

Digital Literacy Training in Canada, Part 2: Defining and Measuring Success

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ABSTRACT

This study explores how public libraries and other local community organizations can best deliver and evaluate the digital literacy initiatives they provide to the communities they serve; this article focuses on program evaluation. Interviews with 14 administrators of digital literacy programs revealed that administrators espouse idealistic intentions for digital literacy programs, particularly to give marginalized people increased educational and vocational opportunities. These administrators are also confident in the success of these programs, despite little formal assessment of outcomes for learners. Success is measured by numbers of program participants and anecdotal evidence of positive outcomes for learners, such as increased confidence or an intention to move forward with career goals. This limited approach to measuring the success of digital literacy programs reveals significant opportunity to more fully and systematically evaluate the outcomes of these programs and to assess whether program goals are being met and ongoing investment of resources is merited.

In twenty-first-century knowledge societies, success in school, workplaces, and everyday life is supported by digital literacy. We define digital literacy as “the set of skills, knowledge, and attitudes required to access digital information effectively, efficiently, and ethically” (Julien 2018). We distinguish digital literacy from information literacy in that the latter is broader and includes nondigital information. Development of digital literacy skills can occur in a variety of contexts, including schools and libraries. This study is focused on the digital literacy programming offered in Canada by public libraries and other community organizations. The goal of the study is to explore digital literacy instruction in these contexts and to identify best practices, including evaluation, of these initiatives. Three areas of focus across two study phases include (a) organizational factors that foster or challenge digital literacy initiatives led by public libraries and other community organizations; (b) user considerations that influence community member uptake of these initiatives, lead to gains in digital literacy skills development, and foster greater

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digital literacy appreciation among community members; and (c) performance measures that effectively evaluate digital literacy initiatives led by public libraries and other community organizations. This article is the second of two articles related to the organization of digital literacy programs, based on interviews with program administrators; this article focuses on how administrators of these programs define success and measure it.

Although digital literacy programs in Canada appear to promote digital literacy, increase digital comfort, and encourage the adoption and use of digital technologies (Nordicity 2018), there remains a need for comprehensive performance measures that assess the effectiveness of digital literacy initiatives. Performance measurement approaches for libraries such as the Public Library Administration's Study Outcomes Toolkit and the Edge Toolkit, developed by a coalition of 12 US library and government associations, fail to provide an inclusive, research-based approach to evaluating the effectiveness of digital literacy programs. Standardized performance measures (i.e., input, output, and outcome measures) for digital literacy initiatives that provide a common language and a common set of evaluation tools are needed as part of a National Digital Literacy Strategy for Canada.¹ Such tools could include quantitative and qualitative measures, could assess organizational factors and user considerations related to success, and would allow inter-institutional comparisons at multiple levels. In addition, a measurement framework based on Canadian research would be more relevant and valid in the Canadian context.

Literature Review

Assessing Digital Literacy

Digital literacy instruction assessment can be informed by evaluation of information literacy instruction (ILI). Bonnie Gratch Lindauer (2004) proposes that assessment of ILI must take place at the intersection of three "arenas": the learning environment, program components, and student learning outcomes. Learning environments and program components must be guided by measurable learning outcomes, such as test performance, portfolios, grades, and assessment of skills and attitudes. Furthermore, evaluation of training programs must be integrated into the institution's goals and mission and an instruction curriculum linked to student learning outcomes. Assessment should be a recursive project that informs all areas of ILI, from institutional goals and advocacy to instructional techniques and expectations of students.

Research on ILI has followed Lindauer's path. Brian Detlor et al. (2011) report that ILI in a business school led to improved *psychological* outcomes, such as perceptions of the university library and its services and decreased anxiety about library research. Furthermore, positive *behavioral* outcomes included increased use of online library services, library staff, and the physical library. Students reported increases in *benefit* outcomes by improving the efficiency and effectiveness in

1. From a confidential briefing to the board of the Canadian Federation of Library Associations from the chair of the Canadian Urban Libraries Council, by Paul Takala, March 27, 2018.

their research habits, which raised grades, saved time, and prepared them more comprehensively for the workforce. This study found that students receiving instruction asked more sophisticated questions about sources for course assignments, pursued their inquiries earlier, and strategized their research more thoroughly. Students reported decreased anxiety with digital resources and physical library sources and services, and student perceptions of libraries and resources improved.

