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Research Article

A Survey of Public Library-Led Digital Literacy Training in Canada: Perceptions of Administrators and Instructors

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Abstract

Objective – This paper presents the results from a survey of administrators and instructors at public libraries across Canada investigating the delivery of digital literacy training led by public libraries. The goal of the survey was to capture a snapshot of the Canadian public library-led digital literacy training landscape and to explore differences in perceptions of training activities between public library administrators and instructors.

Methods – An online survey was distributed to administrators and instructors at public libraries across Canada with the help of two national public library associations. The survey instrument was developed based on a theoretical framework from the research team's prior case study investigations of community-led digital literacy training. The survey included closed- and open-ended questions concerning the availability of adequate/sustained funding, the adequacy of dedicated classroom resources, the competency of teaching staff, the helpfulness of support staff, the amount and frequency of knowledge sharing of best practices, the amount of rigorous and regular performance measurement, the scheduling of the training provided, the skills taught, the pedagogical approaches used, and the marketing carried out. Responses were analyzed using both quantitative and qualitative data analysis techniques.

Results – Public library administrators and instructors in Canada are generally satisfied with the delivery of digital literacy training; however, room for improvement exists. Instructors are more positive about the delivery of this training than administrators. Findings support and extend the research team's conceptual model, specifically in terms of providing more insight and clarity on how the learning environment and program components affect the delivery of digital literacy training led by public libraries. Results highlight how training is situated in context and how libraries need to fine-tune the delivery of this training in ways that are reflective of libraries' learning environments and program components.

Conclusion – Results are of high interest to researchers and library practitioners who wish to leverage evidence-based library and information practice to understand and address the factors affecting the successful delivery of public library-led digital literacy training. Though funding is always an obstacle for any public service organization, libraries can make improvements to the delivery of their training in other ways, such as carrying out more robust performance measurement and using results more transparently, participating in more knowledge-sharing opportunities, and better understanding learner needs and preferences.

Introduction

Digital literacy refers to the "set of skills, knowledge and attitudes required to access, create, use, and evaluate digital information effectively, efficiently, and ethically" (Julien, 2018, p. 2243). Digital literacy is about the awareness, attitudes, and ability to appropriately use digital tools to manage information in the digital age, including the ability to identify, access, manage, evaluate, analyze, synthesize, construct, create, and communicate information (Bawden, 2008). By these definitions, to be digitally literate implies

knowing not only how to operate digital devices (such as laptops, smartphones, and tablets) but also how to critically assess the information accessed through these devices.

In today's information society, people need to be digitally literate to fully participate and thrive. Digital literacy can bridge the digital divide (Abdelaal & Andrey, 2022) and is a critical competence for empowering citizenship in a digital world (Marín & Castaneda, 2022). There are substantial benefits in being digitally literate, including more positive health outcomes (as people are more able to obtain high quality health information online), better access to government services, improvements in workforce development (improved job performance, employment), reduced social isolation, and improved protection against online threats such as phishing scams and identity theft (Detlor et al., 2022; Julien, 2018).

However, many members of society – especially those from marginalized populations such as seniors, youth at risk, newcomers, and immigrants – may lack the financial means or necessary educational prerequisites to obtain digital literacy skills training (Abdelaal & Andrey, 2022). Fortunately, public libraries deliver low-barrier, very low-cost or free training that these populations can access (Manžuch & Macevičiūtė, 2020). Public libraries provide community members with complimentary access to digital literacy training, Wi-Fi, and various information technologies, from basic computers to advanced tools. They often offer diverse digital training methods, ranging from self-guided tutorials to personalized support, group sessions, guest lectures, specialized professional training, community partnerships, and technology-centered spaces (Barrie et al., 2021; Julien et al., 2021; Wynia Baluk et al., 2021).

While the provision of digital literacy training is a core public library service (Nordicity, 2018), it is uncertain how different library personnel perceive the delivery of this training. Administrators, who are responsible for the overall management, operations, and fiscal health of the organization, may have different views than those of instructors, who are responsible for the direct face-to-face delivery of the training. As such, the study asks, "*How do public library administrators and instructors differ in their perceptions of the digital literacy training they provide to the communities they serve?*"

Answering this question is important to public libraries as they play a pivotal role in digital literacy promotion in their communities. Little research is available on the provision of digital literacy training by public libraries, particularly in terms of the factors that promote or impede successful digital literacy training delivery. Libraries would benefit from understanding these factors, especially in terms of the perspectives of library administrators and instructors, as a first step towards implementing actions within their libraries that foster successful training and mitigate or eliminate barriers that impede delivery.

Literature Review

Digital Literacy Training

As described in the previous section, in today's digital age, digital literacy – the ability to navigate, understand, and effectively use digital tools and information – is paramount. One way to obtain digital literacy skills is through the provision of digital literacy training. Digital literacy training is an encompassing educational initiative aimed at equipping individuals with the requisite skills, competencies, and knowledge required to function confidently in a technology-driven environment (Barrie et al., 2021; Bawden, 2008).

