Using Digital Resources: Perceptions of First Nations University Students

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Canada's indigenous peoples face many educational challenges, including the need to learn how to use digital resources. The purpose of this study was to examine the perceptions of First Nations students regarding their use of digital resources. The participants in the study were students studying at the First Nations University of Canada, an institution developed to serve indigenous students. This collaborative research project was intended to provide recommendations for policy and practice to teachers, teacher-librarians and administrators working with First Nations students in Kindergarten to grade 12 schools as well as to administrators and librarians in universities serving First Nations students. The community-based planning approach to the research emphasized listening to the voices of the First Nations students and developing recommendations based on their perceptions of their access to, use of and capacity to use digital resources.

Background to the Research

Access to technology has long been viewed as an aid to improving literacy and academic achievement (American Association of School Librarians & Association for Educational Communications and Technology, 1998), but access to, use of, and capacity to use digital technology is still a problem for minority people around the world (Bothma, 2007). This is also true for Canada's First Nations people, one of the indigenous peoples of Canada.

Readers should note that "First Nations" is the term that many Canadian indigenous peoples use to identify themselves. The term implies that indigenous peoples were the first nations in Canada and deserve treaty considerations. The plurality of the term denotes the diversity of the peoples it represents. Some Canadian indigenous peoples still prefer to use the term "Indian" because the term "First Nations" is not a legal term (see Indian and Northern Affairs Canada, 2008).

The focus of this study was on university-level students who would be more likely to have had opportunities to develop their knowledge of digital resources than would students who were not university bound. The study took place at First Nations

University of Canada in Saskatchewan, one of the western provinces of the country. The intent of the researchers was to use the findings of the study to improve library services to First Nations university students as well as to develop recommendations for educators working with First Nations students in Kindergarten to grade 12 schools.

Literature Review

The purpose of this study was to examine the perceptions of First Nations students regarding their use of digital resources. Research shows that digital inequities continue to exist in schools in North America and around the world. While all students need to have access to digital resources and need to develop 'new literacies' in order to be able to participate as citizens and to compete in today's job market, the capacity to use digital resources is critical for students coming from historically disadvantaged groups such as First Nations students. This literature review provides a context for the study related to digital inequity, the new literacies, and the historically oppressed state of the First Nations peoples of Canada.

Digital Inequity

Canada is among the four countries in the world (along with the United States, Australia and Singapore) with the highest Internet connectivity, but many First Nations people, especially living outside urban areas, have very limited access to the Internet and the digital resources it brings. A recent Statistics Canada report found that, "a majority of urban-based First Nations and Metis people in Saskatchewan do not have the literacy skills to cope in today's society" and "scored below the benchmark considered to be the minimum for an individual to cope in a complex knowledge-based society" (Cowan, 2008, p. A1).

Similar inequities exist in the United States. While some reports show that the Digital Divide is decreasing in the United States, other reports confirm that "significant technology gaps remain along racial lines" (International Society for Technology in Education [ISTE], 2008, p. 2). Both issues of access to and use of digital resources in American schools lead to digital inequality:

> Digital equity is the social-justice goal of ensuring that everyone in our
> society has equal access to technology tools, computers and the Internet.
> Even more, it is when all individuals have the knowledge and skills to
> access and *use* technology tools, computers and the Internet. (ISTE, 2008, p. 1)

Access to digital resources may be present in some classrooms, but the students in those classrooms are not necessarily using the digital resources.

New Literacies

With the spread of the Internet and the inception of digital resources, literacy can no longer be defined simply as traditional, static print literacy. Coiro, Knobel, Lankshear and Leu (2008) argue that present-day literacy acquisition involves the need to

constantly adapt and learn new literacies in order to have the capacity to use emerging technologies. This issue is being raised in Canada's First Nations communities as well. The Circle Project Association, long associated with improving basic literacy rates for First Nations peoples, now stresses the need for addressing the 'new literacies' including technological or digital literacies in First Nations communities (Flegel, 2008).

