50 Mbps download 5 Mbps upload and a 1.2TB data allowance) through Comcast Essentials. By contrast, Digital Charlotte did not use their CARES funding to provide a subsidy, instead, recognizing the importance of efficiently using CARES money to reach more long-term digital connectivity objectives, Digital Charlotte allotted some CARES funding to launch their own variation of the Digital Navigators program[2] (City of Charlotte, 2020).

Outside of the CARES Act funding nexus, EPB, Chattanooga's public utility, operates a gigabit broadband network offering low-income households a 100 Mbps broadband service at a discount of over 50 percent ($26.99 per month compared to $57.99 regularly) (EPB, 2020a). Moreover, EPB has partnered with Hamilton County Schools (HCS) to ensure that all children can access the Internet during the pandemic. As such, families in the EPB service area with students who participate in HCS EdConnect program are eligible to receive a router and at least 100 Mbps Internet service at no charge (EPB, 2020b). In a similar fashion, Greenlight—the community owned broadband provider in Wilson, North Carolina—offers its basic Internet package (50 Mbps symmetrical service) for $10 a month for residents that qualify for the Lifeline program (Greenlight, 2020). With support from local businesses, civic leaders and public donations, the City of Philadelphia, through the PHLConnectED program, has committed to providing free Internet for students until the summer of 2022 (City of Philadelphia, 2021). Families can access their free service through Comcast Essentials or T-Mobile hotspots,

[2] https://digitalcharlotte.org/digitalnavigators/

depending on the stability of their housing situation. Households qualify for the PHLConnectED subsidy if they do not have fixed-broadband access at home, have mobile phone Internet access only, are experiencing homelessness or housing insecurity, or have students who participate in remote learning in locations without Internet access.

These endeavours, though important, do not represent long-term solutions in remedying inadequate broadband access (PEW, 2020). As PEW Research Center suggests, policymakers should prioritize connecting more residences to existing infrastructure, investing in planning and oversight for long term solutions and increased coordination across the various government levels. There is a role for subsidies for very low-income households, along the lines of the energy subsidies discussed below, but subsidies should not be understood as a substitute for other initiatives focused on increasing affordability of communications services in Canada (e.g. ISED 2020).

***Canadian Energy Subsidy Programs***

In Ontario, there are a number of utility subsidy programs aimed at providing financial relief to qualified households. In response to the COVID-19 pandemic, the Government of Ontario instituted the COVID-19 Energy Assistance Program (CEAP) to support residential customers who are struggling to pay their energy bills as a result of the pandemic (Ontario Energy Board CEAP, 2021). Through CEAP, qualified residential customers can receive a one time payment of up to $750 for both their electricity and natural gas bills. To be eligible for CEAP, customers must have an open account with an electricity, unit sub-metering or gas provider as well as overdue payments from one or more electricity or gas bill since March 17, 2020. Outside of the context of the pandemic, the Government of Ontario offers two additional utility subsidy programs, the Ontario Electricity Support Program (OESP) and the Low-income

Energy Assistance Program (LEAP). The OESP offers eligible low-income customers an on-going credit on their electricity bill. The size of the credit is based on the total household income after taxes and the number of people living in the household (e.g. for a one person household the income threshold is $28,000 or less, for a three or four person household the income threshold is $48,000 or less etc.). The LEAP is designed to assist low-income households who are in immediate danger of having their electricity or natural gas services disconnected (Ontario Energy Board LEAP, 2021). In these emergency type situations, low-income customers can receive up to $500 towards their electricity bill and $500 towards their natural gas bill.

***American Energy Subsidy Programs***

In the United States there is a precedent for providing low-income individuals with federally-funded, state-funded and municipally-funded utility subsidies (see appendix for a comprehensive list of subsidy programs). The Low Income Home Energy Assistance Program (LIHEAP) helps qualified households in managing the costs associated with home energy bills, energy crises, and weatherization and minor energy-related home repairs (Office of Community Services, 2021). The rules around LIHEAP qualifications are set by a state-operated LIHEAP office, and subsidy amounts are dependent on various contextual factors, including geographical location (i.e. where you live), income, energy costs or needs, and family size. Funding for the LIHEAP program is also quite limited, so being qualified for LIHEAP does not guarantee that you will receive assistance (only approximately 20 percent of households who qualify receive benefits).

