First Nations Preservice Women Teachers' Experiences and Perceptions Regarding Technology

A Dissertation
Submitted to the Faculty of Graduate Studies and Research
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in the Department of Educational Administration
of the College of Education
University of Saskatchewan
Saskatoon

By
Frances D. Luther

FALL 1997

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UNIVERSITY OF SASKATCHEWAN

College of Graduate Studies and Research

SUMMARY OF DISSERTATION

Submitted in partial fulfillment
of the requirements for the

DEGREE OF DOCTOR OF PHILOSOPHY
by
FRANCES LUTHER

FALL 1997

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ABSTRACT

The primary purpose of this research was to collect data for First Nations educators and policy makers to use in making decisions surrounding issues of First Nations women and technology education. Nine First Nations women preservice teachers at the intern stage of their Indian Teacher Education Program at the University of Saskatchewan were engaged in in-depth interviews concerning their experiences and perceptions regarding technology.

The study found that the participants defined technology first and foremost as computer-related. Some viewed technology from the cultural aspect, and thought technology used for financial gain would take away from the traditional family values. the participants thought that women needed technological training and that they needed to develop self-confidence and become role models in order for First Nations women to exercise leadership in the field of technology.

The participants stated that their university experience was responsible for most of their learning about technology. They did not, however, feel prepared to face the technology they would encounter in schools. Intimidation, stereotypes, the lack of access and exposure to technology, the lack of good self-image, lack of time, and lack of role models were perceived to be some of the biggest barriers to First Nations women learning about and using technology. Men in their use of intimidation and stories with negative images of women and technology were perceived as one of the strongest deterrents to First Nation women advancing in the area of technology.

Findings from this study had significant implications. First Nations teacher preparation programs should include required credit computer courses and establish daycare centers. Band-controlled schools should update computers and make computer facilities available to the community members. Politicians should make provisions for technology education by providing funding for such courses. Further research such as a collection of stories embracing positive images of First Nations women involved in technological pursuits should be undertaken to help ameliorate the status of First Nations women in technology education.
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CHAPTER 1

THE PROBLEM

Rationale

One of the main concerns of the 1972 First Nations position paper, *Indian Control of Indian Education* was to enhance First Nations students' self-identity through the use of relevant resources. Much writing has been done over the past two decades on the use of culturally relevant resources with First Nations students (McEachern & Luther, 1989; Archibald, 1995). The recent technological advancement in educational resources, however, has made it necessary for First Nations students to become technologically literate in order to access information, culturally relevant or otherwise, in the wide variety of multi-media information resources available for use in schools. This need for advancement in the field of technology education is especially important for minority women, such as First Nations women, who are under-represented in the field (Liedtke, 1995).
Canada & Brusca (1991) contend that:

If the gender of the user and the possibility that males and females build different mental models are ignored, there is a very real possibility that the next generation of human-machine communication systems will serve to widen rather than close the technological gender gap (p.49).

Some research has been conducted which sheds some light on issues related to women and educational technology as well as minorities and educational technology. The absence of research about First Nations women and technology, however, is evident.

Multicultural gender issues need to be addressed in research, for as Susan Metz, Vice-president of Women in Engineering Program Administration and Network points out in a recent interview, minority women do encounter a "double whammy" in education. Metz (1995) adds:

While programs are being developed to help minority women pursue degrees and careers in the sciences, faculty directors often assume that minorities are a monolith. What works with one group is not always valid with another. There might be similarities, and there might be issues that are very distinct and separate (Luhrs, 1995, p.14).
Conducting "group-specific" research involving First Nations women and technology, therefore, is warranted. As Battiste (1992) states, "Understanding another way of knowledge can only be perceived from within their own way of knowing" (p.4).

Taylor, Cargo and McAlpine (1993) contend that "Another issue for Aboriginal teacher education programs is how to prepare trainees to be agents of societal and educational change" (p.34). Furthermore, Haig-Brown (1988) insists that a study,

...can provide data which will help educators remove as predictors of academic achievement such variables as sex, ethnicity, race, language and social class. In short, it can help provide knowledge necessary to achieve the goal of 'equity education'.

This study involving Indian Teacher Education Program preservice teachers has been designed to provide such knowledge.

Statement of Purpose

The primary purpose of this research is to collect data which will provide a collective mirror (Blackler, 1992) for First Nations educators and
policy makers to use in decision making surrounding issues of First Nations women and educational technology. In essence, "...helping those working within it [the educational system] to recognize and debate their situation and articulate an alternative way of working" (Blackler, 1992, p. 291). This study is an attempt to create "...a space where it is possible to consider approaches to creative and transformist praxis" (Turner, 1992, p.63), providing a service for the people (La Fromboise, 1983) rather than conducting an experiment on the people (Klein, 1983). It is not intended that this study in any way fosters or extends what (Battiste, 1992) refers to as "cognitive imperialism". Neither has it attempted to impose a deconstructionist methodology. It is realized, however, that some forms of deconstruction may occur to the assumed stability and order (Calas & Smircich, 1992) as the women choose to effect social change surrounding the issues involved in this study.

Research Questions

This study was designed to investigate the following questions. Questions six, seven, eight and nine were based on questions posed by Trautman, Hayden and Smink (1995).
Question 1: What are the perceptions of First Nation women regarding technology?

Question 2: What are the experiences of First Nation women with technology?

Question 3: Where do First Nations women get most of their information about technology?

Question 4: How adequately do First Nations women teachers feel they are prepared in the use of technology?

Question 5: What personal experiences impact on First Nation women's attitudes toward the use of technology?

Question 6: What are some of the perceived barriers to change in the advancement of First Nations women in the field of technology?

Question 7: What are some of the perceived facilitators to change in the advancement of First Nations women in the field of technology?
Question 8: What action needs to be taken to empower First Nations women in the field of technology?

Question 9: What do First Nations women need to exercise leadership in the field of technology?

Definitions of Terms

Several terms used in this study require clarification. The following provides operational definitions for these terms:

**First Nations:** Canadian Aboriginal people have chosen this term to describe themselves. The term has political connotations which are especially meaningful in negotiations with the Canadian federal government. The premise in adopting this title is that in treaty negotiation, it can be asserted that treaties are only made between Nations. Aboriginal people were the first nations in Canada and deserve their rightful considerations. The plurality of the term denotes the diversity of the people it represents.
Band-Controlled: In trying to shed an educational milieu which promotes cultural imperialism, many First Nations bands have established their own school(s). Archibald (1995) describes band-controlled schools in this way:

Some bands gained administrative control over education and established their own schools on reserve. These band-controlled schools differed greatly from the old reserve day schools. Provincial core curricula were adapted to include more First Nations content. First Nations people participated as teachers, teacher aides, and administrators. Once again, the use of extended family teachers and the reinforcement of cultural values and traditions featured predominantly in First Nations education. (p.296)

The decision-making for each school rests with the local people through education councils rather than being dictated by the federal government as was done in the past.

Technology: For the purposes of this thesis, technology, will denote computer-related instructional technology including CD-ROM, laser disk, the Internet and other multi-media.

Significance of the Research

In assessing the value of conducting the research, which is anticipated to inform praxis, specific ramifications come to mind. These ramifications are
significant to First Nations teacher education programs, band-controlled schools and provincial schools. Programs such as the Brandon University Native Teacher Education Program, the Native Indian Teacher Education Program at the University of British Columbia, and the Indian Teacher Education Program at the University of Saskatchewan, which have a high percentage of minority women, may be informed as to the value of educational technology courses when added to the program. According to Saskatchewan Education (1991):

[The] Indian Teacher Education Program (ITEP) implementation [was the] ...first adaptation of the content of university courses to meet the needs of Indian and Metis students. (p.34)

This research should shed some light on what technology components should be integrated into existing courses of studies.

Band-controlled schools which were established to help ameliorate the success of First Nations in formal educational pursuits (Marie Battiste, Personal Communication, March, 1994) may reap benefits from the information provided in this study. For example, policymakers in band-controlled schools may be better informed of strategies to facilitate minority women’s advancement into educational technology leadership roles. Band-controlled school administrators and teachers also may discover from the research findings that new programs or other initiatives need to be implemented to attract and meet the needs of First Nations girls in educational technology.
While this culturally-specific research may inform band-controlled schools and First Nations teacher education programs, the research also may be useful to provincial educational institutions. This study may offer information which may help them "...to understand and incorporate alternative realities" (Gergen, 1992, p.223). For as Gergen (1992) states:

We must inquire not only into the kinds of cultural patterns served or discredited by given theoretical positions, but also into the potential for theories to offer new alternatives and options to the culture (both organizational and otherwise). (p.218)

Post-secondary teacher education which has a strong technology component, therefore, may learn ways to attract minority women and address relevant leadership issues in technology education.

Delimitations

This study contains certain delimitations. They are as follows:

Exclusively, First Nations preservice women teachers enrolled in the Indian Teacher Education Program [ITEP] at the University of Saskatchewan were asked to participate. These women possessed common experiences in
having come through the Indian Teacher Education Program, but their backgrounds differed in their tribal affiliations and geographical experiences. The investigation was restricted to the preservice teachers' perceptions and experiences regarding technology. The interviews were conducted solely during the pre-internship preservice period of the participants' programs. The site was confined to the Indian Teacher Education Program at the University of Saskatchewan.

Limitations

In order to understand and apply findings from this research, certain limitations of the study must be noted. They are as follows:

Scope of What is to Be Discovered

The questions chosen by the researcher may have influenced what the participants considered relevant to this study.

While it was the intent of the researcher to pose questions in the interview situation which would allow for a free range of discussion on the topic addressed, it must be realized that the words chosen and the manner in
which the questions were phrased by the researcher may have had some
influence on the responses of the participants.

It also must be recognized that some of the individuals may not have
had sufficient experience with technology to comment meaningfully on some of
the questions, therefore limiting the scope of what was discovered. This
limitation was somewhat overcome by the researcher’s giving examples of
what she meant by technology.

With any interview situation, the participants may not trust the
researcher or the research process and therefore may not respond openly or
truthfully. It was considered important by the researcher to give the
participants reaffirmation of the anonymity of responses and clarification of the
no risk and ethical safeguards to be followed in the study.

Generalizability of Research Findings

The participants chosen provided the following limitations to the
generalizability of the research findings:

1. There were geographical limitations. Research involving First
   Nations preservice women teachers from Saskatchewan provided findings
which cannot be generalized to First Nations preservice women teachers in other parts of Canada or the world.

2. There were institutional limitations. Findings from a study involving First Nations preservice women teachers from the Indian Teacher Education program at the University of Saskatchewan may not be generalizable to First Nations preservice women teachers from SUNTEP or the Saskatchewan Indian Teacher Education Program at the University of Regina.

3. Cultural background and experience may have posed limitations. First Nations preservice women teachers who were raised in reserve settings may have provided responses which could not be generalized to First Nations preservice women teachers who were raised in an urban setting. The findings from a study involving a First Nations population may not be generalizable to non-First Nations populations, or to First Nations populations which are not "Treaty".

4. The time frame chosen to conduct the study, within the preservice teachers' educational program may have placed a limit on the generalizability of the findings. The findings of a study involving preservice teachers entering
their postsecondary education program may not be relevant for preservice teachers about to exit the program or for teachers already in the field.

**Interpretations of Research Findings**

As it is believed that there are multiple realities at play in any situation (Gergen, 1992) and that the researcher’s background acts as a cultural filter or lens through which research findings are interpreted (Ward, 1992), the interpretation of the research findings and, therefore, what is considered truth in any situation, must be viewed with some scepticism.

**The Researcher**

I was raised in a "white" farming community in southern Saskatchewan. While visiting relatives at age 13, I was told that I had First Nations ancestry. This was the first I had heard of it. I pondered what this meant to my life. Although I had not been raised in an Aboriginal cultural context, I wondered if there was something innate about having an Aboriginal perspective. Did this innateness explain why when playing the children’s game of "Cowboys and Indians" with my siblings, everyone wanted to be the "Indians"?
Upon completing my Bachelor of Education degree with a major in Library Science, I worked in schools with cross-cultural contexts and grew increasingly interested in First Nations education. I worked with the Kawacatoose Education Authority the first year they assumed band-control of their school and later for the Saskatchewan Indian Federated College Library at the University of Regina. At present I am employed at the University of Wisconsin-La Crosse, teaching Educational Media classes. My sense of job satisfaction is very high.

I often wonder what direction my life and sense-of-fulfilment would have taken if a male colleague of mine had not believed in my leadership ability. While I was employed at the Dene Tha Education Authority as a teacher-librarian, the principal, who was moving up to the position of Director of Education, asked if I would take over the position of administrator in charge of the school. I laughed at his request and replied, "No, I can’t do that"! He quickly and repeatedly responded, "Yes, you can, I know you can." His confidence in me inspired me to take the position.

I could not believe how much I enjoyed the leadership role. I had a strong sense that the staff were happy with the way I ran the school, and when I went to resign, the Band-Manager asked what they as a school board could do to convince me to stay. The feeling of success was considerable. While I
was not elevated to the top position in the Education Authority, I did not feel as though I was brushing against a "glass ceiling". I was not elevated to a position of authority because of any quota for females in the organization. My gender did not seem to enter into it, but rather my ability.

Having been treated in such an equitable manner by a male, it now baffles me when male acquaintances in my life explain to me how to hook up my VCR or use some other technical device. I go to work and teach instructional technology classes and then in avenues of my personal life, I am faced with this stereotype of women as innately inept in technologically-related areas. How annoying to be judged by gender!

From the above experiences grew my interest in the quality of First Nations education, issues surrounding technology education and the experiences of women advancing in leadership roles. These interests strongly influenced my choices in dissertation research topics.

While attending doctoral classes at the University of Saskatchewan, I came to realize that my research style would be dictated by my belief that there are multiple realities in any situation. What I believed to be the truth, therefore, was not necessarily what someone else may consider the truth. In order to access these "multiple realities" and truths in my area of investigation,
I would need to have the participants tell the story of their experiences and their perception of the situation in their own words.

The type of research style I had chosen was one favoured by many feminists and First Nations researchers because it has the power to deconstruct an oppressive system and help to empower the oppressed (Lather, 1991). As I continued reading (Carr & Kemmis, 1986) in this area, however, I grew increasingly alarmed at the possible negative impact of my research on the very people I wanted to help. Professors spoke of situations where deconstructionist research indeed broke down an oppressive system, but left nothing better in its wake. It was, therefore, with some trepidation that I approached this research project. I truly hope that the findings will be used in such a way that good comes from this research. At this point, I see my responsibility as describing the situation as the participants perceived it. How the findings are used will be the responsibility of those who choose to read my report, how significant they perceive the underlying issues and themes to be, and how urgently they perceive the need for change in this aspect of society.
CHAPTER 2

REVIEW OF RELATED LITERATURE

The rationale for the establishment of educational programs such as the Indian Teacher Education Program, the setting for this study, was to help empower First Nations people by making them more aware of their culture and helping them to develop personal dignity through Community control.

According to Battiste (1995):

"It was not enough that Aboriginal students should succeed in the school system and receive diplomas or certificates"...The very tenets of Indian education had to change from accepting acculturation and cognitive assimilation as final ends to revitalizing and renewing language and cultural identity and dignity (p.xi).

She adds that:

Their [First Nations communities] demand for educational choice has provided an innovative context for reconciling both historical
and modern contradictions. It has also provided a context for cultural and cognitive renewal among the First Nations. The concept of 'Indian education' has required continual refurbishing. Even the terms used to express the concept have shed their colonial cognitive trappings and have embraced a more empowering and reflective concept. (p.vi)

In relation to this study, therefore, it is hoped that the following literature review will provide an innovative context for reflection, cognitive renewal and refurbishing (Battiste, 1995).

This chapter is comprised of two major sections. The first section gives an overview of the devolution of band-controlled schools and First Nations teacher education programs in Saskatchewan from federal schools to community-based education. The second section provides an overview of some of the cultural artifacts of present day educational situations and how these artifacts relate to First Nations women and technology education.

It was felt by the researcher that an historical literature review pertaining to the participants' cultural background regarding education in Canada as well as readings on the issue of gender and technology were warranted. As Acker (1995) suggests, neglecting the cultural component involved in the research and neglecting an investigation into scholarship on the
issue of gender may be reasons that the integration of gender into research is not always successful:

I think the difference lies, first, in the willingness to go beyond simply commenting on the differences between the sexes when they occur in the data, instead incorporating gender analysis by keeping constant check on how (changing) social and cultural expectations shape behaviour and ideologies and how they are institutionalized in practices and policies, and second, in the extent to which authors are knowledgeable about feminist and other scholarship and theory on gender. (p.143)

This dissertation incorporates the strands of culture, gender and technology. The literature review for this research project, therefore, incorporates an overview of the historical development or more aptly put, historical devolution, of First Nations education in Canada and a review of literature concerning women and technology.

The Devolution to Community-Based Education

This section will provide a brief overview of the devolution process of First Nations teacher education programs and band-controlled schools. Events
and documents directly affecting Canadian First Nations as a whole since 1763 and reasons why these events are important in the present day education of First Nations people will be addressed. The political milieu surrounding First Nations peoples in general must be understood in order to comprehend the premises on which First Nations controlled educational institutions such as the Indian Teacher Education Program, the setting for this study, and band controlled schools, in which many of the preservice teachers interviewed hoped to teach, were established. Specific references will be made to provinces and territories for illustrative purposes only.

Understanding Devolution

The process of devolution, for the purposes of this dissertation, will be understood as a decentralization of centralized control by the Federal Government to community-based control by First Nations people. Because of the complicated political and legal nature of the centralization process which the Federal Government established in assuming control over First Nations’ education, the process of devolution of such a framework of responsibility must be done in accordance with the political and legal basis on which the framework was established. It would seem that the legal basis for the
centralization process lays in the Royal Proclamation of 1763. Some elders, therefore, insist that rather than making claims to the Canadian Federal Government in order to facilitate this devolution process, Canadian First Nations people need to get to the root of the centralization process by taking their claims for local autonomy to the British government (Danny Musqua, Personal Communication, University of Saskatchewan, Saskatoon, Saskatchewan, 1993).

**British Rule**

The *Royal Proclamation* of 1763 set forth the British policy toward Indian people in all parts of North America to claim by Britian and create a huge Indian land reserve west of the Appalachian mountains. "The task of administering this policy was given to the Indian Department which had been created in 1755" (Surtees, 1982, p. 22-3).

In 1860, the control of Indian affairs was transferred to the United Province of Canada by the British government. Under Confederation, The *British North America Act* (BNA) of 1867, section 91(24), placed 'Indians and lands reserved for Indians' under the list of responsibilities of the Federal
Government. These responsibilities included the education of Indian peoples. The decision to have Indian education remain a federal responsibility while the education for the rest of society was to be provincially controlled was grounded in a report published in 1846, endorsing a centrally controlled Indian education policy of assimilation. This report was based on the ideas of Edgerton Ryerson. Prentice and Houston (1975) claim that the report recommended:

...Indians remain under the control of the crown rather than the provincial authority, that efforts to Christianize the Indians and settle them in communities be continued, and finally that schools, preferably manual labour ones, be established under the guidance of missionaries (Haig-Brown, 1988, p.25).

Cultural imperialism (Battiste, 1992), therefore, took a foot-hold in First Nations education.

**Treaties**

A series of numbered treaties had been made with the Indian people (1850-1929). It is said that many land surrender treaties were used to confine Indian people to reserves and make land available to settlers (Canadian Encyclopedia, 1985, p. 1126). The numbered treaties dealt with health,
education, farming, hunting and fishing, annual payment to each person and reserve land proportionate to the population.

It is also worth noting that in areas where treaties were not made, such as in British Columbia, Quebec, Labrador and the Yukon, unique types of hunting and fishing and reserve claims remain to be settled. This provides the background for such special agreements as the James Bay and Northeastern Quebec Agreements where the government of Quebec, Canada and native signatories were required.

**Education with a Difference**

Educational practices surrounding Indian education were about to undergo dramatic changes. Indian children traditionally "...learned by observing and following their parents and by doing tasks expected of adults" (Haig-Brown, 1988, p.26). All members of the tribe, especially the elders were responsible for the education of the young. The children remained in and learned their respective role in their community. This was the case until the implementation of the federal policy of assimilation of Indian children and the establishment of residential schools.
In response to the 1844 Bagot Commission which reported the depressing condition of Indian life in the Canadian West, it was decided to concentrate proposed assimilation efforts on the younger generation. The attitude of the European culture is evident in the use of terms such as "self-improvement" as it applies to First Nations people becoming acculturated.