The importance of students' capacity to use digital resources is stressed by the American Association of School Librarians [AASL], (2007) in their new learning standards for the twenty-first century. The standards emphasize that multiple literacies, not just information literacy, are vital for students' success in education and future employment. Students learn through multiple forms of literacy, including digital, visual, textual and technological literacies (Cervetti, Damico & Pearson, 2006; Sanford, 2008; Young, 2008).

First Nations' Historically Oppressed State

There are many reasons for the oppressed condition of the First Nations peoples in Canada. Primarily due to federal government policies and religious/missionary programs aimed at acculturating First Nations, a secondary inferior economy has been created over many decades that has led to many social problems in the First Nations communities (Battiste, 2005). "As Euro-Canadian society moved more quickly into an industrial-technological economy in the early twentieth century, Aboriginal people found themselves without the skills and resources necessary to participate" (Frideres & Gadacz, 2005, p. 378).

However, some scholars working in the area of First Nations issues, see science and technology as a possible solution to today's social and economic problems of the First Nations peoples. MacIvor (1995) contends that science and technology education can transform First Nations communities and create higher employment for First Nations peoples. The author adds "more importantly, their professional expertise can help guide community decision-making in a variety of areas including economic, resource and social development" (p. 91).

The capacity to use new literacies is important to First Nations' socio-economic wellbeing. Some experts see First Nations students' ability to use technology as a means for promoting economic well-being and community development (MacIvor, 1995). Battiste (1986) adds that there is a link between First Nations' use of new literacies and First Nations' socio-economic level.

The Setting and Context of the Study

The First Nations University of Canada [FNUniv] was created to meet the needs of First Nations peoples. The University's home base is in Regina in southern Saskatchewan; two other campuses , in Saskatoon in the middle of the province and in Prince Albert which reaches First Nations communities in the more remote northern regions (FNUniv, 2008).

The design of the main campus (see Figure 1) was intended to aid in the maintenance and promotion of traditional First Nations culture and community on

Figure 1 First Nations University of Canada: Main Campus
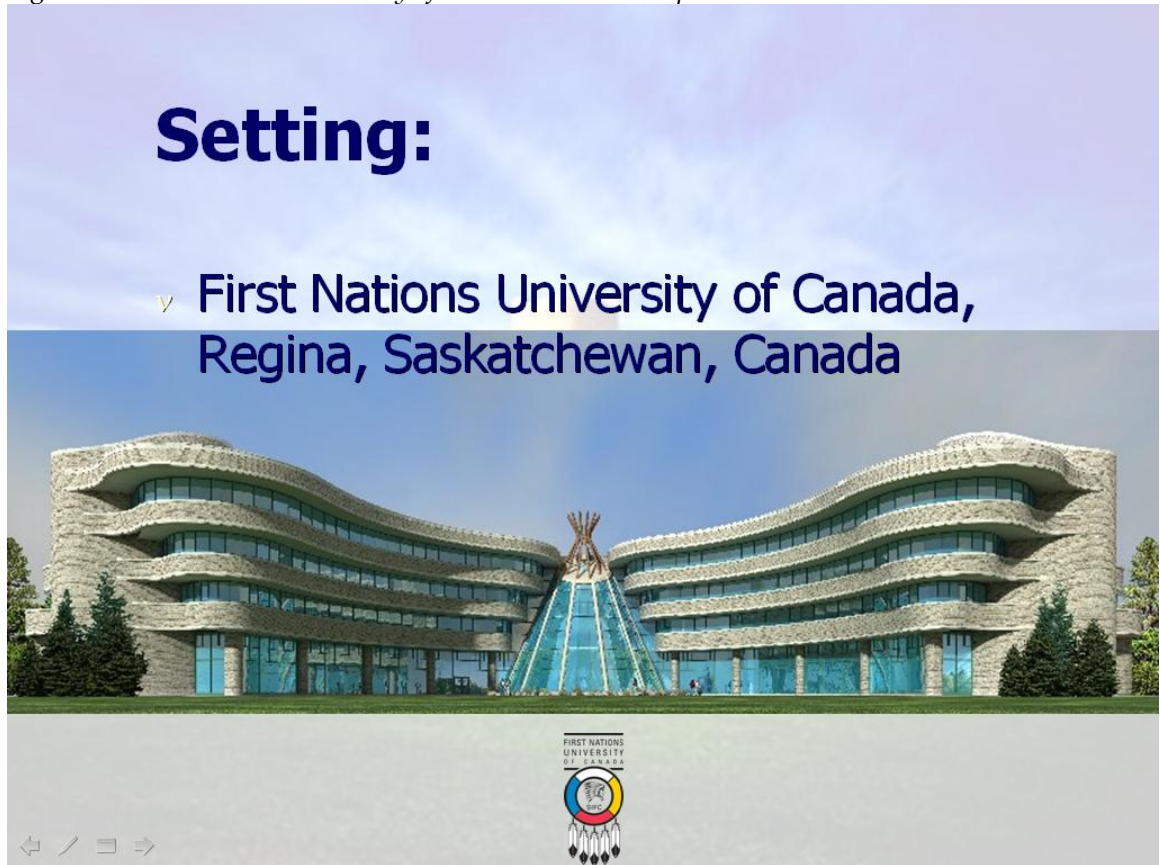
Slide design by R. Missens. Photo courtesy of FNUniv. Information Office, 2008

