
Communication technologies for focus groups with remote communities: a case study of research with First Nations in Canada

Qualitative Research

11(2) 159–175

© The Author(s) 2011

Reprints and permission: sagepub.

co.uk/journalsPermissions.nav

DOI: 10.1177/1468794110394068

qrj.sagepub.com



**Marie-France Gratton and
Susan O'Donnell**

National Research Council Canada

Abstract

Communication technologies offer qualitative researchers more options for conducting research with remote communities. It is not always possible for researchers to travel to conduct focus groups and interviews in person, especially when travel is prohibitively time-consuming and expensive. This reason is often given to explain the lack of qualitative research with participants living in remote First Nations (Aboriginal) communities in Canada. This manuscript presents a case study of a research method developed in collaboration with our research partner K-Net and KORl (Keewaytinook Okimakanak) in northwestern Ontario. The specific study investigated preferences for online health information for First Nations people living in remote communities. Working with K-Net, we developed a method to use multi-site videoconferencing for focus groups – live visual and audio exchange between the researcher in Ottawa and participants in multiple remote First Nations communities. Our conclusion encourages other researchers to try this innovative method to include more remote First Nations community members in participatory research projects.

Keywords

Aboriginal, broadband networks, Canada, communication technologies, cultural, First Nations, focus groups, participatory research, remote communities, videoconference

Introduction

Doing research with remote communities is always a challenge, especially when the researchers are located at a great distance from the communities. In Canada, this challenge

Corresponding author:

Marie-France Gratton, National Research Council, 1200 Montreal Road, M-55 Room 275, Ottawa, ON, Canada, K1A 0R6

Email: Marie-France.Gratton@nrc.ca

faces researchers working with remote First Nations communities. First Nations are one of three distinct Aboriginal groups in Canada. Many of the more than 600 First Nations communities in Canada are in rural or remote locations and some are in isolated locations accessible only by air (Health Canada, 2004).

Access to remote First Nations communities can be very costly and researchers must invest considerable time in travelling. The same is true for First Nations researchers wanting to conduct research outside of their communities. Although conducting research face-to-face with remote community members is desirable, there is a need for other means of communicating requiring no travel that will minimize research costs and consequently encourage and increase research with remote First Nations.

This article describes a new method of data collection for qualitative research with remote First Nations communities. In the specific research for which this method was developed, videoconferencing was used to conduct focus group interviews with First Nations people to learn about their preferences for online health information. This innovative and cost-saving data collection method could be applied to any qualitative research requiring communication with remote and rural communities.

This article starts with an overview of the challenges of doing research with remote communities and how researchers have used broadband networks and the internet in the past to collect data remotely for qualitative research. The context and background for the research that drove the development of the new data collection method is then described, followed by a detailed description of the method used to collect data for this research. The subsequent section reports on the results of using this method, by stating the advantages of this method and what went well as well as its limits and challenges. Finally, the last section discusses the major results and offers some thoughts for future research.

Challenges of research with remote communities and communication technology solutions

The high costs and considerable time required to do research with remote First Nations communities are well-known by researchers working in this area. In a 2000 report by a federal task force reporting to two Canadian federal research institutes, the consequences of the high costs of northern research were highlighted. The report noted that in the previous three years, the cost of airfares and freight transport to northern communities had doubled. The cost of food and lodging in remote northern communities is at least 30 percent higher than in the southern communities where most Canadians live. Unexpected costs related to travel in northern communities can be prohibitive – the report cites the example of \$1,000 per hour for Twin Otter (small plane) support (Task Force on Northern Research, 2000).

According to the Canadian task force, the high costs of doing northern research have caused some researchers to abandon their research. When the report was written in 2000, the two Canadian federal research institutes (SSHRC and NSERC) that are the principal sources of funding for northern research did not cover all the costs of doing northern research and other sources of funding were difficult to find. Overall, the level of resources required to build and maintain good research partnerships with northern remote communities was not available to researchers. The report concluded that: ‘The costs

and effort required to promote and undertake northern research are significant and can present a serious barrier to creating the necessary partnerships among the different stakeholders involved' (Task Force on Northern Research, 2000: 16). While the situation has improved somewhat in recent years with special federal research funding targeting northern research, the reality is that research with remote First Nations communities remains a costly and time-consuming venture; as a consequence few researchers are working in this area.

At the same time that research with remote communities was becoming more costly, new digital media and networks were emerging that opened new possibilities for communicating with remote communities. For almost two decades, researchers have been using broadband networks and the internet to conduct qualitative research. The methodologies have focused almost exclusively on digital text communications – using email, discussion listservs and chat rooms – or digital telephone networks for audio only. Widely cited books and articles about online research include Couper (2000), Jones (1999) and Mann and Stewart (2000). These publications provide how-to information for researchers interested in using text-based communication on the internet to collect data from people.

James and Busher (2006) highlighted the methodological issues they found from using email for interviews in qualitative research. Since there is no visual aspect to using only email as a communication tool, establishing trust with participants can be difficult for the researcher. Lewis (2006) used an innovative method to gain the trust of her participants before engaging in email interviews with them. The author started by using online bulletin boards of support groups for IBS sufferers to discuss her own health problems with potential participants to the research. This allowed her to become part of their community and establish a relationship of trust with the members (Lewis, 2006). The lack of social presence in email-based exchanges forces researchers to find innovative ways to create trust with participants.

