

Digital Technology Adoption in Northern and Remote Indigenous Communities in Canada

Appendix 3: Methodologies, Research Strategies and Research Questions

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First Mile Connectivity Consortium (FMCC)



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Methodologies and research instruments to be tested

Our research activities will follow the OCAP and research ethics guidelines discussed earlier in this report. We intend to follow field research guidelines in Indigenous communities that include: seeking their permission to collect information, involving community members in the research process, respecting their concerns about the content after their review of the material, and the distribution of the findings.

We note that many northern community leaders have expressed frustration about the quality of Internet connections and services in their communities. They may view participation in this pilot study as an opportunity to make the needs and concerns of their communities known, but they may also be skeptical about a research activity that may seem to be an exercise rather than a step toward recognizing and addressing their concerns. We will do our best to explain the context of the study and to assure participants that we will respect their views. We will also guarantee anonymity to all participants.

Further, we note that for research work involving Indigenous communities in the territories, researchers must first obtain a license. For Nunavut, a Social Science Research License is required from the Nunavut Research Institute (see <http://www.nri.nu.ca/research-licencing-applications>). A similar license is required from the Aurora Research Institute for research in the Northwest Territories (see <http://nwtresearch.com/licensing-research/scientific-research-license>). The NWT recommends that applications be made at least three months in advance. The application for a license involves prior approval from the Indigenous community leadership, for example a band council resolution. It is therefore unlikely that we will be able to collect data from communities in the territories for this pilot study.

We intend to work with isolated Indigenous communities in three different regions in order to include diversity in cultural and socio-economic contexts. We have tentatively identified some potential sites in the northern regions of the provinces, but cannot at this point specify the sites that will participate, pending discussions with community leaders.

Below we suggest three methodologies that we propose to test at this pilot phase. We then discuss other methodologies that could be appropriate for a larger study, but cannot be tested in this project because of the limited time and budget that make restrictions on travel and contracting additional local researchers.

Each presentation is proposed as a method that can be replicated in other communities. Reliability (accuracy of results) may vary and generally requires larger samples than can be included in these small pilots. It is important to note that findings cannot be generalized to other communities or regions, but may provide information on usage and opinions that could be found in other northern Indigenous communities.

1. Methodologies to be tested

1.1 Focus group with video conference:

Given the budget and time constraints and the focus of the research on adoption of digital technology in Indigenous communities, it is important to test use of digital technologies to collect information, where feasible. FNEC based in Wendake Quebec operates a videoconferencing network connecting remote communities in Quebec. KNET, based in Sioux Lookout, Ontario, also operates a videoconferencing network that includes facilities in remote Cree and Ojibway communities in northern Ontario, as well as some remote communities in other provinces (see <http://meeting.knet.ca/mp19/course/view.php?id=15>). We propose to use this technology to conduct a focus group with residents of an Indigenous community to address the research questions listed in the next section. Focus groups with video conference have been successful with remote Indigenous communities in the past (Gratton & O'Donnell, 2011).

This approach would require:

- A local person who would agree to assemble a group of residents according to criteria provided
- A discussion protocol that would include the research questions
- Discussion leader(s): two members of our team
- Recording of the discussion
- Written summary of responses and comments.

An advantage of videoconferencing is that it does not require travel to the community. In addition, this methodology could be replicated in other sites with videoconferencing facilities. This method could also use simpler systems such as Skype where sufficient bandwidth is available. There are some potential limitations to this approach. Sites that could participate would be limited to those that have broadband and videoconferencing facilities. Participants may not represent the full range of views in the community. Unless there is an interpreter, participation would require English fluency (and might exclude some elders).

1.2. Online survey of community members:

We propose two options for an online survey. The first would involve residents in one or more communities. If this method cannot be implemented in the short timeframe of the project, we propose conducting an online survey of community leaders.

For the online survey, a questionnaire would be mounted on an accessible platform such as Survey Monkey. Potential participants could be notified by Facebook and other social media and outreach mechanisms such as community radio announcements to complete the survey. A local contact researcher would assist and encourage community members to participate in completing the online survey.

An advantage of this approach is that it could be expanded to reach residents across the North. Also, an online questionnaire format with multiple choice responses would be automatically tabulated. Open-ended questions would also be included.

“Fluid Surveys is another option for online surveys. They are a Canadian company and I convinced them to add support for Inuktitut syllabics. I've run multilingual surveys with them before and they have good analytic tools.”