campus (FNUniv, 2008). The building contains a glass tepee that is used for traditional cultural ceremonies performed by First Nations tribal elders. The FNUniv community, therefore, differs from many universities in it includes not only academics, administrators, clerical staff and students, but also tribal elders. Some tribal elders have office space at FNUniv and are a visible presence on campus. Providing office space for First Nations tribal elders is intended to facilitate student access to community elders to aid in the maintenance and promotion of traditional First Nations culture on campus (FNUniv, 2008).

The First Nations University of Canada is a First Nations' governed university, under the mandate of the First Nations of Saskatchewan. However, FNUniv is inclusive in its student body and does provide educational opportunities "to both First Nations and non-First Nations students selected from a provincial, national and international base" (FNUniv, 2008). FNUniv is affiliated with the University of Regina, an accredited degree granting university in Saskatchewan.

The First Nations University of Canada Library collections focus on materials, "written by, for and about Indian, Inuit, Metis and Indigenous Peoples of North, South and Central America, as well as Australia and New Zealand" (FNUniv, 2008). The Library's collection supports the classes offered by the University and comprises a range of formats. Resources such as government documents, theses, historical documents,

historical artifacts, books, CD-ROMs and digital databases are available for students to research issues related to First Nations peoples. Libraries for the three FNUniv locations were incorporated in 1977 for the Regina Campus, 1985 for the Saskatoon Campus and 1989 for Northern Operations, at the Prince Albert location (FNUniv, 2008).

Research Methodology

The overall goal of this research study was to provide data that could be used to develop recommendations for educational policy to help ameliorate the state of First Nations people by improving access to, use of and capacity to use digital resources. This research was community-based: it was planned and conducted in collaboration with First Nations educators, First Nations students were the study participants, and the research was conducted on-site at the only First Nations post-secondary institution in Canada. Wilson (2004) contends that most cross-cultural research completed in the past was done 'on', but not 'for' Indigenous groups. However, in order to discover and meet the needs of First Nations peoples, it is vital that First Nations people be included in planning for research focusing on First Nations issues (Friesen & Friesen, 2005).

Selection of Study Participants

The researcher went to two classes and introduced the research project to the students in those classes. Participants were recruited by having volunteers sign a sheet with their name and telephone contact number. In order to guard against the appearance of coercion to join the study, instructors for the two classes remained outside the class during the recruitment, and the students were assured that the names of the volunteers would not be shared with their instructors. All participants were guaranteed confidentiality, and no reference was made in the reporting of findings that could be used to identify individual participants.