In addition, the anonymity associated with this method means that researchers have no proof that the thoughts written in the email are the actual thoughts of the participant. This is also true for any other form of digital text communication, such as chat rooms (James and Busher, 2006). On the other hand, several authors found some benefits to using email (James and Busher, 2006; Lewis, 2006; Scott, 2004). Since email exchanges are not done in real-time, participants have the chance to think clearly about their responses, draft them and edit them before sending them off. This can have the effect of enriching the participant responses. The authors also recognized how this method provided participants with some sort of control over the interview process as they were free to respond to the emails at a time that worked for them.

Scott (2004) discovered that email was a medium of communication that gave shy participants the opportunity to contribute their insights to a conversation without the fear of being 'interrupted, talked over or silenced by more vocally dominant conversationalists' (Scott, 2004). In her study, typically shy participants proved to be articulate and eager to be heard when using email. The author, however, noted how the reduced social presence associated with email could cause privacy issues as participants might disclose more personal information about themselves than they normally would and later regret it, feeling that their privacy was violated (Scott, 2004).

More recently, the increased penetration of broadband networks has made it possible for researchers to communicate and conduct their research using richer forms of data exchange. The use of videoconferencing – real-time exchange of audio and video data over broadband networks – has increased significantly in the last few years. To date, however, there has been no published research on how videoconferencing can be used for qualitative research with remote communities, despite the obvious advantages of using audio visual technology compared to text or audio-only communication for this purpose.

Remote and rural First Nations in Canada are currently using videoconferencing for many purposes. Despite significant challenges including lack of adequate bandwidth, First Nations communities and organizations have worked with government and private sector partners to build a significant broadband network capable of supporting videoconferencing for health care, education, and many other community and sustainable development activities (O'Donnell et al., 2008, 2009a, 2009b, 2010). These networks can be used for data collection in qualitative research.

Videoconferencing offers something unique that other types of digital communication over broadband networks cannot offer. As discussed in our recent publication (O'Donnell et al., 2010), social science research on videoconferencing began with attempts to understand why the visual is an important component of communication. One of the earliest theories was *social presence*, developed by a team of social psychologists (Short et al., 1976). According to this theory, videoconferencing is richer in social presence than other non-visual media and communication channels – such as telephone conversations and email exchanges – because it can convey information important for good interpersonal communication. More recent research in this area has highlighted three themes that make up social presence: 1) being together, including co-presence, co-location and mutual awareness; 2) psychological involvement, including saliency, immediacy, intimacy, and making oneself known; and 3) behavioural engagement, the immediacy behaviours through which social presence is realized (Rettie, 2003). Other recent research argues that social presence is facilitated by observation of visual cues such as facial expressions and body movements. Video – with its ability to support visual cues, such as facial expression recognition – will give people a greater sense of social presence than audio alone (Roussel and Gueddana, 2007).

In our earlier research, we found that the visual communication afforded by videoconferencing is important to First Nations people (O'Donnell et al., 2010). In that study, all the interview participants said that having visual communication is important when communicating at a distance. They want to see the other person in a discussion to ensure that people are paying attention when they are speaking. With visual communication, people take the interactions more seriously because others are watching them. Several interview participants in that study said the visual communication allows them to build or maintain relationships with people they cannot meet in person. According to these participants, visual communication builds trust.

Study context and background

Ontario, Canada's second largest province, stretches over more than 1,000,000 square kilometers. The northern third of the province is rugged and sparsely-populated with no permanent roads. The Sioux Lookout district, which consists of 23 remote First Nations

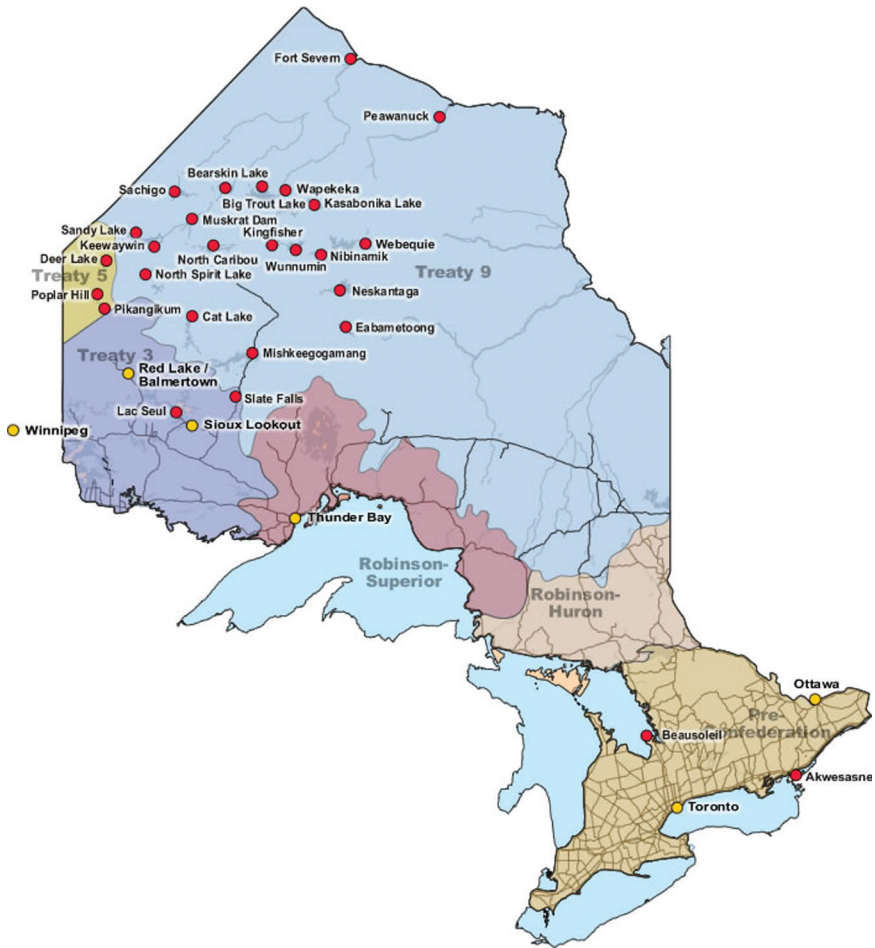


Figure 1. Map of the Sioux Lookout district First Nations in Northwestern Ontario
 Source: KO Telemedicine 2009.