Oana Spinu, Executive Director, Nunavut Broadband Development Corporation

There are several challenges to this approach. It would exclude people without online access or skills. However, questions could be included to ask respondents if there are members of their household who do not have online access or could not complete an online survey. Also, the written questionnaire would exclude non-English speakers such as some elders. Obtaining sufficient responses will require substantial outreach efforts using social media and other means, and possibly a local facilitator to help with contacts and publicity. There are many advantages but also many practical challenges associated with online surveys in remote Indigenous communities (Beaton, Perley, George & O'Donnell, in press).

1.3 Online leadership survey:

A questionnaire could be administered to leaders such as band councilors or community council members, managers of nonprofits and local businesses, teachers, etc. The questions would be structured to ask about digital usage and adoption needs in the community as well as usage by the community members or organizations. Administration could take the form of an online questionnaire or telephone survey.

This approach could provide information from several communities, and would likely be most useful to gain an understanding of observed requirements for effectively supporting digital adoption in the Indigenous communities as well as perceived barriers or limitations to access.

This methodology requires identifying key contacts in selected communities, and may require considerable follow-up to obtain responses. An alternative to the online survey would be to conduct a telephone survey.

1.4 Questionnaire administered in schools:

A questionnaire including the research questions could be administered to a senior grade or grades in a community school. The questionnaire would ask not only about the students' Internet usage but also about use by others in their household. It could be combined with a questionnaire for teachers about use in schools and comments on community access and use. This method will likely require prior written informed consent by the parents for their children to participate in the research.

In addition to the parents' consent, this approach will require agreement by the school and teacher(s) to participate. It does not require travel to the community. Although not as reliable as a survey of a sample of households, it allows for collection of household information by asking the students about facilities and usage by their families. Students in higher grades would be fluent in English, and familiar with digital technologies. This approach could be replicated in schools that agree to participate across the North. A version of this approach – in which students brought the questionnaire home for their parents to complete – has been used successfully in the past (Lockhart, Tenasco, Whiteduck & O'Donnell, 2014).

2. Other methodologies to consider for future studies

Several other field research methodologies could be used to gather information about Internet use and IT adoption in the North. However, they require more resources in terms of funds and time than are available for this project. Examples include:

2.1 Random sample telephone survey:

A telephone survey could be conducted in several regions. The typical approach is to draw a random sample of telephone numbers from an existing data base. This was the method used in a study of Internet usage in Indigenous villages in Southwest Alaska (Hudson, 2012b). As with the previous methods discussed, it does not require travel to communities. A telephone survey can also possible to collect responses from a large sample in a community or communities, or across a region.

However, telephone surveys can be expensive in terms of time taken to conduct interviews and training for interviewers. Including elders in some regions could require availability of interviewers fluent in Indigenous languages. Also, if landline telephone numbers are not available in a public data base, it may be difficult or expensive to obtain them. In addition, if a significant percentage of northern residents now use only mobile phones, it would be difficult to obtain a data base of numbers (mobile phone numbers are typically not tied to specific communities or listed in a directory).

2.2 Targeted telephone survey:

This approach requires contacting specific community members or organizations that can provide responses about their own use, and may be able to provide information about other use in their communities: e.g. band or community council, local businesses and co-ops, non-profit organizations, government offices, schools, libraries, nursing stations, etc. This method was used in the "After Broadband" study in Southwest Alaska (Hudson 2015b).

This approach may be most useful in gathering information about institutional uses and identifying adoption issues for digital technologies for local governance, businesses, non-profit

organizations, etc. Advantages are that it does not require travel to communities, and requires a smaller sample than a household survey. Also, it does not require access to a large database of telephone numbers; however, it does require an accurate contact list.

The interviews with leaders and managers would not yield detailed information about households. Also, the small and targeted sample would generate results that may not be generalizable. Responses are typically not easily coded into an electronic form while the interview is being conducted, and require written notes on answers to questions that would then need to be summarized.

2.3 On-site household survey:

This method requires hiring and training local interviewers and/or sending trained interviewers into communities. A standard interview protocol could be used in multiple communities in several regions to allow for comparison. This methodology could yield highly reliable and comparable results if interviewers are trained in sampling and recording responses accurately. It could also provide field research experience for high school or university students from the North. This training could provide research and interviewing expertise in communities that could be used for their own research initiatives. This method has been used successfully in the past (McMahon, Whiteduck & Timiskaming First Nation, 2015).

This approach would require the recruitment, training and supervision of the interviewers. Training could possibly be done online, but might require a face-to-face workshop. A supervisor would likely need to travel to each community. A tablet-based protocol could be developed; otherwise, it would be necessary to transcribe the results collected on paper forms.