As time passed and the novelty of self-improvement wore off, however, it began to be observed that progress in the arts of civilization was slow and that setbacks were frequent. New habits were difficult to acquire, old ones even more difficult to break. Alcoholism continued to be a problem; children were regularly withdrawn from school at berry-picking time, and the Mississaugas continued to disappear during the hunting season (Grant, 1984, p.94).

Complete immersion schooling in European culture was established for Indian children.

**Residential Schools**

One of the major documents influencing First Nations education in the Canadian West was the Davin Report of 1879. After the establishment of the
Indian Act of 1876, the Federal Government had commissioned Nicholas Flood Davin, a journalist, to look at Indian education in the United States and make recommendations for the Canadian West. According to Grant (1984), Davin noted the shortcomings of the American experience and then recommended the same unsuccessful system for setting up industrial schools by contracting to the missions for the Canadian West.

Grant (1984) proposes that the reasons for Davin making these recommendation were as follows:

The situation on the plains called for immediate action, and the churches had a reservoir of experience in Indian education that could not quickly be duplicated. Besides, any other approach would have called for a greater expenditure of money than the Government was prepared to make (p. 158).

The debate over the welcomed benefits of complete immersion in the dominant culture and language or the imposed cultural genocide is part of the controversy surrounding residential schools. According to Grant (1984), many of the Indian people wished for literacy classes in English. In light of the many criticisms of residential schools forbidding the use of Indian languages by the students, it is interesting to note Grant's (1984) comment that "Their thinking reflected no discredit on Indian languages, resembling rather that of
contemporary anglophone parents who enrol their children in immersion classes as the most efficient method of learning French." (p. 94)

This statement, however, would be refuted by many First Nations people. As a present day First Nations administrator for Saskatchewan Education, Training and Employment commented, Indian people sent their children to the residential schools because they had no choice. Many parents boycotted the residential schools until the Government was pressured into building day schools on reserves. This administrator's personal experience was part of the boycotting process. Her parents kept her home from the residential school until the "day school" was built on the Cowessess reserve in Saskatchewan. This meant that she did not attend school until she was 11 years old. Perseverance and determination in taking two grades in one year and finishing grade 12 by correspondence were then necessary to meet the requirements for university entrance (Gloria Mehlmann, Personal Communication, August 20, 1993).

Besides the cultural-genocide issue centred around residential schools, there was the issue of quality of education offered to the Indian students. The residential schools went up to grade eight. It was not considered necessary for Indian students to go to school after 16 years of age, and they were not encouraged to do so. Even if a child chose to continue, the transfer to the
public school system for a high school program was difficult for the Indian students. The program offered to Indian students in residential schools consisted of only two hours of instruction while the public school students had five hours.

It was not until 1946 that a high school program was introduced into the residential schools. The Indian students were expected to write provincial exams and were evaluated by the same standards as the provincial school students who had been in the provincial system for twelve years (Haig-Brown, 1988).

Kirkness and Bowman (1992) conclude that residential schools had a negative impact on First Nations people.

The legacy of the residential schools was one of cultural conflict, alienation, poor self-concept and lack of preparation for independence, for jobs and for life in general (p.12).

The Indian Act

By 1920, compulsory school attendance and industrial or boarding schools for Indian children were incorporated into amendments to the Indian Act (Haig-Brown, 1988). The policy of acculturation continued in further
amendments to the Indian Act. Miller (1978), as cited by Haig-Brown (1988), quotes Deputy Superintendent General Duncan Campbell Scott:

... Our object is to continue until there is not a single Indian in Canada that has not been absorbed into the body politic and there is no Indian question, and no Indian department, that is the [w]hole object of this Bill (p. 27).

It seems that the general framework of Federal Indian policy was inherited, from the pre-Confederation period, beginning as one of protection and assimilation, encouraging enfranchisement (loss of Indian identity) by way of the Indian Act (Surtees, 1982).

In 1867, the first of the federal Indian Acts became law. These Acts describe:

Parliament's legislative authority with respect to Indians and their lands. It also provides the foundation for the administration of Indian Affairs in Canada (Canada, 1986, p.5).

Some specific features outlined are taxation, wills, ownership of property on reserves, control of monies, schools and the structure of band governments.

The Indian Act is of primary importance in that it gives the legal definition of an Indian, thus setting apart other Native groups such as non-status Indians and Metis. It is stated that, "Indian status was a concept
developed to determine entitlement to reside in Indian reserve communities..."  

**Growing Dissatisfaction**

Mounting challenges to the Indian Act continued. Women claimed sexual discrimination because Indian women lost their status by marrying a non-Indian, and World War II veterans were denied benefits given non-Indian war veterans. This concern for Indian affairs continued to grow into the 1960s with criticisms and questions concerning Indian policy being published. One example of such publication is in the 1967 Hawthorne Report, *A Survey of Contemporary Indians of Canada: Economic, Political, Educational Needs and Policies.*

In response to this survey, the Federal Government issued a White Paper in 1969. This *Statement of the Government of Canada on Indian Policy* was seen as one of the most dramatic proposals on Indian policy since the 1800s. As Surtees (1982) states:

The White Paper called for the repeal of the Indian Act, the abolition of the Indian Department, the transfer of responsibility for Indian affairs to the provincial governments, and the transfer
of control of Indian lands to the Indian people themselves (p. 55).

The White Paper evoked angry responses from Indian leaders and organizations. The Indian people were concerned with a greater recognition of traditional rights, not doing away with them. The Indian Chiefs of Alberta (1970) therefore put forth a reply to the White Paper, entitled Citizens Plus (known as the Red Paper). While it would seem beneficial to First Nations people to do away with the Indian Act and get out from under Federal control, First Nations people wanted to ensure their treaty rights constitutionally (Little Bear, Boldt & Long, 1984). The response to the White Paper, in general, led to a dramatic increase in the scope and intensity of Native political organizations as well as a general increase in activism among Canada's Native people.

Indian associations continued putting forth their opinions on Indian policy and Indian conditions. In an attempt by the National Indian Brotherhood [NIB] to introduce the idea of self-determination to the Canadian government, Andrew Paul, President of NIB, addressed the Special Joint Committee (1974) for revisions to the Indian Act. This was one of the first times First Nations input was allowed in policy making regarding First Nations people. Haig-Brown (1988) quotes Paul:
... to lift up the morale of the Indians in Canada. That is your first duty. There is no use passing legislation about this or that if you do not lift up the morale of the people. The only way you can lift up the morale of any people is to let the members look after themselves and look after their people (p. 28).

The National Indian Brotherhood (1972) published *Indian Control of Indian Education*. This was adopted by the Department of Indian Affairs and Northern Development as federal policy (*Indian Education in Canada*). It affirms:

... the importance of local community control to improve education, the need for more Indian teachers, the development of relevant curricula and teaching resources in Indian schools, and the importance of language instruction and native values in Indian education (*Canadian Encyclopedia*, 1985, p. 1214).

Out of the acceptance of this Federal policy have come provincial publications such as Saskatchewan’s 1984 *Five Year Action Plan* for Native education and Alberta’s 1986 *Native Education Project*. This acceptance has also provided for many Indian controlled educational institutions. Another outcome of the reaction to the Federal Indian policy is that public funding is
now being directed toward research, liaison and service programs for Native
people (Canadian Encyclopedia, 1985).

Self-Government

With this growth in political activism, when the Federal Government
proposed the repatriation of the Canadian Constitution, the Indian people were
somewhat united to offer a voice to ensure the entrenchment of their aboriginal
rights in the new constitution. Section 35 of the Constitution Act, 1981,
ensured that the existing aboriginal and treaty rights of the Aboriginal people
were recognized and affirmed.

In referring back to the treaties as a basis, the Indian First Nations
groups had proposed Indian self-government. They presented the position that
they are indeed nations worthy of their own government, for treaties are only
made between nations. This position is given affirmation by the fact that:
"Aboriginal people are the only distinct group of people specifically mentioned
in the BNA of 1867 and its replacement, the Canadian Constitution of 1981"
(Canada, 1986, p. 5).

In reply to the recognized need to study in depth, "... the needs and
aspirations of Indian people in Canada to manage their own affairs" (Canada,
1984, p. 1), the Federal Government commissioned the Penner Report from the Special Committee on Indian Self-Government (Canada, 1983). It contained 58 recommendations. The first and most general recommendation was that:


Besides this general recommendation, the Penner Report issued:

... a series of special recommendations on constitutional entrenchment, legislation, arrangements, lands and resources, claims resolution and the trust relationship (Canada, 1984, p. 2).

Many questions then arose as to how the institutions of self-government should be brought into being, as well as:

... what should be their jurisdictions, their powers; how they should fit into the inter-locking system of jurisdictions by which Canada is governed (Canada, 1984, p. 4).

Provisions for consultations between the Government and representatives of the Indian people to discuss the above questions were made. These consultations became a series of First Ministers’ conferences. One example of the attempt to establish Indian self-government can also be seen in
Bill C-93, an Act Relating to the Establishment of Self-Government for the Sechelt Indian Band which had its first reading on February 5, 1986.

Discussion

By the mid 1980s most of the residential schools were closed. This is with the exception of a few in Saskatchewan which are now under band control and offer a culturally sensitive environment (Kirkness & Bowman, 1992). One such example of this is St. Michael’s School at Duck Lake, Saskatchewan. While the school property has been part of the town of Duck Lake, through treaty land negotiation, the school yard now is part of the Beardy’s Reserve.

A large number of band controlled schools have been established since 1972. While various levels of support at the tribal council and Federation of Indian Nation levels have been established, the individual bands are autonomous in their decision making about the schools on their reserves (see Appendix A). This is in direct response to the NIB demands for parental control of their children’s education. As Kirkness and Bowman (1992) state: "The community must participate in, and determine, program change. No innovations in curriculum, teaching methods, of pupil-teacher relationships can take root unless parents are convinced of their value" (p.17).
Many success stories have arisen in Indian control of Indian education. Indian survival schools, curriculum products, Indian teacher education programs such as the Indian Teacher Education Program at the University of Saskatchewan, and other post-secondary programs have been established (see Appendix B). But as Barman, Hebert and McCaskill (1987) caution, many struggles remain, especially in the areas of authority and jurisdiction amongst the federal, provincial and band levels.

First Nations Women and Technology

While it is agreed that historical studies show how voices can be silenced over time (Brice-Heath, 1978; Acker, 1995), and that in the interpretation of findings there is no way to anchor information unless it is tied to cultural and past experiences (Paul Theobald, Personal Communication, April, 1997), the following literature review section concerning First Nations women and technology does not continue in an historical vein from the previous section. Rather, it addresses some of the present day cultural artifacts faced by the participants as women in the area of technology. Acker (1995) argues:
The impact of context seems clearer from a
distance, in the increasing number of excellent
historical studies that teach us to beware of our
temptations to make generalizations across time
and place where gender is concerned. (p.116)

When considering the element of gender in educational research, Acker
(1995) states that there is a continuum of how gender may be applied:

First, gender can be ignored, usually in the search for
generalization about "teachers." Second, a role for gender is
created, but statements are made that at best rely on stereotypes
and at worst distort and demean women's role within teaching.
Third, there can be a partial integration, as when the impact of
gender divisions is noted, but is peripheral to the main argument.
Fourth, gender considerations can be thoroughly integrated into
whatever argument is being made. Fifth, gender can move
center stage and become the basis of the analysis. (p.113-114)

The importance of considering gender in research is cited by Acker (1995):
Frustration over the long-standing tendency in scholarship to
develop a specifically feminist methodology have put great store
on work where women occupy the center of concern...Thus,
putting women at the center has begun to redress a very unjust imbalance. (p.114)

As in this research, the proclivity to give women’s voices and experiences center stage is believed to give a fuller understanding of the area being researched. As Acker (1995) states:

Research that includes teachers’ personal narratives and works to understand their motives and perspectives creates pictures of teachers...The increasing emphasis on experience has also lead to a greater appreciation of the diversity of that experience. (p.128)

With this richness of data, however, also comes the realization that:

...women are not all alike but vary in class, race, ethnicity, sexuality, marital status, age embodiment, and many other ways—with the detail and significance of the variation subject to perpetual change—has lead to questions about whether any commonality can be preserved in arguments about women’s experiences or women’s cultures. (Acker, 1995, p.115)

Ergo, in this study on technology, cultural or ethnic as well as gender considerations need to be addressed. While it may be true that all Canadian women (Status of Women Canada, 1989) need to advance in technology
education for intellectual growth and as preparation for employment, McIvor (1995) stresses that there are specific needs of First Nations people

[i.e. First Nations women] in this area:

But there are additional reasons which make scientific and technical education even more necessary for Aboriginal students. Land claim settlements in the north, which have been driven in part by the desire to exploit energy resources, have resulted in increased Aboriginal control over the management, development, use and conservation of lands and resources [Science Council of Canada, 1991]. Future settlements will have a huge economic, political and environmental impact on Canada's resource sector. Resolution of these claims will result in our people taking a much more direct and active part in the governance, management, development, protection, and enhancement of natural resources and non-renewable resources [Cassidy and Dale, 1988]. Consequently, the need for the development of scientific and technical skills among our people is pressing. Simplicity, reasserting authority in areas of economic development and health care requires community expertise in science and technology. (p.73)

The need for advancement in the field of technology education, therefore, is especially true for minority women, such as First Nations women, who are under-represented in the field (Liedtke, 1995).

In contemplating research designed to help ameliorate the present status of First Nations women in technology education, I agree with Turner (1992) that investigators should be sensitive to cultural and symbolic environments, to the impact praxis has on the investigation as well as to the investigation on praxis. While it may be true that an understanding of our cultural symbols is
important to us, Turner (1992) warns that analysis of organizational structures can eliminate their meaning and reduce structures and practices to a formula, however, he stresses the importance of uncovering, discovering and using meaning. Therefore, as I believe, "Social change is intimately connected with changes in available cultural symbols and meanings" (Anyon, 1979, p. 385), the following will discuss the importance of some of the specific symbols in our culture (Liedke, 1995) which create barriers to minority women in their advancement in the field of technology education. The power imbalance these artifacts maintain and some proposed facilitators for change will also be addressed.

It should be understood that because of the limited extent of literature available on minority women and technology, the following discussion will include elements specifically related to either ethnicity or gender. It seems, however, that in many circumstances the barriers discussed will relate to First Nations women in both their ethnicity and their gender.

**The Power Imbalance**

Rothschild (1988) contends that the exclusion of women and minorities in technology is not accidental:
Rather, it reflects a power imbalance in the history of Western scholarship that in turn reflects an ideological and societal power imbalance. A white male elite has controlled society and scholarship, setting the framework and the categories for analysis, legitimizing what is a proper subject for study. Women are the Other who are to be repressed and controlled, as are the poor (who are more female than male), and as are the races and cultures that are not of the white race and dominant cultures.

(p.69)

Posner (1991) would agree that science and math have often been used as the gate-keepers, "as a means to reinforce the prestige of certain social, political and economic groups" (p.8). By believing some of the male dominated symbols in our culture, women may make choices which make the stereotype a self-fulfilling prophecy. Women make choices which maintain the status quo and the power imbalance. The fields of science, math and technology remain strongly male dominated.

In discussing women's slow entry into the field of technology, Rothschild (1988) points out the following:

Feminist research and teaching in science and technology fields were slower to emerge and less visible than in the liberal arts for
two obvious reasons: (1) there were fewer women in these fields, and (2) not only the culture, but the subject matter in these areas had strongly masculine associations. As Margaret Rossiter (1982) has pointed out, for the few women in these fields, acceptance of the traditional canons and values was integral to their struggle to overcome the structural and ideological obstacle to gain entry, even to the lowest levels. Under these circumstances, they were unlikely to be inclined to challenge the methods and received wisdom of the scientific fraternity. (p.5)

Bland (1995) reports that when women choose not to enrol in science, technology and math classes, which act as critical filters in the educational process, they limit their future job opportunities by 50%. She adds that "Stereotyping computer use as a primarily male activity limits young women’s lifelong career aspirations" (p.31). Canada & Brusca (1991) claim that this barrier may be somewhat alleviated by integrating computer skills across the curricula.
Cultural Artifacts

Liedke (1995) concurs that there are artifacts of our culture which affect women's entrance into the field of educational technology. The following discusses the specific cultural artifacts of values, language, images and stories.

Values

Stern (1995) cites examples of cultural values playing a role in student achievement in the maths and sciences. In describing recent Asian-American immigrants to the United States she contends:

Newly arrived in this country, these young people were completely subservient to their family's wishes and wouldn't dream of disobedience. And their parents usually put much more emphasis on math and science than on poetry or drama (Stern, 1995, p.8).

She adds that the parents value math and science achievement because they believe, "...These disciplines lead to good jobs" (p.9).

Luhrs (1995) would agree that there are both personal and cultural values which impact on women's career choices. She states:
But like minorities, some women who are initially attracted to
math and science later opt out of degree programs for a variety
of reasons. The University of Colorado’s Elaine Seymour, who
studied women who left engineering to pursue the arts, found
these students cited two reasons for leaving. First, they
experienced poor teaching. Second, they were troubled by a
profession that they perceived as allowing no room for a
personal life. (Luhrs, 1995, p.13)

These women obviously valued a social life above career aspirations. Some of
these personal values are based on cultural norms:

Add to that [United States restructuring] the political pressure to
restrict affirmative action and the decreased funding for labs, and
the picture for women doesn’t look good.

Even more marginalized are women of color who tend to be
forgotten. In the Latino culture, gender is very important, and
consequently, appropriate career choices are drummed into
women early on. (Luhrs, 1995, p.14)

Stern (1995) reports that some experts such as Libby Palmer, director of
Operation Smart, believe that these values are instilled in women early in life
when they are encouraged to play with dolls rather than technical toys. In this way the power imbalance is ensured for the future generation of the culture.

**Language**

Strandberg (1995) contends that, "Because the prime tool of culture is language, the English language continually develops to serve the values, preferences and beliefs of those who dominate it (p.13). In order to change the status of minority women in technology education, white male dominated language needs to be changed. Students do not necessarily think that the generic "he" includes males and females. As Jones & Wheatley (1989) cite, "Once the author made the statement 'Tapeworms get into man by...’ and a students raised her hand to ask in all sincerity if women don’t get tapeworms" (p.541). Verbal references to minority women and technology need to be used. If a teacher only refers to people in a certain field as "he", both genders may believe that the field is open only to males. It also follows that "Where we name women and only women (as in the statement 'a women athlete' or 'a woman physicist') we convey the impression that athletes, or physicists are normally, typically (properly?) only male" (Stanworth, 1983 in Jones and Wheatley, 1989).
This non-inclusive language affects the self-image of students who do not see themselves in the included groups. As King (1989) contends, we believe what you tell us we are, "We are locked forever in your words" (p.6). It should be noted at this time that noninclusive language is damaging not only to women or minorities, but to mainstream white males as well. As Jones and Wheatley (1989) contend, "The male students find their own stereotypes reinforced by the adult model that represents knowledge and status" (p.542). They in turn then find it more difficult to work with minority groups such as women.

Stories

It is also believed that stories, myths or even examples used in women's educational experiences can impact their attitudes toward certain abilities. Jones & Wheatley (1989) provide the following illustration:

The comment made by a male teacher: 'When you go out with Big Bertha, you can impress her if you turn (hydrogen) into water' exemplifies the characteristic of some teachers to address the class as if there are no women present. Female students may
interpret the message to mean that women are unable to turn hydrogen into water. (p.541)

The North American cultural myth that men are better at computers than women also may be a barrier to the advancement of women in technology education. As Bland (1995) contends:

Computers are machines. In general, all Americans believe that males possess inherent ability to master mechanical objects and to operate them with maximum efficiency. This myth is perpetuated by females who defer to male assistance when they encounter technical difficulties with either software or hardware.

(p.30)

It seems evident that symbols in our culture influence the way we think about ourselves and, therefore, may limit our potential.

Stories in curricular materials which leave out contributions in the field of technology from certain minority groups are also damaging. Many First Nations groups and women are not credited with their technological inventions. It was not the case that women never invented, but rather before women were allowed to vote, they were not classified as persons and therefore could not own a registered patent. A male member of the family, therefore, usually
would apply for the patent. In the case of the female inventor of the sewing machine, the male family member who owned the patent was given credit in the history books for the invention itself. Women with technological minds, therefore, are absent in most historical accounts of North American inventors (David Anderson, Personal Communication, August 21, 1995). DuBois (1983) paints a horrific scenario, that through being made invisible, the people become unknowable, even to themselves.