communities across northwestern Ontario, was the location for this research (Figure 1). Most of these communities can only be accessed by air. Like the majority of First Nations people, the people of the Sioux Lookout district face serious social issues, such as health issues, high unemployment rates, and limited access to healthcare (Fiser et al., 2006; Nishnawbe Aski Nation, 2007; Northern Nishnawbe Education Council, 2008).

With the arrival of Europeans to the Ontario region beginning in the 17th century, the way of life of Aboriginal people there was completely transformed. They gradually lost control of their land and in this process, became more and more disconnected with many of their symbols of history and culture (Royal Commission on Aboriginal Peoples, 1996). This history and the ongoing racism towards Aboriginal people have had a harmful impact on the health of Aboriginal people today, who suffer a significantly lower health status than the general Canadian population (National Aboriginal Health Organization, 2008; Silverman et al., 2001).

Many First Nations communities are rural or remote, with some being fly-in locations only with no road access. Limited health care resources in the communities mean that patients needing clinical consultations must often be flown to the nearest town or cities to reach a hospital, which is costly and time consuming (Fiser et al., 2006). For these reasons, it is crucial that First Nations Canadians in remote communities gain accurate, reliable and relevant access to information and social services. Because of the high costs associated with traveling, digital communications such as videoconferencing have been used to provide remote communications and services to communities to minimize the need for travel.

K-Net (Kuh-ke-nah Network), is the telecommunications services department of Keewaytinook Okimakanak (KO), a tribal council in Northwestern Ontario and a partner in this research. K-Net provides a carrier class broadband network that as of 2006 connected 40 communities in northern Ontario, including the 23 First Nations communities of the Sioux Lookout district (Carpenter, 2010; Fiser et al., 2006). This network allows for the delivery of affordable broadband services to remote communities, including telehealth, tele-education, e-commerce, and videoconferencing (Industry Canada, 2006).

Historically, Aboriginal people have been reluctant to participate in research with non-Aboriginal researchers and have feelings of skepticism and distrust towards them. Among several other reasons, these views are a result of research conducted by non-Aboriginals that is irrelevant to community needs and that lacks respect for Aboriginal culture and ways of doing research (Bennett, 2004; Perley and O'Donnell, 2005, 2006).

Researchers working in or with Aboriginal communities must therefore choose approaches to research that include members of the communities, allowing them to contribute throughout the whole research process. One model of research, participatory research, has been recognized as favorable to Aboriginal research. Participatory research is collaborative in nature and enables Aboriginal community members and researchers involved in the research to voice their opinions, share their knowledge, and have more control over every step of the research process (Bennett, 2004; Smith, 1999).

Researchers must also choose a methodology for gathering data that allows participants to be more deeply involved in the process. This study was therefore conducted using a qualitative user-centered method for gathering data. Respecting the principles of OCAP—Ownership, Control, Access and Possession—is also good practice for researchers. Ownership means that Aboriginal communities are collective owners of their cultural information and knowledge. Control signifies that Aboriginal people have the right to control all aspects of research that may impact them in any way. Access refers to Aboriginal people's entitlement to access their information and to make decisions regarding its access. Finally, possession provides Aboriginal people with a means for protecting their information of breach or misuse (Schnarch, 2004). The researchers fully respected these principles during this study by working in close partnership with First Nations organizations.

The current study is part of graduate thesis research conducted in collaboration with the VideoCom research project funded by SSHRC—the Social Sciences and Humanities Research Council of Canada. VideoCom has three First Nations organizations as research partners, including K-Net and KORI, Keewaytinook Okimakanak.

The novel research method: focus groups by multi-site videoconference

The larger goal of the study was to understand preferences by First Nations people for online health information. User preferences of online health information were explored in depth through focus group discussions. The focus group method was primarily qualitative but also included gathering some quantitative data and was thus a mixed-method approach. A selection of health websites was made to present to participants and a questionnaire was developed to collect data from participants. The questionnaire was reviewed by the First Nations research partners and tested during a pilot focus group interview with First Nations people from the district. The focus groups took place remotely using multi-site videoconferencing technology thus allowing for the interviewer and the participants to see and hear each other in real-time during the sessions despite the distance. This was done using the videoconferencing network that connects 40 remote and rural communities in northern Ontario. Other web-based technologies that can do multi-site videoconference exist but these were not explored in this research.

Participant recruitment was conducted with the help of the K-Net partner. Each First Nations community in the Sioux Lookout district has a Community Telehealth Coordinator (CTC) who manages the telehealth operations. Because of their experience using videoconference and their interest in health matters, it was agreed with the partners that the CTCs would be approached to participate in remote focus group interviews for this research using videoconference, as part of their job responsibilities. Asking the CTCs from each community ensured that most of the communities of the district were represented in the research. The CTCs were also asked to invite other members of their community to participate.