At the state level, California offers two distinct discount programs—the California Alternative Rates for Energy program (CARE) and the Family Electric Rate Assistance program (FERA)—which help to offset utility costs for over 1.4 million Californians (California Public

Utilities Commission, 2021). CARE is a state mandated program that offers low-income participants a monthly discount of at least 20 percent on their electricity or gas bills. The FERA program provides low income households, consisting of three or more members, an 18 percent discount on their electricity bill only. At a municipal level, the Sacramento Municipal Utility District (SMUD) supplies low-income and working poor families a discount of approximately 30 percent on monthly energy costs (American Public Power Association, 2020). SMUD provides this discount through their Energy Assistance Program Rate (EAPR). The EAPR operates with an annual budget between $30-35 million USD, and currently serves 75,000 customers within the SMUD boundaries.

## Synthesis and Recommendations

### *Three Feasible Digital Literacy Options*

This report has outlined several interesting and innovative digital literacy models, collaborations and approaches. Although each program has benefits that could assist Toronto in elevating key digital competencies for many excluded groups, three programs seem most feasible for seamless integration into Toronto's already complex digital literacy landscape. First, Altered Mind's Computers4Life program incorporates digital literacy training and subsidized devices, while also targeting a niche group (low-income, limited English ability) that is often digitally excluded. As previously mentioned, the Computers4Life program would be strengthened by offering desktop recipients mobile hotspots or assisting them in finding low-cost at-home broadband packages. The deficiencies in the Computers4Life model could be remedied by leveraging synergies through the Toronto Public Library's Hotspot Lending program. With this addition, the Computers4Life program would be a one-stop digital inclusion framework, providing skills, devices and access to low-income participants with limited English ability.

Other variations of this program could be implemented to address other multiply excluded cohorts, particularly where low-income is the common denominator (e.g. low-income and older-adults, low-income and Indigenous etc.).

Second, the capacity to generate, understand and mobilize data is a distinguishing component of any effective digital literacy strategy. As such, the Linkvan.ca project represents a useful template in developing an easily accessible, data-driven resource hub. The Linkvan.ca project acknowledges that digital disparities are never one-dimensional, and that these divides reproduce already existing socioeconomic and sociocultural inequities based on a lack of resources and opportunities. The approach recognizes the need to support traditional literacy as well as digital literacy. Establishing a similar resource platform with an underlying data-driven backend is a low-risk, high-reward tool in bridging digital and conventional literacy discrepancies. This model is the foundation of any effective digital literacy strategy, and the importance of developing a similar tool in the context of Toronto cannot be understated.

Third, Media Smarts community research found that, only one in five participants in their Digital Smarts program had access to broadband at home. This means, in the context of the pandemic, roughly 80 percent of already digitally excluded populations would not be able to take advantage of digital literacy programs offered online. This data underscores the need to offer unconnected populations an alternative way to access the affordances of digital literacy programs through non-digital means (see Middleton, 2021 for a discussion of options). The Digital Navigators framework is an illustrative example of how to reach these unconnected cohorts, as it functions by cultivating hyper-local partnerships with trusted community organizations while using a call-in based approach to circumvent issues of access for unconnected households.

*The Missing Piece*

This extensive review of digital literacy programs shows that one essential digital competency that is absent from the entirety of digital literacy curricula is the competency to assess price plans and service offerings from Internet and mobile providers, and to negotiate deals that best suit individuals' needs. These increasingly necessary negotiations privilege those consumers who have the time, energy and the knowledge to call their service provider, often allowing this group to negotiate a lower price on their Internet or mobile bill. Recognizing this problematic reality and incorporating skills to address it will equip excluded individuals with another pragmatic digital instrument. Adding this important element to already existing digital literacy programs will be particularly beneficial for low-income households who are not eligible to receive broadband subsidies (i.e. those who are just above the poverty line).

