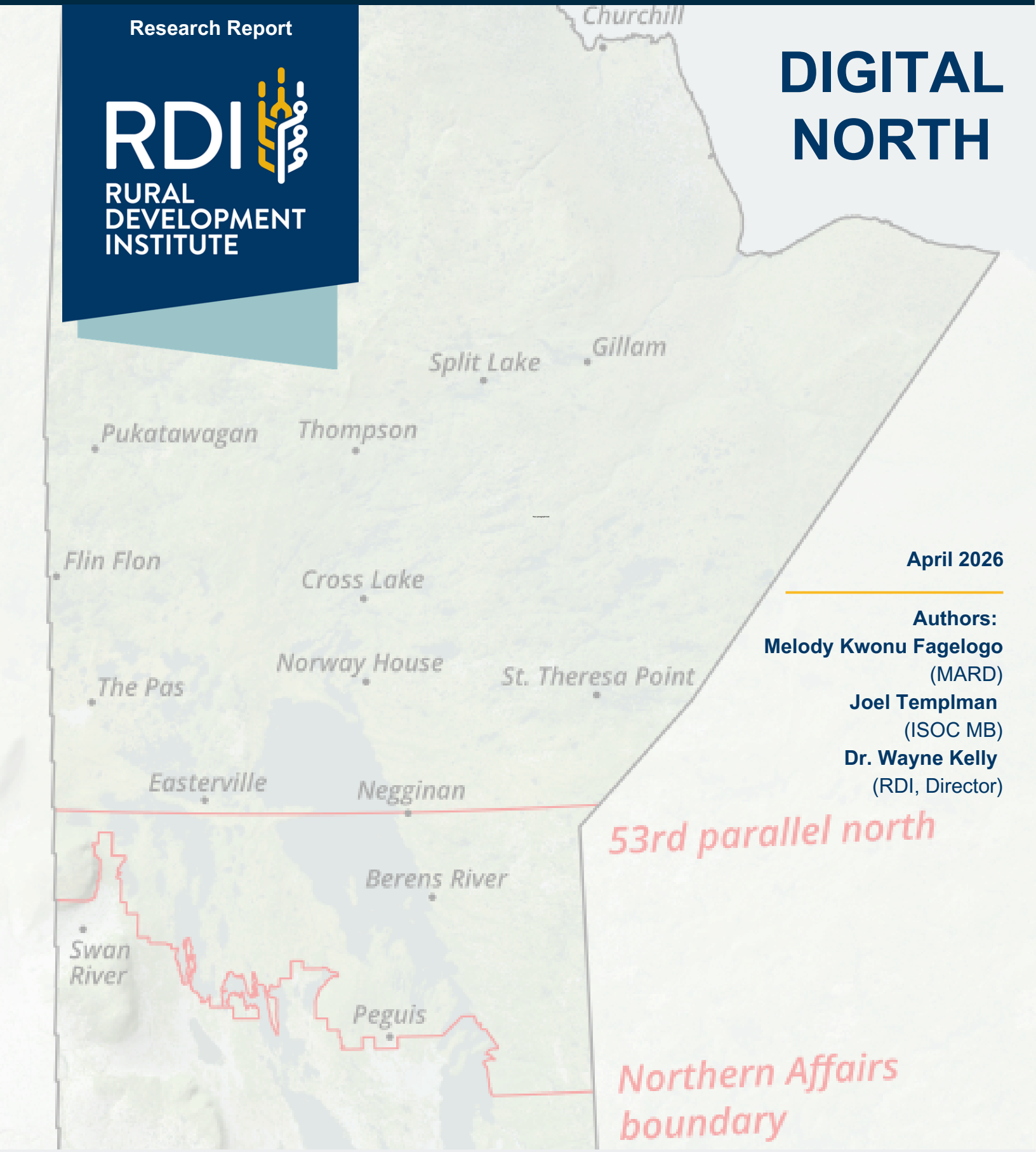
Research Report

RDI RURAL DEVELOPMENT INSTITUTE

DIGITAL NORTH



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Executive Summary

Digital technology is crucial when addressing the realities of Northern Manitoba, a large region with a small portion of the province's population, as 67% of the landmass is home to only 7% of the population. The resulting reality is that many northern communities rely on seasonal roads and limited infrastructure. As the region continues to develop, expanding digital connectivity has become essential for service delivery, participation and economic diversification in the emerging technology-driven economy.