Thirty participants, both female and male, were recruited and participated in the focus groups by multi-site videoconference. Out of the 30 participants, 22 participants returned their questionnaire, which allowed their demographic characteristics to be analysed. There were more female participants than male, with 14 female participants and eight male participants. Most participants reported they were from the Oji-Cree culture; however, there were other participants from the Ojibway culture and as well as the Cree culture. Participants were between the ages of 20 and 59 and highest education levels ranged from primary school to a bachelor's degree. Most participants spoke an Aboriginal language either as their mother tongue or as a second language, while all of them spoke English. All 22 participants specified that they used the internet at least once a day and had previously searched for health information online. More than half of participants (59%) were Community Telehealth Coordinators (CTCs). The participants came from 14 different First Nations communities in the Sioux Lookout district.

A staff member from K-Net took care of contacting all potential CTCs to ask for their participation and schedule the focus group sessions. During the focus groups, the K-Net staff member in Sioux Lookout ensured the connection between sites was made and coordinated the videoconference. He also ensured the recording of the videoconferences. Each CTC had access to videoconference facilities in their communities, managed centrally by K-Net in Sioux Lookout.

The interviewer had access to a videoconference facility at her home research institute in Ottawa. A laptop was connected to the videoconference equipment, allowing the interviewer to show the websites to the participants. Speakers were also plugged into the laptop to improve the sound coming from the videos shown. During the videoconference, the interviewer switched the screen view between the computer screen and the camera to show the websites. The pilot focus group session also served to test the technology as well as the process used for the interview, verifying the quality of the sound and video, and allowing the interviewer to practice the coordination of the speakers.

During the focus groups, each site could see only two of the other sites at once: the site of the current speaker and the site of the last person to speak or the sites of the last two people to speak. Five focus groups were conducted in total. Every participant had a printed copy of the questionnaire on-hand during the focus group interviews. These questionnaires were sent by email to participants, who were asked to print them. During the sessions, the interviewer began by providing background information on the research, providing some instructions regarding the focus group sessions and reading the informed consent for participating in the study.

The interviewer then presented the first set of health websites. To prevent technical difficulties and loss of resolution due to the videoconference, participants were sent the list of links ahead of time for them to view the websites on their own computer. If for whatever reasons participants could not view the websites on their own computer, the interviewer also presented them on the videoconference screen.

Participants were then asked to individually answer some questions on the printed questionnaire regarding their preferences for the websites that had just been presented. The interviewer subsequently invited participants to share their responses and discuss their preferences with the rest of the group. This process was repeated for each set of websites. The websites presented contained text, images, links, and/or videos.

Participants were then asked to complete filling-out the remainder of the printed questionnaire. Following this, three open-ended questions from the questionnaire were asked for group discussions.

Each focus group took approximately two hours and was completely video recorded. Transcripts of the video recordings were made for analysis. The videos were archived using the content management server controlled by the videoconference bridge operator, protected by a password, and archived by the server software by date and time. Access to these videos was given to only certain individuals connected to the research team. The videos were not edited. Following the interview, participants sent their filled-out questionnaires to the interviewer via fax. The received questionnaires were then transcribed for analysis. NVivo software was used to analyze the data from both the questionnaires and the video transcripts.

Results

Cost and time savings of this research method

The most significant advantages to this research method were the considerable cost and time savings. No travel was necessary to conduct the focus groups by either the

interviewer or the participants. Without the use of this method, the interviewer would have had to travel to Sioux Lookout from Ottawa. A round-trip from Ottawa to Sioux Lookout costs from \$750 to \$1,300 with Bearskin Airlines, the only airline that offers connections to Sioux Lookout for flights departing from Ottawa.

From there, to conduct focus groups, all the participants would have had to fly to Sioux Lookout from their communities. Wasaya Airways offers flights to and from the communities in the Sioux Lookout district, to the exception of Lac Seul, Slate Falls and Mishkeegomang. Inquiries were made to get the regular rates for a round-trip with Wasaya Airways to Sioux Lookout from each of the communities that participated in this research. The full price for each trip is more than \$500. Better rates may also be available when flights are booked 10, 7, 3 or 1 day(s) in advance. Considering the high price of travel from the communities to Sioux Lookout, it is realistic to believe that the recruitment of participants would have been much more difficult, if not impossible, if travelling was required.

On the other hand, the interviewer could have travelled to all of the communities instead of having each participant travel to Sioux Lookout. In this case, focus groups including members from different communities would have been impossible. The flight rates for one possible route that can be taken with Wasaya Airways giving the interviewer 1–2 days in each community (excluding Lac Seul, Slate Falls and Mishkeegomang), for a trip lasting 18 days was determined. The itinerary was made with as much inter-community trips as possible, thereby minimizing trips having to connect in Sioux Lookout (Community X – Sioux Lookout – Community Y). This trip would have been exhausting for the researcher and dependent on good weather and no flight delays.

Booking flights in advance reduces the price significantly. Considering that the interviewer could have booked at least 10 days in advance, Wasaya Airways' lowest rate for an itinerary that includes a visit to each of the communities for 1–2 days, starting in Sioux Lookout, costs \$1,934.10. Including the cost of the trip from Ottawa to Sioux Lookout, the total flight costs for this trip for the interviewer would be between \$2,700 and \$3,200 at the lowest rates, with maximum advance booking. This does not include the cost of hotels and meals. The average cost of a room for a visitor in a remote First Nations community in this region is \$150 a night. Meals would have to be self-prepared using food purchased at the community Northern Store, which would cost about \$50 a day. The minimum total cost of this potential 18-day marathon research trip for one researcher would be \$6,300, not including the cost of staying in Sioux Lookout and getting to and from the airports in Sioux Lookout and each community.

