

## Exploring digital literacy learning with the Gwich'in Tribal Council

*Dr. Rob McMahon, Dr. Michael McNally, Crystal Gail Fraser, Hanne Pearce & Trish Fontaine*

Communities in the western Arctic can now connect to high-speed digital infrastructure – a situation that provides both opportunities and challenges for residents of the Northwest Territories (NWT). The completion of the long-anticipated Mackenzie Valley Fibre Link (MVFL) in June 2017 and forthcoming plans to build a redundant fibre link along the Dempster Highway (estimated to be operational in 2021) will improve backhaul connectivity between these regions and Internet exchanges in the south. But despite these improvements, local connectivity remains limited and unreliable in most NWT communities, with high prices charged for services and data overage. As noted by the Canadian Radio-television and Telecommunications Commission (CRTC), almost half of households in NWT

2018. The CRTC established a new basic service objective (BSO) for broadband in December 2016 that recommends the speeds noted above, and an unlimited data option for fixed broadband access services. This standard was established after years of advocacy by Indigenous and public interest groups concerning access in Northern territories, including 2012 hearings on Northwestel's Modernization Plan and a 2014 inquiry on satellite services (McMahon, Hudson & Fabian, 2017). Unfortunately, the major telecom providers serving these communities continue to deliver connectivity services and infrastructure below the CRTC's recommended speeds.

With regards to affordability, the CRTC has generally encouraged competition, though it has stepped in to regulate retail rates in some Northern



*Image credit: Hanne Pearce*

*Participants explore digital content and connectivity in Gwich'in contexts at the June 2018 workshop in Teet'it Z'heh (Fort McPherson).*

lack access to broadband (as defined by the Commission as 50Mbps download/10 Mbps upload), while pricing and quality of service do not match standards in southern Canada (CRTC 2017: 284).

In recent years the Government of Canada has paid increasing attention to this challenge. The Auditor General of Canada is examining broadband in remote regions for a report to be released in fall

regions, including the NWT. The federal government has also set up broadband funding programs, most recently the \$500 million Connect to Innovate (CTI) program managed by Innovation, Science and Economic Development Canada, and a broadband fund currently being established by the CRTC. The CTI fund contributed to several major projects in Canada's North, including the MVFL, the



Image credit: Hanne Pearce

*Participants explore digital content and connectivity in Gwich'in contexts at the June 2018 workshop in Teet'it Z'eh (Fort McPherson).*

Dempster fibre project, and satellite infrastructure in Nunavut. But despite these gains, critics note these projects lack a clear definition of “open access” requirements.

Indigenous communities have led local and regional community networking initiatives since the early days of the Internet (see, for example, Carpenter, 2010; Roth, 2013; Savard, 1998). These projects range from K'at'l'odeeche First Nation's fibre optic network in the Hay River, NWT area to complex regional organizations such as K-Net services in Northern Ontario and Tamaani Internet in Nunavik (FMCC, 2018). Recent CTI-funded initiatives include projects led by Mattawa First Nations in Ontario and Clear Sky Connections in Manitoba. These projects demonstrate ways to drive infrastructure deployment in areas with a limited case for private sector investment, while retaining community ownership and control of networks and services. They are governed by and directly accountable to the communities they serve and reflect the passion of community champions.

The deployment, operations and sustainability of community networks requires a complex balance between local innovation, regional cooperation, and supportive policy and regulatory conditions. Community networking advocates in Canada have

worked hard to reform policy and regulatory frameworks to gain access to public funding for non-profits, cooperatives, and community-based organizations.

### **Communications history in the Gwich'in Settlement Area (GSA)**

Like other Indigenous peoples in the North, Gwich'in are engaged in debates about change. Dinjii Zhuh (commonly known as Gwich'in peoples) have had a long history of engaging with their environments through communications media. Gwich'in communities have always been thoughtful judges of coming change and have made informed decisions about their social, economic, and political worlds. Explorers, fur traders, missionaries and early settlers attempted to construct Indigenous societies as backwards, historical relics either incapable or resistant to change. In recent years, however, historians have demonstrated that Indigenous cultures were (and are) fluid and adaptable. People often incorporated changes while rejecting others, as they saw fit. There have been other forces brought on by colonialism, however, that Indigenous Northerners have been less successful at navigating. These include the 1928 influenza epidemic, the devastation of residential schools, and the decline of the fur trade.