This research explores the current realities of digital technologies across Northern Manitoba and their impact on service delivery, community well-being, and future development. Through interviews with community and organizational leaders, the study examines the current state and impact of digital technologies in Churchill, Thompson, The Pas, and Flin Flon using a structured analytical framework. This project is designed to listen to and facilitate the stories of these communities as they continue to drive connectivity and adoption in Northern Manitoba.

Findings reveal that digital technologies are expanding but unevenly. Communities are adopting tools for education, safety, advocacy and governance, but they face persistent barriers like unreliable connectivity, uneven digital literacy training and support, limited infrastructure investment and low trust in online systems.

Some communities still face persistent connectivity challenges, while others are newly connected and now focused on catching up to their southern neighbours in digital adoption. Attention is drawn to youth acting as a major digital asset, yet a population in need of protection. Additionally, AI adoption is approached with caution and backed by ethical concerns. Organizations acting as intermediaries, such as the Manitoba Education Research and Learning Information Networks (MERLIN), University College of the North, and Tech Manitoba, play vital roles in supporting digital capacity in Northern Manitoba. The ongoing evolution of digital technology connectivity, adoption and impacts in Northern Manitoba requires community-driven planning, place-based policy support, and long-term support.

Based on the research findings, the authors have identified **Key Recommendations** to address some of the digital challenges and unique realities of Northern Manitoba.

- **Strengthen digital literacy and community capacity** in northern Manitoba by expanding community-based digital skills programs and offering ongoing staff training
- **Align digital policies with Northern realities** by creating northern-specific connectivity standards and redesigning programs to reflect geography and cost structures
- **Build youth-centred digital pathways** by developing youth digital leadership programs, expanding supports for safe online engagement, and creating pathways into technology careers



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Background

What are the realities of Northern Manitoba?

Recent research indicates that Manitoba's digital landscape is uneven, with northern and remote communities most affected. These regions experience the most significant gaps in broadband affordability, availability and reliability. These challenges go beyond technical to include the fact that they work in parallel to geography, governance, indigenous sovereignty and persistent structural disparities between Northern and Southern regions of the province.

Northern Manitoba is described as the region north of the 53rd parallel, consisting of Census divisions 21, 22, & 23 (RDI Look North). This region of the province only has one population centre of 10,000 people and, as a whole, is considered a remote region (Assuah et al., 2024). This northern part of the province has a diverse mix of 59 indigenous and non-indigenous communities, cities, towns and a local government district. Of those communities, there are two cities and seven towns in this region, which include the project's four research locations: Thompson (city with population 10,035), Flin Flon (city with population:), The Pas (town with population:), and Churchill (town with population:).

As a large remote region that occupies 67% of Manitoba's land area but includes only 7% of the population, transportation is understandably challenging (Assuah et al., 2024). There are only two major highways linking the region to the rest of Manitoba, and many communities lack regular road access. Fifteen of the communities are designated as fly-in communities (RDI Look North), and 22 are linked by ice or winter roads for several months of the year (Assuah et al., 2024). These transportation realities of Northern Manitoba mean that much of the region is isolated or hard to access, and, as a northern region, bad weather can frequently make it difficult to navigate to any community highlighting the importance of broadband as critical tool for addressing these geographic challenges (Assuah et al. 2024).

Northern Manitoba is a resource-rich region with many critical minerals, large hydroelectric projects and an Arctic port in Churchill (Arctic Gateway Group, 2025). As the State of Rural Canada, Northern Manitoba Chapter indicates, Northern Manitoba is increasingly a critical part of the digital economy despite its own connectivity challenges:

The pendulum has recently swung back, making resource extraction a critical part of today's economy. This is further exemplified by the ongoing digital technology boom, which has substantially increased demand for critical minerals in digital devices and batteries. Manitoba's north is booming with possibilities again, as it contains 29 of the 31 designated critical minerals (e.g., lithium, graphite, nickel, and cobalt) required to support the technological industry. (Assuah et al. 2024)



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What do we know about digital in Northern Manitoba?

