



SOCIAL CONNECTEDNESS
FELLOWSHIP PROGRAM



Building Digital Literacy Among Older Adults: Best Practices

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EXECUTIVE SUMMARY

This research project, in partnership with HelpAge Canada, explored best practices for building digital literacy among older adults. HelpAge Canada, a national charity focused exclusively on improving the quality of life of older adults across Canada and internationally, has created and oversees several digital literacy programs including the Dig-IT program. Dig-IT, short for digital information technology, is a national digital literacy program that provides devices, data, IT support, and training to low-income older adults who are 65 years and older. The aim of this research project was to explore and understand the barriers and facilitators experienced by older adults when learning digital literacy skills.

Semi-structured, in-depth qualitative interviews were conducted with 10 stakeholders, including program participants and program delivery personnel in the Dig-IT program, researchers in the field of digital literacy, as well as individuals from leading organizations providing digital literacy training to older adults in North America.

Findings from the interviews revealed barriers relating to **affordability** as well as **fear** and **anxiety**. The ability to afford a device and internet services were described as “out of reach for many older adults”, and acted as barriers to acquiring digital literacy skills and contributed to the digital divide among this population. Fear and anxiety were prominently discussed as barriers in the literature and during interviews with program delivery personnel and older adult participants. This was attributed to limited prior exposure to information and communication technologies, as well as the ever-evolving nature of technology that requires constant upgrading of skills.

Best practices were discerned in relation to program planning and delivery.

- **Marketing of the program:** Focus on the goals and interests of the older adult participants to increase uptake and motivation.
- **Community-based:** Working with community organizations can help to identify eligible older adults and elicit trust. In rural and remote areas, look for areas where people congregate to host the training.
- **Accessibility:** The tablet was the preferred device among older adults due to the large screen and portability. Providing a stylus can be useful for older adults with dexterity challenges. Translating the curriculum into multiple languages can help to reach diverse groups of older adults.
- **Flexibility in program delivery models:** Provide a range of delivery methods such as 1:1 training, group-based classes and/or drop-in sessions for troubleshooting.
- **Cybersecurity:** Ensure participants understand common online scams and how to keep their personal information secure.
- **Peer-to-peer teaching:** Support older adults in learning from one another by allotting time for discussion throughout the training, and providing opportunities for older adult graduates of the program and advanced users to co-facilitate.

INTRODUCTION

Canada is undergoing an unprecedented demographic shift in which the population over the age of 65 is growing rapidly. For the first time in history, the older demographic now outnumber children who are 15 years of age and younger.¹ As of 2021, there were approximately 7 million adults 65 years and older, accounting for 18.5% of the population.² In 2030, this figure is projected to increase to 9.5 million, or 23% of the population: an increase of 2.5 million in just 9 years.³ This rapid aging of Canadian society, often referred to by demographers simply as ‘population aging’, has implications for the planning and delivery of services, as well as policymaking, to optimize and support this population as they age. Population aging in Canada is also occurring in parallel to an increasingly technology-reliant society. To address these changes, it is clear that supporting the needs of older adults will require a greater focus on digital literacy.

Although a number of definitions for digital literacy exist, in general, the concept can be understood as, “the interest, attitude and ability of individuals to appropriately use digital technology and communication tools to access, manage, integrate, analyze and evaluate information, construct new knowledge, create

¹ Samir Sinha et al. *An Evidence-Informed National Seniors Strategy for Canada Third Edition*. Toronto: 2016.

<http://nationalseniorsstrategy.ca/wp-content/uploads/2016/10/National-Seniors-Strategy-Second-Edition.pdf>

² Statistics Canada, *Older Adults and Population Aging Statistics*, accessed June 21, 2022, https://www.statcan.gc.ca/en/subjects-start/older_adults_and_population_aging

³ Government of Canada, *Government of Canada- Action for Seniors Report*. 2014.

<https://www.canada.ca/en/employment-social-development/programs/seniors-action-report.html>

and communicate with others”.⁴ A focus on access to resources tied to health and social services, finances, and basic necessities, such as groceries or even transportation services, highlights that older adults will more frequently require digital literacy skills to navigate day-to-day activities in the community.

In addition, advancements in healthcare have meant that older adults are living longer and healthier lives when compared to previous generations.⁵ However, the pandemic has accelerated shifts in healthcare delivery to virtual platforms and digital communication tools, and with 73% of adults 65 years and older reporting a chronic condition such as heart disease, diabetes, or cancer, and 37% reporting living with two or more, digitally literate older adults may be able to better access information and yield better outcomes.⁶ Furthermore, the management of a chronic illness may negatively impact the quality of life of an older adult by reducing their ability to perform activities of daily living, which are often routine and essential tasks that individuals can carry out independently (such as eating and drinking), reduce mobility and functional status, and ultimately result in a loss of autonomy. The intersection of health challenges, having multiple chronic conditions and lower levels of digital literacy have been found to increase an individual’s risk for social isolation.⁷

⁴ Government of British Columbia, *Digital Literacy*, accessed August 21, 2022, <https://www2.gov.bc.ca/gov/content/education-training/k-12/teach/resources-for-teachers/digital-literacy>

⁵ Public Health Agency of Canada. *Aging and Chronic Diseases: A Profile of Canadian Seniors*, Ottawa, 2020 accessed June 21, 2022, https://www.canada.ca/content/dam/hc-sc/documents/services/publications/diseases-and-conditions/aging-chronic-diseases/canadian-seniors-report_2021-eng.pdf

⁶ Public Health Agency of Canada, *Aging and Chronic Diseases*.

⁷ Public Health Agency of Canada, *Aging and Chronic Diseases*.

Social isolation is also a growing concern among older adults. Social isolation is defined as an objective lack of social relationships, whereas loneliness is defined as a subjective dissatisfaction with the quality and quantity of social relationships.⁸ As individuals age, and driven by life course events such as retirement, widowhood, and disability or health-related challenges such as mobility impairment, older adults may be more prone to the factors that can contribute to social isolation.⁹ It is estimated that 16% of older adults are socially isolated, and another 30% are at risk of becoming socially isolated.¹⁰ Social isolation is associated with negative health outcomes including poor mental health, depression, and premature death.¹¹ Moreover, 24% of older adults report low social participation.¹² This has been exacerbated during the COVID-19 pandemic, amid lockdowns, wherein many of the services that provided social activities for older adults were cancelled or moved online. Conversely, technology has been identified as a way to reduce social isolation among older adults.¹³

Technology Use Among Older Adults

Technology use for individuals of all ages has become essential for participation in a digital society. There has been a proliferation of services that

⁸ National Institute on Ageing. *Understanding Social Isolation and Loneliness Among Older Canadians and How to Address It*, Toronto, 2022, accessed June 21, 2022, <https://static1.squarespace.com/static/5c2fa7b03917eed9b5a436d8/t/62b1e9be762a7f5587580f65/1655826880808/Social+Isolation+Report+-+FINAL1.pdf>

⁹ National Institute on Ageing, *Understanding Social Isolation and Loneliness*.