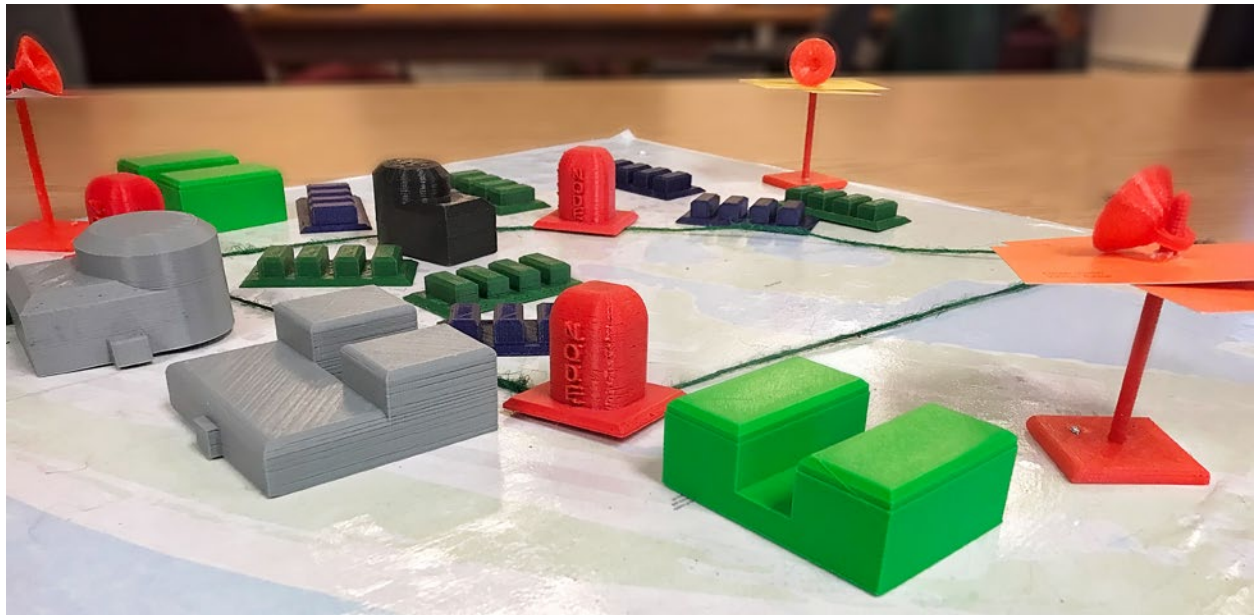


Image credit: Hamie Pearce

*A close-up up of the “Make the net-work” 3D model, which illustrates how a community network is set up. The team developed customized versions of this model for the four Gwich’in communities.*

In recent years, Indigenous Northerners have recognized the importance of preserving oral histories, stories and legends given that residential schooling and other colonial policies actively sought to undermine Indigenous practices. Perhaps one of the first people to take on this important project was Nellie Cournoyea. Working as a broadcaster and station manager at CBC Inuvik, Cournoyea began recording Gwich’in, Inuvialuit, and Sahtu Elders beginning in 1963 and concluded this project in 1979, when she was elected as a Member of the Legislative Assembly for the Western Arctic. These recordings, stored on compact cassettes, became known as the COPE (Committee for Original Peoples’ Entitlement) stories.

These kinds of archiving projects are supported by the increasing availability of digital technologies: digital content – videos, podcasts and photos – and digital connectivity provided through broadband networks and Internet services. Critical oral recordings, transcripts, maps, photographs, reports, and other research materials created during 25 years of work at the Gwich’in Tribal Council (GTC) in their Department of Cultural Heritage (formerly the Gwich’in Social and Cultural Institute) recorded knowledge from Gwich’in Elders who are now deceased, and whose knowledge cannot be recreated. The GTC notes that action must be taken to ensure that these materials are preserved so that they will be available to future generations of Gwich’in people.

In terms of digital connectivity, the MVFL and forthcoming Dempster Highway network will greatly expand the broadband services available to residents of the NWT. The MVFL provides a fibre link

to Inuvik, while the Dempster Highway line will provide a redundant link to Inuvik and opportunities for fibre in Teet’it Zheh and Tsiigehtchic. While rapidly expanding connectivity can support the delivery of a host of public services, economic development opportunities (potentially including community-owned and operated networks), as well as social and cultural benefits, it may also bring challenges such as expensive services and an influx of inappropriate content. It is important to learn from Gwich’in community members about potential impacts, so that policy and community development plans can mitigate risks and take advantage of the potential of fibre optic connectivity.

A strong desire to document and share Gwich’in culture and language reflects an interest in exploring how newly available digital tools will support such work. At the same time, people recognize the limited services, high costs of services, and potential changes that may come as a result of increased access to digital connectivity and the Internet. They are interested in resources that enable them to monitor speed and quality of service and ensure that pricing practices are fair.