The region experiences slower internet speed, high service costs, limited infrastructure and uneven access to digital tools and skills compared to Southern regions, despite national commitments to universal connectivity. Connectivity in these regions goes beyond technical to include the fact that they operate in parallel with geography, governance, and indigenous sovereignty. Broadband access at all speeds continues to expand across Canada, with federal, provincial and territorial initiatives such as the Universal Broadband Fund and the CRTC Broadband Fund helping extend coverage and advance progress toward Canada's Universal service target of 50/10 Mbps with unlimited data.

However, connectivity in the territories, rural communities, and First Nations reserve areas still lags behind the national average and continues to work toward closing the gap (Canadian Radio-television and Telecommunications Commission, 2026). Additionally, Kelly et al. (2025) indicate that while digital transformation is advancing across Manitoba, northern regions remain disproportionately underserved due to sparse population density, high infrastructure costs, and limited private-sector incentives.

Infrastructure alone is insufficient without equal investments in digital literacy, affordability, and community capacity. This reveals how community-driven broadband initiatives have emerged as critical strategies for addressing these gaps, demonstrating that northern communities are not passive recipients of technology but active agents shaping their digital futures. Broader northern and Indigenous digital research provides essential context for understanding Manitoba's situation.

The Northern Public Affairs special issue on connectivity (2018) emphasizes that digital realities in northern Canada are shaped by Indigenous innovation, community-owned networks, and culturally grounded approaches to digital literacy. These insights align closely with Manitoba's northern context, where Indigenous communities are central to digital governance, infrastructure planning, and the articulation of digital sovereignty. National analyses on bridging Canada's digital divide, according to Scott (2024), require tailored policy frameworks that recognize unique geographic, cultural, and infrastructural conditions. Evident barriers to digital adoption in northern communities range from fear of the unknown to social and economic factors, including a lack of trained expertise within the communities and a lack of willingness to use technology (Fontaine, 2017). Bridging these barriers requires understanding this unique situation and developing plans to offer support that helps resolve these challenges.



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1. What is the State of digital technologies in northern Manitoba communities?

FOCUS:
The purpose is to understand how digital change is unfolding, what conditions shape it, and what this means for community development, equity, and readiness.

What do we know?

Across northern Manitoba, connectivity remains the single biggest barrier to digital transformation. Communities repeatedly emphasize that "connectivity is the foundation for all other development". Even where 5G cellular, fibre-optics, or improved broadband is available, reliability is inconsistent, and outages disrupt work, learning, and emergency communications.

"*It's great when it works and it's a benefit, but when we're down, we're down… sometimes that connectivity is not always great, dependent on the weather or whether everything is working the way it's supposed to be.*"
-Acting Director of Parks, Flin Flon (Interviewee 6)

The Manitoba Education Research and Learning Information Networks (MERLIN) works to support equitable access to connectivity, cybersecurity, and licensing and shows that many schools and public institutions still depend on external technical support to maintain basic digital operations. Digital skills vary widely across the region. Youth often have strong digital skills, especially post-COVID. At the same time, older workers struggle with rapid technological change. Many adults lack confidence in online services, with TechMB noting low trust in online services leading to slow adoption.

"These folks who have been largely overlooked for various reasons with infrastructure not being what it should be...what we have is not only a connectivity gap, but a skills gap within Manitoba and other places"
-CEO, TechManitoba (Interviewee 1, 2026)

Communities are increasingly integrating digital technologies into municipal services and education. In Churchill, ways to digitalise water and wastewater management are currently being explored, showing how digital tools can modernise essential services.



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Also, online learning has expanded significantly. The Pas reports AI use in classrooms, and MERLIN notes that classrooms can now “expand their walls” through digital platforms, such as in tourism and economic development. Also, Flin Flon uses digital tools for tourism rebranding and emergency connectivity.

AI adoption is slow, pragmatic, and infrastructure-limited, while data dashboards and online engagement tools are increasingly used to advocate for northern needs. Communities express concern about over-reliance on AI while also stressing ethics-first approaches. There is a desire for AI that solves real problems, not abstract ones. Generally, while TechMB sees rising curiosity, MERLIN stresses investing first in infrastructure, and then AI.

Finally, it was found that digital change is creating new forms of inequality: Youth face online safety risks, raising concerns about youth digital safety. Network outages deepen isolation and highlight dependency, especially in Indigenous communities.