Nevertheless, formal evaluation of ILI in academic libraries is relatively rare. The latest national survey of instructional practices in Canada revealed that most academic libraries rely on informal assessment approaches (Polkinghorne and Julien 2019), a finding replicated in the United States (Julien, Gross, and Latham 2018). The authors observe that the informality of assessment and evaluation negatively affects ILI: “In the absence of systematic assessment of learning outcomes associated with information literacy instruction, the return on investment in instructional work is uncertain, and administrators may have difficulty supporting instructional work” (Julien et al. 2018, 189).

In the Province of Ontario, where the study was undertaken, a recent initiative to develop a kit enabling public libraries to conduct performance measurements in areas of technology services resulted in a product called “BRIDGE” (Abram, Glass, and Ho 2018). Developed with the assistance of provincial government funding, the toolkit is intended to enable public libraries to measure outputs and outcomes of technology services, make evidence-based decisions about technology services, benchmark technology services within the province’s public library sector, and understand the preparedness of staff delivering technology services.

Initial results following application of the toolkit point to positive outcomes, including digital inclusion; digital literacy (defined as increases in technology adoption and comfort with technology); community, social, and civic engagement outcomes; creativity and innovation outcomes; entrepreneurship and business development outcomes; and, workforce development outcomes. Collecting data from 1,561 customer surveys across Ontario public libraries, Nordicity (2018) reports on an initial implementation of BRIDGE. Among digital technology users at these libraries, 92% reported being introduced to new technology through the library and were encouraged to continue using that technology. Importantly, 91% of these users reported their status as a visible minority. A large proportion of respondents (81%) commented on increased social and community engagement through library technology. These kinds of outcome measurements are essential for establishing best practices in digital literacy and inclusion.

Public Library Evaluation

Apart from evaluating digital literacy programs, general evaluation in public libraries was historically focused on input measures, specifically collection-related statistics (Closter 2015). A shift to more user-centered outcome measures came later (Davis and Plagman 2015), including concern for social impact. Karen E. Fisher, Joan C. Durrance, and Marian Bouch Hinton (2004), focusing on community impacts, explore the psychological, behavioral, and benefit outcomes experienced

by New York immigrant communities when engaging needs-based services at their local branches. Through needs-based services, immigrant users find free, safe environments; obtain knowledge that socializes them into a community and its resources; gain experience with these resources that they share with friends and family; and grow to trust library staff. Personally and interpersonally, these services encourage immigrant users to build social networks, boost their self-confidence, gain technology skills, and prepare for education, employment, and citizenship in their new sociocultural circumstances. These authors produced a valuable guide for public librarians seeking to identify these kinds of outcomes (Durrance and Fisher 2005).

In a neoliberal era of declining public funding and increased pressure to justify that funding with demonstrated outputs and outcomes that benefit the community, a recent text provides helpful guidance for public libraries seeking to meet these expectations (Gross, Mediavilla, and Walter 2016). This practical tome rests on a significant history of effort to evaluate the public library in terms of its inputs, outputs, and outcomes (for a summary, see Closter 2015). Indeed, the Institute of Museum and Library Services (2021) in the United States emphasizes the importance of outcome measurement by providing a resource page on its website. At the same time, measuring the economic value of public libraries to demonstrate adequate return on investment of public funds remains an ongoing project (Jaeger et al. 2011).

In Canada, the Working Together Project focused on public libraries working in partnership with marginalized communities to provide useful library services and resulted in the “Community-Led Libraries Toolkit” (Working Together Project 2008). The project, led by Vancouver Public Library, also included libraries across the country, including Regina, Toronto, and Halifax. The services of focus included computer training, defined as “a program or service that helps people increase their ability to use computers, as well as their knowledge, selection, use, and evaluation of electronic information and tools” (Working Together Project 2008, 96). The toolkit provided several possible indicators of success, including relevance (new skills), improved understanding of computers and their affordances, increased self-confidence and independence, and increased use of the library and library staff. While the Working Together Project was primarily focused on engaging productively with marginalized persons, the specific outcome measures introduced in the toolkit appear to have sufficient face validity for possible application today.

Unfortunately, despite these individual projects providing evidence for and guidance in evaluation, there remains a lack of comprehensive and standardized approaches to assessment of training initiatives in public libraries and in other community organizations that play a role in digital literacy training. This lack limits understanding of effective approaches to that training and measurable outcomes.