To improve digital literacy skills among community members, digital literacy training is needed. However, barriers to the delivery of digital literacy training to community members exist, especially to marginalized populations such as seniors, at-risk youth, newcomers, and immigrants. These barriers include: a lack of access to the Internet, data, hardware, and software; the inability to pursue education and training opportunities due to financial, mobility and geographic restrictions; learners not seeing themselves reflected in the digital literacy training programs provided; intimidation and fear of failure; and insufficient intermediate-level digital literacy training opportunities (Elfert, 2019; Huynh & Malli, 2018; Smythe et al., 2021).

Importantly, public libraries, as well as other local community organizations such as social service agencies and not-for-profits, play a key role in overcoming these barriers to digital literacy that local community members face by providing free or low-cost training opportunities and striving to serve those from marginalized groups who may not have access to such training typically accessible to more privileged counterparts (Julien et al., 2021).

Digital Literacy Training and Public Libraries

Public libraries play a key role in the promotion of digital literacy skills to the communities they serve. They offer communities free access to digital literacy training, Wi-Fi, computers, and tablets, as well as more sophisticated technologies (Detlor et al., 2022). They provide digital literacy training and support for both beginners and those with more advanced skills. This can take a variety of forms, such as self-guided help, one-to-one support, group, one-off, and multi-event informational sessions, guest speakers, digital training targeted for specific professions, partnerships with community organizations, and makerspaces or technology learning hubs (Julien et al., 2021). Furthermore, public libraries strive to create a welcoming social space where many people feel comfortable asking questions (Barrie et al., 2021; Wynia Baluk et al., 2021).

In this way, public libraries are at the forefront of addressing the digital divide, offering targeted digital training and services for those who are marginalized (Wynia Baluk et al., 2021). For example, in Andrey et al.'s (2021) multi-method online and phone survey of 2,500 Toronto residents to better understand Internet and device access, "42% of those in Toronto without home Internet use the public library for access, compared to 16% overall" (p. ix).

By promoting digital literacy and inclusion, public libraries help make information, skill development, education, social media, and resources accessible to marginalized populations (Wynia Baluk et al., 2023). Further, by providing local community members with free or low-cost digital skills training, public libraries have become important community digital learning hubs (Nordicity, 2018). Contributions to the economic health of communities and the financial success of individuals are major reasons why public libraries teach digital skills (Horrigan, 2015; Public Library Association, 2024). The public wants libraries to teach digital literacy skills and supports public libraries' efforts to help vulnerable populations in this regard (Horrigan, 2015).

Despite the benefits to community members regarding the digital literacy training they receive from public libraries, certain challenges confront public libraries in offering this service. For example, challenges arise from a lack of resources, including staff time, and limited staff expertise, as well as competition for learners' time (Julien et al., 2021). Further, though public library administrators and instructors espouse idealistic intentions with their digital literacy programs, particularly to give marginalized people increased educational and vocational opportunities, and are confident in the success

of these programs, little formal assessment or evaluation of the learning outcomes of these digital literacy training programs occurs (Julien et al., 2022). There is a need to more fully and systematically evaluate the outcomes of the digital literacy training programs that public libraries provide to assess whether program goals are being met and ongoing investment of resources is merited (Julien et al., 2022).

One way that public libraries are successfully mitigating the challenges of delivering digital literacy training is through partnerships with other community organizations (Wynia et al., 2021). For example, a recent case study in London, Ontario of a partnership between two public library systems – a volunteer seniors' organization and a seniors' centre – demonstrates the benefits and challenges of a community partnership approach to the delivery of digital literacy training (Elgamal et al., 2024). Benefits identified in that case study included mitigating access to social network constraints and providing more personalized, socially engaging, and flexible digital literacy training, while challenges pertained to overcoming inherent tensions over differences in organizational structures and ways of working.

A Theory of Community-Led Digital Literacy Training

Information literacy and educational assessment theories (Boyer & Ewell, 1988; Lindauer, 2004; Sims, 1992) propose that the learning environment in which instruction occurs and program components (i.e., the specific features of the instruction itself) collectively influence learning outcomes. Empirical investigations of information literacy instruction given by academic librarians to university students support the notion of a cause-and-effect relationship between instructional training factors (i.e., the learning environment, program components) and learning outcomes (i.e., psychological, behavioural, and benefit outcomes; Detlor et al., 2011; Serenko et al., 2012).

The need to contextualize the delivery of instruction in terms of the learning environment and program components is supported by situated learning theory. According to situated learning theory, learning is situated in context (Lave, 2009) and there is a need to provide best practice in situated-learning environments (Brown, 2006; Brown et al., 1989). For example, Kurt (2021) identifies specific "situated learning" guidelines when designing the delivery of instruction: i) learners should be presented with realistic and relevant problems to solve; ii) instructors should serve as facilitators or coaches rather than as lecturers; iii) learning should promote reflection, discussion, and evaluative thinking where learners are actively engaged; and iv) the content of a course should not comprise neat packages of information taught by an instructor, but rather involve contextual and real-life learning activities.