Twenty-three First Nations university students volunteered for the study interviews. Appointments were made in consultation with the participants for specific times to hold the interviews. Ten students, four male and six female, kept the appointments and completed the interviews. Age ranges included students in their twenties, thirties and forties. For their elementary and secondary education, five of the participants were educated only in city schools, two were educated only in band-controlled schools and three were educated in a combination of city and band-controlled schools, prior to their attending FNUniv. The specific cultural population is important in that this is the fastest growing minority population in Canada, growing six times faster than non-Aboriginals (Statistics Canada, 2006). In keeping with the First Nations cultural tradition of giving gifts to elders and others in exchange for knowledge, the participants in this study were given a small token of appreciation. Each participant received a travel mug with the FNUniv logo on it.

Data Collection and Analysis

Study data were collected through semi-structured interviews with volunteer participants. A small pilot study with two participants was conducted. Based on the

outcome of the pilot study, changes to the order of the questions were made.   All interviews were recorded on tape. During the interview sessions, notes were taken by the researcher. At the end of each interview, the researcher reviewed her notes with the participant to check for wording and meaning, an important step a cross-cultural situation. This review of the study data often sparked additional comments from the students that elaborated on answers previously given or added new content.   The interviews were coded for direct responses to the interview questions (etic findings) and for any themes that emerged from the data (emic findings) that were not direct responses to the interview questions.

Interview Questions
Specific research question used in the interviews were:
- What are the facilitators to your access of digital information?
- What are the barriers to your access of digital information?
- What are the facilitators to your capacity to use technology?
- What are the barriers to your capacity to use technology?
- What are the facilitators to your use of technology?
- What are the barriers to your use of technology?
- Have you ever used the database, *InfoTrac*?
- When did you last use a database?
- Is there anything else you would like to add?

Delimitations of the Study

Only First Nations students enrolled at the First Nations University of Canada, Regina Campus were recruited to participate in the study.   These students shared the experiences of studying at FNUniv, but their backgrounds differed in their tribal affiliations and geographical experiences.   The study investigated the students' perceptions, not a quantitative measurement of their actual use of databases and their skill level or capacity to use databases.

Major Findings of the Study: Etic Findings

The direct responses (etic findings) given by the participants to the interview questions are summarized below, followed by the themes emerging from information imparted during the interview situation that was relevant to this study but not given in response to the interview questions. The emic findings appear to be the ones with the most cultural significance.

What are the facilitators to your access of digital information?
The study participants saw two primary facilitators to their access of digital information. First, they saw having their own laptops as a major facilitator to access. One student commented, "I wouldn't have a laptop, [but I do] because my band bought all post-secondary students a laptop." Secondly, the participants saw FNUniv web-based access to digital information as a major facilitator to their access to digital resources. Most of

the students commented that because of this web-based access, they had good access to digital information. As one student commented, "[I am] able to access tons of journal articles and then store them on my little stick drive".

What are the barriers to your access of digital information?

The participants listed two main categories of barriers to their access to digital information. First, the participants saw the number of computers on campus as a major barrier. One student commented, "[There are] not enough computers at school [i.e. FNUniv]. Usually when I come, people are just using HiFive, MySpace, or Facebook."

Secondly, poverty was seen as a barrier to the participants' access to digital information. Several students affirmed that not all FNUniv students living in Regina could afford a computer at home to take advantage of the remote access provided by FNUniv. One student talked about his inability to pay the "Internet bill" to have high-speed Internet at home. Comments also came from participants regarding poverty as a barrier to access for off-campus students living in remote communities. One participant stated that because many First Nations students living on reserves and in northern communities are living in chronic poverty, it is "difficult to have computers at home." This participant added that the only computer access may be "sharing computers at the band office, or school library." Because these computers are designated for other uses, access is limited for community members. Also, it was noted, "Many bands still have dial-up, and so it is difficult to do searches."

What are the facilitators to your capacity to use technology?