Purpose of the Study

This study asks, How can public libraries and other local community organizations best deliver and evaluate the digital literacy initiatives they provide to the communities they serve? If these

organizations are to provide effective digital literacy programming, defining success and evaluating the outcomes of these programs are fundamental. This article addresses a specific question: What constitutes a successful digital literacy training initiative within the local community context? A separate article addresses organization of digital literacy programs. The overarching goal of the study is to articulate recommendations for running successful digital literacy training events for local communities. Scholars from multiple disciplines (library and information science, information systems, social science, and business) are conducting the study, with support from the public library sector and other community organizations, to explore digital literacy programming from interdisciplinary and interinstitutional perspectives.

Methods

The study reported in this article is the first phase of a two-phase design conducted in Canada. The study received ethics approval from McMaster University and includes multiple community partners, Hamilton Public Library, the McMaster Office of Community Engagement, the Canadian Urban Libraries Council, and the Canadian Federation of Libraries Association, which are providing advice and support to the project. The first phase included interviews with administrators of public libraries and community organizations that offer digital literacy training opportunities and with the trainers and clients of these trainings. In addition, participant observation of training sessions, demographic surveys of clients, and analysis of training-related documents were also included in phase 1; those data are not reported here. The second, future phase will include national surveys of public library administrators, trainers, and clients, to seek generalization of the qualitative findings reported here. This article focuses on the interviews with 14 administrators in phase 1 who discussed their perspectives on success and performance measurement of digital literacy programs. Those data are reported in this article.

The administrators represented two public library systems in the Province of Ontario in Canada, one in a medium-sized city and the other in a large city, as well as five nonlibrary community organizations including a local industry education council, a youth club, and a math-focused training program. All participating organizations were recruited using snowball sampling. All community organizations were located in the medium-sized city. These administrators were all involved in the design and/or administration of a digital literacy training initiative. They were recruited by direct contact, and all provided informed consent to participate in individual interviews. Interviews lasted from 45 to 60 minutes at a location of the participant's choosing. Interviews were digitally recorded and transcribed by a transcription service, NoNotes. The interview protocol is provided in the appendix. Transcripts were analyzed using DeDoose software, with a constructivist grounded theory approach (Charmaz 2014), and grounded theory data analysis procedures, including the flip-flop technique, use of constant comparisons, and the coding paradigm tool (Strauss and Corbin 1990; Corbin and Strauss 2015).

Results

Defining Success: What Constitutes a Successful Digital Literacy Training Program?

Administrators in all types of organizations tended to describe the purpose and structure of their programs in notably high-minded or idealistic terms. Public libraries were described, for instance, as a democratizing social force, and their enduring importance and fight against corporate monopolies regarding information and technology were stressed. The difficulty comes when an institution attempts to measure achievement of these ideals as an outcome of digital literacy training, a challenge that some administrators are aware of. As one community administrator shared, “[Name], who is working with me, keeps telling me that I am not concrete enough because all I want is awareness and understanding. I want to heighten the awareness and understanding of Canadians and she’s tells me ‘Well [Name] that’s wonderful but that’s not measurable. What are we going to actually measure?’”

There may be some reasons for speaking in these idealistic terms. Interviewees may be giving the kind of answer they think the interviewer wants to hear (e.g., about inclusion, the legitimacy of libraries, or the fight for an informed public). Interviewees might be more or less removed from the program’s daily operations and so less able to speak on concrete outcomes than one of the instructors. They may also talk about programs in ways that speak to broad audiences of interested parties and stakeholders (e.g., city councils, the press) and appeal to common understandings of the inherent goodness of education, literacy, access to information, democracy, and so forth. They may also simply lack any evidence to talk about the program in more concrete terms.

Success of digital literacy programs is a challenge to gauge. Most program administrators acknowledge that their projects are measured as successful based on participant attendance and retention. Success is premised on program attendance, and the assumption (typically regretted) that learning is going on and outcomes are being shaped. Several interviewees voiced concern that evaluation and data collection have not been explicitly planned within their training projects. More rigorous evaluation is evident in the research institutions, and the need for evaluation planning was recognized by these interviewees. Community programs seem least likely to plan for evaluation.