These numbers show the substantial savings for both the researcher and the participants for conducting the interviews at a distance. Aside from the ongoing costs for K-Net to maintain the broadband networks and the videoconference facilities in the communities, there were no other costs for the interviewer and the participants for using the multi-site videoconference method. Most remote and rural First Nations in eastern Canada (Ontario, Quebec and Atlantic region) and about half in the western provinces have access to the videoconferencing technology. The videoconferencing networks and technical support is provided by the First Nations SchoolNet program, for which the necessary infrastructure was implemented to provide remote schooling to First Nations schools (Whiteduck, 2010).

The time involved for the interviews was also considerably less than the in-person alternative. Each participant only had to take two hours of their time to participate in a focus group. For the interviewer, five focus groups were conducted of two hours each, plus half an hour given for set-up each time, making a total of 12.5 hours of interview time for the interviewer. The focus groups were done over a period of three days, with the researcher staying in her home community of Ottawa and being able to conduct her normal activities outside of the focus group times. Therefore, three days of focus groups compared to 18 days of dedicated travel and focus groups means time savings of at least 15 days for using the videoconferencing method instead of travelling.

Other advantages and what went well with the research method

In general, the use of videoconferencing to collect qualitative data for the purpose of this research was very successful. This section describes what went well and some of the advantages associated with this new research method.

One advantage of the method we described earlier is that it allows a mixed-method approach, in our case having the combination of the group discussion with individual responses from the participants in the questionnaires. This allows the researcher to benefit from the advantages of face-to-face interviews combined with survey data. The interviewer could record qualitative details that would otherwise be impossible to record by simply using a questionnaire. The videoconference lets the interviewer see the participants' facial expression and body language, reducing the chances that answers will be misinterpreted. Furthermore, the interviewer can probe for more information if the answer given by the participant is not clear or is incomplete. In addition, if the answers given on the questionnaires are not clear, they can also be compared to the answers given during the focus group sessions to clarify.

The social presence provided by videoconferencing was a definite benefit as it helped provide participants with the security of seeing and knowing who the researcher is, helping to build trust with verbal as well as non-verbal and contextual elements. This benefit would be absent in other forms of online communication, such as email or chat rooms forcing researchers to use other methods for building trust.

The mixed-method approach also provided participants who were too shy to speak up during the focus groups with the opportunity to contribute their thoughts on the paper questionnaire. Similar to email communication, the questionnaire gave the participants time to prepare and edit their answers, while not being interrupted or intimidated by more vocally dominant participants.

Following the focus groups with a questionnaire may have enriched the answers provided by the participants, as the asynchronous nature of paper questionnaires encourages participants to think through and re-examine their answers. It also gave participants a little more control over the research process since participants could choose to respond to certain questions or revise them at a later time, as well as submit their completed questionnaire when it suited their schedule. Therefore, this method provided benefits that you would also get from using email-based communication.

During the videoconference, the interviewer observed active participation in the focus groups. This sometimes required some probing on the part of the interviewer to

encourage discussion; however, most participants appeared to be relaxed and more eager to speak after the first question. This was an encouraging result for this research, considering an initial concern that the dynamics of the focus groups could be affected by the different setting and considering the challenges associated with conducting multi-site videoconferences.

Even though the showing of web pages containing text was more difficult, the showing of the videos worked very well. No technical difficulties were encountered. Participants could see and hear the videos perfectly. This was a result of thorough upfront testing of the technology and material used, including the quality of the videos transmitted and the audio.

Despite the fact that the interviewer was not on-site to pick up the questionnaires after the interviews, a good percentage (73%, 22 out of 30) of questionnaires was returned to the interviewer by fax. The First Nations partners were a great help with this by following up with participants who had not yet returned their questionnaires.

Having First Nations partners contributed significantly to the success of this data collection method. The partnership with K-Net allowed for the easy and rapid recruitment of First Nations participants from the region chosen as the scope for the research. The recruitment as well as scheduling of the focus groups would have otherwise been more difficult and time consuming considering the distance between the interviewer in Ottawa and the communities of the Sioux Lookout district. Also, considering the reluctance that some First Nations have for engaging in research with non-Aboriginal people outside of their communities, establishing trust from the people would have been difficult without the involvement of the partners or without spending a significant amount of time in the communities.

The partnership with K-Net provided the researcher with access to videoconferencing technology and expertise. Since K-Net offers videoconferencing services to the communities of the Sioux Lookout district, all participants had the necessary technology to participate in the remote focus groups. This contributed to the fact that there were no costs involved for the researcher for doing the videoconferences. In addition, all of the participants had experience using videoconferencing since this is how they often communicate with people outside of their communities. This reduced the risk of participants encountering technical difficulties. Moreover, the expertise of the partners in videoconferencing was of great help as the interviewer could concentrate on the focus groups themselves without worrying about technical issues.