Using this theoretical background as a guide, the authors of this paper conducted exploratory case study investigations of community-led digital literacy training (Detlor et al., 2022). Results from that study led to the generation of a theoretical framework where the learning environment and program components were shown to influence learning outcomes that impacted overall digital literacy training success. Specifically, factors of the learning environment such as resources, budgets, and performance measurement affected learning outcomes. For example, a lack of skilled instructors or up-to-date computer labs hindered constructive teaching. Restricted budgets limited what type of training could be offered and how that training could be delivered. Instructional programs that were rigorously and regularly evaluated led to the delivery of higher-quality training. Program components, such as the length of a training session, the amount of material delivered, the type of skills taught, the amount of experiential learning, and the timing of the instruction impacted the delivery of the training. For instance, having the length of a training session match the time required for students to comprehend and master the material being delivered led to positive learning outcomes. When the skills taught were most likely to

improve a student's life, when interactive, hands-on learning activities were provided, and when teaching times were convenient to students, better learning outcomes occurred.

Conceptual Model

Figure 1 presents a conceptual model based on the theoretical framework generated from the research team's prior case study investigations of community-led digital literacy training (Detlor et al., 2022).

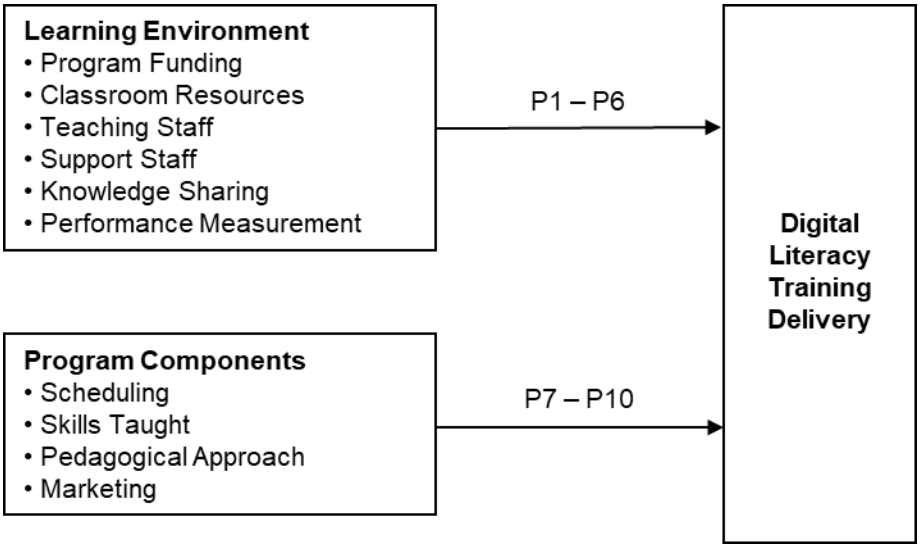

Figure 1
Conceptual model (adapted from Detlor et al., 2022).

As Figure 1 illustrates, both the learning environment and program components impact digital literacy training delivery. The learning environment represents the learning context surrounding the delivery of instruction and includes factors such as program funding, classroom resources, teaching staff, support staff, knowledge sharing, and performance measurement. The following propositions are implied:

- [P1]: The greater the availability of sustained program funding, the better the delivery of the digital literacy training provided.
- [P2]: The greater the adequacy of dedicated classroom resources, the better the delivery of the digital literacy training provided.
- [P3]: The greater the provision of proficient and sustainable teaching staff, the better the delivery of the digital literacy training provided.
- [P4]: The greater the provision of proficient and sustainable support staff, the better the delivery of the digital literacy training provided.
- [P5]: The greater the amount and frequency of knowledge sharing of best practices, the better the delivery of the digital literacy training provided.
- [P6]: The greater the amount of rigorous and regular program performance measurement, the better the delivery of the digital literacy training provided.

Program components represent specific features of the instruction itself and include factors such as scheduling, skills taught, pedagogical approach, and marketing. The following propositions are implied:

- [P7]: The better the scheduling of instruction matches learner needs, the better the delivery of the digital literacy training provided.
- [P8]: The better the skills taught matches learner needs, the better the delivery of the digital literacy training provided.
- [P9]: The better the pedagogical approach matches learner needs, the better the delivery of the digital literacy training provided.
- [P10]: The greater the depth and breadth of marketing, the better the delivery of the digital literacy training provided.

Methods

The study's research question asks how public library administrators and instructors differ in their perceptions of the digital literacy training they provide to the communities they serve. To answer this research question, an online survey to public libraries across Canada was administered via Qualtrics. The survey was based on the study's conceptual model (Figure 1). The survey polled library administrators and instructors about their perceptions of their library's delivery of digital literacy training to the public, specifically in terms of factors of the learning environment and program components.