**Images**

In a study which included the images on bulletin boards, posters and other classroom displays, Jones & Wheatley (1989) found that, "The image of the male laboratory scientist is still a major presence in the science classroom. Males were depicted in 93% of all graphic representations in classrooms" (p.540). A subordinate role for women is reinforced by use of such male dominated images (Sardo-Brown, 1995). In specific reference to computer software images, Canada & Brusca (1991) report: "When female characters do appear in the video games, they are cast in secondary roles or are portrayed as helpless and in need of rescue from the male heroes" (p.48).
The stereotypical image of the lone male scientist is one which may have specific impact on "Many young girls, who value social interaction, [and] do not relish the one-on-one relationship with a machine" (Sardo-Brown, 1995, p.31). Physical settings for computer labs which lead to personal networking (Canada & Brusca, 1991) and cooperative learning groups used with women help to overcome this barrier and also are touted as a way to build confidence in women (Stern, 1995).

**Facilitating Change**

Some educators have realized the need to address many of the above issues. For example, there have been attempts to make science and math amenable to First Nations and female students. Scholars such as Colorado (1988) are suggesting using symbolic metaphors such as the bear to help to bridge the gap in symbols between Native and western science. In Saskatchewan, gender and ethnically inclusive language is being encouraged in science writing. Videotape series such as Women in Science depict female biologists donning hiking boots and crossing rugged terrain or working in a
collaborative community of learners are being recommended. (David Anderson, Personal Communication, August 25, 1995).

Errors of omission and commission are being rectified in textbooks (Saskatchewan Education, 1992). Explanations are being made as to why previously, usually only men were credited with scientific inventions. Resources are being recommended in which ethnic groups such as First Nations People are given credit for scientific discoveries. There is an attempt to have the terms inventor and discoverer no longer seen as exclusively white and masculine in nature (David Anderson, Personal Communication, August 25, 1995).

Saskatchewan Education (1992) publications such as Diverse Voices, are intended to help teachers recognize gender and ethnic inequalities in present resources. This action is lauded by Rothschilds (1988):

Therefore, we need not rely exclusively on feminist resources in order to bring feminist perspectives to our technology teaching.

By critically examining the prevailing technology literature in our fields, we create further feminist teaching methods and resources. In this way, not only are the male biases of technology and the approaches to technology revealed to students, but the ideological, social, and cultural contexts in
which such biases exist and flourish can be exposed as well.

(p.71)

Some of the specific criteria she outlines for evaluating technological resources for gender/ethnic bias may be found in Appendix C. By not censoring non-gender/ethnically inclusive materials from school collections, but rather using these materials as teaching tools, educators may help affect social change and facilitate the movement of First Nations women in the field of technology education.

Closing Comments for the Chapter

This literature review is significant to the proposed study for several reasons. It has been important to the researcher in developing a conceptual framework for the proposed study. The first section provided her with the background to the First Nations educational institution, namely the Indian Teacher Education Program at the University of Saskatchewan, involved in the study. Of particular relevance to this study is the ITEP's foundational goals of societal and educational change (Appendix E). The second section contributed to an understanding of the current situation for minority women in the field of educational technology. An understanding of the influence of cultural symbols
in determining one’s attitude toward technology may prove beneficial in
guiding the discussion during the interview situation.
CHAPTER 3

RESEARCH METHODOLOGY

Over the past few years, much attention has been given to the debate over the virtues of naturalistic inquiry (Guba & Lincoln, 1982; Carr & Kemmis, 1986; Lather, 1991). While the importance of this debate is recognized, it is felt that it is an understanding of the cross-cultural dilemmas and limitations that is of paramount importance in this study. Rather than revisiting the debate any further at this time, this chapter will describe the methodological considerations judged as germane to this study. The majority of the chapter is devoted to a discussion of the anticipated dilemmas and limitations involved in the cross-cultural research which was undertaken.

In trying to further the "giving of voice" (Calas & Smircich, 1992) to First Nations and women, this chapter on research methodology focuses on the writings of First Nations and women authors. It is not the intent of the researcher to diminish the contribution of any other body of researchers in the area of qualitative research.

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Methodological Considerations

At this time, the methodological considerations judged to be most germane to this study are the multicultural/feminist aspects of the methodology, the participants, the data collection and the data treatment. The following section provides an overview of these aspects.

Multicultural/Feminist Methodology

Rothschild (1988) insists that there is a difference between traditional and feminist research methodology. She claims that feminist methodology is an "experiential, interactive and holistic approach" (p.69) and the traditional male approach is "distanced, detached, and exclusionary" (p.69). She adds:

When combined with language usage, an approach that is removed from human experience in this way [that is, the traditional male approach] not only omits issues of gender, but also those of race, class, and multicultural perspectives, and the connections among them. (Rothschild, 1988, p.69)

Therefore, in order to examine both gender and multicultural perspectives in this study, a qualitative research methodology was utilized.
Setting for the Investigation

In order to access First Nations preservice women teachers, the Indian Teacher Education Program [ITEP] at the University of Saskatchewan was chosen as the setting for this study. ITEP was established in 1973 (Appendix B) at the request of the First Nations people of Saskatchewan. The need for First Nations teachers became evident as the First Nations student population increased throughout the province. ITEP students receive a Bachelor of Education degree from the University of Saskatchewan upon successful completion of the four year program (Appendix D).

Participants

First Nations preservice women teachers were asked to participate in this study. The women selected were individuals at the pre-intern stage of their program. The participants met the following criteria:

1) they were enrolled in the Indian Teacher Education Program at the University of Saskatchewan

2) they were at the pre-intern stage of their educational program.
In total there were one hundred and ninety Indian Teacher Education Program students. Twenty of these were at the pre-internship stage. Fourteen of the pre-interns were women, six were men.

The preservice stage of teachers, in which the ITEP students go into schools to gain practical experience as part of their teacher preparation program (Appendix D), was chosen in order to help ameliorate the present status of minority women and technology. As the Status of Women Canada (1989) recommends:

...The pre-service training and ongoing professional development of educators and counsellors at all levels incorporate an understanding of the consequences of the underrepresentation of girls and women in math, science and technology as well as methods to promote the participation of girls and women in these fields of study...(p.ii)

Sardo-Brown (1995) contends that we need to take measures to ensure that educators do not continue to teach in the non-gender equitable way they were taught. She states that, "Teacher educators should address gender-bias issues among preservice education majors so that the same patterns do not continue" (Sardo-Brown, 1995, p.22).
Collection of the Data

A conversational style of interviewing (Oakley, 1982) was employed. Open ended questions based on the research questions in Chapter One were used (Appendix E). The interviews were recorded on audiotape.

In the initial stage of accessing the participants, the protocol of contacting the administrator of the educational institution involved was followed. The Director of ITEP was contacted in person and through a written request (Appendix H). I also discussed the proposed research with two of the female faculty members of ITEP. Written permission was then received from the Director to conduct the research with the participants (Appendix H).

At an arranged time, the Director of ITEP introduced me to a university class in which the preintern First Nations women were enrolled. I gave an overview to the class of the proposed research and the criteria for being a participant to the class. All of the preintern women who were able to participate volunteered. Some of the preintern women were not able to participate because they had medical conditions or were handling a major family responsibility. The volunteers made appointments with me for the interviews.
In an attempt to make the participants more comfortable and to facilitate the participants' access to the interview situation, I booked the ITEP resource centre and a university seminar room on the same floor as the ITEP offices to conduct the interviews. When the participant arrived for the interview, she was greeted by me, offered juice and a seat at the table. I reviewed the rationale for the research with the participant and emphasized that the anonymity of the women would be protected. The participant was then asked to sign the appropriate consent and release forms (Appendix G). I also asked for the participant's verbal consent to record the interview on audiotape. The audiocassette recorder was clearly in view on the table.

A copy of the interview questions (Appendix E) also lay on the table. I explained that it was hoped that the format of the interview situation would be conversational (Oakley, 1981), but there was an established set of questions that I would be introducing in order to try to discover the women's perceptions and experiences regarding technology. During the interview, some women who stated they were English as a Second Language speakers, wanted to be able to read the question posed. I complied by pointing to the particular question on the typed sheet of questions on the table. Other participants expressed concern that they might not give the "right" answers to the questions. I emphasized that there were no "right" answers to the questions, only the women's
perceptions and experiences. I tried to emphasize that in this situation, the participants were the experts.

At the end of the interview, a First Nations research protocol of giving gifts in exchange for a sharing of knowledge and wisdom was followed. Usually this protocol is in the form of giving gifts of tobacco to elders (Colorado, 1985).

**Treatment of the Data**

The oral data from the interviews were transcribed. Data were reported on the First Nations women's perceptions of technology, experiences with technology, perceived barriers and facilitators to change in the advancement of First Nations women in the field of technology, perceived action to be taken to advance First Nations women in the field of technology, and what was perceived to be needed for First Nations women to exercise leadership in the field of technology. Other taxonomies imposed by the participants were recognized. Data on the reasons for First Nations women to learn about technology, negative aspects of technology, the importance of adequate
Figure 1. A map of possible reasons for not providing answers to outsiders’ questions. (Osborne, 1989, p.202).
technology training to the "image" of preservice teachers, using existing venues
to hold technology training programs, and the importance of technology
training for women at all life stages were summarized. An identification was
made of patterns in the participants' responses. Resurfacing issues within the
data were discussed.

The anonymous transcripts and a copy of the findings were given to
another researcher who had experience researching First Nations educational
issues. This auxiliary researcher checked for validity in the data analysis.

Dilemmas and Limitations

In conducting cross-cultural research, the researcher faced certain
dilemmas and limitations which were unique to this type of study. The
following discusses some of the cross-cultural dilemmas and limitations of the
research:

Group Acceptance of the Researcher

There may be several reasons why data may be withheld from the
researcher. Given the nature of research on a specific culture, unless the
researcher comes from the specific group of the participants, she may not be trusted. For example, even though the researcher may be of First Nations ancestry, she may be considered an "Other Indian" by the research population (Verna St. Denis, Personal Communication, February, 1993). Gender may also create a problem for the researcher. Figure 1 shows some of the gender related reasons for lack of cooperation by a cultural group in answering interview question. This aspect may not be relevant to a study involving the interviewing of First Nations women, however. In describing her cross-cultural research, Haig-Brown (1992) recommends the following:

People doing research engage in a process called gaining access.

For me, gaining access conjures up a vision of breaking down a gate or coming in with a search warrant. I prefer to think of the start of research in which I participate with other human beings as beginning a relationship. I can begin the work only because other people accept me as a worthwhile confidante. (p.97)

She always makes known to the participants her research purpose of addressing "... injustice in First Nations education". This helps inspire trust in the research and the researcher.
Interviewing Style

As discussed in Chapter Two, the advancement of women in science related fields such as educational technology usually involves ameliorating a power imbalance in the area. A researcher seeking to empower women, however, may employ methods or adopt attitudes which create another power imbalance in the research process which denies power to the participants (Oakley, 1982). It was hoped that adopting a conversational interviewing style would assist in alleviating the usual power imbalance between interviewer and participants.

It also was hoped that the conversational style will not restrict the participants in what they may have or want to say (Haig-Brown, 1992). The use of open-ended questions should allow First Nations women’s voices to determine some of the parameters of the study and provide the data. The cultural group, therefore, had a part in determining what was worth knowing and what was worthy of study (Du Bois, 1983). In very controlled closed-ended questioning, the researcher determines what is valid knowledge by what questions are asked and the ways the questions are posed (Oakley, 1982). As Calas & Smircich (1992) maintain:
The imagery of women's "different voice" was picked up by other researchers who examined "women's ways of knowing"... Similar to the work of historians of women, these writings documented "women's experiences" and asserted it as valid knowledge in its own right. (p. 232)

It was believed that as a byproduct of this inclusionary process, "...The fullness of significant human experience" (Massarik, 1981, p. 206) would be evidenced in the richness in the data collected.

It was anticipated that there will be an intrinsic reward for the participants and that they would not just feel used for my ends as is often the case in cross-cultural research. As Sardo-Brown (1995) reports, by encouraging "...preservice education majors to generate examples of gender bias from their own schooling, ...the need to address these issues of gender bias becomes personally relevant and meaningful" (p.22). This spin-off of the interview situation is recorded by Oakley (1981). She states:

Nearly three-quarters of the women said that being interviewed had affected them and the three most common forms this influence took were in leading them to reflect on their experiences more than they otherwise might have done... (p.50)
The research then may prove beneficial to the participants as well as the researcher.

**The Questions Used**

One of the issues centred around cross-cultural situations is the idea of the intelligibility of communication between differing cultural groups. As Gergen (1992) states, "Words fail to make sense (they remain nonsense) until there is at least one other person to give assent to their meaningfulness" (p.214). This would hold true in the basic definitional understandings of technical terms used by one group.

Another aspect of cross-cultural communication is the knowledge that language backgrounds create a difference in the understanding of concepts. Hoebel & Weaver (1979) exemplify this through the Shawnee language in which the concepts of pushing and floating are both interpreted as pushing against (p. 584).

Therefore, while the research questions listed in Chapter One cover the broad research categories intended in this study, other questions based on these categories were developed for use with the participants. Taking into consideration the cross-cultural nature of the interview situation and the English
as a Second Language background of some of the students, it was decided to phrase the questions in natural rather than technical language (Appendix E). It is hoped that the use of less technical language increased the understanding between the interviewer and the participants.

**Analysis of Research Findings**

When interpreting findings in a cross-cultural situation, it should be noted that based on the assumption that differing interpretations can be held of the communicated truth or reality (Gergen, 1992) it would then follow that differing views of reality can be held by the actors. "That is, if what we call the real is governed by the ideology of the caller, the attempts to inform society of what is actually the case must be regarded with suspicion. A genuine interest in discovering the nature of things in themselves seems both naive and misleading" (Gergen, 1992, p. 212).

Other warnings about interpreting cross-cultural research findings come from Ward (1992) and Brice-Heath (1982). They cite examples where minority children are judged as uncooperative and dull because the children are behaving according to their cultural norms rather than those of the dominant white culture.
It then follows that in describing the research findings, care needed to be taken in the naming process. Naming "...defines the quality and value of what is named - and denies reality and value to that which is never named, never uttered" (Du Bois, 1983, p.108). During this process, it was important that the researcher realize that often the naming was being done from her theoretical perspective and, therefore, gives life to her original position (Gergen, 1992). Stereotypes, therefore, could be propagated through the choice of descriptive language with implied meaning used in describing the findings. As King (1989) laments about some previous cross-cultural research, "We believe what you tell us we are" and "We are locked forever in your words".

**Codes of Ethics**

This research project was conducted within the confines of the University of Saskatchewan [U of S] Code of Ethics to protect the participants from uninformed harm. The researcher was expected to respect the anonymity of the respondents and acquire their informed consent (Appendix G). Certain protocols were followed, such as acquiring consent from the Director of ITEP (Appendix H) before approaching students. Some First Nations bands also have adopted similar codes. First Nations’ traditional protocol may involve giving
gifts such as tobacco to the elders before approaching them in order to learn from them (Colorado, 1988; McIvor, 1990). Therefore, while conducting this research, the researcher had to learn to "walk with a foot in both worlds", as many First Nations women have had to do in their educational experiences. Strict adherence was payed to the ethical procedures and guidelines provided by the University of Saskatchewan (see Appendix F).
CHAPTER 4

PRESENTATION OF DATA

In this chapter the findings from this study are reported. The first
section describes the participants. The second presents the etic findings, the
direct responses to the interview questions asked. The third section gives the
emic findings, the information imparted by the respondents in the course of the
conversational interview situation which does not fall directly within the
parameters of the interview questions, but is relevant to the study at hand. The
use of emic findings in research is stressed by Hammersley and Atkinson
(1983):

This mode of organizing...is, then, in keeping with an analytical
approach that stresses the heuristic importance of the members’
[participants’] own categories, taxonomies, and vocabularies.
One makes sense of the culture via such culturally defined
constructs, and the cultural is portrayed through their [the
participants’] reproduction. (p.226)
The importance of relating *emic* findings, especially in this cross-cultural research, is therefore essential in order to make sense of the findings.

The Participants

Nine preservice First Nations women teachers volunteered to participate. All these women were enrolled in the Indian Teacher Education Program at the University of Saskatchewan. They were at the pre-intern stage of their educational program. The participants represented the diverse background of First Nations students who attend ITEP (University of Saskatchewan, 1995). For example, a few of the participants said that they had attended band-controlled schools. One of these had attended only band-controlled schools. All but two of the participants recalled that they had attended provincial schools for at least part of their education. Two of the participants recounted that they had attended only provincial schools:

I went to public school in a town called...Basically the reserve life was like something we went out [to] on weekends to visit all the relatives, cousins. Occasionally [we would] go to...powwow. But it wasn't, I wasn't raised traditionally. And the reason why I went to ITEP was because I wanted to learn more.

...And then I went back and finished grade 11 and 12 on the reserve. We, me and...one of my other classmates, there was
just the two of us who graduated in the first year. [The first] to graduate [from our band-controlled school].

One participant stated that she had a lot of experience going to different schools.

While some researchers have problems getting willing participants (Osborne, 1989), all of the preservice women who were able to participate agreed to do so. Those who were not able to participate had conflicting circumstances such as severe medical conditions. I think the high level of participation was due in part to the fact that I previously had taught all of the participants but two. During the coursework stage of my doctoral program, I worked as a sessional lecturer at the University of Saskatchewan. I taught an educational administration class and a module of an introduction to education class to ITEP students. I therefore had met most of the ITEP students who were now at the pre-intern stage of their teacher education program. In the spring of 1996, when Orest Murawsky, Director of ITEP, arranged for me to introduce my proposed research to the preservice ITEP students, I met with a class which included a majority of the pre-intern students. Not only did most of the women present agree immediately to participate, but many of the male students gave me a disappointed look when they realized they could not be involved.
Two women warily approached the interview setting. One was a young single woman, probably in her 20s, whom I had never met before. She said she did not decide to participate until she talked to some of the other women I had had as students. They said that I was nice, so she decided to become involved. At first, she seemed very nervous and fidgeted with her baseball cap, but she relaxed as we began talking. Another wary student was a middle-aged woman, probably in her late 40s, and experienced in First Nations education as a band-controlled school board member. Before she would "open-up" to me, I had to let her "interview" me first. I was more than willing to do so. From my readings of Oakley (1981), I remembered that participants often see the researcher as the one holding the power. I saw the reversing of roles in this situation as a way of levelling that power imbalance. In the course of the time I spent with this woman, the conversational style of interviews (Oakley, 1981) developed and the student soon felt comfortable enough to share her perceptions of and experiences with technology. This participant also used the interview situation to learn about technology newly introduced to her in the interview. For example, when I asked her if she had had experience with laser disks, she replied "no", and then went on to glean from me everything I knew about laser disks and their educational applications.
In general, all the participants seemed very concerned about providing information that would be useful for the research. Initially, one participant expressed concern over giving me the "right" answers to the questions. I had to assure her there were no "right" answers, only her perceptions and experiences. In this situation, she was the expert.

A bonus for me as a researcher was the frequent use of humour by all the participants. This made the interview situation not only an informative, but also an extremely enjoyable experience for me.

Etic Findings

A summary of the responses to the interview questions is as follows:

**Question B1 and Question B2**

*What do you think I mean when I say technology?*

*What does technology mean to you?*

The participants gave overlapping responses related to their perceived definitions of technology for the two questions above. Computer-related
concepts comprised by far the most favoured response. All but two of the
participants referred to computers in their responses:

    Well, when I think when you speak about technology it’s first
    and foremost, computers...

    It would be computers...

    Computer, and, mostly computer.

Some defined technology as the application of computers in an educational
setting such as using computers as a teaching tool. One participant saw
technology as an awareness issue related to computers in education:

    Well, it just means, First Nations, do they, are they aware of
    computers, or are we going to be using them as a teaching tool...

Another preservice teacher mentioned the educationally related concepts of how
much children have been exposed to technology and how much technology is
available in schools:

    I would take it as how much children have been opened to
    technology that’s available in a lot of schools. How much
    technology is available in the school you’re going to. I would
    take it as those two aspects.

    While few definitions of technology related to computer capabilities
emerged, some recent developments such as HyperCard, the Internet, and E-
Mail, all widely used in educational settings, were mentioned:

    Well, I was thinking of my Ed. Communications class that I
    have taken. Also my...class I am taking right now. In the first
One respondent addressed the communication of information aspect of computers:

...It's a technological world...We're all globalized. We're globalized because through the computers and stuff, it hooks up your heads of the states, like we're all one.