Finally, the partnership with the First Nations organizations allowed the researcher to fully respect the principles of OCAP. The partners are part of a tribal council and are the liaison with the CTC's who work for the same tribal council. Collaborative planning and preparation was done with the partners; all work, including a draft copy of the thesis and of this manuscript, was reviewed before being finalized and suggestions and opinions given by the partners were respected and applied to the research. Archives of the video recordings of the focus groups as well as the final copy of the thesis were made available for future review and analysis on the research project website, which is hosted on a server owned by the partners. Both the CTC's and the partners have access to this content on the website, which is password protected. The results of the research were also shared with the partners. Attempts to make the results relevant for the participating First Nations

were made throughout the study. The research project is long-term and the relationship with the partners will continue for at least another four years following the study described in this article.

Limits and challenges of this novel research method

Conducting the focus groups remotely had several significant advantages, mostly cost and time savings. However, this method does have its challenges and limits. First, conducting focus groups remotely could possibly have an impact on the dynamics of the sessions. Even if the participants and the interviewer could see each other on the videoconference screens, not being physically face-to-face in the same room may influence the mood of participants and create a different atmosphere than an in-person focus group. The feelings of closeness and privacy with the group might not be as strong. Also, not seeing every member of the group at once means that participants cannot see every person's reactions and facial expressions when speaking. This can however, be accommodated with some videoconferencing technology that allows for every site to be seen simultaneously on a split screen. However, this means that every site image will be smaller, which may not work in certain situations, such as when many sites are participating.

In addition, coordination between speakers during videoconferences is much more difficult than doing so in-person. As only the current speaker and the last person that had spoken could be seen on the screen at once, participants had to speak up and interrupt if they wanted to add something to the conversation, instead of lifting their hand or giving another type of signal to indicate that they wanted to speak. Several participants may decide to speak all at once or some users may talk less because they are not sure when it is their turn to speak or they might be afraid to interrupt someone. Group discussions could possibly be less active in this case.

The interviewer worked around this challenge by ensuring that everyone had their chance to speak at the appropriate times. During a videoconference, it is easier to get everyone's input by doing round tables, where the interviewer calls out each participant's name or site and allows them to speak. It is essential to use different techniques to accommodate every participant's particular needs. Interviewers should be skilled facilitators with videoconference experience.

As discussed, the social presence afforded by videoconferencing has several benefits; however, it also comes with its challenges. The visual aspect of this method creates the same problem that researchers face when doing face-to-face interviews in that the answers of participants may be shaped by their interpretation of the researchers' values and attitudes conveyed through social characteristics, such as age, race, gender and facial expressions.

Furthermore, in the case of this study, websites were presented to participants, which increased the challenges. There is a loss of resolution when showing a computer screen through a videoconference screen. Even though the interviewer ensured that all participants had no trouble viewing the web pages during the focus groups, the loss of clarity of the websites on the video conference screen could influence the preferences of the users and thus their responses to the research questions. Improved technology, such as higher bandwidth, could resolve this issue.

The videos were easier to see through the videoconference screen, but the text on some of the web pages was sometimes too small and the size had to be increased to allow for participants to read. This meant that only a small portion of the web page could be seen at once, which forced the interviewer to scroll every few minutes to show the whole page. However, it is important to note that participants did have the liberty of viewing websites on their own computer, if they had access to one, during or after the interview. This was the preferred method for certain participants, especially when showing web pages that contained text.

In a small number of cases, some participants had difficulty opening the web pages. The interviewer and the videoconference coordinator worked to help these participants with these technical problems; however, doing so at a distance also appeared to have its challenges. For example, in one case it was difficult to understand what the user was doing wrong, as the interviewer could not see what the user was doing and the user had trouble communicating using technical terms. In this case, participants that are comfortable using a computer and the internet would have been required.

Data collection always requires lots of planning and preparation. This was also true for the method used for this research. This method requires access to videoconference technology, not only for the researcher but for all the participants as well. It also requires someone to take care of connecting the sites, maintaining those connections throughout the whole videoconference, and ensuring that no technical difficulties are encountered. This method therefore requires a partnership with skilled people in videoconferencing. Without this partnership, researchers would have to add the costs of renting videoconference facilities to their research expenditures as well as the extra time and effort required to organize and coordinate the videoconferences.

In addition, since interviews are conducted remotely, the interviewer must ensure that all participants have the necessary material for the focus groups ahead of time. In this case, participants had to have the printed questionnaire on hand as well a list of links to web pages open and ready on their computer. This material was sent to participants via email. Before each focus group session, the interviewer verified that every participant had the required material ready.

Also, collecting data remotely often means that recruitment of participants must also be done remotely. It could be more difficult to reach participants at a distance and to schedule the focus groups. Collecting the paper questionnaires following the interview can be another challenge. Since the interviewer is not on site to pick-up the questionnaires, some questionnaires were never returned and some participants took some time in sending them back, causing delays. As well, there is no guarantee that the responses provided on paper were the actual thoughts of the participants. Again, having research partners in the area can be advantageous and efficient.

Finally, this study was conducted with participants experienced in videoconferences. Participants were not only accustomed to the technology but also familiar with the process and were comfortable in front of a video camera. In future research, having participants with no experience with videoconferencing could possibly pose a problem. However, the help of partners, especially local partners, in this case could significantly reduce that risk as they can help with technical issues and with the coordination of the speakers.

Discussion and conclusions

In summary, the data collection stage of this study went well allowing the researcher to obtain useful results while cost and time savings were high. The findings of this research highlighted the preferences of online health information for First Nations people. The research helped determine the principles that should govern the conception of health websites in the Aboriginal context. This knowledge could be useful for health communication professionals, First Nations health professionals and policy makers. Considering the value of these findings, the use of videoconferencing for data collection has shown itself to be a valuable method to collect qualitative data for research in the Aboriginal context. The important cost and time savings also proved this method to be even more advantageous.