Research questions

The approach to field research in this pilot study follows the multilevel analysis discussed in the literature review, namely questions that address the following factors that could influence adoption and usage of the Internet, communication technologies, and broadband including:

- Community members / Household factors
- Community-level factors
- IT Infrastructure supporting adoption

Adoption of digital technologies, including Internet usage, generally requires:

- **Availability:** Facilities (e.g. equipment and connectivity) must be available to the potential user. The user must have access to a device such as laptop computer, tablet, smart phone, etc. as well as sufficient bandwidth for their desired applications. As noted in the literature review and summary of sources, there are numerous Indigenous communities in the north where fixed connectivity speeds are below current Canadian targets. Mobile speeds are generally also considerably slower in the north than in the rest of Canada. Data caps create

self-censoring as people are challenged to stay below the monthly maximum data usage. Many of the remote Indigenous communities included in this study area remain unserved by mobile / cellular providers.

- **Affordability:** As discussed earlier in the literature review, users of the Internet and broadband (where available) cite the cost of being online as a barrier or restraint to use. These costs typically consist of monthly charges plus additional charges for exceeding download caps. Indices of affordability can be constructed using data on income and connectivity prices, as shown in our analysis of demographic and connectivity sources. However, it is also important to gather information from users concerning their needs for appropriate pricing on their use of available digital technologies and those that they wish to see made available to them. Again, caps on the maximum monthly data transfers influences how and what people are using their digital equipment.

In recent years, the price of devices to access the Internet (such as computers, tablets, and mobile phones) has not been cited as a significant deterrent to access. However, users will also be asked whether the price of these devices is a barrier, and if so, how they do obtain access to them – such as through a community access location or from other family members or friends.

- **Skills and support for effective use of digital technologies:** Some studies of those without access to digital technologies cite lack of skills as a perceived barrier to usage. These skills may refer to basic understanding of how to use a personal computer or how to access the Internet, as well as skills for web searches, and how to use popular applications such as Skype, cloud based applications, etc. These also refer to using the technologies effectively to meet the needs of the community members, which could also involve levels of informal support that may or may not be available in the community.
- **Relevant content and/or applications:** Some studies have also identified perceived lack of relevant content as a reason for non-adoption. In general, respondents may think that they do not need the information or connections afforded by being online, and/or that the content they can find is not relevant to them – such as lack of content about the north, lack of content in Indigenous languages, etc. They may also state that other sources or services provide the information they need, such as newspapers, radio and TV, and information from family, friends, and/or community organizations (Hudson, 2012b).

The following section lists research questions and examples of specific items to be included. Where feasible, standard wording such as used by the OECD could be adopted.

It should be noted that the informed consent form associated with the research protocol will include the information that respondents may choose not to respond to any of these questions. For online surveys, this will take the form of an introductory statement describing the research

being undertaken, who will have access to the information, what it will be used for, and they are able to stop completing the questions at any time.

To gain an understanding of demographic factors that may influence Internet use and opinions, respondents will be asked to provide:

- age range (e.g. under 15, 15-20, 21-30, 31-40, 41-50, over 50, etc.);
- gender;
- education attainment;
- resident community;
- ethnic self-identification.

Research questions that address factors related to digital technology adoption:

Availability refers to the question of “level of Internet access in different communities” in the scope of work, and is addressed primarily in our review of existing sources on Internet and broadband coverage. This question can also be included in our field research to include *quality of service*, which is a problem frequently cited in CRTC testimony and other sources.

Questions that address quality of service include:

- **Speed:** users may not know actual speed, but will be asked whether speed is adequate to carry out applications such as accessing websites, cloud-based services, popular applications such as Skype, streaming audio, streaming video, social media, posting pictures and video material, etc.
- **Latency:** respondents will be asked if they notice delays that affect their ability to use content or applications (particularly relevant in satellite-served communities).
- **Reliability:** respondents will be asked about inconsistencies in service including variations in speed, dropped connections, outages, etc.
- **Internet Service Provider:** Who is the local provider of the Internet service? How do you access the Internet?

Availability can also include information on where people in the community use the Internet:

- **Devices:** Respondents will be asked which devices they use to access the Internet: e.g. laptop computer, desktop computer, tablet, smartphone, etc. If they use multiple devices, they will be asked to estimate what percentage of usage is spent on each device, and to explain choice of devices (e.g. mobile phone is not “fast enough” for some applications; computers are available only at school or library, etc.)
- **Location:** Respondents will be asked where they access the Internet: at home, at school, at a community organization, a library, a public access site, at work, throughout the community (if using mobile) etc. As noted in the literature review, public access locations have been cited as particularly important for northern residents. Also, there are major policy implications in terms of wireless broadband availability and pricing for mobile devices if they are to be used for Internet access.