The students listed several facilitators that contributed to their capacity to use technology. First, most of the students were quick to report that certain people were major facilitators in their capacity to use technology. The types of responses fell into several categories of people and how they served as facilitators to First Nations students' capacity to use digital resources. Academic advisors encouraged students to take a university class to learn how to use a computer and recommended the University of Regina information literacy classes to students. FNUniv Library staff showed the students how to use the technology and also created a comfortable environment in the library. FNUniv instructors listed databases on course bibliographies and took their classes to FNUniv Library to have librarians "walk students through" how to use databases relevant to the course.

Besides people, study participants also listed the following as facilitators to their capacity to use technology: availability of online tutorials and having a required core course in doing research and using digital resources. Having general computer knowledge was helpful too, such as knowing how to do file transfers. With the remote access, students needed to know more than just how to access the information (e.g., search the databases); they also needed to know how to get the data file from home to campus (instructors), from campus to home, and so on.

What are the barriers to your capacity to use technology?

The students reported two major deficiencies as barriers to their use of technology: problems with the new literacy classes and corruption in local control of educational funding. Several students emphasized needing more education in knowing "how" to refine searches: One student gave examples of circumstances that the researcher categorized as truncation and Boolean searching in summarizing the student's response. The student exclaimed, "Wait a minute!" and retrieved a pad and pen from his book bag to take notes. "What were those names again?" he asked. Several students claimed that they needed instructors to integrate database instruction into classes. They said that they not only need to know 'how' to use the database, but they also needed to know what databases were relevant to various subject areas and for particular course content.

Two students cautioned that there were too many demands on the students' time to take more classes and online tutorials on how to use digital resources. One student stated, "Students often feel overwhelmed when first coming to campus and find it difficult to believe that they should take another workshop on how to do research." Regarding online tutorials, one student used the metaphor of a two-sided coin to add that the flip side of a capacity to use facilitator often involves the barrier to the same. He added that while online tutorials can be a facilitator, "sometimes the tutorials take too much time to read", thus acting as a barrier.

Corruption in the local control of educational funding also was listed as a barrier to First Nations students capacity to use digital resources resulting in some students not having the information literacy skills they need when they arrive at FNUniv. After being assured of confidentiality for his responses, one participant reported, "Sometimes funding for band-controlled schools is used for paying down debt in other areas. There is a lot of corruption out there." He explained that some band-controlled schools, therefore, do not have enough computers for the students to learn how to use the Internet.

What are the facilitators to your use of technology?

The study participants listed two facilitators for First Nations students' use of digital resources. First the participants mentioned FNUniv instructors, specifically, those requiring students to use digital resources to gather information for assignments. Secondly, database functionality such as the facility to capture citations and transpose them into the proper style format for creating bibliographies, a functionality about which one student commented "databases are user friendly."

What are the barriers to your use of technology?

Three barriers to use of digital resources by First Nations students were cited by the study participants. The first barrier was FNUniv instructors who one student perceived as not wanting students to use "too many computer resources." A second barrier cited was the lack of full-text documents on databases. One student pointed out that "often only abstracts are given." She claimed that students need more access to full text

documents to be able to use the information in the databases. She added that it is often possible to get a hard copy, but this is cumbersome and time consuming.

The third barrier to use of digital resources cited by the study participants was the deficit of specific information related to Canadian First Nations topics. One student commented that there seemed to be lots on American/US Native American topics, but little in databases about Canadian First Nations topics. Another student stated that there is information related to people with disabilities in Canada, but there is also a deficit in disability-related topics specific for Saskatchewan First Nations People. Regarding this deficit, he asserted "limited scope in databases, only broad scope on disability issues."

Have you ever used the database, *InfoTrac*?

InfoTrac was chosen as the specific example for this question because *InfoTrac* had been made available to all schools in the Province of Saskatchewan through a government initiative and therefore it was most likely to have been known by the study participants. However, in response to this query, all but two students replied "No." Only two of the participants had heard of the *InfoTrac* database. In assessing the findings, however, it may be that some of the participants are in the thirties and forties age group, and therefore may have completed high school before the provincial government made the funding available to schools in the past decade.