The success of programs as described by administrators fell into four general categories: (a) participants’ general understanding of information technology in their own lives, (b) service for underrepresented groups, (c) numbers and retention of participants (returning participants, growing programs, drawing in friends/families), and (d) positive life outcomes for participants (increased confidence; applying skills learned to new jobs, education, and hobbies). As most programs are still in the process of developing formal evaluation procedures, when respondents were asked about positive aspects of training, their comments were not based on actual data. However, a large proportion of respondents stated that program participants had observably greater confidence and enthusiasm toward using digital technology following training. A number

of administrators also commented on increased positive interactions with community partners (e.g., schools, youth clubs, and charities). Finally, several interviewees praised the programs for helping users gain a useful end product, such as a certificate or personal project.

Public Libraries

One public library administrator (PLA) said, “People keep coming back, we’ve got a really low dropout rate, and we’ve got the next cohort up and ready to start. So the demand is there, whether how they feel about it during the process remains to be seen, which I hope to capture in the evaluation and whether it’s really effective or not.” Another shared, “[I] saw an older adult being helped by a teen and the older adult, she was just so thrilled to . . . to learn how to do it. She’d been really, really frustrated that she couldn’t . . . figure out how to put . . . a book on her tablet, and . . . when the team showed her how to do it, she was just like, ‘Oh, I can do that.’ I think that it really makes them feel empowered, and it makes them feel more confident, nobody wants to feel dumb.” Another said, “We’re halfway through this first cohort and we’re hearing great things about the learning circle model. Well, this cohort doesn’t formally finish until December, there’s 20 people who completed the four courses, and two of them are already employed.”

In public libraries, success is defined primarily by contributing to digital inclusion; digital literacy; community, social, or civic engagement; increased confidence; workplace development; and “resilient” communities. Secondly, success is defined in terms of highly attended classes and returning participants. One respondent noted, “I think that a successful digital literacy program is when the person who took the program can teach somebody else . . . to have the confidence to teach somebody else.” Another said, “So, they’re confident that . . . now they use that equipment or see them if they comment, suggest, or ask, ‘Okay I know all about this, do you do something like a bit more advanced?’ And so [we] have recommendations from people saying, ‘Oh, I had a friend who took this, we took this course and now here’s my family.’” Another PLA said that success would be demonstrated if program participants “would develop confidence that they possess these skills. That people use these skills for success in their lives (e.g., finding a job, pursuing a hobby).”

Community Organizations

Community organizations define success in terms of high numbers of participants and repeat participants. These administrators note that their programs increase participants’ confidence in using digital technology, and surveys of participants show increased interest and understanding of the benefits that accrue from training. One community administrator said, “There are some scholarships attached to being part of this program that have helped people. And then us, internally, we have some opportunities as well, as well through other things through [the youth club] that support you financially to be able to go to school.” Another stated,

We also do surveys with the participants, kind of in general as well as for specific programs. . . . This is something I find useful. This is something that made me think about [a] possible career or think about, do I feel like I know more about the things I've learned [than] I did before. How much did you know before? How much do you know after? Those types of things. So, if we're finding that people are still feeling like they gained something out of being in the programs, then we would . . . think about continuing them.

Research Organizations

In research organizations, administrators note that program participants gain a greater understanding of artificial intelligence (AI), data security, and algorithms. One research administrator stated that participants gain “a better understanding of how AI works—how my data is used in algorithm processing . . . so use of particular technology or, you know—I now know how I'm going to do something differently as a result—some outcomes like that.” In these organizations, success is also defined as high numbers of participants and returning participants, as well as new employment, business development, and further education for adults. In this context, heightened awareness of AI among participants was also cited as evidence of success.

Measuring Success

Public Libraries

The large public library uses BRIDGE for performance measurement. This library is also undertaking a third-party survey of citizens, measuring who values and uses the program. Staff want to know who is being served and who is not. They expressed a concern that surveys might be too “high level” and simply get overly positive results. The BRIDGE evaluation could help show the library staff who they are surveying. This library seeks to use evidence-based decision making and recognizes that the public library system is challenged by “a culture of evidence-based decision-making which is new for the public library sector. Thinking in terms of outcomes is a little bit new for the public library sector.” This same respondent stated, “I'm a big fan of standardized tools mostly because most public libraries don't have that, they don't have a planning department to be able to pull it together to do rigorous testing of tools, we need good tools that are easily implementable.”