¹⁰ Penny MacCourt. *Social Isolation of Seniors Volume I Understanding the Issue and Finding Solutions*, 2016. Accessed June 27, 2022, <https://www.canada.ca/en/employment-social-development/corporate/partners/seniors-forum/social-isolation-toolkit-vol1.html#fn15-0-rf>

¹¹ Public Health Agency of Canada, *Aging and Chronic Diseases*.

¹² National Institute on Ageing. *Understanding Social Isolation and Loneliness*.

¹³ Keya Sen, Gayle Prybutok, and Victor Prybutok, "The use of digital technology for social wellbeing reduces social isolation in older adults: A systematic review, *Social Science and Medicine- Population Health*, 17, (2022). doi:10.1016/j.ssmph.2021.101020

have shifted online including banking, groceries, and some healthcare services. Yates, Kirby, and Lockley (2015) describe this process as “digital by default”, in which in-person, phone and paper interactions are replaced by digital alternatives.¹⁴ For those who lack the technological infrastructure and necessary skills to navigate the ever-changing technology landscape, this shift can result in digital exclusion and further contribute to social isolation.¹⁵

Older adults have lower technology adoption, acceptance, and use. Technology use has been found to be negatively associated with age; meaning that with increasing age, technology use decreases.¹⁶ For example, it is estimated that 68% of older adults use the internet, but a closer examination of this statistic highlights that older adults are not a homogeneous group, and beyond age alone, a diversity of factors can impact the experiences related to technology use. Among this demographic, usage decreases with age:

- 85% of older adults aged 65 to 69 years old report using the internet;
- 62% of older adults aged 75 to 79 years old report using the internet;
- 40.8% of adults aged 80 years and older report using the internet.¹⁷

By contrast, technology use among younger generations, those aged 15 to 64 years, is estimated at 97.2%, or near saturation.¹⁸ However, statistics suggest

¹⁴ Simeon Yates, John Kirby, Eleanor Lockley. “Digital-by-default”: Reinforcing exclusion through technology, (April 2015):158-161, <https://livrepository.liverpool.ac.uk/3027639/1/IDOWII%20Chapter.pdf>

¹⁵ Anthony McCosker et al. “Accounting for diversity in older adults’ digital inclusion and literacy: The impact of a national intervention,” *Ageing and Society*, (2021): 1-21. doi:10.1017/S0144686X21001550

¹⁶ Jordan Davidson and Christoph Schimmele. *Evolving Internet Use Among Canadian Seniors* (2019), <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2019015-eng.htm>

¹⁷ Davidson and Schimmele, *Evolving Internet Use*.

¹⁸ Davidson and Schimmele, *Evolving Internet Use*.

that this trend is being reversed, as technology use is increasing over time among the older adult population.¹⁹

A 2020 Environics survey commissioned by AGE-WELL found that 65% of older adults aged 65 years and older own a smartphone. The survey also found that older adults reported using information and communication technologies (ICT) for a wide array of activities, with 23% of respondents reporting using video-calling on their smartphones, 17% reporting video-calling using a computer, and 13% of respondents reporting engaging in online social activities such as games and book clubs.²⁰ Despite these statistics, only around three-quarters (76%) of respondents felt confident using current technology.²¹ Additionally, in Canada's General Social Survey it was found that older adults were *less likely to believe that the internet was helpful in communicating with others, in helping them make informed decisions, and saving them time.*²² These differences not only in technology use, but in perceptions or attitudes about technology use between the older and younger generation, have been attributed to differences in socialization and life-course experiences (e.g., many older adults retired before the use of computers in the workplace or education settings.).²³

This difference in technology use has been termed the “digital divide”, which is defined as the gap between those who have access to technology (or

¹⁹ Davidson and Schimmele, *Evolving Internet Use*.

²⁰ Environics Research. *Tech Use by Older Canadians for Health, Wellness, and Independence in the time of COVID-19* (2020), <https://agewell-nce.ca/wp-content/uploads/2020/09/OATechSurvey-SEP2020-FINAL.pdf>

²¹ Environics Research, *Tech Use by Older Canadians*.

²² Davidson and Schimmele, *Evolving Internet Use*.

²³ Davidson and Schimmele, *Evolving Internet Use*.

want to access technology) and those who do not.²⁴ The digital divide has been conceptualized as two-tiered. The first-level digital divide comprises access to technology (e.g., having physical access to the internet, a computer, or a smartphone). The second-level digital divide refers to the skills needed to engage with technology.²⁵ This differentiation recognizes that although some older adults may own devices, they may not be able to use them in a meaningful way due to a lack of skills.²⁶ However, again, it is important to note that the technology experiences of older adults are not homogeneous.

Quan-Haase, Williams, Kicevski, Elueze, and Wellman (2018) developed a typology of older adult technology use based on 41 interviews with older adults living in the East York region of Toronto.²⁷ The typology is based on self-reported digital skill level and self-reported number of online activities:

- 1) **Non-users:** no digital skills, no online activities (10%)
- 2) **Reluctant users:** low digital skills, 0-2 online activities (17%)
- 3) **Apprehensives:** low digital skills, 3+ online activities (17%)
- 4) **Basic users:** mid-level digital skills, 1-2 online activities (27%)
- 5) **Go-getters:** mid-level digital skills, 3+ online activities (22%)
- 6) **Savvy users:** high digital skills, 3+ online activities (7%)²⁸

²⁴ Davidson and Schimmele, *Evolving Internet Use*.

²⁵ Hsin-yi Sandy Tsai et al. "Getting Grandma Online: Are Tablets the Answer for Increasing Digital Inclusion for Older Adults in the U.S.?" *Educational Gerontology* 41, 10 (October 2015): 695–709. doi:10.1080/03601277.2015.1048165

²⁶ Tsai, *Getting Grandma Online*.

²⁷ Anabel Quan-Haase et al. "Dividing the Grey Divide: Deconstructing Myths about Older Adults' Online Activities, Skills, and Attitudes." *American Behavioral Scientist* 62, 9 (May 2018). <https://doi.org/10.1177%2F0002764218777572>

²⁸ Quan-Haase, *Dividing the Grey Divide*.