The online survey took approximately 20 minutes to complete and included closed- and open-ended questions concerning the availability of adequate sustained funding, the adequacy of dedicated classroom resources, the competency of teaching staff, the helpfulness of support staff, the amount and frequency of knowledge sharing of best practices, the amount of rigorous and regular performance measurement, the scheduling of the training provided, the skills taught, the pedagogical approaches used, and the marketing carried out (see the Appendix). Both English and French versions of the survey were created.

A pilot test was conducted at one public library to assess the validity of the survey instrument prior to the roll-out of the full survey to public libraries across Canada. As a result of the pilot test, a couple of survey questions were dropped if: i) they pertained to a library's statistics (e.g., collection size; number of library users) and this data could be gathered by other means (e.g., via a library's annual report); and ii) the answers to these questions varied considerably among survey respondents from the same library. Some pilot test participants indicated that some closed-ended questions were too similar in what was being asked. These questions were re-worded to make them more discrete and different from one another.

Two national public library associations – the Canadian Urban Libraries Council and the Canadian Federation of Library Associations – assisted with the recruitment of participants from their memberships. Three separate rounds of recruitment occurred where emails soliciting participation were sent directly to public library personnel. Each participant was eligible to receive a twenty-dollar online Amazon gift card as an incentive to fill out a survey. This funding was made possible through a grant from the Social Sciences and Humanities Research Council of Canada. Email address information collected from participants to distribute the Amazon gift cards was stored separately from participants' survey responses.

Descriptive statistics were used to analyze numerical responses. Because of small and unequal sample sizes between administrators and instructors, the data did not meet the requirements of parametric

statistics. Therefore, the Mann-Whitney U non-parametric test was used to examine the difference between variables for administrators and instructors. Thematic analysis (Miles et al., 2014) was employed to discover and investigate themes in the textual answers provided to open-ended questions.

Results

In total, 45 respondents (i.e., 29 administrators and 16 instructors) completed the survey. These respondents represented approximately 20 different public libraries across Canada (not all respondents identified their library in the survey responses).

Though a larger response rate would have been preferred, a diverse and representative sample of public libraries of varying sizes across different regional areas of Canada was obtained. The public libraries surveyed comprised both rural and urban libraries, were situated in different provinces across the country, were of varying sizes (e.g., large, medium, small), offered a range of different digital literacy training offerings (some more elaborate and extensive than others), had varying numbers of library personnel dedicated to digital literacy training, had different amounts of training resources available (e.g., classroom space; computer equipment), and had different levels of funding available for digital literacy training (some more extensive than others). In this way, the sample was representative of the general diversity of public libraries across Canada, which span different geographic regions, rural and urban settings, library sizes, as well as staff, resources, and budgets allocated to the delivery of digital literacy training.

Many participants gave detailed responses to open-ended questions asked in the survey; these provided much needed context to interpret answers to the closed-ended questions.

Of those respondents who reported demographic information, an almost equal number of men (12) and women (14) administrators responded. More instructors identified as women (9) than men (6). Gender inclusive options were provided within the demographic questions; however, no participants self-identified as trans or non-binary in these responses.

The average age of administrators and instructors was 42 and 35 years respectively. Administrators and instructors had 15 and 7 years of work experience in the library field respectively. Most administrators possessed a graduate (21) vs. an undergraduate (4) degree, while a more even split between graduate (9) and undergraduate (6) degrees was reported by instructors. Statistical non-parametric analyses revealed no differences between groups in terms of gender, age, work experience, and education at $p < 0.05$.

Learning Environment

Overall, survey respondents were generally satisfied with program funding, classroom resources, teaching staff, support staff, knowledge sharing, and performance measurement with respect to the delivery of digital literacy training in their libraries.

Results showed that, on average, instructors viewed **program funding** more favorably than administrators ($U = 321.5$, median $_{\text{instructors}} = 6.00$, median $_{\text{administrators}} = 5.00$, $p = 0.032$). Analysis of qualitative comments suggests that administrators, who are tasked with library oversight and budgetary responsibilities, are more acutely aware of financial constraints that impact sufficient program funding – something instructors may not fully appreciate. For example, as one administrator noted, "*Funding is insufficient, but it is stable… proper funding for digital literacy requires a healthy budget for materials as well as*

staff and their time." Instructors, on the other hand, were more apt to focus on what could be done with the funding that is provided and think of creative ways to make do, rather than focus on what could be done if more funding were available. For example, one instructor stated, "*No funding is required. I use devices the library already owns for demonstrations, and I advise patrons to bring their own devices for assistance*."