When did you last use a database?

The participants gave a wide array of responses ranging from two students who stated, "I used a database today," two students who grimaced, trying to remember sometime in the distant past, to one student who stated, "I have never really used a database." Most of the students had used a database in the past semester at university.

Is there anything else you would like to add?

In their responses to the question about any other information they would like to add, several recommendations for administrators and librarians in tribal bands and educational institutions were given. First, one student recommended that "[school] administrators should set more money aside to buy more computers for use by students." Secondly, two students recommended that administrators should negotiate computer leasing agreements for students to have laptops for remote access to digital information. One of the students added that the leases should include a "three year upgrade component." Thirdly, one student suggested a new "Aboriginal data port [portal] to various Aboriginal databases" to facilitate research on indigenous peoples topics. He remarked "[there are] many different articles from all over the world."

Themes Arising from the Data: Emic Findings

Three major themes emerging from the study data include: digital resources providing a tie to the First Nations' past; tying First Nations culture to technological needs; and global thinking by First Nations students.

Digital Resources Providing a Tie to the First Nations' Past

Some First Nations students see the importance of digital resources as a way of researching their First Nations family and community history. Two students said that being able to use technology to read about their history was particularly important to them as they said their reserves and families had lots of "famous" history. One student commented, "My community is really rich in history, some other communities may not be." Another student commented, "I researched my community and also my family and found a picture of my grandfather in the Veterans Affairs website." She exclaimed that her mother was very excited to see the picture of her father in his uniform. She also said that she found treaty information and eagerly added, "Perhaps we have more land claims!" Several students cited the Canadian Archives database (Archives Canada, 2008) as a rich source of historical digitalized information for them. The students stated that their searching to find links to their past was done in their spare time for interest sake, not for class requirements.

These findings support other commentary in the literature that, in order to be successful in developing new literacies within the educational milieu, we must link to what is happening socially with the students outside the classroom (Cervetti, Damico & Pearson, 2006). Whitehorse (2003) claims that using historical cultural aspects of the indigenous culture such as the traditional weaving of a rug can also help to convince tribal elders, who may be resistant to providing access to digital resources, to see the benefits of using computers.

Tying First Nations Culture to Technological Needs

Several students saw not only a link between using technology to link with their history as a people, but also distinct ties with their current First Nations culture and their technological needs. This link between history, culture and the need for new literacies is supported by Cervetti, Damico and Pearson (2006) who state that educators need to move to "a broader understanding of literacy that moves beyond a singular, psychological, fixed, skill-focused view to a view of literacy as inherently situated in personal, historical, cultural and social contexts" (p. 380).

As the participants in this study stated, when First Nations students leave their communities to come to campus, they are used to a support system from their families and communities back home. Some students reported that a collegial environment in a university setting is a huge facilitator for First Nations student success. One participant stated that he knew that some new students are very lonely when they first arrive. He asserted, "[we need to] realize how tough it is and just be there to support each other." Some participants suggested using social networking technology to help new First Nations University students create a cultural community support group and communicate with each other about what they are experiencing on campus and to make new friends. One participant was explaining how beneficial social networking sites such as FaceBook have been for him to keep connected with his cultural community and also to expand it. He stated that "I use it [FaceBook] for keeping in touch." He added that

because of FaceBook, he has "friends all over the world. I keep in touch with them, [just] not in real time."

Besides recreational use, experts support the use of social networking technologies for educational use (Naslund & Giustini, 2008) and the need for the capacity to use these new techonologies (Todd, 2008). It should be noted, however, that many associations and institutions are cautioning students and formulating standards and policies for the responsible and safe use of social networking technologies such as FaceBook and MYSpace (AASL, 2007; Oppenhuizen, 2008).