Of the lessons learned, the major one was that partnership with researchers from the remote locations in question are crucial to ensure the success of this method, especially for Aboriginal research. This helps with the recruitment of the participants as well as the planning and scheduling of the videoconferences. Furthermore, partnership with researchers that have experience with videoconferencing is also essential to ensure technical aspects are taken care of for set up and during the videoconferences.

This study builds on our previous research findings that communicating by videoconference is an appropriate method for remote and rural First Nations communities in Canada, and that First Nations communities appreciate having the opportunity to engage in activities using this communication medium (O'Donnell et al., 2009b, 2010). We have argued elsewhere that multi-site videoconferencing can reconfigure the space of First Nations (McKelvey and O'Donnell, 2009). The technology encourages people to feel, temporarily at least, as if they exist in the same space. As one First Nations speaker in a recent study emphasized, *'videoconferencing, one of the enablers, is like you're walking into an office that feels like it's next door and it can be like 3,000 kilometres away, so that's a very good feeling'* (quoted in McKelvey and O'Donnell, 2009). Individuals using the technology are less concerned with distance. Participants often describe the technology as convenient; they do not have to travel to attend a meeting. Videoconferencing does not of course overcome all the problems of space and time, but it allows First Nations community members to conceptualize their place in a shared networked space, instead of a geographic space.

Several opportunities for future research have come out of this study to expand on the current findings. The methodology for data collection used for this research could be used in future qualitative research with different groups, such as other cultural groups, or could be applied to other areas of qualitative research, when distance is an issue.

Future research could explore how this method could also be used for quantitative research. The questionnaire that participants filled-out during the focus groups was partly used for quantitative purposes but as this study was qualitative in nature, the sample size was limited and too small for the results to be statistically significant. That said, if a larger group could be managed, this method could be applied in a quantitative study. Advantages would include establishing trust by meeting, seeing and speaking to participants over the videoconference while they fill-in the questionnaire instead of simply sending the questionnaire by mail or electronically. This also allows for the interviewer to answer questions that the participants may have concerning the questionnaire.

The limits and challenges to using videoconferencing for data collection encountered in this research could be looked at in more detail in future studies to discover new approaches that could help overcome them. For instance, the loss of resolution when showing a computer screen over a videoconference screen was mentioned as a limitation of this study. An in-depth look at how technology can be used differently to improve the resolution could be examined.

Future studies could also explore the opinions of participants by interviewing or surveying them regarding their experiences with videoconferencing. The results of this could be used to help discover new ways to improve the method.

Finally, another possible future research could be to repeat this study with face-to-face focus groups, if resources are available, and to compare the findings with the findings from this study. Will the same results be obtained if the interviewer and participants are present in the same room? The goal would be to determine whether or not videoconferencing has an influence on the findings.

Acknowledgements

The authors would like to acknowledge the significant contribution of our research partner, Keewaytinook Okimakanak (Northern Chiefs Tribal Council) in Northwestern Ontario, and to offer them our sincere thanks and appreciation for participating in this study. In particular we would like to thank KO/K-Net staff member Lyle Johnson for liaising with the communities, scheduling the focus groups, and providing technical advice and support. We would also like to thank the Community Technology Coordinators (CTCs) working with Keewaytinook Okimakanak Telemedicine who generously and graciously participated in the research. The authors also appreciate the helpful comments provided by the two anonymous reviewers on an earlier version of this article. The study was part of the VideoCom project (<http://videocom.firstnation.ca>), funded by a Standard Research Grant from the Social Sciences and Humanities Research Council of Canada (SSHRC) for 2006–2009 and 2009–2012.

References

- Bennett M (2004) A review of the literature on the benefits and drawbacks of participatory action research. *First Peoples Child & Family Review* 1(1): 19–32.
- Carpenter P (2010) The Kuhkenah Network (K-Net). In: White J, Peters J, Beavon D and Dinsdale P (eds) *Aboriginal Policy Research Volume 6: Learning, Technology and Traditions*. Toronto: Thompson Educational Publishing, 119–127.
- Couper MP (2000) Web surveys: a review of issues and approaches. *Public Opinion Quarterly* 64(4): 464–494.
- Fiser A, Clement A and Walmark B (2006) *The K-Net Development Process: A Model for First Nations Broadband Community Networks*. Canadian Research Alliance for Community Innovations and Networking (CRACIN), Toronto.
- Health Canada (2004) Backgrounder on Telehealth activities in First Nations and Inuit communities. Aboriginal Crossing Boundaries Online Discussion Document. Prepared by e-Health Solutions Unit, First Nations and Inuit Health Branch, Health Canada, August.
- Industry Canada (2006) *National Satellite Initiative Program Description*. Available at: http://broadband.gc.ca.proxy.bib.uottawa.ca/pub/media/nsi_prog_des.html (accessed 16 April 2008).
- James N and Busher H (2006) Credibility, authenticity and voice: dilemmas in online interviewing. *Qualitative Research* 6(3): 404–420.