Repairs and trouble-shooting: Respondents will be asked if where and who they go to when they are experiencing problems such as:

- Need to repair equipment such as computers, network, smartphone, tablet, etc.
- Access to assistance with software or other problems such as viruses.
- Getting their home or business connection established and then troubleshooting it when there are problems.
- Maintaining the local network and ensuring a good online experience.
- Purchasing digital equipment and software.

Affordability is addressed in some of the sources we cite on income levels across the North. It will also be addressed in field questions such as:

- How much respondents pay per month for their subscriptions.
- If respondents pay extra if they exceed data caps, etc., and typically how much.
- Whether users feel that pricing is a hindrance to the amount of usage and/or the types of applications they want to use.
- Whether they think pricing affects usage by others they know in the community.

Skills refer to the ability to use the digital technology. Typically, young people are confident in knowing how to use computers or other devices. This component of access may be more relevant for elders, who may choose not to use the Internet or may rely on younger members of their family or household. Respondents will be asked:

- Whether they feel they have skills necessary to get online.
- Whether they are able to use various applications such as email, social networking, finding information on websites, other popular applications such as Skype.
- If training is available in the community and where might they get the training they desire.
- If they know of people in their household or the community who do not have the necessary skills to use the Internet.

Content/Applications: Respondents will be asked what kinds of content/applications they use, e.g.:

- social media
- video conferencing such as Skype
- ecommerce sites for online shopping, banking, etc.
- egovernment sites for government information, licenses, taxes, etc.
- web sites for local, regional, national and international news, other information
- audio streaming
- video streaming
- work-related applications, etc.
- post images and videos, send email, share information on a blog
- their own web site to share information

Mass Media: It is important to understand the role of mass media as well as the Internet as information sources for northerners, such as newspapers in English/French, newspapers in local languages, community radio, network radio, television. Questions will be included on how respondents get information about:

- their community
- their region
- the rest of Canada, etc.
- other sources of information (friends, social media, local web site, etc.)
- other services they would like to see provided.

Experiences in using digital technologies in their community: Identifying how community members interact with local organizations and services that use digital technologies. Questions about digital technology adoption in local and regional organizations will be asked, such as:

- **School:** Sample questions might include: How do the students use the Internet in the community? Are there changes required to improve student learning experiences? Do the teachers use the digital equipment? How much? What needs to change at the school? Other comments about the local students experience in the use of digital technologies at the school.
- **Other Education and Training:** Sample questions might include: Have you or anyone you know taken any online courses or participated in some online training using video conferencing or online? What worked well? Were there any areas that need to change or be improved upon to make that learning experience better? Any other comments about doing online training in your community?
- **Informal Learning:** Sample questions might include: Where do you go to find information or to learn a different skill? What are local people sharing who are using the Internet to teach other people? What other sharing is happening that you have been involved with online? Are there other comments about sharing and learning online.
- **Banking** and unbanked status, credit card ownership, and overall access to bank services influenced one's ability to set up home Internet services.
- **Indigenous language and script use.** Do respondents know how to input Inuktitut syllabics? Do they avoid certain applications/devices because they do not support syllabic scripts (they are not available on Android mobile devices).
- **Businesses:** Sample questions might include: Which local businesses are using digital technologies to support their operation? What suggestions or ideas are needed for helping local businesses and organizations to use digital technologies? How is the Internet being used for tourism in your community? What do you sell on the Internet? Are there other

businesses or services that you would like to see in your community, that require these digital tools? Any other comments?

- **Health care:** Sample questions might include: How is the local health care centre using digital technologies in delivering services in your community? Have you or do you know someone who has been helped with these technologies in your community? How? How would you like to see these digital technologies used for health care in your community? Any other comments about supporting and improving health care services using these technologies?
- **Time permitting** similar questions will be asked for community leadership and administration programs, justice services (policing), access to information (libraries), entertainment, and other organizations or services available in these remote Indigenous communities. What other services or organizations are needed in your community?
- **Jobs:** Sample questions might include: What other jobs or employment opportunities required to support people to use these digital technologies in your community?
- **Personal experiences:** Sample questions might include: Asking respondents how they are doing things now that they could not do before the Internet was available?

Closed-end responses under this topic can be followed with probes, such as:

- If yes, are there of any examples you might share?

These questions can be posed to all respondents, but may best be addressed in focus groups and/or leadership surveys as described above.