The distribution of older adults among the six categories demonstrates that very few (7%) are considered “savvy users.” The most common category for older adults to fall under was the “basic user,” (27%) followed by the “go-getter” (22%). These findings demonstrate the diversity of skills and experiences among older adults.

Sociodemographic factors such as geographic location, income, education, and health status influence internet use. For example, Davidson and Schimmele (2019) found that education was strongly associated with internet use: 46.2% of older adults without a highschool diploma reported using the internet compared to 89% of those with a university education.²⁹ Health status was also identified as an important factor in predicting technology use: 72.6% of older adults who reported very good or excellent health were internet users compared to 61.9% who self-reported their health as poor or fair.³⁰ Certain populations experience greater barriers to internet use. For example, it is estimated that 42.4% of Indigenous older adults do not use the internet. The low use among this population has been attributed to higher proportions of individuals living in rural and remote areas, higher rates of poverty resulting in the inability to afford a device and internet, as well as poor health status.³¹

Technology use has the potential to increase the quality of life among older adults by helping them to stay connected to friends and family, supporting lifelong learning, providing entertainment, as well as assisting in information

²⁹ Davidson and Schimmele, *Evolving Internet Use*.

³⁰ Davidson and Schimmele, *Evolving Internet Use*.

³¹ Hossam Ali- Hassan, Rama Eloulabi, and Asvini Keethakumar, “Internet non-use among Canadian Indigenous Older Adults: Aboriginal Peoples Survey (APS)”, *BMC Public Health* 20, (2020): 1554. <https://doi.org/10.1186/s12889-020-09659-5>

seeking, including gaining access to health-related information.³² Despite the potential benefits of technology, many older adults are reluctant to engage in the digital world due to lack of experience, high effort to learn, fear, concerns around cyber safety and security, and the perception that there is limited value to incorporating technology into their lives.³³ Digital literacy programs targeted at older adults aim to increase technology adoption, acceptance, and use in order to improve quality of life.

HELPAGE CANADA'S DIGITAL LITERACY PROGRAM: DIG-IT

HelpAge Canada is a national charity dedicated to improving the quality-of-life of older adults across Canada and internationally. As part of their work, HelpAge Canada has developed a national digital literacy program, called Dig-IT. The program provides tablets, data, training, and IT support to low-income older adults. Dig-IT uses a curriculum developed by Gluu Society, a non-profit organization helping older adults learn to use technology. The 10-week curriculum starts at the basics and progresses to more advanced topics. The program also comes with a Best Buy Geek Squad membership for each participant. The program partners with community-based senior services organizations across Canada and is delivered by volunteers. Participants are given a tablet as part of the program which they are able to take home between sessions. The program delivery model varies across organizations, with some

³² Hsin-yi Sandy Tsai, Ruth Shillair, and Sheila R. Cotton, "Social Support and Playing Around: An Examination of How Older Adults Acquire Digital Literacy with Tablet Computers." *Journal of Applied Gerontology*. 36, 1 (January 2017): 29–55. doi:10.1177/0733464815609440

³³ Hannah Barrie et al., "Because I'm Old": The Role of Ageism in Older Adults' Experiences of Digital Literacy Training in Public Libraries. *Journal of Technology in Human Services*, 39, 4 (2021):379–404. doi:10.1080/15228835.2021.1962477

choosing a group format and others preferring individual, one-to-one instruction. Participants are gifted the tablet after the training is completed. This research project sought to identify best practices for building digital literacy among older adults in order to align the Dig-IT program with these practices and to inform HelpAge Canada's community partners.

RESEARCH QUESTIONS

The following questions helped guide this research project:

1. What strategies are effective for building digital literacy in older adults?
 - a. In older adults living with low income?
 - b. In marginalized older adults? (i.e., individuals that are excluded or experience discrimination based on race, gender, sexual orientation, physical ability, language, or immigration status).
2. From the perspective of both older adult participants, and program delivery personnel (paid staff and volunteers), what are barriers to building digital literacy in older adults? What are enablers to building digital literacy in older adults?
3. How does improved digital literacy impact social inclusion and perceptions of *belonging* for older adults?

METHODOLOGY

A literature review was conducted to identify best practices for building digital literacy among older adults. The literature review facilitated the identification of leading programs and scholars in the field. Market mapping was

conducted to identify leading digital literacy programs targeted at older adults in North America. Multi-stakeholder interviews were conducted with participants and volunteers in the Dig-IT program, academics in the field of digital literacy, and individuals from the identified leading organizations providing digital literacy training to older adults in North America. Purposive sampling was used for participant recruitment. Purposive sampling “involves identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest”, also known as “information-rich cases.”³⁴

Participants were sent an information sheet and research consent form prior to the interviews. All participants gave written informed consent prior to the interview. Interviews were conducted either over the phone or on the platform Iris.FM. Iris.FM allows for separate video and audio files, and records locally on each device, which ensures that audio and video files are protected from disruptions in internet connectivity. All interviews were audio-recorded and audio files were uploaded into Otter.ai for transcription. The transcripts were then uploaded to Taguette, an open-source qualitative data management tool, for analysis. Transcripts were analyzed using thematic content analysis following the Braun & Clark (2006) methodology.³⁵ Transcripts were coded and codes were then grouped into themes.

³⁴ Lawrence Palinkas et al., “Purposeful Sampling for qualitative data collection and analysis in mixed method implementation research.” *Administration and Policy in Mental Health*, 42, 5 (September 2015): 533-544, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4012002/pdf/nihms-538401.pdf>

³⁵ Virginia Braun and Victoria Clarke, “Using Thematic Analysis in Psychology,” *Qualitative Research in Psychology* 3, 2. (2006):77-101. <https://doi.org/10.1191/1478088706qp063oa>

KEY FINDINGS AND EVIDENCE

Key Findings from Literature Review and Market Mapping

In total, 22 academic articles were reviewed. Key search terms included digital literacy training, information and communication technology, tablet, computer training, older adult, and senior. The market mapping exercise helped to identify 33 digital literacy programs targeted at older adults. Programs that had large reach and provided their curriculum online or a description of the curriculum and followed best practices found within the literature were contacted for interviews.

Best practices found within the literature included:

- Providing an array of different delivery options to older adults including one-to-one support and group-based formats.
- Integrating the digital literacy program into existing programs or organizations.
- The curriculum included step-by-step instructions, diagrams, and repetition.