Another computer-related definition viewed computers as representing modern views and modern concepts:

Modern views, modern concepts and computers. And why I say computers is I can't handle a computer yet. I'm real green.

Other participants suggested a machine-related definition of technology.

There were five distinct views:

a) Technology as "machines".

b) Using machines instead of people.

Machine, and things that...instead of using people, they're using machines, computers, and stuff like that. That's what I think technology means.

c) How to use different types of media, setting them up and using them in presentations and teaching:

I think not only computers, but also how to use different media. Like how to set up a projector. How to use an opaque projector. How to use this
and how to use that. And just being able to use them in the classroom, and in your presentations, and your teaching.

Some participants mentioned traditional audiovisual equipment such as opaque projectors, televisions and videocassette recorders.

d) Using technology such as satellite dishes for enjoyment.

e) Using technology such as the fax machine and telephone to gain financially and prosper from it:

I find a vast difference between the reserve, my home reserve and from the modern world. There is a big kind of gap there in technology. Sure, there’s satellite dishes and stuff. And they watch all those things, but it’s a different value system. They’re not so dependent on technology. It’s just sort of something there to enjoy, as the entertainment aspect. But it’s not like...they can live without the fax machine and without the telephone. And they do it more for...they enjoy technology more, where the other uses it to gain financially and prosper from it.

...Because too many people get too dependent on it, where they have to reflect on and see what’s important in life. And it’s still the old values like your family. Feeding your family, taking care of them, clothing them. You can survive without it...It’s something there to enjoy but you...I don’t want to become dependent on it.
The latter response came from a participant who saw technology used for financial gain as something that might take away from family values and something on which you could become dependent.

Other participants alluded to a more encompassing definition of technology:

...technology to me is more than what we look at everyday. It could be something as mediocre as walking through, or going on an elevator to using the computer. It could be anything.

...Something innovative, something very 90s, something that I'm not familiar with, probably.

Just technological system, like things I described, like computers, TVs, all machineries...

When I think about technology, [something]...to make life a little bit easier.

In short, the participants defined technology first and foremost as computer-related. Being preservice teachers, many thought of the educational aspects of technology, such as computer awareness in schools or traditional audiovisual equipment such as projectors. Some viewed technology from the cultural aspect, and believed that technology used for financial gain would take away from the traditional family values.
Question B3

What are a few examples of technology?

In citing examples of technology, many participants mentioned computer-related technologies. Two specific examples of computer-related technologies not mentioned in responses to the above questions were the Windows program and automated tellers:

I worked in a bank part-time, so when I think of technology, I think of the interact automated teller machines. I travelled Europe last year, I took a year off school. And, I mean, I could get money out of my automated teller machine in Germany, just as easy as I could in Saskatoon.

Radios were specifically mentioned by a respondent as an added example of the category of audiovisual equipment. Another respondent expanded on the idea of satellite dishes as the machinery of technology for enjoyment purposes:

...like how they do with the satellite. You get can get 100 channels or a hundred and fifty channels on this. Just pay $30.00 a month...

The weapons of war as an example of a negative application was cited by one First Nations woman:
...I think it's a negative aspect how like with weapons in the war, and all the things we've developed to hurt other human beings... That kind of stuff, I'm not for that type of technology.

One participant mentioned Resource-based learning in schools as an example of the modern ideas and modern concepts aspect of technology. In reflecting on a personal experience from her daughter's education, this participant explained the beneficial aspect of application of this technology:

When you say modern technology, maybe in education, in Resource-based learning would be a move forward. Because when I went to school, I mean, here is your reader, here is your social studies text. And there weren't any other books in the school. Whereas now, watching my daughter, who is nine, 'Oh, look, I have a book on trees from here, and oh, look from [over] here...'. So I would say that is a major one, and a super one because I relate it back to her... It draws her interest because they can grab a book... maybe they're all on trees. They can grab one they like. They're going to read it, where if you handed them one, it might not spin their wheels, and [they would] push it away.

Therefore, the participants saw examples of technology as being primarily computer-related. The applications of technology were perceived by these preservice teachers to be negative in relation to the weapons of war which harms other human beings and positive in relation to the educational technology of Resource-based learning which leads to students being better motivated through choosing their own resources.
Question B4

Have you had experience with: Computers? CD-ROMS? Laser Disks? Multimedia? Library Online Catalogues? The Internet? Distance Education Technology? Other Types of Technology?

There was only one participant who stated she didn’t have any experience with computers. All the participants, however, stated they had experience with library online catalogues. Only two participants had not used the Internet. A few had used CD-ROMs and multimedia. No one had used laser disks. Few were aware of laser disks and many had to ask for an explanation of what laser disks were. No one had used distance education technology, but after an explanation of what it was, many explained that they were aware of it. Two participants mentioned other types of technology with which they had experience. This technology included fax machines, office technology, and LCD panels.
Question C1


At university was by far the most popular response. In school was a close second. Other sources of learning included work, friends, television, technical college and at home on the computer. The library online catalogue, which was the only technology everyone in question B4 said they had experienced, was introduced to the students through a librarian from the University of Saskatchewan giving a workshop which was integrated into other classes the students were taking.

One participant commented that while she had formal instruction in areas such as the Internet, she would not classify it as good instruction. Just because she was introduced to a technology during her educational experience did not mean she was therefore capable of using the technology. She stated that sometimes the classes were too large to facilitate learning and sometimes, the instruction was too brief. The technological skills introduced needed to be reinforced throughout the preservice teachers' educational experience:
One twenty minute group in one of the computer rooms where there was probably forty of us and one instructor. So, it was 'push button, third down on your left, and flip the switch fourth over to your right'. And when you stood up and walked out, it was...What I’m saying, I had no good formal instruction which is something I want.

Yeah, because, just twenty minutes and you walk away. And I haven’t been in that computer room since. And it’s like learning a language. If you learn some of it and then for two, three years you don’t use it, and in a way, it’s gone.

In summary, most of the participants stated that they had learned about technology primarily during their preservice teacher training at the University of Saskatchewan. Many stated that they had learned to use some technology during their elementary and secondary educational experience.

**Question C2**

*As you are entering your internship, do you feel adequately prepared in the use of technology in schools and classrooms?*

The responses to this question were almost all negative. There were two positive responses and two undecided responses. A discussion of the responses is as follows:
Negative Responses

While most participants responded "no" to the question regarding adequacy of preparation, some elaborated on their response:

Not really, no. I don’t know how to make programs or I’m sure if somebody showed me how to work a program then I would be able to teach it but other than that, no.

No, no I don’t [feel prepared]. I mean, if a teacher has one in the classroom [a computer], the way I sit right now, I’m sunk.

I think I would like to know a little more before I went out. I mean, how do you sit in front of your students and say, Well, now, how do you turn this thing on?

I don’t think I could. I’m not capable of teaching a computer class ’cause I just have the basic skills.

No, probably now I would say that if I was to go out interning I would probably find a lot, a lot of younger students who know more about computers than I do and they will be teaching me a thing or two.

One participant who said she did not feel adequately prepared in the use of technology to go interning, suggested she would have to sit down with her co-operating teacher and have the teacher show her how to use whatever technology is in the school.
Affirmative Responses

Two participants expressed some confidence in feeling prepared to go into the schools and use the available technology:

I would think so, and then I'm not the type of person to sit back, you know, like if I don't know something, I'll go find somebody, you know, that can help me with this. I want to use this. How do you use this?

Yes, I would probably fool around with [it] and learn about it myself. After school or when they're not around there so I could [use it]. That's how I kind of taught myself, cause I had to do something on it and I just stayed there for awhile and found my way through.

The confidence expressed by these two preservice teachers, however, was not based on any previous computer-related technological training, but rather on their own natural ability to investigate and understand computer-related technologies.

Other Responses

One participant commented that her feeling of preparedness would depend on the level at which she would be expected to intern:

Right now, I'm just paranoid to go out and intern. I don't know why. I feel like [at] university here, like we learn so much
about things to do and not to do, but as for practical, it’s been really short. So like, sure we know how to create our lessons and we know how to get the necessary resources and materials and how to you know, motivate the students or stimulate the students to stay with you. But you know, I’m sure it will be a lot different when you get out there to actually teach some students. And as for the technology part, I would feel comfortable teaching primary, like with the computers, because I don’t feel like I have enough knowledge in me to teach any further than that. But for everything else, like I feel comfortable with the basics, like primary level, rather than I would secondary.

Another participant felt she could not properly comment at this time, because she did not know what she would be faced with in the school situation:

    Well, I know a bit, but I don’t know how I would be until I got to school, into the school and see what they all had. Maybe I would be able to help them and stuff. I’m not sure right now.

Therefore, most of the preservice teachers stated that they did not feel adequately prepared in the use of technology to go interning. Based on their own natural ability, some thought they could compensate for what they had not been taught once they were in the school setting.
**Question D**

*What personal experiences have had an impact on your attitude toward your use of technology?*

The participants recounted educational, work-related and childhood types of experiences:

**Educational Experiences**

Several positive and negative recollections of educational experiences with technology were shared:

As a mom and a craftsperson, one woman saw no need for further technology. However, when she became a student she saw the need for technology. She remembered her experience in this way:

I was at home and being a mom, well I didn’t need a computer at home to be a mom. And I, my interests when I was at home were all crafts and there again that was with my hands. But now, like I say, need determines your views. And I’m here [university], I can see how much of an asset some modern technology would be. In fact, in having taken my classes here, like I watch people hand in papers they’ve done on the computer and they look beautiful. I still sit at the end of the kitchen table with my typewriter.
Another preservice teacher who saw the need to learn to use technology, however, became frustrated by the lack of understanding band leaders had about the educational implications of the technology. She bought a home computer but did not know how to use it. She asked her counsellor about taking a computer class. The preservice teacher was told that her band could not fund the course, because they saw it as something that was for personal benefit, not for use in schools. She gave up the idea of taking technology training. She recounted the experience as follows:

...And then I was going to take a class, I talked to my counsellor about it, taking a class of a computer, and then she told me that it’s impossible for my band to fund me. Because it’s for my own good, ch, this class I’ll be taking. That’s how they want to see it. Not for me to use it in schools or whatever, and I was getting confused about it. And I just left it and read my stuff on my own that came with the computer.

Having struggled with typing on a typewriter, and then being taught computers in high school, one woman saw how much easier and faster it was to use the word processor. She told about how she then became excited to learn the new technology:

And I was really fascinated by how much [more] convenient, how much more quicker, and it’s so much more easier. In grade nine, the thing was typewriters, and the old fashioned [ones]. I could not handle those. But once the computers came, it was so different. My whole attitude, like even just on typing or whatever, it totally changed. Because I think that the computer is a lot more inviting, a lot more interesting to look at, rather
than just these keys on the big typewriter. I think I found myself to be really easy to learn and excited to learn these things too.

Another participant recalled that playing games on computers and experiencing simulated learning experiences were a fun way to start learning about computers:

I just remember grade seven or eight was the first time I ever really got to take a computer class. And I just remember playing games like, just games on there. And then the teacher would give us these tiny assignments and we would do them in a group and he would walk around, and nothing really. There was never anything really concrete...And that was fun.

On the other hand, the demeaning behaviour of a computer teacher gave one participant a negative attitude toward computers. She remembered the experience:

When we were about in grade seven or whatever, there was this one teacher, he, he was in charge of computers, like you know, he was like their computer wizard or whatever, but he was teaching the students how to use the computers but he was a really mean guy. Like he was mean. Like he used to, I think he even abused some of his classroom, like his class, like his students. But, I don’t know, I was kind of afraid of him mainly, even though he wasn’t our teacher. But, I really don’t like computers from there, I think. Yeah, like he was the only one I guess who really knew how to use the computers, but when he was teaching our classroom, ...Division Two, I think he taught, but anyways, we were Division Three, and then he walked by and he like slapped one of the student’s hands in our class. So, I don’t know, it just kind of turned me off from there.
Another respondent stated that, after transferring to a larger city high school, she did not have the background to do the computer class assignments. She also got turned off and did not go near computers until she went to university. She recounted the experience:

And, then...I kind of got turned off when I went to [name of school] because it was more like they took up more information than we did in grade ten. 'Cause it was such a small little town. And then you know, you go to [name of school] and then they like wanted you to make all these different programs, set up your own programs. And, like, I just got totally confused and it just... I didn’t go near a computer until I came to the university.

Work Experiences

Two extremely different attitudes toward technology emerged in this section. While at a job, computers and a computer class were available, so one woman took advantage of the situation and learned how to use computers. It was not a requirement of her job, she just was self-motivated. This woman embraced technology in her workplace simply because she saw the technology as a positive addition to her life. She remembered:

...I really didn’t get introduced to computers or anything until I went to work at...And because we had all these computers sitting there and nobody was really using them. So, I decided to get into the program, how you use this, and how you use that. And so I started learning a little bit before we even went to computer
class...Just to have them sitting there, because if it had been in somebody’s home, I probably would be scared to go and touch it just in case it would break...

For another woman, however, technology in her workplace was seen as a negative experience. The employees in this provincial government office saw no need for updated technology because what they had worked for them. In fact, she felt that things worked better without updated technology because once they started using computers, files on computers were lost. Before computers, the hard copy never got lost. She told about how they could rely on it:

...Like when I worked before, we had no need for updated technology. Because what we were doing worked quite well for us. And feedback I’ve received since, it worked better without technology...But like people that I still associate with, you know, that they have everything on computer now and they have lost things. When we had it in the book on the desk which we referred to...We had this loose-leaf book and we wrote all the road tests under each column, under each name, and it’s called the 'Bible' there. Because the whole place ran by it, and I mean it was there on the desk, you didn’t move that book, it was always there. It was always there to refer to and think, now they’ve moved it onto computers since I’ve left. They’ve had it erased. Well, now you get 60 people walking in with appointments, fifteen minutes apart, and it’s erased. Like I can’t imagine how horrendous that could be. So like in those aspects, we had no need for further technology.
Childhood Experiences

One woman told of her childhood recollections of technology for enjoyment purposes. When she was younger, she used to go to her room and do her homework while listening to the radio. As she got older she watched television "all the time".

These First Nations women preservice teachers remembered technology-related experiences that influenced them both positively and negatively. Some of these experiences happened to them at work, some in educational settings and for one, it was the pleasurable act of listening to the radio as a child.

Question E1

What do you see as some of the biggest barriers to First Nations Women learning about technology?

The cited barriers seemed to fall predominantly under the headings lack of motivation, lack of access to technology, lack of time, intimidation, stereotypes, lack of role models, and problems with technology training. While
in total, there were by far more examples of problems with technology given
by the participants, more participants commented on the lack of access to
technology and the lack of time. The responses are elaborated below in order
of their mention during the study:

Lack of Motivation

First Nations women not understanding the benefits of technology to
themselves, their community or their children was seen as a barrier. One
participant thought:

Maybe if they understood that it could benefit them. [That] it
could benefit them in their community ...or their children. Then
maybe they would want to start learning about technology.

Lack of Access to Technology

Some respondents stated that First Nations women lack exposure and
access to technology and this creates a barrier to their learning about
technology. This happens in several ways. First of all, there is limited
computer use by students in reserve schools and where there are computers, often the computers are old and outdated. As one participant commented:

...On the reserve, there is no, like any of the school kids get a bit of computer use, but not a lot. And there are computers that are really old and outdated.

Lack of access and exposure to technology was also perceived to occur because women 23 years or older do not have a lot of experience with computers, as computers have been recently introduced and some of the band schools are behind. One preservice teacher stated:

And so in terms of you saying women, they’re just kind of introducing that now. And so, you have to look, maybe in ten, fifteen years. The kids that we just taught, now will...The ones that are my age, or older, I don’t think they would have a lot of experience with computers due to the fact they’ve just been newly introduced, and a lot of band-controlled schools are kind of behind.

Technological advancements happen at such a rapid pace, that bands need to keep up with the changes in technology.

Lack of Time

Time was seen as creating a barrier to First Nations women learning about technology. It was felt by the respondents that the ITEP course load is too heavy to include additional computer coursework:
They load you down enough here without going over to Kelsey or the business college and looking for additional work. This is why I’m hoping someone will [offer a class] this summer, and offer it here. The basic course or something like that, if they offer it.

The respondents added that single mothers have the responsibility of childcare which takes up time. Married women spend time handling family responsibilities and other household chores. As one participant commented, time is a barrier to First Nations women learning about technology:

...I would say that the men have it easier when they come to school. The men, because all the men do, they come to school and they do their work and they go home, they’ll eat, then they go to their room and do whatever and do their work while the wife has to cook and clean up after the kids. And do this first before they can do whatever they do, the main work. And by that time, it’s late. So, that’s why I think the family and other household chores could be a barrier to succeeding in technology.

Time was therefore perceived as an inhibiting factor in both the home and educational settings.

**Intimidation**

These preservice teachers lamented that First Nations women feel intimidated by new technologies because the technological field is seen by
some as male dominated. Men are perceived to dominate the high paying jobs and have first access to experiencing new technologies. One person reflected in depth on this issue:

"'Cause we're so intimidated. Because if a First Nations woman...we grew up, sure with respect and everything, but it was always so male dominant. The males were the ones with the high paying jobs. And the ones to first experience the new creations or technologies out there. So, when I went to use it, I thought, OK, I wasn't intimidated because it was so male dominant, but I looked at it and thought, first of all, if I could succeed. Second of all, I never had a chance to ever see anything like a computer before. It was all so new to me. And then as I got to go working with it though, it sure changed my whole attitude. I didn't think anymore that it should be just the men or that only men had experience doing this. I actually felt, 'I'll have a better [life]' at that time. But it was really, I think, just the basic barriers are that we feel so intimidated by everything that happens. First of all, that we look at the computer and we think, 'Oh, there's no way'. We're so used to our doing it the old fashioned way, just doing things on our own. And when we have the computer, now it's like, 'Oh, it sure hits a lot harder', it's a lot more intriguing. But you still...shy away from it...still a little scared about it.

Also, male teachers who do not create a safe risk-taking environment for students to learn new technologies, were seen as a source of intimidation. One woman remembered:

I think the first, most formal instruction I got about computers, was by a teacher, teacher who made a point to make everybody lesser than whom he was. You know, and that he knew everything there was to know about it. If you questioned it, it was just like you know, don't even bother because your question is not relevant here, you know. And I think that had a lot to do
with it. Like, I was so scared. Once I start going, OK, if I hit the wrong key am I going to destroy everything, or am I going to get into trouble? And then I thought, 'Well, I knew that it was so new to me, but yet having this, this male instructor who just really put everyone down and it made it a lot worse to understand or easier to accept'. So, I was so scared that you know he would get mad all the time or what not, but, that had a lot to do with it. I think it's just how you're introduced to the technology, you know, has a lot to do with how you react to it.

Males were seen as a strong contributing factor to the First Nations women's feelings of intimidation.

**Stereotypes**

Some aspect of the negative influence of gender and technology-related stereotypes were given by the respondents. They felt that stereotypes exist in which boys are naturally adept at the use of technology. Women are supposed to be homemakers and therefore have no need to learn computers. As an interviewee suggested:

I think there's always that stereotype that boys and technology link together and then like women are supposed to be like the homemakers. So then like, what are they going to use computers for? Like you know, there's always that barrier.

It was perceived that men on reserves hold these stereotypes about women.

One woman stated:
Well, I know a lot of men on the reserve are quite stereotypical about women. I know that for fact.

The participants saw men as perpetuating gender role stereotypes such as telling women they can’t do certain things:

I don’t know about band leaders, but maybe it is... You know how they say how women can’t do this and that. But I think women really can do this, if they wanted to. And if there’s a barrier, I think they should just go over it or something like that!

The imagery of First Nations women literally scaling barriers is a very powerful one.