- Jones S (1999.) Studying the net: intricacies and issues. In: Jones S (ed.) *Doing Internet Research*. London: Sage, 1–27.
- Lewis J (2006) Making order out of a contested disorder: the utilization of online support groups in social science research. *Qualitative Researcher* 3: 4–7.
- Mann C and Stewart F (2000) *Internet Communication and Qualitative Research*. London: Sage.
- McKelvey F and O'Donnell S (2009) Out from the edges: multi-site videoconferencing as a public sphere in First Nations. *Journal of Community Informatics* 5(2). Available at: <http://ci-journal.net/index.php/ciej/article/view/479/455>
- National Aboriginal Health Organization (2008) *An Overview Of Traditional Knowledge and Medicine and Public Health in Canada*. Ottawa: NAHO.
- Nishnawbe Aski Nation (2007) NAN First Nations. Available at: <http://www.nan.on.ca/article/nan-first-nations-164.asp> (accessed 13 April 2008).
- Northern Nishnawbe Education Council (2008) *Sioux Lookout District Chiefs*. Available at: <http://nnec.on.ca/nnec/?q=node/11> (accessed 13 April 2008).
- O'Donnell S, Beaton B and McKelvey F (2008) Videoconferencing and sustainable development in remote and rural First Nations. Paper presented at the Community Informatics Research Network (CIRN 08), Prato, Italy.
- O'Donnell S, Perley S, Simms D and Hancock BR (2009a) Video communication roadblocks facing remote, indigenous communities. *IEEE Technology and Society Magazine* 28(2): 16–22.
- O'Donnell S, Perley S, Walmark B, Burton K, Beaton B and Sark A (2009b) Community based broadband organizations and video communications for remote and rural First Nations in Canada. In: Stillman L, Johanson G and French R (eds) *Communities in Action*. Newcastle-upon-Tyne: Cambridge Scholars, 107–119.
- O'Donnell S, Walmark B and Hancock BR (2010) Videoconferencing in remote and rural First Nations. In: White J, Peters J, Beavon D and Dinsdale P (eds) *Aboriginal Policy Research Volume 6: Learning, Technology and Traditions*. Toronto: Thompson Educational Publishing, 128–139.
- Perley S and O'Donnell S (2005) Engaging New Brunswick First Nations in research. Paper presented at the Community Informatics Research Network 2005 Conference, Cape Town, South Africa.
- Perley S and O'Donnell S (2006) Broadband video communication research in First Nations communities. Canadian Communication Association Annual Conference 2006, York University, Toronto, June.
- Royal Commission on Aboriginal Peoples (1996 [8 February 2006 – last update]) Report of the Royal Commission on Aboriginal Peoples – Volume 3 – Gathering Strength – Chapter 6 – Arts and Heritage. Ottawa: Government of Canada.
- Rettie R (2003) Connectedness, awareness and social presence. In: *The 6th Annual International Workshop on Presence*, 6–8 October 2003, Aalborg, Denmark. Available at: <http://www.presence-research.org/papers/Rettie.pdf>
- Roussel N and Gueddana S (2007) Beyond 'beyond being there': towards multiscale communication systems. In: *ACM Multimedia (MM'07): Proceedings of the 15th international conference on Multimedia*, 24–29 September 2007. Augsburg, Germany.
- Schnarch BS (2004) Ownership, control, access, and possession (OCAP) or Self-determination applied to research. *Journal of Aboriginal Health* 1(1): 80–95.
- Scott S (2004) Researching shyness: a contradiction in terms. *Qualitative Research* 4: 91–105.
- Short J, Williams E and Christie B (1976) *The Social Psychology of Telecommunications*. Toronto: John Wiley & Sons.
- Silverman BE, Goodine WM, Ladouceur MG and Quinn J (2001) Learning needs of nurses working in Canada's First Nations communities and hospitals. *Journal of Continuing Education in Nursing* 32(1): 38–45.
- Smith LT (1999) *Decolonizing Methodologies: Research and Indigenous Peoples*. New York: Zed Books.

- Task Force on Northern Research (2000) From crisis to opportunity: rebuilding Canada's role in northern research. Final Report to SSHRC and NSERC. Ottawa: Minister of Public Works and Government Services.
- Whiteduck T (2010) First Nations SchoolNet and the migration of broadband and community-based ICT applications. In: White J, Peters J, Beavon D and Dinsdale P (eds) *Aboriginal Policy Research Volume 6: Learning, Technology and Traditions*. Toronto: Thompson Educational Publishing, 105–119.

Appendix

Table 1. Checklist of requirements and preparatory steps for conducting focus groups over videoconference

Requirement	Yes, No or N/A
1. Establish strong partnerships with researchers from the region involved in the research	
2. Establish partnerships with or hire the services of videoconference experts to handle technical tasks during the interviews	
3. Consider having a facilitator to coordinate between speakers during the interview	
4. Ensure all participants have access to videoconference facilities	
5. Mail, fax or email participants any material needed for the interviews ahead of time (including material that will be presented)	
6. Verify that each participant has the required material prior to the interview sessions	
7. Test technology used with other people from various sites (videoconference equipment, audio and image quality, transmission of videos)	
8. Practice using multi-site videoconference technology by conducting pilots of the interviews prior to the actual interviews	
9. Ensure with the videoconference provider that video recordings of the interviews are made	

Biographical notes

Marie-France Gratton is a business analyst at the National Research Council Canada Industrial Research Assistance Program in Ottawa, Canada and a recent graduate of the University of Ottawa's Master of Science in Electronic Business Technologies program. Her research interests include web technologies, information technology, human-computer interaction, and participatory research with First Nations communities.

Susan O'Donnell is a senior research officer at the National Research Council Canada Institute for Information Technology and an Adjunct Professor of Sociology at the University of New Brunswick in Fredericton, Canada. Her research interests include participatory research with First Nations communities, community informatics, social analysis of digital communications, and video communications.