What does this mean?

Northern Manitoba communities are advancing digital innovation, but they are doing so while carrying structural barriers that Southern regions do not face. Connectivity is viewed as essential infrastructure, tied to reconciliation, equity, and long-standing gaps shaping everyday realities



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2. What are the opportunities for digital technology in the north?

FOCUS:
This section is designed to uncover what digital technology can make possible for northern communities, given their realities, strengths, and aspirations

What do we know?

Digital tools allow northern residents to access learning without leaving their communities. Online learning, micro-credentials, and remote training can reduce out-migration and build local skills.Communities in Manitoba stay connected to provincial and national networks with the help of digital tools while digital change is reducing isolation for many communities. Also, with better connectivity, there is broader networks participation that enables remote work, telehealth, virtual meetings.

Additionally, digital tools play a critical role in supporting emergency communication in remote and northern communities. Flin Flon is advancing efforts to strengthen emergency connectivity, with these examples highlighting a broader opportunity that the strategic use of digital systems can significantly improve emergency preparedness, support wildlife safety, and enable more effective crisis communication.

Again, communities are increasingly digitising forms, infrastructure, and public works to enhance efficiency and service delivery. In Churchill, efforts are underway to explore the digitalization of water and wastewater management systems, reflecting a broader shift toward modernized infrastructure. At the same time, digital tools are enabling local leaders to leverage data more effectively to advocate for northern priorities and needs.

Digital platforms are playing an important role in helping northern communities promote tourism and strengthen local identity. For instance, Flin Flon is advancing tourism initiatives to rebrand the North and showcase its unique character. At the same time, expanding digital access is supporting broader economic diversification by opening new channels for visibility and engagement. This highlights a key opportunity on leveraging digital storytelling, online marketing, and virtual tourism helping to attract visitors, stimulate investment, and position northern communities more competitively.

Organizations are actively working to address digital gaps and improve access across northern communities. In Thompson, there is a strong focus on tackling digital inequity while building local digital capacity to ensure residents can fully participate in an increasingly connected world. Similarly,



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TechMB is supporting this effort through digital literacy and training initiatives that equip individuals with essential skills.

"We're working across communities where internet is so spotty...you're trying to take a remote distance learning class and all you're watching is that loading wheel...The big piece is connectivity...The next piece is capacity."
-Associate Vice President, UCN (Interviewee 4)

Communities are increasingly relying on digital tools to collaborate effectively across vast distances. In Flin Flon, this includes the use of remote collaboration technologies, networked systems, and backup solutions to maintain continuity and coordination. Similarly, MERLIN highlights how digital platforms enable classrooms to "expand their walls," connecting learners and educators beyond geographic boundaries.

Digital tools have the potential to play a meaningful role in addressing youth challenges while creating new opportunities for growth and development. Many communities are prioritizing initiatives that support youth digital safety, ensuring young people can navigate online spaces responsibly. At the same time, youth in The Pas demonstrate strong digital skills, highlighting an existing foundation to build upon. This presents a valuable opportunity: targeted digital programs can foster youth leadership, promote safe and informed online engagement, and create pathways toward education and careers in the technology sector.

Communities are approaching artificial intelligence with cautious openness, emphasizing its practical value over abstract potential. There is a clear preference for AI solutions that address real, tangible challenges, alongside an adoption approach that is ethics-first, consent-based, and grounded in community priorities. This perspective highlights an important opportunity: when aligned with local values and needs, AI can enhance decision-making, improve service delivery, and strengthen data analysis in ways that are both responsible and impactful.

What does this mean?

Manitoba's northern communities are building digital capacity and adapting to rapid change, but they are doing so despite major structural gaps that limit access, affordability, and opportunity. Their progress reflects determination, local leadership, and a refusal to wait for ideal conditions



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3. What are the current digital adoption and use barriers?

FOCUS:
The focus is not just to list problems but to uncover the underlying conditions that shape how northern communities can or cannot use digital tools.

What do we know?