Results showed that, on average, instructors viewed **classroom resources** more favorably than administrators ($U = 346.0$, median $_{\text{instructors}} = 6.00$, median $_{\text{administrators}} = 5.00$, $p = 0.006$). This difference stems from instructors' direct engagement with classroom resources, leading to a greater appreciation of them. For instance, one instructor noted, "*The computer lab is good and works well for the basic classes we offer*," highlighting satisfaction with classroom resources for their immediate teaching needs. By contrast, administrators were more aware of general institutional classroom resource needs and the challenges in maintaining or updating classrooms, as reflected in one administrator's comment: "*The library received a large batch of classroom resources ~5 years ago. Some of these are broken through wear and tear*." Interestingly, all administrators (100%) commented on classroom spatial constraints, whereas no instructors did. As one administrator pointedly stated, "*We currently don't have dedicated space for digital literacy instruction. Programming in this location is similar to scramble parking*," underscoring the general lack of adequate classroom facilities in public libraries and the keen awareness of this limitation by administrators. As administrators need to routinely manage classroom allocation and solve corresponding problems (e.g., find suitable rooms), whereas instructors are always assigned a room, it is understandable that obtaining suitable classrooms is less of an issue for instructors.

In terms of **teaching staff**, most instructors had many years of teaching experience, but as one instructor noted, teaching skills were achieved on the job and not through formal education, "*Over 20 years I think. I was not trained to be a teacher though. Previous jobs have put me in a position where I had to train.*" Instructors noted challenges including a lack of time to prepare and learners' lack of English or French (the language of instruction) when carrying out their teaching. Administrators rated their instructors highly but acknowledged that while the instructors were knowledgeable about the content they taught, they could benefit by being more pedagogically prepared. Because closed-ended teaching staff questions were presented to library administrators only, no statistical analysis was done comparing views on teaching staff between instructors and library administrators.

No statistically significant differences between instructors and administrators with respect to their views of **support staff** were observed ($U = 168.5$, median $_{\text{instructors}} = 4.67$, median $_{\text{administrators}} = 5.67$, $p = 0.126$). An examination of the qualitative comments showed that though both administrators and instructors shared similar concerns regarding staffing challenges, instructors were less confident of the competence of their current support staff and were more critical of the challenges associated with increasing the competence of support staff. Further, instructors were less positive about the collaborative and resourceful support received from support staff. Instructors' harsher perceptions of support staff in the delivery of digital literacy may be due to the direct operational dependencies required by instructors of support staff to help facilitate digital literacy training.

No statistically significant differences were found between instructors and administrators with respect to their views of **internal knowledge sharing** ($U = 261.0$, median $_{\text{instructors}} = 5.67$, median $_{\text{administrators}} = 5.67$, $p = 0.485$) and **external knowledge sharing** ($U = 241.0$, median $_{\text{instructors}} = 4.00$, median $_{\text{administrators}} = 4.00$, $p = 0.829$). Internal knowledge sharing refers to the sharing of knowledge about the delivery of digital literacy instruction within one's library branch among instructors, administrators, and staff. External knowledge sharing pertains to the sharing of knowledge about the delivery of digital literacy instruction with outside stakeholders (e.g., other libraries, community agencies).

The Wilcoxon Signed-Rank Test (i.e., the non-parametric equivalent of the paired *t*-test) revealed that respondents rated internal knowledge sharing much higher than external knowledge sharing (Z=-2.914, median $_{internal}$ = 5.67, median $_{external}$ = 4.00, p = 0.004). In their open-ended comments, they further described that knowledge sharing about the training happens internally but could be improved, and that external knowledge sharing with other public libraries happens less often, but when it does, it is found by instructors to be extremely valuable. Knowledge about how a course is taught is typically shared informally, via word-of-mouth. For example, one instructor explained how they regularly inform other colleagues in their library about the courses they teach, "*I make consistent efforts to educate my fellow staff and my manager about what courses I'm offering, what they entail, and invite my colleagues, where available, to sit in on or even co-lead courses with me.*"

Around half of respondents indicated that their library employed performance measures (i.e., the evaluation of the digital literacy training provided including satisfaction surveys and participant feedback) to assess the quality of digital literacy instruction. When performance measures were used, respondents believed that such measures were generally helpful, comprehensive, and applied consistently. When performance measures were not employed, about two-thirds of respondents indicated that their library used to collect such measures in the past, but this practice was later discontinued.

On the whole, survey respondents consistently reported that **performance measurement** primarily involved the collection of rudimentary statistics (e.g., attendance) and the administration of short evaluation questionnaires. However, this evaluation work was not done on a consistent basis. As one administrator noted, "*Post-attendance surveys are delivered to learners randomly rather than consistently in our system,*" highlighting the irregular rhythm of feedback collection. Instructors were more optimistic than administrators about the utility of the performance metrics collected, largely due to the fact that instructors were more likely to use the feedback received to make changes to their own training. Administrators, by contrast, were concerned about the lack of use of performance measurement data for higher-level library decision making. For example, according to one administrator, "*I don't know how the library actually uses the information they get from surveys,*" highlighting the lack of certainty among administrators regarding performance metrics.

Program Components

Survey respondents were generally satisfied with their libraries' scheduling of the training, the skills taught, the pedagogical approaches used, and the marketing approaches utilized concerning the delivery of digital literacy training in their libraries.