The medium-sized public library also uses BRIDGE for evaluation. One respondent from this library explicitly acknowledged that evaluation is almost nonexistent. The digital literacy programs do not even require registration. At one point, staff did a survey to try to identify training gaps but found it challenging to implement the survey results. An administrator from this library stated, “I don't think we do the best job right now. I know for youth programs mostly

we do feedback forms. We do some survey forms as well for tech programs. But I think that's kind of the level we are right now, just trying to get feedback from customers."

One PLA stated that "output is really, in my view, the good evaluation. Because we're doing this either for somebody to find a job or for someone who's social or isolated to feel more connected. Or someone who can think of, like, a professional experience . . . this might make them interested in getting into technology or take away of fear of technology. So, again, the impacts to me of training on people's lives is very much, like, learning, reading books, right? I mean, how can you measure the success of reading other than success in life they'd want?" Another said, "If we offer a program and it's well attended, then we'll offer it again. And so, kind of, how it works is, we're always looking at our people. Is this still working? Are people still coming? Are they still finding it useful? And so then we'll keep doing it . . . [but] if we offer it and no one comes, then we're not going to offer that again."

Community Organizations

At one of the community organizations, "qualitative-type information" is used to evaluate programs. Success is also based on the number of students finishing high school and going on to postsecondary education. One community administrator noted the absence of researchers and research experience to put together a rigorous evaluation survey. At another community organization, success is characterized as "gaining knowledge." This organization was planning a 6-month follow-up to see if students have found relevant jobs and continued to use web-building skills. This organization also collected anecdotal data as part of a grant application. Another community organization shared that its funder requested short interviews with students (some "real feedback as opposed to a survey"). The organization conducted short pre- and postprogram surveys for after-school programs, tracking student development of skills, perceptions, and attitudes toward science, technology, engineering, and mathematics (STEM). It also attempted to survey parents, with very limited results.

The third community organization expressed a desire to get student numbers over time. This organization is giving students anonymous identification numbers to track attendance and retention. For youth programs, success is based on retention and return; for adult programs, success is achieved when participants go on to postsecondary education or start a small business. One respondent stated,

For us, success comes from the kind of beginning. When you're starting up your program, you're looking at what is your goal, what do you want to do. Our two programs have different successes. The kids' success is that they come back. We want to see them again. We want to move them to the next step. We want to keep progressing through the stages . . . but for our adult program's success, that's a little different. It's how are you

then using these skills that we've given you in these twelve weeks. A fantastic success . . . is that they go to postsecondary or that they've started a business.

Another respondent noted,

As of graduation when they were leaving, they all gave us some feedback forms that are part of our grant. All of which had great outcomes. Then, we took some anecdotal information when we're there, say, "Okay well, what are your next steps? Where are going?" I think it was five that completed. Two had said they were going to look into [college] programming and . . . the other three just wanted to use it in their daily life. There was a woman who came in and the web site that she created at the end was to build a recipe web site because her friends are always asking her for recipes and sharing it . . . personal . . . accomplishment is good too.

Research Organizations

At one research institution, there are plans for quantitative and qualitative measures (surveys and conversations). The surveys will include a series of competency statements about the relation of AI to personal information and security, social media platforms, job screening, and employment.

At the other research organization, an outside evaluator will be brought in to conduct an evaluation that aims "to capture how participants feel about the program and the subject of STEM in general, at both the beginning and end of the program." This evaluation includes pre- and postprogram surveys given to both participants and instructors, although instructors are more likely to complete them. In addition, more than 100 interviews with program administrators were done.

The respondent from this organization noted that it is difficult to evaluate digital literacy programs because there is no standardized assessment tool, and often evaluation surveys are too long or too short. Another research administrator noted that for one program, "our target was to ensure that 60% of our participants identified as female. However, our latest numbers indicate that our female participant average is sitting at roughly 30% across all six sites." Another respondent stated that "program success would be competency and confidence in hardware/software and IL [information literacy] skills." Evaluation reports focus on outcomes like better understanding of AI, algorithm processing, and demographic information. One research organization is concerned with how behaviors and attitudes have shifted as a consequence of the training and seeks feedback on program pedagogy as well as content. Another research administrator said, "I'm actually trying to figure out how to evaluate it because part of the challenge is, we certainly know how many people were accepted into the program and we know how many people complete the program—trying to figure out if we can keep track of them, to ask if they have found employment as a result of this training, is something we're going to have to ask the participants to agree to, to be contacted after the fact."