Lack of Role Models

It was felt that there is a lack of Aboriginal women role models as computer teachers, and in addition, First Nations women do not see other Aboriginals taking computer classes. One woman recounted her personal experience:

...and there are no women teachers that do teach computers. Uh, like in grade ten, that was a woman who taught us computers, so that was good. But like I don’t think there’s enough Aboriginal women teaching computers. ...Well, when you go to a computer class you don’t see very many Aboriginals in there, anyways. ’Cause I was the only one in that class in [name of school]. And like, the only woman too. It’s all kind of like white kids that are in the classes.
Problems with Technology Training

Problems with technology training programs were seen by the respondents as a barrier to First Nations women learning about technology. Several participants commented on the need to change the existing status of technology training programs. Some of their complaints were:

a) Technology training programs are not available on reserves. Women must move off reserves to receive the training. As one participant stated:

...The only barrier would be like women back home on the reserve wanting to take this course. And there’s children, there’s home. And in order to learn something about computers, technology, you would have to move off the reserve and get into this computer program, or whatever, this kind of program.

b) There is a lack of ITEP credited computer courses. What one woman wanted was:

Well, for programs like ITEP programs, like they should have a course that’s based on computers only, with credits.

c) Technology is not integrated into other university classes.

One preservice teacher commented:
Well, as far as learning about it, there isn’t much offered within our classes.

d) A computer class is not required in ITEP.

e) A university computer class may not fall within one’s schedule. The importance of scheduling was explained by a participant:

...offered the class that involves computers. But, I mean, if that doesn’t fall within your schedule, or within your need to take that one particular class, then you don’t get it.

f) There is a lack of funding for computer courses. Single women who are students may not be able to afford to enroll in additional courses.

One woman commented:

Single gals...that are just students, no income or anything, to go and add these additional courses on, and if there’s no funding from your band, there’s a major barrier.

Technology training needs to be given a high priority for resource allocation, especially for single women.

Therefore, lack of motivation, lack of access to technology, lack of time, intimidation, stereotypes, lack of role models, and problems with technological training were perceived by the participants to be some of the biggest barriers to First Nations women learning about technology. The
respondents felt that numerous issues such as requiring technology courses in
the participants’ preservice training and bands providing more funding for
technology training need to be addressed in the area of technology training
before First Nations could learn about technology. The participants elaborated
at length on the issue of intimidation, with respondents citing examples from
their experiences of seeing intimidation as a barrier to First Nations women in
their use of technology.

**Question E2**

*What do you see as some of the biggest barriers to First Nations women using
technology?*

The stated barriers to First Nations women using technology were
categorized under the headings lack of access and exposure, lack of
canagement, lack of knowledge, lack of a good self-image, lack of
motivation, and other opinions. Lack of access and exposure to technology
was seen by the participants as the predominant barrier. The responses were as
follows:
Lack of Access and Exposure

Several women cited lack of access to technology as a barrier for First Nations women. Comments reflective of this perspective were:

Well, first of all, they don’t have access to computers. I mean, not all, but the majority don’t have access to computers.

I don’t know other than having access, You know, not having access to the equipment itself. Back on my reserve, you can find computers in the band office, you can find computers in the school. But a person can’t walk in there and say, ’I want to learn how to use this’. It’s not just being able to afford the equipment I think would be a barrier. I guess it is for everybody.

I just think it’s access to it. And access to the part where you need to learn and you need to have someone to teach.

One woman explained that she had no money to buy a home computer in order to teach her child:

...Well I know some Natives, some, do have computers at home. But I know for myself, I can’t afford one. So then, how am I suppose to teach my child to use this?

The lack of access and exposure to technology was thus seen as passing on into the next generation and continuing to act as a barrier to First Nations women using technology.
Lack of Encouragement

On reserves where there may be some access to computers and training programs, lack of parental encouragement was seen to be a barrier:

...and well, they do have computers on reserves now, too, like a computer class, so maybe it's just parental encouragement that kind of blocks you from using them.

This participant obviously felt that access to technology was not enough. Lack of parental encouragement would prevent some women from the using technology available to them.

Lack of Knowledge

Many of the participants cited lack of knowledge about how to use technology as a barrier. They felt that many First Nations women do not have the opportunity acquire this knowledge. This was seen as due in part to a shortage of classes and teachers to enable First Nations women to learn to use technology. One woman knew this from first hand experience:

...exactly like myself, the lack of knowledge to use it, you know, because they haven't had the opportunity to learn.
Lack of a Good Self-image

It was stated that First Nations women often lack confidence in being capable of learning how to use computers. The women think it is beyond them. These preservice women perceived this lack of confidence stemming from certain factors:

a) The perpetuation of gender role stereotypes. People say, "Just boys do that" or "It's a man's job".

b) Male peer pressure such as boys saying, "You're just a girl" or "Girls don't do that".

c) A self-fulfilling prophecy of failure. As one participant stated:

[stereotypical]. "You're just a girl", you know how people say. Or boys say that, 'Girls don't do that' and 'Boys just do that' or 'It's a man's job'. I think it's what people say about women that sort of makes them feel down and [then] they can't do stuff like that.

What women are told about their inability to do something because they are a woman, therefore, caused the participants in this study to "feel down" and, consequently convinced they can't do the task.
Lack of Motivation

It was perceived by the participants that some women are used to doing things the old fashioned way and want to stay with what is familiar and comfortable. One participant reflected upon her own mother:

You know, when I think of [this], I think about my mother. She’s, well, she’s forty-six now, forty-seven, oh, she’ll be forty-seven next week. She still works in the same business for twenty-four years, twenty-four years. And I think she’s been there right from, you know, the very beginning of it until now, and a lot has happened since then. And I think about computers to her. She is fascinated, but she is even more intimidated because she feels that maybe it should be the only the younger ones that should know about it or else just have access to it. Whereas, she’s gone so far in doing things her way and the way she likes to do it and it’s easier for her. She doesn’t have to feel like she is going to fail at something new, you know. So, that’s how I look at that question, when I think about how she would use it. But I think a lot of times when you’re set in your ways, it’s just how you want to handle things. Rather than trying to...like I know she would be interested, like wanting to learn how to use it. But yet she would feel a bit intimidated because she feels that it’s for the young people to use. But then she’s thinking, "Well, maybe we won’t need it because I’m already just about to finish here-my work and what not". It could be that.

Older women, therefore, may feel that learning new technologies is for younger women and that they will not need it, because they are just about ready to retire. This lack of interest in learning about technology by older women, however, may filter down to younger women by way of lack of role models or
lack of parental encouragement and thus serve to proliferate the existing barriers to First Nations women using technology.

Other Opinions

Two of the participants expressed opinions which did not fall into the above categories. They both felt that there are no barriers to First Nations women using technology:

I really don’t see a barrier for them, once they’re using it, I don’t see.

I don’t see any barriers, because my husband has taught in the band school system all along, and it’s available...technology is available there to use.

Therefore, lack of access and exposure to technology, lack of knowledge in how to use technology, the lack of encouragement to become technology users, lack of a good self-image to feel confident enough to attempt using technology, lack of motivation to get involved with technology, and other opinions, were cited by the respondents as some of the biggest barriers to First Nations women using technology. Lack of access and exposure to technology came across as one of the most formidable barriers to be addressed. It was
perceived as hopeless for First Nations women to attempt to use technology
where there is none available for them to use.

Question E3

*What gets in the way of First Nations women advancing in the area of
technology?*

Several factors were perceived by the respondents as getting in the way
of First Nations women’s advancement in the field of technology. The most
emphatically stated response was always "Men". The participants gave some
examples of how they perceived men as getting in the way:

a) Job creation is done from the male perspective.

b) If women enter male dominated jobs or politics, they are not
welcomed by men.

c) If women enter male dominated positions, they are already
intimidated by surpassing men in that field, and the addition of
learning about new technologies only adds to their feeling of
intimidation. As one participant summed up the situation:
Men! For First Nations women, first of all when you look at politics, very very few would be women in politics. Very, very few. And those that are, trust me, are not welcomed with open arms, first of all. As for the technology part, because everything has been so dominated by men, like men are the ones [that] have the jobs more or less. They create new jobs. They’re the ones that are creating them, not the women. So you throw technology in there, like computers, or what not, to them, it’s just like again they’re so overwhelmed by what’s been happening. And I think they’re still intimidated that they could actually get further or past the men, you know, and that they do that. Like I said, they’re not welcomed with open arms, you know the men. Then they’re [women] more intimidated because a woman is actually succeeding somewhere but...It has a lot to do with, I think, just men.

The strong impact of intimidation on First Nations women in the area of technology was also reflected in responses to previous questions in this study.

Lack of Access to Technology

Lack of access to computers and the ensuing lack of hands-on experience with technology was frequently mentioned by the interviewees. The following is representative of those responses:

I don’t know other than us being able to access, you know, not having access to equipment itself. Because, you know, back on my reserve, you can find computers in the band office, you can
find computers in the school, but a person can’t just walk in
there and say I want to learn how to use this. It’s just not being
able to afford the equipment, I would think would be a barrier.
I guess it is for everybody.

It was felt by the participants that the barrier to hands-on experience
was caused in part by the lack of technology courses being offered in the
reserve communities. The women, therefore, have to move away from their
home communities to take technological courses. Single women without
children find it easier to go where the training programs are. Married women
and women with children find it harder to look after the children and find a
job. If you get into a good job away from home, often the children are not
happy in this new situation. As stated by one participant:

...Single, well, I shouldn’t say that. Single women do go out and
you know they can get all these different training programs and
so on. But for married women or women with children, there’s
always the children and finding a job. If you can get into a
good job away from home, then chances are, a lot of times the
children are not happy where you move to.

The lack of access and exposure to technology was a recurring issue in this
study.
Family Responsibilities

Single women with children have many family commitments and expenses such as daycare that get in the way of First Nations women advancing in the area of technology. Employers sometimes then question the ability of these single mothers to do the job. One woman tells about the problems of her friends who is a single mother:

A lot of my friends that are my age have children, and usually [they are] single mothers. So, therefore, for them to advance in a career or in a job, things are more difficult. Like one of my friends, she works at the bank with me. She has two children, and I mean, you know, there’s daycare and then there’s this and there’s that. And cost wise she complains. She goes, ’I’ve got a raise but now my subsidy dropped or whatever, and I have to pay more. And I just get my pay stubs every two weeks’. And I think...it’s not the fact that a First Nations person isn’t capable of doing the job. It’s the fact that there are just other circumstances that could hold them back, or an employer could judge them based on these circumstances.

Sometimes these employers don’t understand cultural differences:

And then, it depends where First Nations people are trying to advance in technology. If they’re in a Eurocentric environment where they’re trying to get a job things are a lot different. And sometimes, employers don’t understand cultural differences and that kind of stuff.

The attitudes of employers towards single mothers therefore sometimes gets in the way of First Nations women.
**Stereotypes**

Stereotypes held by co-workers, especially if a woman received the position through affirmative action, can get in the way of First Nations women advancing in the area of technology. One woman knew that this negative peer pressure often starts at an early age:

Kids can be mean to you cause they already know that kind of thing blocks you just like stereotypes.

**Lack of Encouragement**

Lack of encouragement and lack of peer support may get in the way. A First Nations woman may be the only Aboriginal student in technology classes. As one participant tells, a lot of Aboriginal students, especially women, need the support of other Aboriginal students:

And from sitting back and listening to many class discussions many over the coffee cup discussions downstairs, a lot of the Aboriginal people, and especially the ladies, need the support of fellow Aboriginal people...
Lack of Role Models

It was felt that the lack of First Nations women role models definitely got in the way of First Nations women advancing. Usually there are no Aboriginal women scientists depicted in resources, only male scientist images. One woman thought this lack of role models prevented First Nations women from seeing themselves in technology-related fields:

...Well, every time you see a science show, there’s always that one male scientist. So, you never see an Aboriginal woman scientist. So that could be a block right there.

In summary, men were perceived as one of the strongest deterrents to the advancement of First Nations women in the area of technology. Lack of access to technology and family responsibilities were also emphasized. It was felt that stereotypes and stories spread by men about women not being able to achieve in technology related areas created negative self-images in women and therefore got in the way of women advancing. It was also felt that there were not enough role models to counteract the negative influences. Encouragement to advance in technology-related areas was also seen to be lacking for First Nations women.
Question F

What things do you think can facilitate or help First Nations Women to learn about and use technology?

The facilitators mentioned by the preservice teachers in response to what can facilitate First Nations women to learn about and use technology can be classified under the headings of effective role models, access and exposure to technology, the establishment of technology training programs, and the use of appropriate teaching styles.

Effective Role Models

First Nations women seeing other First Nations women who have gained some measure of success in the field of technology was seen as a necessary facilitator. Suggestions of First Nations women being hired as guest speakers to inspire women in technological fields, as well as examples of First Nations women in the field being used in awareness training sessions were given by the respondents:
Programs, or guest speakers, stuff like that could show them. Or even examples of women who have worked on technology or with technology and that have advances themselves.

It was also thought that more First Nations women being hired to teach technology classes would help.

Ease of Access and Exposure to Technology

It was stated that communities planning for and providing women with the opportunity to be introduced to and learn about technology would reduce First Nations women’s feelings of intimidation in learning about and using technology. Earlier in this study, intimidation was listed as a barrier to First Nations women. The participants felt that women know new technologies are available in the world at large through what they see advertised on television. The participants added that if bands brought this technology and workshops on how to use it to the reserve setting, the women would not see the technology as something foreign and therefore intimidating, but rather as something with which they are comfortable and familiar:

I think there are a lot of people between the ages of twenty and forty that have never really had any experience with computers and with different types of technology. And I think it’s because they’re intimidated.
Well, I think also from mass media, you see computers and you see them. And you see all this advertising for this kind of computer. And it’s just something foreign to me. I just haven’t been exposed enough to it to feel comfortable. I think, with any new thing people are automatically maybe intimidated or not really comfortable with it ’til you’ve been around something and it becomes familiar.

One participant suggested that access to computers be facilitated by establishing mobile computer labs equipped with computer teachers. Women could go to a neighbouring community to learn about technology, rather than having to move from their home community. She had seen this work:

...What’s helping, well, it’s not on my reserve. There is a new community about four miles away, four kilometers away. It’s a hamlet. And what they’ve done is they’ve brought in this computer, computer training program, where they learn about different programs. And they brought in this instructor. And I don’t know how many computers they brought in, but this is not my reserve, this is another community. But I know a lot of people on my reserve have gone there to take this...

This type of move by First Nations women was stated earlier in the study as a barrier to First Nations women learning about and using technology.

Establishment of Technology Training Programs

The establishment of technology training programs in reserve settings, university settings, and urban centers were cited as facilitators. All but one of
the respondents cited technology training programs as a facilitator. Additional comments regarding the establishment of technology training programs were also given. These are described below according to the alternative settings proposed by the interviewees:

**Reserve settings**

Bands planning for and providing workshops for women to be introduced to and learn about technology would reduce First Nations women’s feelings of intimidation in learning and using technology. The participants thought that having workshops on recent developments in technology as well as projections for the future in technology would help politicians plan and First Nations women to feel informed:

I think there should be some programs developed by either, depends if you’re a small community, by the community itself. I think a lot of bands need to start looking at technology and start thinking of the future and having maybe workshops and that kind of stuff to help whoever is interested in learning. At least give them the opportunity. Provide it for them.

...Even on the reserve, they could have a little computer programming. Just to introduce people. It doesn’t have to be those that are working, it could be anybody. It’s just to give them a sense of what’s starting to happen. And the things to look forward [to] in the future. There is going to be a lot more than we have now. Just to get a feel for what is out there.
University settings

Having more technological training while students are at university was seen by the participants as a facilitator for First Nations women to learn about and use technology:

Well, I think right here would be a good place. I don’t know why there isn’t more instruction in that field when it is part of your teaching career. When you’re looking at the College of Education here...

Urban centers

For women who do not attend existing educational programs, one participant suggested that an introductory computer course would be beneficial:

There are some people, women I know that don’t go to school. And they have the Friendship Centers and that’s suppose to be for the use of Native people. Maybe they could have a computer course, or some[thing] introductory.
Other comments

Some of the other suggestions about technological training programs included homogeneous grouping, scheduling, possible content suggestions, and starting the training at an early age. These are briefly discussed in turn below.

It was suggested that the technology training programs established to facilitate First Nations women should be culturally homogeneous. One participant thought this would help the women feel more comfortable:

Maybe if there was a program out [there] for Native women, but just for Native women, I don’t know, who are computer illiterate, I guess. 'Cause if there was a program I would probably attend or whatever. I would probably feel more comfortable if the majority was Native, Native women.

It was felt that First Nations teacher education programs were a good place to have technology training because the cultural support group achieved through homogeneous grouping, was built into the classes and therefore, would act as an available facilitator. Previously in the study, the lack of such a support group was cited as a barrier for First Nations women learning about and using technology.

University courses in technology training, offered at a time in the students’ schedules so the courses could be easily incorporated into their schedules was thought to be a facilitator. As one participant stated, convenient
scheduling of the technology training would help eliminate one of the above stated barriers, time:

If they made it more like a course. If they offered a class during the classtime because I’m at school only during classtime. And I have to try to do everything, all my assignments during the time I’m in school. Otherwise, I go home and there is no time. So they could have it, offer a class during school time.

Some of the specific content which would be useful to First Nations women also was given:

...Classes where they talk about computers...We learned in class how we can make slides, your own slides, or how can I say it? You would have little squares like this. And you would have information in that. And you could have a picture. And then you could put it on a computer. And then you print it out. Can be onto an overhead you know.

One participant commented on the need to start technology training at an early age:

At the present time, I think it is a good idea to start them right in school, at a young age. Learning about technology and that it’s accessible, and it’s easy for everybody to understand.

It was suggested that this would help girls grow up knowing what types of technology are available, knowing how to use the existing technology, and feeling confident in being able to achieve in the area of technology.
Teaching Styles Conducive to Technology

The participants thought that the way in which First Nations women are taught technology would impact on their ability to learn and use technology.

One woman related her personal experience:

Like, I’m intimidated by computers and I always call myself computer illiterate. I always grab a friend or whatever just because I know I feel better going through a really in depth workshop and going slow, step by step. And really explaining what’s going on, rather than a lot of computer teachers just jump right in assuming you have the basis of computers, and you don’t.

The participants felt that teachers being aware of a student’s background knowledge in computers and designing the assignments in accordance with this background is important to give the women a feeling of success in technology education.

In short, the preservice teachers interviewed perceived effective role models, access and exposure to technology, the establishment of technology training programs, and the use of proper teaching styles as what can facilitate or help First Nations women learn about and use technology. Extensive comments were given about technology training needs in rural, urban and university settings.
Question G

What actions do you think should be taken to empower First Nations women in the field of technology?

The participants felt the actions of establishing educational programs, support from politicians, women asserting themselves and other actions should be taken to empower First Nations women in the field of technology. These strategies are elaborated below:

Initiating Educational Programs

Education was seen as a key to empowering First Nations women. Every participant mentioned the action of establishing technology-related educational programs. As shown in the statement below, it was felt that education would provide the means with which First Nations women could become independent and self-sufficient:

I think we need to start educating our women...taking them off reserves, getting them past depending on their husbands, depending on other social systems. That anybody can do it you know...I think we need to educate more of our women, get more women out there...If they have programs to help people, like in the city of Saskatoon here. If they
were to create a program with technologies or for women to educate themselves in areas of whatever they choose to. That would be really great, because you would see a lot more people not so afraid to leave the reserves. And actually people wanting to better themselves for their families, and for their future.

Educating women to the benefits of technology so they are less intimidated and better motivated to use it was perceived as something that would help empower First Nations women. One woman told this story:

...the band office...there was this one woman there...They started computerizing...all their programs. She worked in social development and they got computerized. And then she had this assistant. She was terrified of computers. The other assistant was a guy. He didn't mind going in and learning about computers so it ended up that he knew how to run the computer inside out and program everything. And she was terrified. She's an older, older woman. And she's been out of school for quite awhile and probably just never felt OK with working with computers.

One participant also stated that women need to be educated to believe they can achieve in technologically related areas. An information campaign which bombards First Nations women with images and examples of other First Nations women who have succeeded in the area would help empower the women. As shown in the following statement, she strongly believed that this was something First Nations women needed to be empowered in the area of technology:
Just information, maybe even hand-outs or something like that. Show that you can do it. Or that First Nations women can do this or they can do that if they want to.

Support from Politicians

The action of politicians providing financial support for technological training for First Nations women through grant allocation was cited. It was believed that often other types of educational pursuits such as upgrading receive a higher priority in grant allocation:

...As it is, there’s a lot of people already asking, trying to get grants for certain things. And that would be...not too important for anybody to really push a grant, mainly just for females, but...When you ask for grants from the governments to fund, funding for certain things, courses. I know on the reserve they ask for grants that for unemployment center for getting upgrading there. And maybe when they come down to deciding to what grants can go where, maybe they’ll look at it, that computer training or whatever-technology training is not as important as getting these people upgraded to grade twelve. So I think maybe that would be kind of pushed to the end. Because they want to help the majority and not just a few.