Digital Literacy Programs for Older Adults

Digital literacy training programs for older adults have emerged from a need to bridge the digital divide and to promote older adults' digital inclusion. Digital literacy programs vary in their delivery, scope, and content. Programs reviewed in the literature ranged in length from six to fourteen weeks with sessions occurring for one to two hours each. Typically, the program curriculum started with teaching the basic features of a tablet (e.g., getting to know how to

power on and off, volume controls) and progressed to more advanced topics such as email, videoconferencing, and social media. Training programs for older adults can demonstrate the utility of technology in the lives of older adults, and can improve attitudes toward technology in this population.³⁶

It is important to align programming to reflect what older adults value.³⁷ This can be achieved by consulting older adults at the beginning of the training as well as listening to their needs throughout the training and adapting the program accordingly. This can empower participants and ensure that the content is tailored to and relevant to their needs.³⁸ Overwhelmingly, older adults in the literature reported a desire to engage with technology to connect with their families.³⁹ Other reasons for participation included wanting to connect with others, loneliness, lack of digital literacy, desire to learn how to use technology to accomplish tasks more easily, and not wanting to feel left behind from the modern world.⁴⁰

³⁶ Kathleen Schreurs, Anabel Quan-Haase, and Kim Martin. "Problematizing the digital literacy paradox in the context of older adults' ICT use: Aging, media discourse, and self-determination," *Canadian Journal of Communication* 42, 2, (2017):359-377. doi:10.22230/cjc.2017v42n2a3130

³⁷ Sajay Arthanat et al., "Multi-stakeholder perspectives on information communication technology training for older adults: implications for teaching and learning," *Disability and Rehabilitation: Assistive Technology* 14, 5 (July 2019):453–61. doi:10.1080/17483107.2018.1493752

³⁸ Lucy R. Betts, Rowena Hill, Sarah E. Gardner. "'There's Not Enough Knowledge Out There': Examining Older Adults' Perceptions of Digital Technology Use and Digital Inclusion Classes." *Journal of Applied Gerontology* 38, 8 (August 2019):1147–1166. doi:10.1177/0733464817737621

³⁹ Sajay Arthanat, *Multi-stakeholder perspectives*.

⁴⁰ Jessica Fields et al., "In-Home Technology Training Among Socially Isolated Older Adults: Findings From the Tech Allies Program." *Journal of Applied Gerontology* 40, 5 (May 2021):489–99. doi:10.1177/0733464820910028

Barriers and Facilitators to Building Digital Literacy in Older Adults

Health-Related Barriers

A consistent theme across the literature was the identification of health-related barriers that made it difficult for older adults to engage with technology.⁴¹ This included both physical challenges and disabilities as well as cognitive challenges such as deficits in short-term memory.

Physical Barriers and Disabilities

Physical health challenges such as visual or hearing impairments and arthritis can discourage older adults from using technology.⁴² Many digital literacy programs for older adults chose to use tablets for their size, portability, and ergonomics. This is illustrated in a quote from a participant in a study conducted by Tsai, Shillair, and Cotten (2017):

“Because I have trouble with my arthritis in my hands so I can’t hold a big book, so my books are on my iPad... even your laptop has to be plugged in and it is big and bulky to take into the living room and sit, that is why I like it better.”⁴³

In a study exploring older adults’ experiences with tablets, it was found that older adults that acquired tablets found them easy to use, which increased participant confidence.⁴⁴ While there were many reported advantages to using a tablet, older adults with challenges in fine motor skills and dexterity reported having difficulty using the touchscreen and small buttons.⁴⁵ In response to this,

⁴¹ Tsai, *Social Support and Playing Around*; Eleftheria Vaportzis, Maria G. Clausen, Alan J. Gow, “Older adults perceptions of technology and barriers to interacting with tablet computers: A focus group study” *Frontiers in Psychology* 4, 8 (October 2017). doi:10.3389/fpsyg.2017.01687

⁴² Tsai, *Social Support and Playing Around*.

⁴³ Tsai, *Social Support and Playing Around*.

⁴⁴ Tsai, *Getting Grandma Online*.

⁴⁵ Tsai, *Social Support and Playing Around*.

some programs provided accessories such as a stylus or case.⁴⁶ A stylus was also helpful in providing a clearer view of the screen due to its slim shape.⁴⁷

Cognitive Barriers

Memory challenges emerged as a barrier to older adult acquisition of digital literacy skills.⁴⁸ Strategies used to support older adults' learning included conducting the training at a slower pace, providing step-by-step instruction, and repetition, as well as providing diagrams and visual aids.⁴⁹ In an intergenerational digital literacy program called Cyber-Seniors that was implemented at the University of Rhode Island, student mentors used multiple strategies to teach older adults, including observational learning, step-by-step instruction, visual aids such as watching a tutorial, downloading screenshots, repetition and review, hands-on learning, and trial and error or "playing around".⁵⁰ Overall, the researchers found that a tailored approach, responding to the learning preferences of the participants, was most effective.⁵¹ Similarly, a digital literacy program called NeverTechLate conducted a focus group with tech coaches, and it was found that repetition, hands-on practice, and a step-by-step approach were

⁴⁶ Ben Fletcher-Watson et al., "Strategies for enhancing success in digital tablet use by older adults: A pilot study" *Gerontechnology*. 15, 3 (2016):162–70; Jacqueline McGinty. "Developing a Training Program for Digital Literacy Coaches for Older Adults: Lessons Learned from the Train-the-Trainer Program" *Journal of Education and Training Studies* 8, 11 (October 2020):62-69. doi:10.11114/jets.v8i11.5002

⁴⁷ Fletcher-Watson, *Strategies for enhancing success*.

⁴⁸ Julie A. Delello and Rochell R. McWhorter, "Reducing the Digital Divide: Connecting Older Adults to iPad Technology" *Journal of Applied Gerontology* 36, 1 (January 2017):3–28. doi:10.1177/0733464815589985

⁴⁹ McGinty, *Developing a Training Program*.

⁵⁰ Dara L. LoBuono, Skye N. Leedahl, and Elycia Maiocco, "Teaching technology to older adults: Modalities Used by Student Mentors and Reasons for Continued Program Participation" *Journal of Gerontological Nursing* 46, 1, (2020):14–24. doi:10.3928/00989134-20191118-02

⁵¹ LoBuono, *Teaching technology to older adults*.

needed for older adults to learn technology effectively.⁵² Additionally, having printed instructions such as a workbook or handouts to accompany the training was supported in the literature.⁵³ Written instructional materials can be referenced between sessions as well as after the training concludes. Some programs provided optional homework to allow participants to practice their skills between sessions.⁵⁴

Notetaking was also identified as a strategy that older adults used to compensate for their memory challenges.⁵⁵ For example, in a study that was conducted on a digital literacy project at an affordable housing community in New York, older adults used notetaking to remember passwords and instructions.⁵⁶ However, this strategy can sometimes lead to problems if the notes are misplaced, as one participant noted:

“When I create an account, I write its password on a piece of paper. And then I lay the paper over here or over there, and I don’t use it for long. And then when I have to use it, I don’t know what the password was. And by then, the paper is gone.”