Results showed that, on average, instructors viewed the **scheduling** of digital literacy training sessions more favorably than administrators (U = 327.5, median $_{instructors}$ = 6.00, median $_{administrators}$ = 5.33, p = 0.011).While both administrators and instructors were aware of the importance of scheduling in influencing the uptake of digital literacy training sessions by library users, only the instructors – and all 100% of them – reported the need to tailor the delivery of the training to participant availability. For example, one instructor wrote, "*We provided this course at varying times and dates throughout the spring and summer to accommodate different schedules*." None of the administrators mentioned the need to adapt the timing of the instruction to match the needs of learners. Instructors' closer connection to the direct impact of scheduling on participants likely led to a greater awareness of the need to tailor the delivery of the training to participant availability. Administrators, who manage broader organizational and operational concerns, may be less sensitive to the need for, and importance of, scheduling training sessions that best suit the needs of learners.

Results showed that, on average, instructors viewed the relevance of the **skills taught** in the digital literacy training sessions more favorably than administrators ($U = 318.5$, median $_{instructors} = 6.00$, median $_{administrators} = 5.50$, $p = 0.016$). Administrators were more critical of the lack of advanced digital skills training offered in their libraries. For example, one administrator said, "*We could offer more advanced skills; however, with limited staff devoted specifically to digital literacy it is hard to offer a robust programming schedule.*" Another administrator stated, "*I hope we can soon offer more programs that reach more levels of digital literacy*." By contrast, instructors were more appreciative of the focus and delivery of basic digital literacy skills training offered by their libraries. For instance, many instructors described how in their training they *"begin from the premise that you've never seen a computer before,"* highlighting a commitment to teach essential skills. One instructor, commenting on the adequacy of skills taught, stated: "*…I do think they were appropriate for the subject and intended audience experience level.*" Noteworthy was the fact that only 14.7% of administrators versus 85.3% of instructors discussed the use of specialized technology in the training. One instructor boasted, "*participants are learning industry-standard digital literacy skills in the areas of photography, filming, music recording and digital design,*" indicating a high regard for the specialized skills taught within their library training program. Interestingly, administrators were much more concerned than instructors about the outreach challenges of getting participation from marginalized groups.

Results showed that, on average, instructors viewed the **pedagogical approaches used** in the digital literacy training sessions more favorably than administrators ($U = 310.5$, median $_{instructors} = 6.00$, median $_{administrators} = 5.33$, $p = 0.031$). Instructors felt they were able to adequately teach digital literacy basics, but acknowledged there was room to expand. As one instructor pointed out, "*In a one-hour course, there's not a whole lot of room to extend far beyond basic demonstrative approaches*," which supports the notion that while foundations are covered, there is a desire for deeper engagement. Instructors were generally appreciative of the autonomy they had to modify the course. For instance, one instructor commented, "*When I offer this course, I feel confident that I'm able to tailor it to the needs of the group of attendees*"; while another said, "*I'm able to adapt the content on the fly to be as relevant as possible for members*." Instructors also commented, much more than administrators, on the importance of incorporating hands-on learning into the training. Instructors' comments, like "*Everything is hands-on and one-on-one*" and "*I would like to have more hands-on practice in the next session*," demonstrate a commitment among instructors to offer engaged, active learning. Administrators, on the other hand, were very concerned about incorporating learner needs into the training rather than a focus on teaching techniques. For example, all administrators placed high value on participant motivation as part of an effective pedagogy. By contrast, no instructor was concerned about incorporating learner needs into the training, possibly indicating a focus by instructors on pedagogical methods rather than on participant motivation in the learning.

No statistically significant differences were found between instructors and administrators in terms of their views of the effectiveness, timeliness, and comprehensiveness of marketing approaches ($U = 240.5$, median $_{instructors} = 4.83$, median $_{administrators} = 4.50$, $p = 0.685$). Overall, survey respondents consistently reported how **marketing** was satisfactory in that current traditional marketing approaches (e.g., "*we use things like our events calendar on our website*") fill classrooms. Little promotion is needed to fill registration. According to the open-ended responses, administrators were particularly concerned – much more than instructors – that current approaches to advertising tend to reach only current library patrons and not those who do not visit the library. Administrators recognize the difficulties in reaching underserved and hard-to-reach populations who may not be on social media, read a newspaper, or watch local television. By contrast, instructors were more concerned than administrators about the ineffectiveness or complete absence of marketing strategies to promote digital literacy training in their libraries. According to one instructor, tight program scheduling due to constant staff changes impacts the ability to successfully market the training ahead of time.