Discussion

Research organizations appeared to emphasize evaluation more than public libraries or community organizations. Overall, respondents explained that the issue of performance measurement is an ongoing, largely unanswered concern. Success is defined by administrators from all three organizational types in terms of inputs (program attendance) and outcomes related to clients' personal successes. However, those successes are mostly represented idiosyncratically and recorded anecdotally rather than being brought together in a systematic approach to program evaluation. The majority of respondents commented that their programs are still in the process of evaluating or developing proper evaluation of their digital literacy programs. The respondents who explain their performance measurement as solely program attendance also expressed their wishes for more in-depth measurement of user outcomes (e.g., new skills, job, or education). It is noteworthy that the reliance on informal evaluation revealed in these interviews echoes research on information literacy training in the academic library context (Julien et al. 2018; Polkinghorne and Julien 2019) and raises questions about the ways in which public library administrators, in particular, justify investment of resources in digital literacy programs.

Digital literacy programs can be viewed as attempts to enact democratic values at the civic level: democratizing information access and skillsets by offering instruction to individual users. Administrators across all organization types see libraries as cornerstones for democratic information use, and digitally literate people as best able to participate in the economics and politics of a digitally driven society. These program administrators tended to voice these democratic ideals as the primary reasons for their programs' implementation, and anecdotally, positive outcomes for program participants can be identified by these participants. Anchoring responses in idealist terms may serve multiple purposes (e.g., abstract but impassioned advocacy for the program), but they do not substitute for succinct communication of the actual outcomes of digital literacy training (e.g., psychological, behavioral, and benefit outcomes). These ideals are not measurable as instructional outcomes: the democratization of information access or challenges to monopolies of information cannot be assessed through an instructor or participant evaluation. Until program administrators' professed program goals can be aligned with measurable outcomes for participants, evaluation will be challenging.

Currently, the perceived success of programs across organization types is primarily based on attendance at instruction sessions and retention of participants. This is clearly not an optimal way of measuring program success. Rather, assessing individual psychological, behavioral, and benefit outcomes of program participants would provide valid evidence of program outcomes and help to justify the investment of public and private funds into digital literacy programming. As noted by Polkinghorne and Julien (2019), in the absence of formal evaluation, advocacy to external stakeholders is challenging. The key to successful evaluation is planning, which starts with understanding what information and data are needed, ideally both quantitative and qualitative, and asking the right questions to elicit those data (Snead 2014).

Limitations

There is the possibility that the administrators interviewed for this study were not aware of the measurements of success actually being implemented in their organizations. Their perspectives may have been influenced by their perceptions of what stakeholders want to hear, leading them to focus on democratic ideals rather than measurable outcomes. In addition, the generalizability of these findings cannot be assumed on the basis of this small-scale qualitative study limited to a single Canadian province. The future national survey will seek to remedy that limitation by collecting more generalizable data.

Conclusion

These interviews with administrators can help to answer our original research question: What constitutes a successful digital literacy training initiative within the local community context? From the perspective of our respondents, success is characterized by program registrations and by anecdotal evidence of outcomes such as increased confidence using information technology, moving forward with educational or career goals, and reducing the digital divide. Although both public libraries claim to use BRIDGE to evaluate programs, that use did not appear to have any significant role in evaluating the success of digital literacy programs. The reasons for a lack of rigorous evaluation are unknown, but in the public library context, they may relate to a lack of training in evaluation during professional preparation for librarianship and thus a lack of capacity, as well as limited perception that performance measurement may be valued at the board or civic level. Administrators in the community and research organizations may well lack training in evaluation methods, although that was not explored in this study.

The voices of the administrators heard here shed some light on one critically important aspect of digital literacy training in Canada—namely, how success is defined and measured. However, these perspectives must be balanced with the voices of program instructors and program participants to flesh out the picture of digital literacy programming in Canada. In addition, the national survey to be conducted in phase 2 of this study will test these findings across the country and provide a more thorough understanding of the investments being made in digital literacy training and the outcomes of those investments for individual Canadians, as well as the implications for the country as a whole. At that stage, specific recommendations for practitioners and policy makers on how best to implement and measure the success of digital literacy programs will be developed.

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