One strategy to overcome this challenge is to digitize these records by taking photos of the notes for future use.⁵⁷ The researchers identified the lack of a mental model as a barrier to building digital literacy among older adult

⁵² McGinty, *Developing a Training Program*.

⁵³ Sarah Neil-Sztramko et al., “Impact of the Age-on tablet training program on social isolation, loneliness, and attitudes toward technology in older adults: Single-group pre-post study” *Journal of Medical Internet Research* 3, 1, (April 2020). doi:10.2196/18398; Delello, “*Reducing the Digital Divide*.”

⁵⁴ Neil-Sztramko, *Impact of the AGE-ON tablet training program*.

⁵⁵ Fletcher-Watson, *Strategies for enhancing success*; Sunyoung Kim, Willow Yao, and Xiaotong Du, “Exploring Older Adults’ Adoption and Use of a Tablet Computer During COVID-19: Longitudinal Qualitative Study” *Journal of Medical Internet Research* 5, 1, (January 2022). doi:10.2196/32957

⁵⁶ Kim, *Exploring Older Adults’ Adoption and Use of a Tablet Computer*.

⁵⁷ Kim, *Exploring Older Adults’ Adoption and Use of a Tablet Computer*.

participants.⁵⁸ A mental model is an understanding of the internal structure and processes of a device.⁵⁹ The authors recommend including an explanation of how a device works in the curriculum of training programs.⁶⁰ Fletcher-Watson, Crompton, Hutchison, and Lu (2016) also suggest that notetaking can help to consolidate learning.⁶¹ While note-taking can aid older adults in remembering passwords and instructions, this memorization style of learning can lead to problems when systems are updated, or interfaces change and may not be applicable across different devices.⁶²

Technological Self-Efficacy

Technological self-efficacy refers to the confidence in one's abilities to use new technology.⁶³ Some older adults may have low technological self-efficacy, which can present as technology-related anxiety.⁶⁴ Older adults commonly express fear of breaking technology, being scammed, as well as concerns surrounding privacy.⁶⁵ Therefore, it is important to include an assessment of an individual's confidence with technology, and cybersecurity training in the curriculum to ensure that participants are aware of the risks of being online and have the skills to protect their personal information.

Tsai, Shillair, and Yost (2015) found that having older adults “play around” with devices with support on-hand for any questions that may arise or for

⁵⁸ Kim, *Exploring Older Adults' Adoption and Use of a Tablet Computer*.

⁵⁹ Kim, *Exploring Older Adults' Adoption and Use of a Tablet Computer*.

⁶⁰ Kim, *Exploring Older Adults' Adoption and Use of a Tablet Computer*.

⁶¹ Fletcher-Watson, *Strategies for enhancing success in digital tablet use by older adults*.

⁶² Barrie, “Because I'm Old.”

⁶³ Tsai, *Getting Grandma Online*.

⁶⁴ Tsai, *Getting Grandma Online*.

⁶⁵ Betts, “There's Not Enough Knowledge Out There.”

troubleshooting, was an effective method for older adults to acquire digital literacy skills.⁶⁶ This 'trial-and-error' style of learning can help older adults build confidence. Despite some older adults' anxious predisposition toward technology, there was a common motivation to learn throughout the literature.⁶⁷

Ageism

The broader discourse surrounding aging and technology is negative, with older adults depicted as incompetent, disinterested, anxious or fearful.⁶⁸ These ageist stereotypes can shape the perceptions of those who are teaching older adults about technology, and may also be internalized by older adults themselves, and result in older adults feeling alienated and reluctant to engage with technology.⁶⁹ Schreurs, Quan-Haase, and Martin (2017) note that the negative representations of older adults in media and society can foster self-doubt among older adults surrounding their capabilities.⁷⁰ Barrie, La Rose, Detlor, Julien, and Serenko (2021) explored older adult experiences of participating in a digital literacy program delivered through a public library in Ontario, Canada. During the interviews with participants, ageism emerged as a dominant theme.⁷¹ Older adults identified their age as a barrier to acquiring digital literacy skills. There was a belief that increasing age was associated with a decreased ability to learn and master new skills.⁷² Older adults expressed that

⁶⁶ Fletcher-Watson, *Strategies for enhancing success in digital tablet use by older adults*.

⁶⁷ Betts, "There's Not Enough Knowledge Out There."

⁶⁸ Schreurs, *Problematizing the digital literacy paradox*.

⁶⁹ Schreurs, *Problematizing the digital literacy paradox*.

⁷⁰ Schreurs, *Problematizing the digital literacy paradox*.

⁷¹ Barrie, "Because I'm Old."

⁷² Barrie, "Because I'm Old."

they were falling behind younger generations, whom they believed pick up technology intuitively.⁷³

Ageism can also be present in peer and family relationships. A lack of support from family, including the belief that their family member would be uninterested in technologies or could not obtain the skills necessary to use new technology, discouraged older adults from participating in the online world.⁷⁴ Arthanat, Vroman, Lysack, and Grizzetti (2019) found there was stigma and negative peer pressure surrounding the use of ICT among older adults, as noted by one of their participants:

“When you hear two of the residents talking about Facebook, you’ll hear the other residents almost mocking them behind their backs, like who do they think they are?”

On the other hand, having support from family was identified as a facilitator to older adult engagement with technology. Tsai, Shillair, Cotten, Winstead, and Yost (2015) found that the influence of family was crucial in the decision to acquire a tablet.⁷⁵ These findings highlight the social environment as an important element in older adults’ decision to engage with technology.⁷⁶

A supportive training environment was essential in helping older adult participants to overcome fear and resistance to technology.⁷⁷ Barrie et al. (2021) found that fostering a supportive environment wherein older adults feel safe to explore increased participants’ confidence.⁷⁸ The authors recommend using an

⁷³ Vaportzis, *Older adults’ perceptions of technology*.

⁷⁴ Arthanat, *Multi-stakeholder perspectives*.

⁷⁵ Tsai, “Getting Grandma Online.”

⁷⁶ Delello, *Reducing the Digital Divide*.