Connectivity remains the single most significant barrier across northern communities, underpinning all aspects of digital and economic development. It is widely recognized that reliable connectivity forms the foundation for progress in areas such as education, healthcare, and public services. However, organizations like TechMB highlight slow adoption rates, often linked to low trust in online services. In addition, communities consistently report challenges related to limited investment and insufficient policy support. Together, these factors underscore the need for stronger infrastructure, targeted policy interventions, and trust-building initiatives to enable more inclusive and effective digital participation.

"Sometimes that connectivity is not always great… we're really kind of just dependent on, you know, is the weather good? Is everything connected? Is everything working the way it's supposed to be working?"
- Acting Director of Parks, Flin Flon (Interviewee 6)

Digital skills vary widely across communities, with younger populations generally showing stronger digital proficiency while adults and older workers often lag behind due to rapid technological change. Areas like Thompson emphasize the need for digital literacy and wraparound supports, while The Pas notes improved youth skills since COVID-19, but continued gaps among adults. Churchill similarly reports challenges for an aging workforce adapting to new technologies. Overall, these trends point to the need for inclusive digital literacy initiatives that support all age groups and ensure more equitable participation in a digital economy.

Many communities face ongoing challenges related to limited access to hardware and technical support required to sustain digital systems. MERLIN highlights specific needs such as devices, mapping tools, and on-site support to strengthen local capacity. In addition, there is a strong reliance on trusted intermediaries, as many communities lack sufficient internal expertise or resources to manage these systems independently. Overall, this underscores the importance of building local technical capacity while ensuring consistent access to essential digital infrastructure and support services.



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Digital adoption across communities is constrained by broader infrastructure challenges that extend beyond technology alone. In Churchill, priorities include improving housing availability, expanding entry-level training, and strengthening youth-focused programs. The Pas emphasizes the need for greater infrastructure investment and development approaches tailored to the local context. Meanwhile, Flin Flon highlights ongoing needs in connectivity, emergency systems, and access to professional services. These examples reveal that successful digital adoption depends on coordinated investments in both foundational infrastructure and community-specific supports.

Some communities remain hesitant to adopt digital tools due to concerns around privacy, safety, and system reliability. TechMB notes that low trust in online services contributes to slow adoption rates, reflecting broader uncertainty about digital systems.

In addition, youth digital safety concerns are consistently raised across multiple communities, highlighting the importance of protecting vulnerable users. These factors show that building trust, ensuring strong safeguards, and improving reliability are essential for increasing confidence and supporting wider digital adoption.

An important point noted is that provincial and federal policies often do not align with Northern realities, as they tend to be designed around Southern contexts. This imbalance creates barriers such as underfunding, limited infrastructure data, and slow policy responses, as seen in Thompson. Across communities, there is also a lack of effective collaboration between stakeholders.

Concerns about over-reliance and overall readiness have led to a cautious approach. As MERLIN highlights, infrastructure needs to come first, with AI adoption following once communities have the capacity and systems to support it effectively.

What does this mean?

Northern communities are navigating digital transformation with resilience and creativity, but they are doing so within systems never designed for their needs. Digital adoption is inseparable from equity, infrastructure, reconciliation, and long-term community well-being across northern and Indigenous regions



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4. How do we get there?

FOCUS:
The focus shifts from describing the current state to understanding the pathway for change to identifying the conditions, actions, and supports northern communities need in order to move from barriers to meaningful digital adoption.

What do we know?

Strengthening digital development in northern communities requires investment in reliable broadband and backup systems, improved emergency communication, and access to essential tools such as devices and mapping technology with on-site support. Addressing housing shortages is also critical to retain workers and sustain long-term capacity. Overall, these measures are needed to build a stable foundation for effective and lasting digital adoption.

Building digital capacity in communities requires ongoing, community-based digital literacy programs supported by local champions and youth mentors. Training should be continuous rather than one-off, and designed to encourage multi-generational learning so that different age groups can share skills and support each other.

Strengthening digital capacity in northern communities requires investment in trusted local institutions such as UCN campuses, libraries, recreation centres, and community organizations. Funding initiatives like TechMB, MERLIN, and regional networks can help expand hands-on technical support and training. In addition, developing local digital navigators would provide residents with accessible, day-to-day assistance in using digital tools and services. Together, these measures help build sustainable, community-based support systems for digital inclusion.