Providing this financial support to technological programs for women could be interpreted as emotional support for the women. The respondents thought that feeling supported by politicians would help to empower the women in the field of technology:
...the politicians, because they play a big role in everything that happens on the reserves, with everybody's lives, whether they see it or not, they play a big role. I think we need a little more encouragement from them, a little more support, and making funding necessary, you know, for women to support these programs for their women. To get the women out there to better themselves, in turn better their kids, better their families, better their homes, better their communities. It doesn't take one person to change everything. Everybody has to help. And then if you have the support of the politicians who are out there trying to help their people, then really, really help, not only the men, not only the ones that need upgrading and what not, but to help everybody. And I think when you look at the university here, I just thought it, because you see, in ITEP alone, the majority are female, and that's really good to see because there is so much, you know. You look at women, they're the ones out there now getting the jobs, they're the ones out there supporting the families. And in the end, you'll see the women, they'll be the ones in power. That's what I say. My dad may not agree with me, but that's what I say.

Politicians setting priorities for their people through funding and grant allocation was seen as a way of providing support and guidance for women.

**Women Asserting Themselves**

Assertiveness was seen as something that was needed to empower First Nations women. One participant gave an example of women asserting themselves by demanding technology education:

This action, we should get in there and speak to whoever designs all these classes and say, 'Hey, get us trained in this'. And I
don’t care if it’s Aboriginal or non-Aboriginal. Get something in here so that when we go into very modern schools, and they send you to this special room for all the various types of things that they have, whether it be projectors, whether it be using the computer in the library, whether it be the Internet, whether using the encyclopedias that are on the computers and that now. Get us some classes and show us how to do it because, sure it’s fine if they, and this one, this one and this one have them at home, and they can do all that. But for everyone that has one at home and can do all that, how many don’t?

For preservice women teachers, this might mean forming a women’s student organization which could present technology-related issues to teacher training program administrators.

Other Actions

One preservice teacher stated that ITEP should require a computer class and therefore ensure that all ITEP graduates gain some confidence in using education technology:

Well, when you're taking this course, I think there should be, you should require some kind of computer class. That should be required.

Another action that was mentioned in relation to technology training was that daycare services need to be provided while the technology training was taking place:
Like I mentioned before, I think there should be some kind of workshop...Whoever handles employment aspects of First Nations women should set up workshops or something where it is easily accessible, where maybe you have a computer workshop for people and. But you provide daycare services at the same time and so there's nothing really holding them back.

It was mentioned that parental support would be a desirable action to help empower First Nations women in technology-related fields.

The actions that were perceived by the participants to be empowering for First Nations women in the field of technology were establishing educational programs, support from politicians, and women asserting themselves. Actions from politicians were seen as having wide-reaching implications.

**Question H**

*What do you think First Nations women need to exercise leadership in the field of technology?*

The participants thought that women needed support, from both peers and the community, needed assertiveness, needed technology training, needed the outcomes that education could provide such as developing self-confidence
and becoming role models in order for First Nations women to exercise leadership in the field of technology.

**Women Need Support**

Both peer and community support were mentioned:

**Peer support**

One of the participants commented that peer support while taking technology training was important:

Support. Maybe it would give you a sense of ownership or whatever if there was Native. If it was for Native women instead of the mainstream. I don’t like that word.

Technological education classes should be homogeneously grouped.

Establishing classes for First Nations women, rather than the university populace in general, would help provide such a support system for First Nations women.
Community support

One participant stated the need for community support to empower women, but at the same time, the feeling was that the community did not share the participant’s values and therefore, support from the community was unlikely:

If I were to go back to my community, I would need my community’s support. But, for women, like where I’m from, there is hardly anybody going to school. I don’t know, I don’t really feel sorry, but I feel like, you know, shaking up a few people’s heads, because I know there is more out there.

Another participant also stated the need to try to elicit community support:

I would need a lot of help, and in community support too. I would try to get the community involved with me to try to get the First Nations women into technology. Maybe they wouldn’t like the idea of it, but you have to sometimes do what’s best. You and women.

This participant recognized that receiving community support may not always be an easy task, one without opposition.
Women Need Assertiveness

In order for First Nations women to exercise leadership, one participant stated that women need to be more assertive in stating and letting others know that they are capable of achieving "something wonderful":

But for women to gain leadership in anything, they need to be a little more assertive, a little more aggressive. And letting people understand that they do have a mind, and that it can be used for really something wonderful, really great. If you just were given the chance, or if you have it in your heart, like so determined to do it, people will listen. It's just that so many people feel like the ones that are in power are the only ones that have the minds, or the ones that know what is going on. There's a lot of more people at home that have not had any formal education, but they know what they're doing. And if they were just given that opportunity to show a little bit more assertiveness, a little more aggressive, that they would probably push it and they could get others to think the way they want to think. And that they could really be so forceful, like in the area of technology or any other areas. They could be really strong there, because I think, like for myself, I understand.

This participant went on to explain that she grasps technologically related concepts faster than her husband, and he thinks that because the keyboard is part of the computer, then computers are "women's stuff", therefore, challenging the existing stereotype of men and technology as mentioned above.

She added:

They might be, but they [women] can sure prove a lot when you really want to put your mind to it. That's all.
First Nations women, therefore, were seen as needing to speak out and take 
more responsibility for their own destiny in this area.

**Women Need Technology Training**

All the participants stated that First Nations women needed technology 
training to exercise leadership in the field of technology:

A lot of knowledge about computers. That’s about it.

I think it just falls back to training. Just like anyone, anyone 
else, whether they’re First Nations or not.

**Women Need an Education**

Several things that First Nations women need to exercise leadership 
were perceived by the participants as outcomes of improved education in the 
area of technology:
Developing self-confidence

It was felt that once First Nations women had technological training they would then feel more comfortable with technology and therefore develop a greater sense of self-confidence. In commenting on self-confidence as something First Nations women need in order to exercise leadership in the field of technology, one woman stated:

...You need to learn it, feel comfortable and obviously with what you’re learning. And then once you know, like I know certain, certain subjects I’m better at. And the ones I’m better at, I can, I have, once you have the self-confidence, I think then you can be a leader.

Another respondent added that education provided through life skills training would also produce the self-confidence which First Nations women need so that they might exercise leadership:

Probably again, the introduction [to technology]. But then there’s also a lot of women out there who hesitate, who are unsure. So maybe, if there was a life skills program. A lot of these women have never left the reservation, so their life is...They lead an isolated life where their life just revolves within the community, or on their family, and so on. A lot of them need to, need to start getting out. And from there they can advance into bringing different programs for them. But first of all, they need to get that self-confidence in life skills programs. I know there is a lot of them out there I’ve taken. I did take one myself, so...
It would be impossible for the women to be more assertive as stated above if they did not first develop self-confidence.

**Becoming role models**

It was suggested by one participant that once First Nations women are educated in the field of technology, they then can find good jobs and advance in technology-related careers, and thus exercise leadership in the field of technology. Other First Nations women would see those who are successful and, by the example of these role models, feel that they too can go on to achieve in technology-related careers. She saw this progression as follows:

> [If] more women were educated, knew more about it, and were able to work right with the people, and then slowly build themselves up. And then, somebody sees them with a better job than the next person. More people will see that she could do it, well, I could do it too!

Success would breed more success for First Nations women.

In summary, the participants perceived that women needed support from both peers and the community, needed to be more assertive, needed technological training, needed the outcomes that education could provide (such as developing self-confidence and becoming role models) in order for First Nations women to exercise leadership in the field of technology.
Much of what was perceived as needed was seen as an incremental process where something like assertiveness comes from a good self-esteem which comes from education and community support. The cultural focus of the community as the pivotal point in this process was emphasized.

**Question I**

*Are there any comments or concerns you wish to express that were not addressed in the interview questions?*

While some of the participants took the opportunity to reaffirm what they felt was important in regard to First Nations women and technology, there was only one response that was not covered previously in the responses to the above questions. The need to educate parents as to what their children are learning in school about technology, so the parents don’t become apathetic about this aspect of the child’s education was given as additional information. As one respondent noted:

*The only thing I can see is, again, I’m looking back at my band. And because we just got our very first school, this is the first year in operation. And everything...I know they’re having a lot of problems. You know, not only with the children, but with the teachers, with the community, with everybody just trying to
adapt. And a lot of the people are totally missing the point, that we can perhaps generate [alleviate?] some of these anxieties that children have, and to [help them] to like technology...It would make them better people. It would exercise their thoughts and their motor skills, or whatever, they would be putting it to good use, their frustrations. Whatever they might have. And I think to support and to educate the community about what their children are learning in regards to technology. Because, we just got computers in this school this year. And I know it's a lot of first time children that will actually be using the computers. And they may go home and explain this to the parents. The parents won't understand what they're talking about. Or they won't care because they won't understand. But it would be really good if you could have, invite the parents to use the facilities like that. Not only to educate students, but their parents as well, if you want to. So don't make technology an individual thing, but make it a community thing...That's how I feel when I look back at my community. The things that I feel are important, and that perhaps might help the school. And supports from the community like towards the school and their students. So I think it takes a lot of partnership between the families and the school itself. And basically, that's about it.

Making parents aware of their children's technology education and its benefits were seen as imperative to First Nations children's educational success.

**Summary of Etic Findings**

The etic findings showed that the participants defined technology first and foremost as computer-related. Being preservice teachers, many thought of the educational aspects of technology such as computer awareness in schools or
traditional audiovisual equipment such as projectors. Some viewed technology from the cultural aspect, and thought technology used for financial gain would take away from the traditional family values.

All the participants stated they had experience with library online catalogues. Almost all of the participants had experience with computers and had used the Internet. However, none of the participants had experience with laser disks. The participants stated that their university experience was responsible for most of their learning about technology, but concern for the quality of that education was expressed. Many of the women had learned to use technology during their elementary and secondary school experience as well.

Most of the preservice teachers stated that they did not feel adequately prepared in the use of technology to go interning, where they would practice teach for a semester in schools. Some, based on their own natural ability, thought they could compensate for what they had not been taught once they were out in the classrooms.

The First Nations women preservice teachers remembered technology-related experiences that influenced them both positively and negatively. Some of these experiences happened to them at work, some in
educational settings and for one, it was the pleasurable act of listening to the radio as a child.

Lack of motivation, lack of access to technology, lack of time, intimidation, stereotypes, lack of role models, and problems with technology training were perceived by the participants to be some of the biggest barriers to First Nations women learning about technology. The respondents felt that numerous issues such as requiring technology courses in the participants’ preservice training and bands providing more funding for technology training needed to be addressed in the area of technology training before First Nations women can learn about technology.

The participants elaborated at length on the issue of intimidation. Respondents cited examples from their experiences of seeing intimidation being a barrier to First Nations women in their use of technology.

The lack of access and exposure to technology, lack of knowledge of how to use technology, the lack of encouragement to become technology users, lack of a good self-image to feel confident enough to attempt using technology, and lack of motivation to get involved with technology were cited by the respondents as some of the biggest barriers to First Nations women using technology. Lack of access and exposure to technology came across as one of the most formidable barriers to be addressed. The point was stressed that it is
hopeless for First Nations women to attempt to use technology if there is none available for them to use.

In summary of the responses about hindrances to First Nations women advancing in the area of technology, men were perceived as one of the strongest deterrents. Lack of access to technology, and family responsibilities were also emphasized. It was felt that stereotypes and stories spread by men about women not being able to achieve in technology related areas was seen to create negative self-images in women and therefore got in the way of their advancement. It was also felt that there were not enough role models to counteract the negative influences. Lack of encouragement to advance in technology-related areas was also identified as a factor.

The preservice teachers interviewed perceived effective role models, access and exposure to technology, the establishment of technology training programs, and the use of appropriate teaching styles as actions that could better facilitate or help First Nations women learn about and use technology. Comments were made about technology training needs for women living on reserves and in cities. These preservice teachers had extensive comments about their own university technology training experience.

The actions perceived by the participants to be empowering for First Nations women in the field of technology were establishing educational
programs, support from politicians, and women asserting themselves. Actions from politicians were seen as having wide-reaching implications.

The participants thought that women needed support, from both peers and the community; needed to be more assertive; needed technology training; and needed the outcomes that education could provide, such as self-confidence and role models in order for First Nations women to exercise leadership in the field of technology.

Much of what was needed was seen as an incremental process where something like assertiveness comes from a good self-esteem, which comes from education and community support. The cultural focus of the community as the pivotal point in this process was addressed.

At the end of the interview situation, most respondents restated and reaffirmed issues they had previously mentioned. The need to educate parents as to what their children are learning in school about technology, so the parents do not become apathetic about this aspect of the child’s education, was given as additional information. Once again, grass-roots support was seen by the First Nations preservice teachers as essential to First Nations women achieving in the area of technology.
Emic Findings

This section provides a summary of the information imparted during the interview situation that is relevant to this study, but did not fall within the direct responses to the above questions. This information is organized under the headings, reasons for First Nations women to learn about technology, negative aspects of technology, the importance of adequate technology training to the "image" of preservice teachers, using existing venues to hold technology training programs, the importance of technology training for women at all life stages, and patterns in responses.

Reasons for First Nations Women to Learn about Technology

Several reasons were given by First Nations women for learning about technology:

1. Some women benefit from the intrinsic reward of learning something they did not know before. Two such experiences were recounted:

   I'm always interested in learning about new things like in our Ed. Indian class this week, we learned how, well, we're starting to learn how to create our own web site.
I would think so, and then I'm not the type of person to sit back, you know, like if I don't know something, I'll go find somebody, you know, that can help me with this. I want to use this. How do you use this?

The experiences of these women not only being interested in technology, but also being able to comprehend technological concepts and possessing the ability to become proficient in its use, defies the stereotypes mentioned previously in this chapter.

2. Possessing technological skills was seen to allow women to secure interesting and well paying jobs. According to one participant, learning about technology allows First Nations women to rise above mediocre jobs such as store clerks and casino card dealers:

Like if we were to funnel some of the support that all these politicians have for, I'll make the example, the casinos that are coming up. They say they are put there to create jobs, to create an economy for our people, and everything. Sure, that's what they might be there for, but wouldn't it be better to get some of our people past, past the mediocre jobs...like being a clerk in a store, or else being a dealer at a card table at a casino. To really get them out there. Not only included in their own little reserve, or their own little First Nations' community, but get them past that.

The question, "What is progress?" is raised in this statement. This participant commented about casinos being set up to help the people, but if the quality of life of individuals is not improved and self-fulfillment is not achieved, then where is the progress?
3. Technological education allows First Nations women to build better lives for themselves, their children, their families and their community. The hopes of the women interviewed, respecting such progress for their people, were represented in the following statements:

   Maybe if they understood that it could benefit them. [That] it could benefit them in their community ...or their children. Then maybe they would want to start learning about technology.

   I think we need to start educating our women...taking them off reserves, getting them past depending on their husbands, depending on other social systems. That anybody can do it you know...I think we need to educate more of our women, get more women out there...If they have programs to help people, like in the city of Saskatoon here. If they were to create a program with technologies or for women to educate themselves in areas of whatever they choose to. That would be really great, because you would see a lot more people not so afraid to leave the reserves. And actually people wanting to better themselves for their families, and for their future.

Technological education, therefore, was seen by the participants as a key to progress for First Nations people.

4. The efficiency with which women can process information is enhanced by the use of technology. One woman had experienced this:

   And I was really fascinated by how much [more] convenient, how much more quicker, and it's so much more easier. In grade nine, the thing was typewriters, and the old fashioned. I could not handle those! But once the computers came, it was so different. My whole attitude, like even just on typing or whatever, it totally changed. Because I think that the computer is a lot more inviting, a lot more interesting to look at, rather
than just these keys on the big typewriter. I think I found myself to be really easy to learn and excited to learn these things too.

It was earlier espoused in this study that women were often not motivated to learn technology and because they did not know what it could do for them. This experience is one which could be used in the information campaign previously mentioned to help off-set this lack of motivation.

5. Computers are in the school system, in almost every classroom. Some of the participants raised the issue that women teachers, therefore, need to know how to use them:

I don’t see any barriers, because my husband has taught in the band school system all along, and it’s available...technology is available there to use.

I don’t know other than us being able to access, you know, not having access to equipment itself. Because, you know, back on my reserve, you can find computers in the band office, you can find computers in the school, but a person can’t just walk in there and say I want to learn how to use this. It’s just not being able to afford the equipment, I would think would be a barrier. I guess it is for everybody.

The preservice teachers interviewed, therefore, knew of the inescapable prospect of computers in their future careers.

6. At present, the reserve band-office, which is the center of the community, uses computers. As one participant saw it, in the future everything on the reserves will be controlled by computers:
...but I think it would be good for Native women to get more involved. I think 'cause that’s where I see the future. On the reserve, everything is, will be controlled by computers. Not everything, but, I mean, the majority of it. If they’re a clerk at the office, I’ve got a few sisters that are clerks at the office. And they know about computers and stuff like that. They have inservice programs and that. But that’s pretty well the center of the community, the office is. So, I think it’s important that Native women do learn about, like how to, even just [learn] the basics.

The prevailing thought from these participants was that First Nations women really did not have a choice in learning about technology if they hoped to be successful in the contemporary work force. Technological advancements were evident in the reserve setting, and therefore were encroaching on every aspect of First Nations women’s lives.

7. Technological education allows First Nations women to be on a more equal footing with non-First Nations women. Two women voiced it in this way:

[If] more women were educated, knew more about it, and were able to work right with the people. And then slowly build themselves up. And then, somebody sees them with a better job than the next person. More people will see that she could do it, well, I could do it too!

So that we can be as equal or as educated as those in the white communities, also.

As seen in the previous points, First Nations women need technology to be successful in the reserve setting. Now the point is being made that First
Nations women need technological expertise in order to be competitive in the job market in off-reserve settings as well.

8. When organizations adopt new forms of technology, women may be forced to learn to operate these technologies in order to keep their jobs. One woman told this story:

...[at] the band office...there was this one woman there...They started computerizing...all their programs. She worked in social development and they got computerized. And then she had this assistant. She was terrified of computers. The other assistant was a guy. He didn’t mind going in and learning about computers so it ended up that he knew how to run the computer inside out and program everything. And she was terrified. She’s an older, older woman. And she’s been out of school for quite awhile and probably just never felt OK with working with computers.

Regardless of First Nation women’s motivation or career stage, therefore, they may have no choice in becoming involved in technological education.

9. Acquiring technological capabilities allows women to move into positions of power. One participant felt strongly on this issue:

...and in the end, you’ll see the women. They’ll be the ones in power. That’s what I say. My dad may not agree with me, but that’s what I say.

For any minority or oppressed group, "being in power" is one of the optimum goals or dreams. For the above participant, technological education could help provide First Nations women with that power.
Therefore, some of the emic responses as to why women should learn about technology were insights into how technological education could provide self-fulfillment in individuals and therefore help create better, stronger communities. The inescapability of computers in First Nations women's lives also was pointed out. Feelings of equality and power were thought to be strong reasons for involvement in technological education.

**Negative Aspects of Technology**

Some examples of the "old ways" being better than computerization were cited:

1. The weapons of war we have developed to hurt other human beings are a negative aspect of technology. As one woman stated:

   ...I think it's a negative aspect how like with weapons in the war, and all the things we've developed to hurt other human beings...That kind of stuff, I'm not for that type of technology.

The First Nation's cultural value of people helping each other was therefore seen to be threatened by this use of technology.

2. Computers are to be feared. They may take over our jobs, including teaching. One woman provided this look at the future:
Well, the future is mostly on technology. Every thing is going to be changing. And you got to be with the computers. That’s what’s going to take over some jobs. Sometimes, what if, the computer takes over the jobs, the teacher too. That is what is happening now...But I think a child needs to have the person to guide you instead of just the computer. Because they can really explain everything. I’m a little fearful of computers too. But if they take over our jobs, then...

It was felt by this participant, that it is better for a child to have a person (teacher) guide her in learning rather than having a computer as a guide.