Global Thinking of First Nations Students

One of the themes emerging from the findings of this study is the global thinking of First Nations students. The participants in this study showed global level thinking in a number of different ways. While the FNUniv students are aware of the breadth of digital databases available to them through the FNUniv, the students wanted access to digital databases at a global level. As one student stated when talking about the information that is available at international universities, "as a university student, I want to be able to access any university databases available online." Another student, as mentioned above, commented about using technology to make friends all over the world and to expand his community to the global level through the use of new technologies. McPherson (2008) concurs that the use of new technologies is creating a global level of thought by students and that educators must infuse a multi-literacies pedagogy in school library curriculum in order to help students to cope. Young (2008) affirms that issues of culture and technology are global concerns.

Implications and Recommendations

The findings from this study have implications for teacher-librarians, librarians and administrators working with First Nations students . As stressed by the International Federation of Library Associations, libraries have a prominent place in creating the learning environments that can tackle the Digital Divide (Bothma, 2007). Coiro, et al. (2008) state that information about and education on the new literacies is needed for administrators and other "policy makers who still think of literacy in traditional print terms" (p. 9). The findings from this study should contribute to the discussion on the new literacies and may help to raise awareness for librarians and administrators in first Nations band-controlled schools and tribal colleges about teaching information literacy and other new literacy skills to their students (AASL, 2007).

The findings of this study also have implications for administrators and politicians making decisions about budget allocations to help improve access to and use of, and capacity to use digital resources for students in K-12 First Nations band-controlled schools and post-secondary institutions. The study also may have implications for researchers who plan to do cross-cultural research involving First Nations participants. The findings from the study were used to develop recommendations for teacher-librarians and administrators in K-12 schools; librarians and administrators in tribal colleges; and for researchers (Table 1).

Table 1 Recommendations

Recommendations	Research Question Category		
Target Audience - K-12 School Teacher-Librarians & Tribal College Librarians	**Access**	**Use**	**Capacity to Use**
Teach new literacies and integrate them into the curricula.			✓
Teach new literacies by tying them to the First Nations students' culture.			✓
Teach new literacies by tying them to the First Nations students' community and family history.			✓
Teach new literacies by tying them to what is happening in the First Nations Students' life and interests outside the education setting.			✓
Develop acceptable use policies on social networking and other technologies.		✓	✓
Create Aboriginal data port to various Aboriginal databases.	✓		
Teach new literacies and integrate them into the curricula.			✓
Teach new literacies by tying them to the First Nations students' culture.			✓
Teach new literacies by tying them to the First Nations students' community and family history.			✓
Teach new literacies by tying them to what is happening in the First Nations students' life and interests outside the educational setting.			✓
Develop acceptable use policies on social networking and other technologies.		✓	✓
Create Aboriginal data port to various Aboriginal databases.	✓		
Target Audience - Tribal Band Administrators			
Increase budget allocations for certified teacher-librarians to teach new literacies.			✓
Increase budget allocations for computers for community use.	✓		
Increase budget allocations for high-speed Internet access.	✓		
Ratify acceptable use policies for social networking and other technologies		✓	✓
Target Audience- Tribal College Administrators			
Increase budget allocations for librarians to teach new literacies.			✓
Ratify acceptable use policies on social networking and other technologies.		✓	✓
Target Audience - Researchers			
Locally: Survey First Nations students in a quantitative study to investigate a further breakdown of the students' capacity to use databases, such as their ability to locate the information they need versus possessing the information literacy skills necessary to understand and utilize the information they find.			✓
Continentally: Interview Native American students at other North American tribal colleges regarding their access to, use of a capacity to use digital resources.	✓	✓	✓
Globally: Interview other Indigenous population students around the world such as Maori in New Zealand and Aborigines in Australia, regarding their access to, use of and capacity to use digital resources.	✓	✓	✓

Summary

This community-based investigation gathered data through interviews with First Nations students. Their voices have been presented in this article, and from their words come the findings that support recommendations for practice. The recommendations for teacher-librarians, librarians and for administrators working with First Nations students in educational institutions and making educational policy are intended to help improve First Nations students' access to, use of and capacity to use digital databases. This research may serve as a model for others to conduct their own community-based research to help improve the state of library services to First Nations students.

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