In this context, our team engaged in a participatory action research project to explore digital literacy concepts and resources shaped to the interests, desires and needs of Gwich’in peoples.

### **Exploring digital literacy in Gwich’in contexts**

Recognizing that digital technologies are being deployed rapidly throughout the NWT, including the GSA, our project takes a critical approach to explore

how digital literacy resources are developed and used by communities. When we talk about “digital literacy,” we mean:

The range of knowledge, skills, and behaviours used with digital devices such as smartphones, tablets, laptops and desktop computers. This term includes the ability to locate, organize, understand, evaluate, and analyze information using digital technology. It involves a working knowledge of current digital technologies and an understanding of how they can be used effectively (Beaton et al., 2016, p.9).

Through a collaborative development process that began in spring 2017, our team has worked to explore innovation in Gwich’in contexts through workshops and the creation of open educational resources that focus on the development, sustainability, and use of digital technologies. This work involves highlighting examples of local and regional innovation, exploring how communities might de-

velop local connectivity infrastructure, and examining how they will manage the increased presence of digital content. Our project aims to provide a forum for Gwich’in community members to learn about, discuss, and become informed about these issues at a key moment in the development of Northern digital infrastructures.

and innovations undertaken by the GTC, including their interactive online atlas and ethnobotany database. The project also generated two resources for community members to conduct their own workshops: a facilitator handbook and a participant handbook. The project team decided to make these resources open-access through Creative Commons, so that anyone can use them in their own work.

Once the summer 2017 pilot concluded, the partners continued to develop the project. Taking into consideration feedback from participants, the team decided to expand the workshops to cover two days of interactive instruction (one day on university-based researchers. Participants presented on and discussed policy, applications, and capacity-building related to community-driven digital development in the North. To support online and remote engagement, the workshop was made available through a livestreamed webcast.

Building on issues discussed at Bridging the Gap, we collaborated with the GTC in planning a follow-up project. This took shape as we developed and hosted a day-long pilot workshop in Inuvik that involved Gwich’in community members in the co-development of appropriate digital literacy resources. A total of 19 people participated in the workshop, including youth who travelled by road and plane from four Gwich’in communities: Teet’it Zheh (Fort McPherson), Tsiigehtchic, Aklavik and Inuvik. Participants from Inuvialuit and non-Indigenous communities also joined as delegates. The workshop blended presentations and discussion. Along with an introduction to key aspects of digital content and connectivity, it showcased Northern-based projects



*Scenery on the Dempster Highway between Tsiigehtchic and Teet’it Zheh.*

In April 2017, these issues were considered at a UAlberta North-sponsored public forum and panel discussion titled Bridging the Gap: Community engagement, content and connectivity in the North at the University of Alberta, which featured a panel of experts, policy-makers, community leaders, and

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Image credit: Hanne Pearce

### *Tsiigehtchic from the ferry.*

content; one day on connectivity), incorporate more hands-on activities, and host the free workshops in the NWT Gwich'in communities in summer 2018. We began refining our pilot resources to focus on different aspects of Indigenous digital literacy (connectivity and content) in the context of the Gwich'in people of the NWT.

Recently, the workshops were delivered in the four GSA communities (Teet'it Zheh/Fort McPherson-Tsiigehtchic, Aklavik and Inuvik). In June, participants gained a hands-on introduction to key elements of digital content and connectivity. They also identified supports and barriers to digital content and connectivity and discussed examples of digital innovations taking place in Gwich'in and NWT communities, as well as resources and supports for their own community-based technology development projects. Topics included knowledge management, digital rights, project management, and broadband business models and policy – all framed in ways that highlighted local and regional interests, desires, needs and perspectives. Participants discussed some of the benefits and challenges that arise alongside emergent technologies and shared strategies of how to experiment with their own projects.

The two-day course took an interactive approach to learning about digital content and connectivity. Responding to feedback from our 2017 pilot workshop, we developed two activities. On Day One, participants worked through the “Lifecycles of a digital object,” creating unique digital content and organizing it in a digital library developed using the Mukurtu open source content management system. To explore digital connectivity in a tangible way, on Day Two participants built a model of a network in their community (“Make the net-work”). The completed model, which consisted of a pegboard map

base, 3D-printed pieces and string, was then used to lead discussions on how a community broadband network can be assessed, sustained and used effectively. The workshop ended with a session on digital rights and how to employ them, and provided resources for further learning. The facilitators recorded the session and plan to conduct post-workshop interviews and surveys to learn about future topics to cover, activities of interest, and innovative digital projects that Gwich'in peoples are working on. We are currently developing these resources into a free online textbook, which will be sent to GTC and our Gwich'in community partners and made publicly available in fall 2018.