Discussion

The findings presented above indicate a general level of satisfaction among public library administrators and instructors with the delivery of digital literacy training, though there is room for improvement. Classroom funding is adequate for current training needs, but, if more funding were available, then libraries would be able to offer more frequent training, a more robust curriculum that comprises a more varied set of courses at both basic and advanced levels, and better classroom resources including up-to-date information technologies. Pedagogical training of library instructors would be beneficial as well. A more concerted effort with internal and external knowledge sharing would help spur innovation, boost creativity, and encourage best practices in the delivery of digital literacy training within libraries. Performance measurement is under-utilized; better recording and analysis of evaluation metrics would go a long way in assessing the delivery of the training and identifying areas for improvement. The scheduling of courses could be better aligned to learners' timing preferences. Allowing instructors to have flexibility in their teaching approaches and encouraging active "hands-on" learning opportunities are key success factors in the delivery of the training. To improve, more focus could be placed on understanding and meeting learner needs, especially in terms of the content taught. More comprehensive advertising approaches targeting a broader range of constituents would increase reach, especially to those who traditionally do not visit the library.

Importantly, differences were identified between administrators and instructors in the delivery of digital literacy training. Instructors have a more positive perception of the operational aspects of the training such as funding, classroom resources, scheduling, skills taught, and pedagogical approach. Instructors' closer engagement with program delivery may positively influence these perceptions. Administrators, on the other hand, have a broader focus on the health and sustainability of the training in general to ensure that it meets community needs and is accessible to all community members while being less concerned about specific training details.

These findings support and extend earlier work in this area (e.g., Barrie et al., 2021; Elgamal et al., 2024; Julien et al., 2021; Julien et al., 2022; Wynia et al., 2023), specifically in terms of providing more insight and clarity on how the learning environment and program components affect the delivery of digital literacy training led by community organizations, such as public libraries (Detlor et al., 2022). For instance, public libraries can provide instructors with better training opportunities so they can be more up to date on the technical aspects of the training they provide, as well as the best pedagogical approaches to utilize. Public libraries can take a more proactive approach to acquire sustainable funding through examination of new and sustainable funding models for digital literacy training. Public libraries can offer training at more convenient times to learners. Public libraries can better market the training as current marketing methods primarily only secure attention to those who traditionally visit a public library. They can also better share best practices learned in the delivery of the training to both internal and external audiences. Better collection and analysis of training performance metrics are also needed. Currently, minimal performance measurement occurs; there is ample room to collect more extensive and richer quantitative and qualitative metrics.

Results also highlight how training is situated in context (Lave, 2009), and how libraries need to fine-tune the delivery of this training in ways that are reflective of libraries' situated learning environments (Brown, 2006; Brown et al., 1989). For example, as recommended by Kurt (2021) and this study's findings, the delivery of digital literacy training could be improved by having instructors provide learners with real-life "hands-on" learning activities where learners are actively engaged with and interact with training content of interest and relevance to learners.

This study is constrained by certain limitations, namely a relatively low participation rate of libraries. There are 642 public library systems in Canada (Bush, 2024) while this study comprised approximately 20 different public libraries across the country. Though a diverse and representative sample was obtained, a greater number of libraries, as well as individual respondents, would have been preferred. A larger number and more balanced (i.e., equal) number of administrators and instructors would have allowed the use of parametric statistics in the analysis of the data. Despite these limitations, a sufficient amount of quantitative and qualitative data was obtained to conduct a robust analysis and elicit findings.

In addition to obtaining a larger survey sample, future studies would also benefit from administering surveys to learners (i.e., end-users, students) who received the digital literacy training, in order to assess the delivery of the training from a learner's perspective. The current study only captures administrator and instructor perspectives of digital literacy training delivery.

The generalizability of the study's findings may only apply to public libraries in Canada and other similar jurisdictions, such as the United States. Future studies may wish to administer the survey in other countries to see if similar or different findings result. Other countries that offer more sustainable digital literacy training to community members, such as Scandinavian countries, may provide better and more stable funding to local community organizations for digital literacy training, and thus their experience and impact rolling out digital literacy training programs to local community members may differ. This, however, needs to be studied and verified.

Last, the focus on digital literacy training specifically, and not other types of training a library provides, can be considered a limitation of the study in that the study's findings may not equally or necessarily pertain to the delivery of other training content.

Despite the study's limitations, survey results are of high interest to researchers and library practitioners who wish to leverage evidence-based library and information practice to understand and address the factors affecting the successful delivery of public library-led digital literacy training. Though funding is always an obstacle for any public service organization, libraries can make improvements to the delivery of their training in other ways, such as carrying out more robust performance measurement and using results more transparently, participating in more knowledge sharing opportunities, and better understanding learner needs and preferences.

Conclusion

This paper reports findings from an online survey to administrators and instructors at public libraries across Canada concerning the delivery of digital literacy training led by public libraries. The goal was to obtain a snapshot of the Canadian public library-led digital literacy training landscape and explore differences in perceptions of the training between public library administrators and instructors. The survey was based on a conceptual model from the research team's prior case study investigations of community-led digital literacy training. The survey asked questions concerning the learning environment and program components, and their combined influence on the delivery of instruction.