⁷⁷ Barrie, “Because I’m Old”; Betts, “There’s Not Enough Knowledge Out There.”

⁷⁸ Barrie, “Because I’m Old.”

asset-based approach to programming rather than focusing on deficits, which can help to empower older adults in their learning.⁷⁹ Additionally, a non-judgmental environment that avoids jargon can help older adults feel more comfortable.⁸⁰ Conceptualizing the training as an opportunity to support lifelong learning, rather than as a means of “catching up” with society, can shift the perspective of learners.⁸¹

Rapport

Rapport was an important facilitator for supporting the learning of older adults. Integrating digital literacy programs into existing programs or organizations was found to be instrumental in garnering older adult participation or “buy-in”. A digital literacy program called Tech Allies was incorporated into an existing friendly-visiting program in San Francisco.⁸² It was found that integration into the friendly-visiting program greatly enhanced participation due to the existing positive relationship with staff.⁸³ Similarly, a community case study of a technology training program for homebound older adults called Talking Tech, was implemented by Meals on Wheels Rhode Island (MOWRI).⁸⁴ Talking Tech is a 14-week training program delivered one-to-one by volunteers, called “TechMates”. One participant recounted a positive experience with their TechMate:

⁷⁹ Barrie, “*Because I’m Old.*”

⁸⁰ Betts, “*There’s Not Enough Knowledge Out There.*”

⁸¹ Barrie, “*Because I’m Old.*”

⁸² Fields, *In-Home Technology Training Among Socially Isolated Older Adults.*

⁸³ Fields, *In-Home Technology Training Among Socially Isolated Older Adults.*

⁸⁴ Frances N. Jiménez et al., “A Technology Training Program to Alleviate Social Isolation and Loneliness Among Homebound Older Adults: A Community Case Study” *Frontiers in Public Health* 9. (November 2021). doi:10.3389/fpubh.2021.750609

“[He] delivers my meals so I had met him and knew him, but [...] it was nice having him here... I was very comfortable.”

Integrating digital literacy programs into existing programs or organizations can also facilitate the identification of target populations that may otherwise be difficult to reach, such as homebound or socially isolated older adults.

Group-based programs can provide opportunities for older adults to socialize with peers and can facilitate peer-to-peer teaching. This can allow for discussion between participants as well as the sharing of techniques and strategies.⁸⁵ An intergenerational program found that having the same volunteer-participant dyads every session helped to increase rapport and retention in the program.⁸⁶ However, the format of group-based programs may pose a challenge due to the heterogeneity of older adults' technology skills. For example, a digital literacy program in Pennsylvania called NeverTechLate was delivered using an intergenerational group-based format. The program consisted of one-hour lessons over eight weeks and involved four student coaches, with 16 older adult participants.⁸⁷ Volunteer graduate student mentors reported challenges, balancing the need for one-on-one support with the need to facilitate the training, due to the varied skill level of older adult participants in the program. It was suggested that dividing groups by skill level could help to resolve this challenge.⁸⁸

This sentiment was also echoed by a participant in Betts et al. (2019):

⁸⁵ Fletcher-Watson, *Strategies for enhancing success*.

⁸⁶ Fletcher-Watson, *Strategies for enhancing success*.

⁸⁷ McGinty, *Developing a Training Program for Digital Literacy Coaches for Older Adults*.

⁸⁸ McGinty, *Developing a Training Program for Digital Literacy Coaches for Older Adults*.

“There’s some people that seem to know everything, and you seem to wonder why they’re there and others who are, like myself know very little and you feel embarrassed sometimes to ask single, simple questions ... it want’s [sic] to be perhaps a beginners group, and a more advanced group.”⁸⁹

Dividing groups based on ability or skill can help to level the playing field, and can normalize their experiences and make them feel that they are not the only ones who are experiencing challenges. To build on the findings from the literature review, interviews provided a multi-stakeholder perspective and insight into HelpAge Canada’s Dig-IT program. Themes from the interviews are reported below.

Key Findings from Interviews

A total of 10 interviews were conducted over the months of July and August 2022. Five organizations were identified from the market mapping for interviews. One program was no longer running, and one did not respond. The three organizations that participated in interviews included Cyber-Seniors, ABC Life Literacy, and Community Tech Network. Four researchers were approached for interviews, three were interviewed and one did not respond. Participants were recruited through the Dig-IT Program Manager and the community organization lead on the Dig-IT program. Some of the community organizations had just started with the program and therefore were deemed ineligible to participate, given they would not be able to speak to the program impact. Three community organizations were identified as being eligible for interviews including Ross Place, the Atwater Library, and A&O Support Services. From this, one program

⁸⁹ Betts, *“There’s Not Enough Knowledge Out There.”*

participant, one volunteer, and a volunteer coordinator overseeing the Dig-IT program agreed to be interviewed. The Dig-IT Program Manager at HelpAge Canada was also interviewed. Interviews lasted between 16 to 116 minutes.

Barriers to Building Digital Literacy Among Older Adults

Fear and Anxiety

Fear and anxiety surrounding technology emerged as a theme across stakeholder interviews. This was attributed to limited prior experience with information and communication technologies in what was described as fear of the unknown. Beginning the learning journey can be overwhelming and frustrating for older adults. The complexity of interfaces and constantly evolving nature of technology can pose challenges to those who are new to technology. A fear of failure, being scammed, fraud, or of breaking the device were common. A program participant in Dig-IT, described a shift in her perspective as she began the learning journey:

“I didn't even know, imagine at the beginning, I didn't know what upload meant and download meant. No, I'm laughing at myself. But I can laugh at myself because I've seen there was really nothing to be afraid of. It was just that I didn't know.”

These fears can hold people back from participating in the program or can cause individuals to drop out of the program. This was demonstrated during an interview with a volunteer:

“I had one gentleman who told me after the third or fourth class, he said, “You know, I just think it's not for me, I'm not gonna do this anymore.” And I said, “Why? Why is that?” And then he said, “You know, it's just too new. It's just too much. And it's too new.” And I said, “but you've already learned so much, and you've done very well.” And I said, “I promise you, if we just keep practicing and

working on it, I'll be able to show you a whole bunch of other new things, and then you're really going to get good use out of this tablet." And I wasn't sure if he would come the next week, because he pretty much was giving me that well, thanks but no thanks. And then next thing, you know, he showed up and never said another word again about it. And he was fully participating."

A supportive environment with compassionate volunteers and staff who provide encouragement to older adults on their learning journey is essential to increasing participants' confidence.