3. Information now gets lost. It didn’t before the use of computers. For one participant, sometimes the old system of human adding and subtracting was better:

...Like when I worked before, we had no need for updated technology. Because what we were doing worked quite well for us. And feedback I’ve received since, it worked better without technology. ...But like people that I still associate with, you know, that they have everything on computer now and they have lost things. When we had it in the book on the desk which we referred to. ...we had this loose-leaf book and we wrote all the road tests under each column, under each name, and it’s called the 'Bible' there. Because the whole place ran by it, and I mean it was there on the desk, you didn’t move that book, it was always there. It was always there to refer to and think, now they’ve moved it onto computers since I’ve left. They’ve had it erased. Well, now you get 60 people walking in with appointments, fifteen minutes apart, and it’s erased. Like I can’t imagine how horrendous that could be. So like in those aspects, we had no need for further technology.
Another participant related from personal experience that automated tellers sometimes go down and people cannot gain access to their bank account balances without a lot of work and time.

4. Relying on technology is in conflict with traditional family values. Taking care of the family is more important than financial benefit and profit. This perceived cultural impact was framed in this way:

I find a vast difference between the reserve, my home reserve and from the modern world. There is a big kind of gap there in technology. Sure, there’s satellite dishes and stuff. And they watch all those things, but it’s a different value system. They’re not so dependent on technology. It’s just sort of something there to enjoy, as the entertainment aspect. But it’s not like...they can live without the fax machine and without the telephone. And they do it more for...they enjoy technology more, where the other uses it to gain financially and prosper from it.

...Because too many people get too dependent on it, where they have to reflect on and see what’s important in life. And it’s still the old values like your family. Feeding your family, taking care of them, clothing them. You can survive without it...It’s something there to enjoy but you...I don’t want to become dependent on it.

Therefore, the negative applications and aspects of technology were seen as technology used in war to harm people, the fear of computers taking over jobs and becoming our teachers, the inconvenience of computers "crashing", and the possible demise of family values.
The Importance of Adequate Technology Training
to the "Image" of the
Preservice Teacher in the Classroom

Participants who did not feel adequately prepared in the use of
technology to go interning, expressed concern about how this lack of
preparedness would affect their image in front of the students they would be
teaching. They expressed some of their fears in this way:

I think I would like to know a little more before I went out. I
mean, how do you sit in front of your students and say, Well,
now, how do you turn this thing on?

I'm not scared to learn from somebody like a child or
something, if they have something to show me but I don't know
really what kind of image I would put across to my students.

...I really feel we need computers and I don't want to have the
students to know more than me when I get out there...

The issue of respect is important to any teacher. These preservice teachers
feared losing the respect of their students by looking ill-prepared as teachers.
Using Existing Venues to Hold Technology Training Programs

Suggestions were made to use existing venues in both urban and reserve settings to house technology training programs. For women who live in urban centers, but are not enrolled in existing educational programs, one participant suggested that technology training programs be established at Friendship Centers. The physical facilities already exist, and part of the mandate of the centers is to help First Nations women:

There are some people, women I know that don’t go to school. And they have the Friendship Centers and that’s suppose to be for the use of Native people. Maybe they could have a computer course, or some[thing] introductory. Have them over there, because they’re not making use of the Friendship Centers, anyways.

Two participants suggested that band-controlled schools, which often sit vacant in the evenings, would be a convenient place to hold technology-related workshops for First Nations women on reserves, provided computers were available in the schools:

Or, if there’s a school, let’s say on the reserve, there’s a school there with computers. That would be a perfect place to have, to hold a workshop...
Like we always said, the school is empty after hours. Why can’t we offer classes to adults to get them used to being on the computer...

Using existing venues is important when funding for technological training is scarce. Monies would not have to be allocated to new building projects, but rather could be used to establish new programs and hire good role models for First Nations women.

The Importance of Technology Training

for Women at all Life Stages

All stages of First Nations women’s lives, from girls to "older" women, were addressed by the respondents. The relevance of technology at each stage was seen as follows:

Girls

As mentioned as a barrier to First Nations women learning about technology, stereotypes exist in which boys are naturally inclined to learn about technology, but girls should not bother because they are expected to be homemakers. One participant addressed this age group by stating that men and
boys perpetuate gender role stereotypes by telling girls they can’t do certain things:

I think there’s always that stereotype that boys and technology are linked together and then like women are suppose to be like the homemakers. So then like, what are they going to use computers for? Like you know, there’s always that barrier.

...boys saying "You’re just a girl" or "Girls don’t do that".

In order to undo some of the negative impact of these stereotypes, another participant suggested in the discussion on facilitators for First Nations women, that girls, at a young age be taught that they are able to achieve in the field of technology:

At the present time, I think it is a good idea to start them right in school, at a young age. Learning about technology and that it’s accessible, and it’s easy for everybody to understand.

If girls at a young age are told they can succeed in technology-related areas, perhaps they will not grow-up believing the negative stereotypes that presently exist about women and technology.
Twenty to Forty Year Old Women

Many First Nations women in the 20 to 40 year-old range were seen to be intimidated by technology because of their lack of exposure to it. One woman saw this age group as being intimidated:

I think there are a lot of people between the ages of twenty and forty that have never really had any experience with computers and with different types of technology. And I think it's because they're intimidated.

As discussed under barriers to First Nations women learning about technology, women 23 years or older do not have a lot of experience with computers as computers are just newly introduced and some of the band schools are behind.

Older Women

It was suggested that older women who have not had the opportunity to learn to use recent innovations in technology should take advantage of technological training programs. This type of education would benefit these older women in their work situations, as well as for their life in general:

...for the older people...that age group that never has experience in that computers or any type of technology, I think they need to just start retraining themselves and relearning the new things that are out there on the market that could help them in their work. But it makes things a lot
easier to process like to learn things. And for their work especially, it makes it a lot easier.

As mentioned in the discussion on the barriers to First Nations women using technology, some older women who are about to retire may not be motivated to learn technology:

You know, when I think of [this], I think about my mother. She’s, well, she’s forty six now, forty seven, oh, she’ll be forty seven next week. She still works in the same business for twenty four years, twenty four years. And I think she’s been there right from, you know, the very beginning of it until now, and a lot has happened since then. And I think about computers to her. She is fascinated, but she is even more intimidated because she feels that maybe it should be the only the younger ones that should know about it or else just have access to it. Whereas, she’s gone so far in doing things her way and the way she likes to do it and it’s easier for her. She doesn’t have to feel like she is going to fail at something new, you know. So, that’s how I look at that question, when I think about how she would use it. But I think a lot of times when you’re set in your ways, it’s just how you want to handle things. Rather than trying to...like I know she would be interested, like wanting to learn how to use it. But yet she would feel a bit intimidated because she feels that it’s for the young people to use. But then she’s thinking, "Well, maybe we won’t need it because I’m already just about to finish here—my work and what not". It could be that.

Another participant recounted an incident about an older woman she knew who was intimidated by computerization:

...[at] the band office...there was this one woman there...They started computerizing...all their programs. She worked in social development and they got computerized. And then she had this assistant. She was terrified of computers. The other assistant was a guy. He didn’t mind going in and learning about computers so it ended up that he knew how to run the computer inside out and program everything. And she was terrified. She’s an older, older woman. And she’s been out of school
for quite awhile and probably just never felt OK with working with computers.

Therefore, women at all ages have technology-related needs which should be addressed.

**Patterns in Emic Responses**

Participants who cited access as a barrier to First Nations women learning about and using technology, remarked that there was no gender difference. This barrier applied equally to First Nations men. If the barrier cited was time, the participants remarked there was a gender difference. The discriminating factor for gender difference in the barrier of time was the childcare responsibilities of First Nations women:

I don’t know other than having access. You know, not having access to the equipment itself. Back on my reserve, you can find computers in the band office, you can find computers in the school. But a person can’t walk in there and say, ‘I want to learn how to use this’. It’s not just being able to afford the equipment I think would be a barrier. I guess it is for everybody.

...I would say that the men have it easier when they come to school. The men, because all the men do, they come to school and they do their work and they go home, they’ll eat, then they go to their room and do whatever and do their work while the wife has to cook and clean up after the kids. And do this first before they can do whatever they do, the main work. And by that time, it’s late. So, that’s why I think the
family and other household chores could be a barrier to succeeding in technology.

First Nations women, therefore, perceived themselves as having distinct gender-related needs in the field of technology. At other times the women saw themselves as having distinct cultural needs, as all First Nations people need better access and exposure to technology.
CHAPTER 5

SUMMARY, DISCUSSION AND
RECOMMENDATIONS

This chapter includes a summary of the study and a discussion of the
findings and how these findings relate to the literature reviewed in Chapter
Two. A series of recommendations for First Nations teacher education
programs, band-controlled schools and politicians are provided, followed by
several recommendations for further research.

Summary

In this section, an overview of the study describing the problem, the
research questions, the methodology, including data collection and analysis, the
setting and the population is provided.
The Problem

One of the main concerns of the 1972 First Nations position paper, *Indian Control of Indian Education*, was an enhancement of First Nations students' self-identity through the use of relevant resources. Much writing has been done over the past two decades on the use of culturally relevant resources with First Nations students (McEachern & Luther, 1989; Archibald, 1995). The recent technological advancement in educational resources, however, has made it necessary for First Nations students to become technologically literate in order to access information, culturally relevant or otherwise, in the wide variety of multi-media information resource formats available for use in schools. This need for advancement in the field of technology education is especially true for minority women, such as First Nations women, who are under-represented in the field (Liedtke, 1995).

The study investigated First Nation women's experiences and perceptions regarding technology. The women were asked what they perceived as barriers and facilitators to First Nations women learning about and using technology. Inquiry also was made into what actions the participants perceived as necessary for First Nations women to advance in the area of technology, as
well as what they perceived necessary for First Nations women to exercise leadership in the field of technology.

Methodology

A qualitative research methodology which could address the gender and cultural implications of the study was chosen. Rothschild (1988) insists that there is a difference between traditional male and feminist research methodology. She claims that feminist methodology is an "experiential, interactive and holistic approach" (p.69) and the traditional male approach is "distanced, detached, and exclusionary" (p.69). She adds:

When combined with language usage, an approach that is removed from human experience in this way [that is, the traditional male approach] not only omits issues of gender, but also those of race, class, and multicultural perspectives, and the connections among them. (Rothschild, 1988, p.69)

Calas and Smirchich (1992) add that:

Arguing that all scholarship reflected the perspectives of its creator, feminism promoted a view of the academy where narrowness of knowledge could only be avoided by the inclusion
of a multiple points of view, if contradictory to one another...(p.242)

Therefore, in order to give credence to the voice of the participants and examine both gender and multicultural perspectives in this study, a qualitative research methodology based on the writings of First Nations and women authors was utilized. "The use of this methodology allowed for the collection of a variety of data that may have been missed by the use of quantitative techniques..." (Jones and Wheatley, 1989, p.536). The attention to feminist research is not intended to detract from other forms of qualitative research.

**Setting for the Investigation**

In order to access First Nations preservice women teachers, the Indian Teacher Education Program [ITEP] at the University of Saskatchewan was chosen as the setting for this study. ITEP was established in 1973 (see Appendix D) at the request of the First Nations people of Saskatchewan. The need for First Nations teachers became evident as the First Nations student population increased throughout the province. ITEP students receive a Bachelor of Education degree from the University of Saskatchewan upon successful completion of the four year program (Appendix D).
The Participants

First Nations preservice women teachers were asked to participate in this study. The women selected were individuals at the pre-intern stage of their program. The participants met the following criteria:

1) enrolled in the Indian Teacher Education Program at the University of Saskatchewan.

2) at the pre-intern stage of their educational program.

In total there were one hundred and ninety Indian Teacher Education Program students. Twenty of these were at the pre-internship stage. Fourteen of the pre-interns were women, six were men. Nine preservice First Nations women teachers volunteered to participate. The participants represented the diverse background of First Nations students who attend ITEP (University of Saskatchewan, 1995). For example, a few of the participants said that they had attended band-controlled schools. One of these had attended only band-controlled schools. All but two of the participants recalled that they had attended provincial schools for at least part of their education. Two of the participants recounted that they had attended only provincial schools.
Data Collection

Conversational style interviews were used to collect qualitative data. Open ended questions based on the above research questions were used (Appendix E). The interviews were recorded onto audiotapes and subsequently transcribed.

Data Analysis

Data were reported on First Nations women's perceptions of technology, experiences with technology, perceived barriers and facilitators to change in the advancement of First Nations women in the field of technology, perceived action to be taken to advance First Nations women in the field of technology, and what was perceived to be needed for First Nations women to exercise leadership in the field of technology. Other taxonomies imposed by the participants were recognized. Data on the negative aspects of technology, suggested venues to hold technology training and the need for technology training for First Nations women at all life stages were summarized. An identification was made of patterns in the participants' responses and resurfacing issues in the data.
The anonymous transcripts and a copy of the findings were given to another researcher who had experience researching First Nations educational issues. This auxiliary researcher checked for validity in the data analysis.

Discussion

An analysis of the data showed that recurring themes emerged throughout the responses to the questions. In order to prevent redundancy in the discussion of the findings, this section has been organized according to key issues, rather than by specific questions. Issues related to cultural relevance, access, intimidation, stereotypes, and access to role-models emerge from the findings. These are elaborated in the following sections:

Issues of Cultural Relevance

Several culturally-related issues became evident in analyzing the findings. There seemed to be an overwhelming conflict among First Nations women regarding traditional roles and technology. One such issue was the culturally-defined role of First Nations women as primary and often sole caregivers for children. It was felt by the participants that the time needed to
fulfil their roles as primary caregivers consumed the time needed to be successful in the field of technology. Numerous women commented on this issue.

Because the women were expected to do the main work of child-rearing, the participants felt that they did not have the time to be successful in the field of technology. Having the primary responsibilities of childcare took away from their time as students learning about technology and these responsibilities also took away from the time First Nations women needed in order to be successful in the workforce. Both single and married women suffered from this culturally-defined role. The aspect of culturally-related values determining success in technology-related fields is brought to the fore by Stern (1995). Luhrs (1995) agrees that personal and cultural values impact on many women opting out of technology-related career tracks that seemed to leave no time for the women’s personal lives. Several suggestions for dealing with this lack of time such as establishing daycare centres for Indian teacher education programs and in work situations are woven through the recommendations listed below.

Concern regarding the perceived threat technology posed to the women’s culture was expressed. One woman felt that First Nations women would need to make choices between embracing technology and holding onto
traditional values. McIvor (1995) relates the problem this issue holds for First Nations parental support of technological education:

Moreover, parents apparently hold conflicting attitudes toward institutionalized education, seeing it as beneficial to their children's future but threatening to their culture. (p.84)

McIvor (1995) adds her own note of caution about technology education:

Educators should question assumptions about who benefits and who suffers from scientific and technological development (p.83).

This coincides with one participant's concern about the impact of the technology of casinos on First Nations people and the question of "What is progress?". The participant commented on casinos being set up to help the people, but if the quality of life of individuals is not improved and self-fulfillment is not achieved, then where is the progress? In relation to this, Fleming (1987) espouses:

The promise of a golden age through technology cannot be tolerated in any curricular proposals. Technological innovations must be presented in a humanitarian risk-benefit framework. Promising students that technological innovations, especially those labelled 'high tech', will necessarily lead to a multitude of
golden opportunities for all is a dangerous and immoral practice.

(p.42)

Thus, First Nations women must have cognizance of and be prepared to make decisions regarding what they will be relinquishing in their pursuit of economic prosperity through technology education.

Another culturally-related issue was the First Nations students' use of relevant resources that match their learning style (National Indian Brotherhood, 1972; Art More, Personal Communication, 1987). When asked what technology meant and also what were some examples of technology, the participants cited some recent developments in computer capabilities such as HyperCard and the Internet. These technologies seemed to have specific culturally-relevant learning implications (McEachern & Luther, 1989) for First Nations students. For example, HyperCard and parts of the Internet allowed information to be accessed in a non-linear way through hypertext searching capabilities. Because of this hypertext searching capability, minority students no longer have to go through computer programs in a linear progression established by the programmer, but may access and organize the information in a way that is culturally meaningful to them (Eiman Alemadi, Personal Communication, March, 1995). These recent innovations in computer capabilities are therefore extremely important in fulfilling the 1972 First
Nations policy of having relevant resources appropriate for the learning styles of First Nations children (National Indian Brotherhood, 1972).

Also, the issue of the importance of using culturally-relevant resources in motivating First Nations students to learn about technology (McIvor, 1995; National Indian Brotherhood, 1972) was evident in the number of participants who expressed excitement, when talking about their experiences learning the Internet. Specific culturally-relevant examples were given by the participants when they expressed excitement in using certain forms of technology:

    Yup, I went on the Internet! Here at the university...We're doing this thing right now about save the environment. We can go in there and you can type in 'save the environment', and it will bring a bunch of stuff and you can look and you will get ideas from the U.S.A. and around here. [You] can get neat ideas!

One participant exclaimed that you even could find out information about Pow Wows on the Internet! This finding affirms the continuing importance of culturally-relevant resources as asserted by the National Indian Brotherhood in 1972:

    ...the importance of local community control to improve education, the need for more Indian teachers, the development of relevant curricula and teaching resources in Indian schools, and
the importance of language instruction and native values in Indian education (Canadian Encyclopedia, 1985, p. 1214).

It appears, from the foregoing discussion, that when attention is paid to the inclusion of culturally-relevant assignments, the motivation for learning about and using technology is stimulated.

**Issues of Access**

Issues of access mentioned by the participants include both lack of access and ease of access to technology and technological training programs. The lack of access to technology was strongly referenced by the participants as a barrier to First Nations women learning about and using technology. Lack of access was also seen as getting in the way of First Nations women advancing in the area of technology.

Ease of access to technology was seen as a facilitator to First Nations women advancing in the field of technology. It would seem that ease of access is important in that it can facilitate not only the advancement of First Nations women, but First Nations people as a whole. For example, in order for First Nations people to be informed decision makers and advance in their quest for self-government (Canada, 1984), they need technological skills which will
provide them with access to up-to-date information about matters affecting them. As McIvor (1995) points out:

Such an approach [making technological education relevant to local issues] may help students see scientific and technical knowledge and skills as important to future community development, and as important to their future as community decisionmakers. (p.77)

Posner (1991) talks about a power imbalance between those who have knowledge and those who do not. If First Nations people do not have access to technology to access relevant information, they are the ones without the relevant knowledge and are therefore relegated to be the unempowered ones. This issue is especially important in the many treaty negotiations between various levels of First Nations government and the Canadian Federal Government. Many of these negotiations are based on historical agreements. A new CD-ROM information format has made access to historical Federal Government information regarding Canadian First Nations people more feasible (Orest Murawsky, Personal Communication, March, 1996). The quest for autonomy in decisionmaking regarding such issues as local community control of education (National Indian Brotherhood, 1972) is dependant on having the
relevant information to make informed decisions. As Andrew Paul, 1974
President of NIB stated:

...To lift up the morale of the Indians in Canada. That is your
first duty. There is no use passing legislation about this or that
if you do not lift up the morale of the people. The only way
you can lift up the morale of any people is to let the members
look after themselves and look after their people (Haig-Brown,
1988, p.28).

Access to such information through technological advances, therefore, can help
empower First Nations people in the negotiations regarding Federal government
policies affecting them and prevent them from once again falling victim to
cultural imperialism, as described by Battiste (1992).

Several examples for bolstering ease of access to technology such as
integrating technology into existing ITEP course are listed in the
recommendations included later in this chapter. As well, technological courses
aimed at specific target groups are given under recommendations directed at
politicians. It is hoped that the establishment of these training programs will
furnish access to technology for First Nations people. Possessing the hardware
and software components of information technologies such as the CD-ROM
programs mentioned above is not enough. Without training to provide the
skills necessary for the people to access and process the information, the knowledge and therefore the power, to be independent decisionmakers continues to be locked away from First Nations people.

**Issues of Intimidation**

The issue of a gender-related power imbalance fostered by men was brought out in many participants’ responses mentioning the intimidation of First Nations women in the field of technology. Rothschild (1988) would seem to concur with this assessment of the situation as she states that women and minorities are purposely excluded from technological fields through such means as intimidation, in order to maintain the existing power imbalance:

Rather, it reflects a power imbalance in the history of Western scholarship that in turn reflects an ideological and societal power imbalance. A white male elite has controlled society and scholarship, setting the framework and the categories for analysis, legitimizing what is a proper subject for study. Women are the Other who are to be repressed and controlled, as are the poor (who are more female than male), and as are the races and
cultures that are not of the white race and dominant cultures.

(p.69)

Some of the participants cited experiences from their childhood in which male teachers who saw themselves as gatekeepers to knowledge, and therefore to power (Posner, 1991) intimidated some of the First Nations women. This intimidation was effective in deterring the women from advancing in the field of technology.