Results indicate that public library administrators and instructors in Canada are generally satisfied with the delivery of digital literacy training; however, room for improvement exists. Instructors are more positive about the delivery of this training than administrators.

Importantly, findings support and extend the research team's conceptual model, specifically in terms of providing more insight and clarity on how the learning environment and program components affect the delivery of digital literacy training led by public libraries. Results highlight how training is situated in context and how libraries need to fine-tune the delivery of this training in ways that are reflective of libraries' learning environments and program components.

Author Contributions

Brian Detlor: Conceptualization (equal), Methodology (equal), Qualitative Analysis, Writing – original draft, Writing – review & editing **Alexander Serenko**: Conceptualization (equal), Methodology (equal), Quantitative Analysis, Writing – review & editing **Tara La Rose**: Conceptualization (equal), Methodology (equal), Writing – review & editing **Heidi Julien**: Conceptualization (equal), Methodology (equal), Writing – review & editing

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Appendix

Digital Literacy Training Survey to Administrators and Instructors at Public Libraries

Instructions

The questions below pertain to your library branch. Course participants are defined as individuals who take digital literacy instruction offered by your library. Instructors are defined as individuals who teach digital literacy instruction at your library. Please answer all questions below to the best of your knowledge. Please answer all questions as per the current context of digital literacy instruction at your library.

Library Branch Information

What is the name of your library? (open-ended)

What is the name of your library branch? (open-ended)

Library Branch Learning Environment

The amount of ***funding*** allocated by my library branch for digital literacy instruction is: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Sufficient.
b) Sustainable.
c) Flexible.

Please share your thoughts on the amount of funding allocated by your library branch for digital literacy instruction. (open-ended)

Classroom resources provided by my library branch for digital literacy instruction are: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Adequate.
b) Sustainable.
c) Up-to-date.

Please share your thoughts on the classroom resources provided by your library branch for digital literacy instruction. (open-ended)

[*Teaching staff questions only posed to library administrators*]

Teaching staff (e.g., instructors) provided by my library branch for digital literacy instruction are: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Pedagogically prepared.
b) Knowledgeable in the topic of their teaching.
c) Available.

Please share your thoughts on the teaching staff provided by your library branch for digital literacy instruction. (open-ended)

Support staff (e.g., admin assistants, help desk) provided by my library branch for digital literacy instruction are: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Helpful.
b) Knowledgeable.
c) Available.

Please share your thoughts on the support staff provided by your library branch for digital literacy instruction. (open-ended)

Knowledge sharing about the delivery of digital literacy instruction at my library branch among instructors, administrators, and staff is: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Useful.
b) Commonplace.
c) Effective.

Please share your thoughts on knowledge sharing about the delivery of digital literacy instruction at your library branch among instructors, administrators, and staff. (open-ended)

Knowledge sharing about the delivery of digital literacy instruction with external stakeholders (e.g., other libraries, community agencies) is: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Useful.
b) Commonplace.
c) Effective.

Please share your thoughts on knowledge sharing about the delivery of digital literacy instruction with external stakeholders (e.g., other libraries, community agencies). (open-ended)

Does your library branch use ***performance measures*** (e.g., satisfaction surveys, participant feedback) to assess the quality of digital literacy instruction? (Yes/No)

If yes,

Performance measures used by my library branch to assess the quality of digital literacy instruction are: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Helpful.
b) Comprehensive.
c) Applied consistently.

Please share your thoughts on the performance measures used by your library branch to assess the quality of digital literacy instruction. (open-ended)

If no,

Has your library branch or library system tried to establish such measures in the past? (yes/no)

<u>Library Branch Program Components</u>

The ***timing*** of digital literacy instruction at my library branch (when courses are offered: season, day, time) is: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Conducive to course participant schedules.
b) Conducive to instructor schedules.
c) Conducive to library branch schedules.

Please share your thoughts on the timing of digital literacy instruction at your library branch. (open-ended)

The ***digital literacy skills*** (e.g., basic skills, advanced skills) taught at my library branch are:

a) Adequate.
b) Useful.
c) Appropriate.

Please share your thoughts on the digital literacy skills taught at your library branch. (open-ended)

The ***pedagogical approaches*** (e.g., teaching methods) used in digital literacy instruction at my library branch are: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Effective.
b) Relevant.
c) Current.

Please share your thoughts on the pedagogical approaches (e.g., teaching methods) used in digital literacy instruction at your library branch. (open-ended)

The ***marketing*** approach at my library branch to promote digital literacy instruction is: (7-point Likert-type scale from 1 strongly disagree to 7 strongly agree).

a) Effective.
b) Timely.
c) Comprehensive.

Please share your thoughts on the marketing approach at your library branch to promote digital literacy instruction. (open-ended)

Demographics

What is your age? _____ years old

What is your gender? Man/woman/I identify as (please specify)/Prefer not to answer

What is your highest level of education? (options: high school or less; college diploma; undergraduate degree; master's degree; doctoral degree)

For how many years have you worked in the library field? (open-ended)