“We need sustained funding. We need equity. We need to be funded on par with other institutions… It is time to double down to realize the lack of basic infrastructure in the North on all fronts.”
--Associate Vice President, UCN (Interviewee 4)

Improving digital and infrastructure outcomes in northern communities requires policy and funding approaches that are better aligned with local realities. Provincial programs should be redesigned to reflect northern geography and higher cost structures, ensuring they are practical and equitable. Stronger collaboration between municipal, provincial, and federal partners is also essential to reduce fragmentation and improve coordination.



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In addition, funding models should prioritize long-term investment rather than short-term initiatives, enabling sustained development, stability, and meaningful community impact.

Strengthening digital trust in northern communities requires prioritizing the safety of youth and elders, ensuring transparent and consent-based use of AI, and protecting privacy. Overall, systems should respect community control over data and decision-making to support responsible and trustworthy digital adoption.

Effective digital development in northern communities requires tools that directly address real, local challenges such as waste management, water systems, public safety, and tourism. Rather than applying one-size-fits-all solutions, technologies should be adapted to fit the specific context and needs of each community. Co-designing these tools with community members is essential to ensure they are practical, relevant, and widely accepted, ultimately improving both adoption and long-term impact.

Supporting youth in northern communities requires targeted digital leadership programs that build skills, confidence, and long-term engagement with technology. These programs should also emphasize safe and responsible online participation to ensure young people can navigate digital spaces securely. In addition, creating clear pathways into technology-related careers can help retain talent locally by reducing out-migration and encouraging youth to apply their skills within their own communities.

Responsible AI adoption in northern communities should prioritize gradual, ethical capacity-building over rapid implementation. AI literacy needs to be developed slowly, ensuring people understand both its benefits and limitations. Its use should be limited to addressing real, community-identified problems rather than imposed or abstract applications. Equally important are strong safeguards around consent, transparency, and cultural relevance, ensuring that AI systems align with local values and are trusted by the communities they serve.

What does this mean?

Advancing digital development in the North requires long-term, community-driven investment rather than short-term or southern-designed approaches. Sustainable progress depends on local leadership, culturally grounded strategies, and policies that reflect northern priorities, lived experience, and the realities of remote communities.



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Appendix 1: Research Methods

Methods

This study used a qualitative research design with semi-structured interviews to explore digital realities across Northern Manitoba. Semi-structured interviewing is deemed an effective method for capturing detailed, context-rich insights while allowing participants to guide the conversation toward issues most relevant to their lived experience (McIntosh & Morse, 2015). The qualitative design was further informed by principles of interpretive inquiry, which emphasize understanding how people make sense of their experiences within specific social, cultural, and geographic contexts (Merriam & Tisdell, 2015). This approach was essential for analyzing perspectives from individuals working in diverse northern settings.

Ethics approval was obtained from the Brandon University Research Ethics Committee (BUREC). Participants were recruited via email invitations sent to six (6) leaders, each outlining the purpose of the study, the interview process, the voluntary nature of participation, and requesting participants' consent to take part in the research. Before the interviews, participants were provided with a set of guiding interview questions and information about the interview format. Informed consent was obtained for the interviews to be recorded and later disseminated as part of a publicly accessible podcast.

Analysis

Insights from each participant were directly collated within an analysis framework designed to surface recurring patterns and clarify what was happening in terms of digital literacy across all six communities represented in the study. This framework enabled a structured comparison of capacities, experiences, and challenges, revealing both shared themes and community-specific perspectives. Building on this foundation, thematic analysis was then applied to the full set of qualitative data, allowing a move beyond descriptive accounts and identifying deeper meanings and underlying conditions shaping digital literacy practices, barriers, and opportunities across Northern Manitoba.

Data Collection Tools

The study made use of a set of tools to support ethical, accurate, and effective qualitative data collection. Primary data were collected using a semi-structured interview guide, which ensured consistency across participants while allowing space for individual perspectives. All six interviews were conducted and recorded remotely using Zencastr to capture high-quality audio. Participant invitations, engagement, and coordination were facilitated through email invitations that introduced the study and obtained initial agreement, distributed interview questions, provided technical guidance, and scheduled interview sessions. To maintain accuracy, audio-editing software was used to clean and prepare recordings, after which a member-checking process was implemented by sharing the edited files with participants for verification, correction, or approval before dissemination.

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