Financial Barriers

The cost of purchasing a device and a monthly internet plan was described as 'out of reach' for many older adults, acting as a barrier to acquiring digital literacy skills. Programs should consider additional hidden costs that are required for the older adult to participate in the training. For example, the cost of transportation to get to the training was identified as a barrier by one of the researchers interviewed. The removal of financial barriers is essential to bridging the digital divide for low-income older adults.

As part of the eligibility criteria for Dig-IT, participants must be considered low-income. The disclosure of financial information can be a sensitive topic for older adults. One researcher discussed the challenges of disclosure:

"From a low-income perspective, there's also a sense of shame that they feel judged, I believe, or they feel ashamed that they're only making a certain amount."

This may prevent some older adults from participating in the program if they are unwilling to disclose their financial information.

Furthermore, the challenges associated with living with low-income may act as a barrier to participation in digital literacy programs in which the acquisition

of digital literacy skills cannot be prioritized due to challenges in day-to-day living. The Dig-IT Program Manager recalled a conversation with one of the Dig-IT community partners:

“We had some more feedback from one of our community partners that was saying, the lower income older adults, right now, with inflation with everything, they're struggling to feed themselves, they're struggling to pay their rent...as good as the program is, they just don't have personal bandwidth to take that on.”

There was a concern from both participants, as well as the Program Manager, about the lack of affordability of internet service after the program concludes. While public wifi is available, it may not be accessible to all users due to mobility concerns, or out of concern for their health during the pandemic. While there are some programs that subsidize the internet for low-income older adults, they were described as fragmented across Canada. The following themes relate to the planning and delivery of digital literacy programs.

Program Planning

Marketing

Marketing of the program was identified as an important tool for recruitment of both organizations as well as potential participants. Recruitment of organizations for the Dig-IT program was done through targeted outreach as well as an open call to organizations. Successful organizations then recruited participants. To maximize program reach, participants noted a need to consider how the training is being presented to older adults. Capitalizing on the goals and interests of participants was one strategy that was proposed. For example, participants reported that many older adults wanted to learn how to use

technology to communicate with their families. One researcher discusses this further:

“Creating programs of digital literacy, where the poster doesn't necessarily say, learn digital literacy, it says, learn to use a 3D printer or learn to make a digital story. And so, the emphasis really is on the outcome or the goal of the engagement, rather than forwarding like a generic skill set.”

A volunteer with the Dig-IT program shared that she has been approached by many prospective participants who were interested in the program, however, some were reluctant to participate due to the long time commitment of 10 weeks, and others were intimidated by the content of the program.

“We're trying to get a second group together, once this one is finished. But again, it's hard to get people to come. And they love the idea. But then, commit[ing] to it is challenging... It sounds like a lot. And then I think they think that maybe they'll be tested or something. So, I have to explain to them that no, this is me showing you some really interesting things that you can do.”

Community-Based

Working through existing community organizations or programs was identified as a successful strategy to identify eligible older adults and elicit trust. This relationship building was said to positively influence recruitment and participation in the program. A Program Director who participated in this project discussed the impact of working with communities:

“A trusted partner and an ambassador for your program is really important. And sometimes, it's like a real light touch engagement. Like, there's a senior center. So, you go for bingo one time, and then you go for lunch, and you sit down and you eat with people, so they get to know you, and then they trust you. It's just old-fashioned community organizing work.”

The Program Director further highlights that a community-based approach is especially important for the recruitment of marginalized and racialized populations:

“The effects of systemic racism will show up in client recruitment because they don't trust government agencies. They've been overpromised and underdelivered for many generations.”

And so, a lot of folks who have had that kind of ambivalent relationship with government agencies, sometimes they're hard to recruit. And that's why having a good community partner makes all the difference."

A community-based approach can be a cumbersome endeavour, requiring a substantial amount of outreach to organizations. This outreach is vital to reaching those older adults who are in the most need of service such as socially isolated older adults. One of the researchers interviewed described one strategy for recruitment:

"It has to be somebody who they already know. Is that the public health nurse, is that the PSW, is that family doctor, or the nurse practitioner, is that the clinic, is that the mobile diabetes care provider who is it that might have contact with that person? Is that the pharmacist, like unusual people who might have a connection to the person who might be able to relay the information in such a way as the person would feel that they want to connect. But a stranger knocking at your door, if you're someone who experiences social isolation, it might not make you engage, even if you make the connection."

During the interviews, the location of the training was also highlighted as an important consideration. When considering a location for the training, it was suggested to "think outside the box", for example, the training does not have to occur in a computer lab, rather the training could take place at an accessible location in the community with a wifi connection. One participant highlighted that this is particularly important in rural and remote locations:

"In a rural population, you go to where the people naturally congregate. And it could be a church, it could be a store, wherever they go one time for one hour, they can do the orientation, and take the device home."

Program Delivery

Program delivery partners recognized the need for older adults to be connected to the internet, especially during the pandemic. Organizations that were interviewed described a steep learning curve caused by a rapid shift to online delivery models during Covid-19 restrictions. The Dig-IT program filled a need for these organizations by providing an all-in-one digital literacy program. The organizations pivoted from their regular programming to teach older adults

to order groceries and prescriptions online, as well as zoom with family members. This required substantial staff and volunteer resources to provide outreach and support to older adults learning technology for the first time while accounting for pandemic restrictions. These restrictions prevented a hands-on orientation to the device for older adult learners which was identified as challenging.

Flexible Program Delivery Options

Flexibility in program delivery models was identified as a theme within the interviews. Successful program delivery will largely be dependent on the preferences of the older adult. It is important to be responsive and receptive to the needs of the older adult participants as discussed by one participant:

“As an organization, or a representative of an organization, you get a bit more credibility when you respond to what people want. And then people are more prepared to take a risk if you ask them to do something that might not feel as comfortable doing. If you want people to learn digital literacy skills, and we know that [people have] fear, and anxiety; [They think] “I’m going to break it, I’m not going to succeed at it, I already learned it, and I unlearned it.” All of those things people are carrying with them. So, if you’re able to respond to them, and to alleviate some of that anxiety by making whatever you’re doing the most comfortable that it can be, they’re more likely to take a risk.”

A program participant valued one-to-one lessons with her volunteer over the phone due to her mobility challenges:

*“I stayed with everything on the phone. I didn’t go in person, it would require a **lot from me** having to go somewhere. And if it would have been at the library, I’m glad that it was on the phone because I have my own health issues. It’s also, it’s tiring, it seems simple but eventually, it is tiring. I have to take the transport adapted bus and go and come back... and also, I had been keeping my distance from a lot of people because of the COVID situation”*

In contrast, a group-based delivery style was identified by other interviewees to be a successful strategy. The Program Manager of Dig-IT at HelpAge Canada explained the benefits of group-based delivery:

“There is huge value in having classes and people learning from each other. When people are in the same classroom, firstly, they’re seeing other people the same age learning this stuff and picking it up and it maybe seems a little less intimidating. Also, people are asking questions they may not have thought of that are really useful.”