***Broadband Subsidies***

It must be noted that the lack of affordable broadband in the current marketplace is not exclusively a social problem to be solved through publicly funded subsidization programs. Ongoing policy efforts are needed to increase competition and create real choice in the Canadian broadband market so that Internet service providers offer more affordable options, and subsidization is reserved only for the lowest income earners. Nonetheless, this research suggests that when subsidies are warranted, the US Emergency Broadband Benefit model provides a useful guideline for developing and implementing a broadband subsidy program. The EBB offers low-income households a significant monthly subsidy (up to $50) towards their existing Internet bill. By structuring the subsidy in this way, the EBB allows low-income households to purchase an Internet package that best suits their needs in terms of speed and data allowances. Implementing a similar model to the EBB would give low-income households in Toronto a

flexible subsidy alternative, especially when compared to the more rigid structures of Connected Families and Connected for Success (e.g. pre-set speeds and data allowance caps).

**Conclusion**

The framing of this report is centred around digitally excluded individuals and groups, highlighting initiatives and ideologies that seek to address digital literacy disparities in unique and innovative ways. Subsequently, the targeted and purposeful framing of this report is meant to act as a commentary against fragmented governmental approaches that limit the amplifying effects of digital literacy efforts. Increased coordination among the various levels of government begins with the development and implementation of a national digital literacy strategy. A new digital literacy agency could be established with the specific mandate to champion digital literacy, overseeing the digital literacy ecology while clearly demarcating best practices and overarching objectives. Furthermore, the pandemic has magnified the significant inequalities regarding digital literacy, Internet access and affordability. As a result, many new digital literacy programs and broadband subsidy schemes have been implemented to lessen the negative impact of COVID-19. These COVID-influenced measures should not have an inherent expiry date, instead it is essential to assess the validity in retaining affordability and digital literacy measures taken in the immediate response to COVID-19. Lastly, this report has shown that there is a precedent for subsidizing both public utilities and broadband for the lowest income households within the context of the pandemic and under more normal circumstances.