### **Conclusion: Reflections and next steps**

In recent years, government, civil society, and media have paid increased attention to rural and remote broadband. Looking ahead, the Government of Canada has announced it will launch a review of the Telecommunications Act and the Broadcasting Act, with public consultations announced for September 2018. These consultations provide opportunities to contribute to policies and regulations that impact broadband infrastructure and services.

In fall 2018 the Internet Society is hosting the second Indigenous Connectivity Summit in Edmonton and Inuvik. The summit provides a space to discuss and debate community networks, and the policy and technical conditions that might enable their widespread growth and sustainability. Our team hopes that some of the participants in the digital literacy workshops will join these activities and continue to collaborate in a growing community of Gwich'in digital innovators. Moving forward, above all we hope this project provides a useful forum where Northern participants can discuss emerging



Image credit: Hanne Pearce

*Landscape, sunshower on the Dempster Highway, taken from the south end of Gwich'in territories.*

digital technologies and their impacts – both positive and negative – on their communities. ●

*Dr. Rob McMahon is an assistant professor in the Faculty of Extension at the University of Alberta. He teaches in the Master of Arts in Communication and Technology and Master of Arts in Community Engagement programs. Rob co-founded the First Mile Connectivity Consortium, a national nonprofit association of Indigenous technology organizations (see: [www.firstmile.ca](http://www.firstmile.ca)).*

*Dr. Michael McNally is an associate professor with the School of Library and Information Studies at the University of Alberta. His research and policy work focuses on improving rural broadband and access to educational resources.*

*Crystal Gail Fraser is a PhD candidate in the Department of History and Classics at the University of Alberta. She is Gwich'yà Gwich'in and originally from Inuvik and Dachan Choo Gèhnjik, Northwest Territories. She is currently completing a PhD on the history of residential schooling in Inuvik from 1959 to 1996.*

*Hanne Pearce works at the University of Alberta Libraries, where she has served in a number of public service roles over 14 years. She holds a BA and MLIS from the University of Alberta and is working to complete her MA in the fall of 2018. She is also a freelance photographer and graphic designer.*

*Trish Fontaine is the Program Coordinator for UAlberta North ([www.uab.ca/north](http://www.uab.ca/north)) an office at the University of Alberta helping build relationships in the North through student, researcher and community supports. She holds an MA in Communications and Technology focused on digital inclusion in Northern communities and continues to be involved in projects that provide communities with access to skills and training for active participation in digital inclusion.*

#### Endnotes

1. See: <https://www.cbc.ca/news/canada/north/yukon-government-dempster-fibre-Internet-1.4718828>

2. See: <https://crtc.gc.ca/eng/archive/2016/2016-496.htm>
3. See: <https://crtc.gc.ca/eng/archive/2013/2013-711.htm>
4. This issue was debated at a 2017 CRTC proceeding, after which the Commission denied an application by Northwestel for requesting forbearance from the regulation of its Wholesale Connect service in the communities served by the Mackenzie Valley Fibre Link, since forbearance would not be in the public interest of users in affected communities. See: <https://crtc.gc.ca/eng/archive/2017/2017-300.htm>
5. For the Mattawa initiative see: <https://www.cbc.ca/news/canada/thunder-bay/broadband-high-speed-Internet-coming-to-five-northern-ontario-first-nation-communities-1.4344419>. For the Clear Sky Connections project, see: <https://clearskyconnections.ca/home>
6. Information about this event, and an archived livestream, is available at: <https://www.ualberta.ca/why-ualberta/arctic/north/bridging-the-gap>
7. <http://firstmile.ca/first-mile-research-hosts-digital-literacy-workshop-with-gwichin-tribal-con/>
8. Available at: <http://atlas.gwichin.ca/index.html>
9. Available at: <https://www.gwichin.ca/plants>
10. They are available for download at: <http://firstmile.ca/first-mile-research-hosts-digital-literacy-workshop-with-gwichin-tribal-con/>
11. See: <http://mukurtu.org/>
12. For example, the House of Commons Standing Committee on Industry, Science and Technology report Broadband Connectivity in Rural Canada: Overcoming the Digital Divide, and CIRA's report The Gap Between Us: Building a Better online Canada.
13. For information on the 2018 Indigenous Connectivity Summit, please visit: <https://www.Internetsociety.org/events/indigenous-connectivity-summit/>

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*Photo Credit: Haime Pearce*

*Aerial photo of Gwich'in lands, taken on departure from Inuvik, June 2018*