One approach that was repeatedly mentioned during interviews was a group-based approach with additional one-to-one support. Additionally, having older adults themselves involved in the teaching was recommended as a strategy.

Accessibility

Accessibility was highlighted throughout interviews with stakeholders. Program delivery personnel reported teaching participants how to enhance the font size, use magnification, adjust volume, and turn on closed captioning on videos. It was reported that many participants struggled with the swiping motion required to operate the tablet. Community organizations noticed these barriers among participants and quickly adapted to meet participants’ accessibility needs. One volunteer recounted the accessibility challenges experienced by older adult participants:

“Number one challenge was, I think, in future, if possible, if they could have a tablet that includes a stylus, because I find that everyone’s on a different level for their hand and mobility issues. But being seniors, their hands are not used to using tablets, and their fingers, when they press, because it’s such a small board, they press two letters at the same time, or their hand is shaking, or their hand is sore. And once when I recommended it to them, one lady had her daughter buy her one, and it was amazing how much better. After everyone tried it, it was so much easier, because they can hold a pen.”

Additionally, in response to the difficulties with dexterity and fine-motor skills, the volunteers taught the participants how to use voice commands to navigate the tablet.

A service provider in Winnipeg discussed challenges in relation to newcomer older adults who may have difficulties speaking and reading English. This individual stated:

“One challenge that we’ve run into with our senior immigrant settlement services clients was that they had different levels of English language competency. An issue that came up is that there may be language barriers, because all the written materials currently are in English.”

Ensuring that materials are translated into different languages will help to reach diverse older adults and reduce barriers to access.

IMPACT ON SOCIAL CONNECTEDNESS

The tablet fostered social connectedness by increasing the social participation of older adults. It was reported that older adults used the tablets to connect with their family, participate in recreational and social programming, and for entertainment purposes, such as listening to music and watching videos. The ability to continue participating in recreational and social programming enabled older adults to stay connected to their community. This was seen as especially beneficial during the pandemic; with lockdowns and social distancing contributing to social isolation and loneliness. When pandemic restrictions eased, group-based programs provided a space to socialize and meet other older adults in their communities. This increased feeling of connectedness was discussed by a program participant:

“You’re reading up on different things. You see the pictures; you see the little video or something you might see it. And it’s kind of nice, it does take you into another world. And you’re not feeling isolated because you could take a trip and see oh, well there’s that guy and he’s going on his yacht, and he’s sailing and he’s talking about his experience, so you get to enjoy other people’s experiences. And then later on, you say well, I’m still sitting here but for that while you did not feel the shut-off and you kind of felt connected, you know?”

For one participant, being socially connected meant more to her than just interpersonal relationships; it meant being connected more broadly to the community and society. She described how the tablet has helped her feel more connected to society through increased awareness of global issues and current events:

“My looking at connectedness, now I’m coming from a person living alone, no kids, no family in [city of residence], zero, I consider connectedness, even when I can read what’s happening in the world. What’s going on?”

This expanded understanding of connectedness relates to a theme within the literature that older adults expressed feeling excluded from society due to a lack of digital access.

Limitations and Future Research

It was found that there was a gap in the literature on digital literacy among marginalized older adults. Many of the participants in the studies included in this review were middle to higher income, healthy, and primarily Caucasian, all of whom voluntarily participated in the program. Future research should include older adults with diverse educational backgrounds, income levels, health statuses, ages, races and sexualities. The older adult perspective was limited to only one participant, and therefore, conclusions about the impact of the program cannot be made.

RECOMMENDATIONS

The following best practice recommendations are based on evidence from the literature review and multi-stakeholder interviews. These recommendations can be used by community-based senior services organizations in the planning and delivery of digital literacy programs.

- **Community-based:** Working with the community can help to identify eligible older adults and can facilitate rapport and the development of trust. In rural and remote communities, look to where people gather, such as libraries, community centres, or schools that have a strong wifi connection.
- **Accessibility:** Integrating accessibility into the delivery of programming can enhance the experience of older adult participants. Providing accessibility tools

such as a stylus can reduce health-related barriers for older adult participants. Education on accessibility features can be incorporated into the curriculum, such as teaching how to increase font size, brightness, and how to use voice commands. Additionally, translating program materials into different languages can support the inclusion of diverse groups of older adults.

- **Marketing:** Marketing is an important consideration in the planning of the program. Focusing on the goals older adults have when using technology, for example, learning how to use technology to connect with their families, can increase uptake and the motivation to learn. Marketing materials such as flyers or brochures advertising the program can be distributed to individuals connected to older adults, such as healthcare providers or pharmacists, and at places older adults frequent in the community. This strategy can help to reach those who are socially isolated or homebound.
- **Flexibility in program delivery styles:** There is a diversity of digital literacy skills among older adults, ranging from beginner to advanced. Providing opportunities for all older adults to engage with information and communication technologies in the way they want to, supports lifelong learning. For example, holding drop-in hours for those wanting to ask specific technical questions, one-to-one training for beginners, or group programs based on shared interests or skill-levels. Providing an array of options supports older adults' self-determination.
- **Peer-to-peer teaching:** Graduates of the program or older adult advanced users can become involved in the teaching of the curriculum. This

representation of older adults as the “experts” can increase confidence in learners, in essence, the feeling of ‘if they can do it, so can I’. This can also contribute to a sense of purpose and belonging for the older adult trainer.

- **Cyber-security:** Older adults expressed fears relating to cybersecurity including fear of fraud, stolen identity, and viruses. It is important that cybersecurity training is incorporated into digital literacy curriculums, including information on how to identify common scams and fraud. This knowledge can help to reduce fear among participants.

CONCLUSION

In conclusion, digital literacy training programs are important for enhancing older adult social participation and inclusion. Digital literacy is no longer “nice to have”, but rather is essential to live and participate in an increasingly digital society. Older adult technology use is increasing with time, however, gaps remain. While older adults encounter many barriers to building their digital literacy skills, there remains an enthusiasm to learn. Digital literacy programs provide one way to bridge the digital divide that exists among older adults. In the words of one stakeholder, “*digital equity creates real equity.*” Programs should adhere to evidence-based best practices to ensure that they are meeting the diverse needs of older adult learners.

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