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# Appendix A- Subsidy Chart

North American Subsidy Programs

| Program Name | Country | Type of Subsidy | Government Level of Funding | Eligibility Criteria | Subsidy | Longevity | Website |
|---|---|---|---|---|---|---|---|
| Low-income Home and Energy Assistance Program (LIHEAP) | United States | Utility | Federally-funded | Set by State offices | Contextual (based on, family size, energy costs or needs). | Long-term | https://www.benefits.gov/benefit/623 |
| California Alternative Rate for Energy Program (CARE) | United States | Utility | State-funded | Based on number of household members and household income (1-2 = $34,480, 3 = 43,440 etc.). May also qualify by process of participation with other social programs (Medicaid, FoodStamps/Snap, National School Lunch's Free Lunch Program etc.). | Contextual, but at least 20% off electricity or gas bill. | Long-term | https://www.cpuc.ca.gov/lowincomerates/ |
| Family Electric Rate Assistance Program | United States | Utility | State-funded | Low-income household with three or more people that slightly extends CARE (3 = $54,300, 4= 65,500 etc.). | 18% of electricity bill only. | Long-term | https://www.cpuc.ca.gov/lowincomerates/ |
| Energy Assistance Program Rate (EAPR) | United States | Utility | Municipally-funded Sacramento Utility District (SMUD) | Based on number of household members and monthly household income (1-2 = $2903, 3=$3660 etc.). | Contextual, but in most cases approximately 30% of home energy costs. | Long-term | https://www.publicpower.org/periodical/article/affordable-energy-whole-community |
| Lifeline Program | United States | Broadband | Federally-funded | Income must be at or below 135% of federal poverty guidelines. | Up to $9.25 monthly and up to $34.25 tribal lands. | Long-term | https://www.fcc.gov/general/lifeline-program-low-income-consumers |
| Coronavirus, Aid, Relief and Economic Security Act (CARES) | United States | Contextual based-on City objectives, but many have used funds to increase connectivity. | Federally-funded | N/A | $150 billion dispersed between state, local and tribal governments. | COVID-influenced | https://home.treasury.gov/policy-issues/cares |
| Emergency Broadband Benefit (EBB) | United States | Broadband and Device | Federally-funded | Based on participation in other social programs including, Lifeline, reduced price school lunch program). Or experienced a substantial loss of income due to the pandemic ($99,000 single filers, $198,000 joint filers) | In most cases $50 broadband subsidy and $100 towards a device. | COVID-influenced | https://www.fcc.gov/broadbandbenefit |
| EPB Chattanooga (2020a) | United States | Broadband | Municipally-facilitated | Low-income households with a student who participates in the National School Lunch Program. | 100 Mbps service offered at a discounted price: $26.99 per month compared to $57.99 regularly. | Long-term | https://epb.com/about/news/epb-to-offer-discounted-internet-for-low-income-families/ |
| EPB Chattanooga (2020b) | United States | Broadband | Municipal and Foundations | Low-income households with a student who participates in the Hamilton County Schools EdConnect program. | Completely free100 Mbps broadband service. | Long-term | https://epb.com/about/news/hamilton-county-and-chattanooga-use-smart-city-infrastructure-to-bridge-the-digital-divide-for-students/ |
| Greenlight North Carolina | United States | Broadband | Municipally-facilitated | Low-income households that qualify for the Lifeline program. | Basic Internet package 50 Mbps download and 50 Mbps upload for $10 per month. | Long-term | https://www.greenlightnc.com/connecting-wilson |
| COVID-19 Energy Assistance Program (CEAP) | Canada | Utility | Provincially-funded | One or more overdue gas or electricity bills since March 17th, 2020. | Up to $750 for over due gas and electricity bills. | COVID-influenced | https://www.oeb.ca/rates-and-your-bill/covid-19-energy-assistance-programs |
| Ontario Electricity Support Program (OESP) | Canada | Utility | Provincially-funded | Contextual based on number of people in the household and total household income (1= $28,000 or less, 3-4 = $48,000 or less). | Contextual based on number of people in the household and total household income. | Long-term | https://ontarioelectricitysupport.ca |
| Low-income Energy Assistance Program (LEAP) | Canada | Utility | Provincially-funded | Low-income households that are in immediate danger of having their electricity or natural gas shut-off. | Up to $500 off their electricity bill, and up to $500 of their natural gas bill. | Long-term | https://www.oeb.ca/rates-and-your-bill/help-low-income-consumers/low-income-energy-assistance-program |
| Connecting Families Initiative | Canada | Broadband and Device | Federally-funded | Low-income households who are issued the maximum Child Care Benefit. | Offers a broadband plan (25/5Mbps, and 100GB of data) for $10 a month. Also offers free refurbished computer. | Long-term | https://www.ic.gc.ca/eic/site/111.nsf/eng/home |
| Connected for Success | Canada | Broadband and Low-cost device option | Privately-funded (Rogers) | Subsidized tenants, seniors, those receiving disability and those receiving income support. | Offers a broadband plan (25/5Mbps, and 100GB of data) for $9.99 a month. Also offers option to purchase low-cost device | Long-term | https://about.rogers.com/giving-back/connected-for-success/ |
| Internet for Good | Canada | Broadband and Low-cost device option | Privately-funded (TELUS) | Receive the maximum Child Care Benefit. Or Canada Child Benefit statement showing an income of $31,120 or less. | Offers a broadband plan (25/5Mbps, and unlimited data) for $9.95 a month. Also offers option to purchase low-cost device | Long-term (24 month increments) | https://www.telus.com/en/social-impact/connecting-canada/internet-for-good |