First Nations women and other minority women therefore continue to be under-represented in the field of technology (Liedke, 1995) by what they see as the effective use of intimidation by the men who want to remain as holders of power. One woman commented:

'Cause we're so intimidated. Because if a First Nations woman...we grew up, sure with respect and everything, but it was always so male dominant. The males were the ones with the high paying jobs. And the ones to first experience the new creations or technologies out there...

As another participant stated, because of intimidation, First Nations women "feel down" about themselves and then they are not able to achieve in the field of technology.
Issues of Stereotypes

The issues concerning stereotypes were mentioned by the participants as barriers to First Nations women learning about and using technology. The issues concerning stereotypes were also perceived as what gets in the way of First Nations women advancing in the field of technology. In relation to this, Bland (1995), Stern (1995) and Luhrs (1995) state that there are subtleties in our cultures which influence women to opt out of technological fields because of how they see themselves in relation to technological careers.

One such subtlety is the influence of stereotypes perpetuated in negative stories about women and technology. This influence may begin early in life when girls are encouraged to play with dolls rather than technological toys (Stern, 1995). The participants felt that often these stereotypes and stories, however, are not so subtle in their influence. Men and boys were described by the participants, as telling girls they should not do certain things and that the girls were expected to grow up to be housewives. Technological training would therefore be a waste of time for the females.

The participants felt that men hold stereotypes about women and technology and that men believe that boys are naturally more adept than girls at technological endeavours. Bland (1995) would seem to concur that the
North American cultural myth that men are more capable in the area of computers than women indeed may be a barrier to the advancement of women in technology education. She states:

Computers are machines. In general, all Americans believe that males possess inherent ability to master mechanical objects and to operate them with maximum efficiency. This myth is perpetuated by females who defer to male assistance when they encounter technical difficulties with either software or hardware. (p.30)

It seems evident that symbols in our culture influence the way we think about ourselves and, therefore, may limit our potential and influence the choices women make for themselves.

**Issues of Access to Role Models**

The issues of role models mentioned by the participants included the lack of role models and the presence of effective role models. The lack of role models in the field of technology was cited by the participants as furthering the myth that women are not technologically adept. The lack of role models was mentioned as a barrier to First Nations women learning about and using
technology and also as what gets in the way of First Nations women advancing in the field of technology. The lack of role models was viewed by the participants as preventing First Nations women from seeing themselves in technology-related fields:

...Well, every time you see a science show, there’s always that one male scientist. So, you never see an Aboriginal woman scientist. So that could be a block right there.

On the other hand, the presence of effective role models was mentioned as a facilitator to First Nations women in this area, and becoming effective role models was mentioned as an area in which First Nations women need to exercise leadership in the field of technology. First Nations women seeing and becoming effective role models was suggested by the participants as a remedy for the negative influences of the male intimidation and the effect of the negative stories and stereotypes concerning women and technology. First Nations women teaching technological education courses was seen by the participants to be a good start to effective role-modelling. Pictures of, and references to, women in technology-related careers in learning resources also were mentioned by the participants as being helpful:

Programs or guest speakers, stuff like that could show them. Or even examples of women who have worked on technology or with technology and that have advanced themselves.
These findings concur with the findings in a study by Jones and Wheatley (1989), "The image of the male laboratory scientist is still a major presence in the science classroom. Males were depicted in 93% of all graphic representations in classrooms" (p.540). A subordinate role for women is reinforced by use of such male dominated images (Sardo-Brown, 1995). In specific reference to computer software images, Canada & Brusca (1991) also reported that: "When female characters do appear in the video games, they are cast in secondary roles or are portrayed as helpless and in need of rescue from the male heroes" (p.48).

In summary, many issues, especially culturally-related ones, emerge from the findings. First Nations women are expected to be the primary caregiver for families, and therefore, do not have enough time or energy left to be successful in technological pursuits. Students who learn via culturally-related technologies are better motivated in technological learning. However, if a person knows that she has limited or outdated technological skills because of limited access to technology, this knowledge leads to poor self-esteem which in turn leads to low achievement in the area of technology. Other issues discussed above, such as intimidation of First Nations women by men; negative stories and stereotypes about women and technology; and the lack of effective role models also negatively affect the self-image of First
Nations. King (1989) would contend, that these women believe what others
tell them they are. It should be noted at this time that lack of positive role
models is damaging not only to women and minorities, but to mainstream
white males as well. As Jones and Wheatley (1989) assert, "The male students
find their own stereotypes reinforced by the adult model that represents
knowledge and status" (p.542). They in turn then find it more difficult to work
with minority groups such as women. Therefore, if this gender-related power imbalance is not ameliorated, society as a whole suffers.

Recommendations

Based on the findings from the research and the issues discussed above,
several recommendations have been identified. These recommendations have
implications for Indian teacher education programs, band-controlled schools,
and politicians. Recommendations for further research have also been
provided.
Recommendations for Indian Teacher Education Programs

A number of recommendations for First Nations teacher education programs can be drawn from the findings of this study. Several recommendations for First Nations teacher education programs were directly related to the culturally-related issue discussed above in which First Nations women's culturally-defined role of principal child care-giver posed a barrier of time to their succeeding in the field of technology. These recommendations are as follows:

Credited computer courses should be added to preparation programs. Since time was cited as a barrier to First Nations women learning about and using technology, a computer course with credits would mean that the preservice teachers would not need to spend extra time learning computer skills.

Course loads should be reduced in order for students to include additional computer coursework. Simply adding a computer class as listed above would not necessarily provide access for the preservice teachers if they already have a full slate of required classes. If the course load is not reduced when a required computer course is added, once again, time would create too formidable a barrier to the women.
Relevant institutions should ensure that university computer classes fall within students’ schedules. As a remedy to the barrier of time, the participants suggested that computer classes offered should not require the preservice teachers to make an extra trip to campus nor require them to arrange for additional childcare. A computer class offered during the regular scheduled time period of classes would facilitate access for women into technological education. Daycare centres were recommended by the participants for both single and married mothers in educational as well as work situations. In order to help alleviate the time constraint caused by childcare as mentioned in the above discussion on culturally-related issues, First Nations preservice women teachers need childcare support such as daycare centres.

It also was recommended that a computer class should be required in the preservice teachers’ program. As one participant stated:

Maybe if they understood that it could benefit them. [That] it could benefit them in their community...or their children. Then maybe they would want to start learning about technology.

By facilitating this, programs would emphasize the importance of technological education to preservice teachers.

Another recommendation was that technology should be integrated into other university classes. The participants felt that a quick introduction to a specific form of technology was not adequate to have the preservice teachers
become proficient in the use of that technology. The integration aspect also
would allow preservice teachers an opportunity for application of the
technology in their educational experience.

The aspect of integrating technology into other courses becomes
especially important when one realizes that the library online catalogue, which
was the only technology everyone in Question B4, said they had experienced,
was introduced to the students through a librarian from the University giving a
workshop which was integrated into other classes the students were taking.
This type of integration of technological education would therefore seem to be
the most effective way to have students learn about, and gain first hand
experience with, technology.

Recommendations for Band-Controlled Schools

In addressing the issues of access as discussed above, the participants in
the study recommended that band-controlled schools should facilitate computer
use by the students. One way for First Nations women to become proficient
users of technology, is for them to learn it as children. The participants felt
that having access and exposure to computers would help provide
self-confidence for the students in the field of technology.
In response to the issues of intimidation, the participants recommended that band-controlled schools update computers. The preservice teachers felt that if the technology available to the school students is outdated, young women graduating from band-controlled schools will not be technologically adept in the world at large. Knowing that they possess outdated skills will only serve to foster the women's feelings of intimidation.

**Recommendations for Politicians**

In clarifying the issues of access, the major recommendations for politicians, inherent in the participants' comments, focused on the politicians placing technology education higher on their agendas. First, the First Nations women in the study recommended that politicians should ensure funding for computer courses. The women felt that sometimes technology training is not given a high priority for resource allocation by politicians. Sometimes technology training for preservice teachers is considered as personal gain rather than seen as beneficial to the students these women will teach. Single women who are students may not be able to afford to enrol in additional courses because of the lack of funding.
It also was recommended that classes and teachers should be provided by the politicians to enable women to learn to use technology. The preservice teachers mentioned that in order for First Nations women to advance in the field of technology, other significant people in their lives also needed various types of technology related education. Several educational programs, therefore, were recommended by the participants for implementation. The topics and the various target groups for the programs are outlined in Table 1.

It also was recommended that politicians initiate on-reserve technology training so that women are not required to leave the reserve community to seek technology training or a better job.
### Table 1

**Recommendations For Technology-Related Training Programs**

<table>
<thead>
<tr>
<th>TARGET GROUP</th>
<th>TOPICS</th>
</tr>
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</table>
| 1. Women     | a) The importance of acquiring technological skills  
b) Computer literary skills  
c) Development of self-confidence in using technology  
d) Unlearning technology-related gender stereotypes  
e) Life-skills development to be able to cope with moving to urban centres to take technology training or be hired for a technology-related job |
| 2. Politicians | a) Benefits of First Nations women’s technology training to the community as a whole  
b) Importance of providing funding to First Nations women’s technology training programs |
| 3. Parents   | a) Aspects of technology which female students are learning in school |
**Recommendations for Further Research**

A review of the findings indicated several areas for further research. In order to help negate some of the barriers indicated by the participants, or to implement some of the facilitators and actions indicated, research could be conducted into positive stories and role models for First Nations women, Distance Education Technology needs of First Nations women, policies regarding community access to band-controlled school resources and the level of personnel available to implement and support technology education in band-controlled schools.

A collection of stories embracing positive images of women involved in technological pursuits could be undertaken. Publication of these stories and their distribution to schools could help to ameliorate the negative impact of the present stories regarding the failure of women in technological situations.

In an exploration of the concept of "women and work", videotaped interviews of First Nations women discussing their overcoming barriers and advancing in technologically related careers could be collected. These personal accounts would be helpful to other First Nations women suffering from intimidation and negative self-images engendered by the negative stereotypes of women and technology. As well, Acker (1995) suggests, "...hardly any studies
have investigated exactly how teachers deal with the interaction between home and work". The videotapes may be especially useful in high school situations where young First Nations women are embarking on career choices which will affect their future.

Inquiry could be made into the Distance Education Technology needs of First Nations women living in non-urban settings. While Distance Education is used in many non-urban settings throughout Saskatchewan, most of the participants were not aware of Distance Education Technology. None listed it as a facilitator or as an action to help First Nations women in the area of technology education. The use of Distance Education Technology also could help ameliorate the problems that arise with women leaving the reserve setting to seek technology education.

Inquiry could be made into policies regarding community access to band-controlled schools’ technology and facilities for technology education. The participants who had technology on their home reserves stated that it usually was not accessible to the general public.

The level of personnel available to implement and support technological innovations in band-controlled schools could be explored. Even if technology is made available and the students are encouraged to use it, the technology remains inaccessible if there is a lack of competent teachers to properly teach
the students or technical support staff available to keep the systems up and running.

Synthesis

In rendering a synthesis to the information provided in this study, two particular points emanate. One point deals with access to technology, the second with role models.

First, a cycle of helplessness and hopelessness (Figure 2) exists for First Nations women. This cycle is maintained by a lack of access to technology. If First Nations women are denied access to technology, they are denied access to information and the knowledge that information could provide. Posner (1991) concludes that people who are kept from knowledge are also kept from power. Battiste (1992) adds that by First Nations people being denied power, they are subjected to both cultural and cognitive imperialism. By being the unempowered ones and suffering cultural and cognitive imperialism, First Nations women continue to be denied access to technology and therefore are denied access to knowledge and to power. By being denied access to technology, an endless cycle of helplessness and hopelessness for First Nations
Figure 2. An endless cycle of helplessness and hopelessness.
women is established and maintained (Figure 2). In order for this cycle to be broken, ease of access to technology for First Nations women must be facilitated.

The second point in the synthesis entails the equation of circumstances which lead to a lack of role models (Figure 3). The preintern women felt that the compounding of negative images in stereotypes, plus the negative images in stories, plus the negative influence of the intimidation by men lead to First Nations women opting out of technology-related careers. Thus, there is a shortage of role models for First Nations women to emulate.

The participants, however, did not view this equation of circumstances which leads to a lack of role models as a hopeless situation in which First Nations women were powerless to affect change. The participants encouraged personal responsibility for First Nations women. The participants commented that if there is a barrier to First Nations women becoming role models, then women should "just get over it". The participants felt that First Nations women should take action to remedy the lack of role models by becoming more assertive and demanding technological training for themselves.

The participants also explicated that by becoming role models, First Nations women could take away some of the negative influence of the
No Access to Technology

= No Knowledge

= No Power (Posner, 1991)

= Cultural Imperialism (Battiste, 1992)

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Figure 3. An equation of circumstances which lead to a lack of role models.
intimidation by men, take away some of the influence of negative stereotypes and take away some of the influence of negative stories. By becoming role models, the women would help to eradicate some of the negative factors involved in the equation of circumstance which perpetuates a lack of role models.

Thus, a synthesis of the study yielded a cycle of helplessness and hopelessness, maintained by a lack of access to technology. Facilitating ease of access to technology would help break this cycle. Also emanated from the study was an equation of circumstances which leads to a lack of role models for First Nations women. First Nations women taking actions to become role models would serve as a remedy for the lack of role models in technology education.

Concluding Comments

This study is unique, not only in its original contribution to knowledge, but also in its bringing together diverse issues regarding technology and the challenges it brings to women. The study also portrays the confluence of change and the ongoing struggle for women in society to assume a more instrumental role in their own and society’s future. The discussion of the
issues in this study is further influenced by the consideration of cultural minorities. By the concomitant treatment of these three matters of importance, a more effective tapping of First Nations women as a human resource may be effected, particularly when specific courses of action can be identified for First Nations women, their families, their communities and for society as a whole. It is hoped that this dissertation may contribute in some way to this being realized.
References


Canada. Indian and Northern Affairs Canada. Alberta Region (1986?).

Speaking of Indian affairs. Ottawa: Indian and Northern Affairs Canada.


APPENDIX A

FIRST NATIONS EDUCATION ACT
AN ACT RESPECTING EDUCATION FOR THE
INDIAN NATION IN THE FEDERATION OF SASKATCHEWAN INDIAN NATIONS

SHORT TITLE

1. This Act may be cited as the Indian Education Act, 1986,
   _______________ Indian Nation:

INTERPRETATION

2. In this Act:

   (a) "Allowable School Age" means the age at which a
       student may participate in the education system;

   (b) "Band" means the members of the _______________ Indian Nation;

   (c) "Board" means the Board of Education of the __________
       _______________ Band;

   (d) "Chairman" means the Chairman of the Board of
       Education;

   (e) "College" means a post-secondary institution that
       provides university level programs of study, or in
       which research is undertaken;

   (f) "Compressed School Year" means a school year in which
       the total number of school days is less than those in a
       school year, but during which the same amount of
       instructional time is taken by the students;

   (g) "Compulsory School Age" means having attained the age
       of seven (7) years, but not having attained the age of
       sixteen (16) years;

   (h) "Crown" means the Crown, Her heirs and successive
       Governments;

   (i) "Tribal Council" means collectively the ______
       Bands of the ___________________________ Tribal
       Council;

   (j) "Tribal Council Board" means the __________________________
       Tribal Council Chiefs Board of Education;
(k) "Tribal Council Government" means the Indian Governments of the Tribal Council Chiefs;

(l) "Education system" means those educational facilities, education programs and services that are delivered by the Indian Government of the Band under the authority of this Act;

(m) "Elder" means an Elder of the Indian Nation;

(n) "Federal Government" means the Government of Canada;

(o) "FSIN" means the Federation of Saskatchewan Indian Nations;

(p) "Fiscal Year" means the 12 month period between April 1 and March 31.

(q) "Guardian" means a person who is not the natural parent of a child and who is responsible for the care of the child;

(r) "Guardian Agency or Guardian Institution" means any agency or institution that assumes the status and role of a guardian for any child or student in its care;

(s) "Indian Nations Government" means any other form of Indian Government, whether it is at the Band, Tribal, District, Agency, Territorial, Provincial, National, or International level;

(t) "Indian Government" means the Chief and Council of the Band;

(u) "Institute" means a post-secondary institution that provides training in the trades, professions and arts, and other community related training, or in which research is undertaken;

(v) "Post-school" means a program of studies offered to students who are not participating in either the N/K-12, College or Institute programs;

(w) "Pre-school" means those children whose age is below the established age for entry into nursery or kindergarten;
(x) "Program" means a course of studies offered to students at the pre-school, N/K - 12, College and Institute levels;

(y) "Provincial Government" means the Government of the Province of Saskatchewan;

(z) "School" means the lands, physical facilities and programs offered to students enrolled in the education system under the authority of this Act;

(aa) "School Year" means the total number of school days between the period from July 1 to June 30.

(bb) "SIEC" means the Saskatchewan Indian Education Council;

(cc) "Student" means any person enrolled in an education program under the authority and jurisdiction of this Act;

(dd) "Treaty" means the Treaty No. _______ agreement entered into between the __________ Indian Nation and the Crown guaranteeing schools and the Treaty right to education for the Band and individual members of the Band, no matter where their place of residence may be.

PURPOSES AND PRINCIPLES

3. The purposes and principles of this Act are:

(a) The structures, organizations and procedures confirmed by this Education Act will be governed primarily by Indian law and custom and connected with Indian traditions and culture, unless Anglo-Canadian law and custom are expressly adopted by the Indian Government of the __________ Band.

(b) To implement our Treaty with the Crown under the jurisdiction and authority of the Indian Government of the ______ Indian Nation. Should any inconsistencies or conflicts arise between our Treaty and this Act, the Treaty shall take precedence over this Act in all instances.
(c) To promote the following principles:

i. that in all matters the Band is paramount;

ii. that in all matters the Band and its Indian Government is sovereign;

iii. that the Indian-Crown Trust relationship shall be maintained and is grounded in our Treaty No._________ with the Crown, the Royal Proclamation of 1763, the Constitution Act, 1867, Section 91(24) and the Constitution Act, 1982, Sections 25 and 35(1) which recognize and entrench our Treaties.

(d) To establish an education system to serve the educational needs of the __________ Band that is consistent with the spirit and intent of our Treaty with the Crown.

(e) To empower Indian Government with the right to provide the facilities, programs and procedures, equipment and personnel necessary to the management and operations of the education system.

(f) To establish educational standards and curricula that promote and enhance the education of Indian students.

(g) To provide Indian Government with the powers to delegate or share certain rights and responsibilities for the education of students from the __________ Band.

(h) To provide the Indian Government of the __________ Band with the power to recognize and support the authority and jurisdiction of Indian Education Acts and other Indian Government legislation, enacted by other Indian Nations Governments.

(i) To provide Indian Government with the power to promote the creation and implementation of an academic, social and emotional environment, at all levels, that is consistent with Indian culture, society, values, beliefs, history, traditions and languages.
BOARD OF EDUCATION

4. A Board of Education will be established, that will be subject to the authority of this Act as prescribed by the Indian Government of the __________________________ Band.

APPOINTMENT OF THE BOARD OF EDUCATION

5. (a) The Board shall consist of _______ members appointed by Indian Government, or elected by the Band membership;

(b) The Chief of the Band shall be an ex-officio member of the Board.

QUORUM AND VOTING

6. (a) A quorum of the Board shall be __________________;

(b) A resolution or regulation passed by a majority of the members present at a regularly scheduled or duly posted meeting of the Board, at which a quorum is present, binds all members of the Board.

TERMS OF OFFICE

7. A person appointed as a member of the Board shall hold office for a term not exceeding _______ years.

VACATION OF OFFICE

8. A person ceases to be a member of the Board when he/she:

(a) submits his/her resignation to the Indian Government; or,

(b) is removed from office by Indian Government.
VACANCIES

9. (a) Vacancies on the Board shall be filled according to Article 5(a) above;

(b) A vacancy among the appointed, or elected, members of the Board does not impair the authority of the remaining members of the Board to act, provided that a quorum of the Board is in attendance;

(c) Where the vacancies on the Board render the Board ineffective, as determined by the Board and the Indian Government, the Board and the Indian Government shall determine an interim arrangement.

VALIDITY OF ACTS OF THE BOARD

10. Provided that each member of the Board has been properly appointed, or elected, and that they have not been disqualified for any reason:

(a) All Acts of the Board are valid; and,

(b) The Acts of a Committee of the Board are valid.

CHAIRMAN AND VICE-CHAIRMAN

11. (a) The Board shall, from among its members, appoint a Chairman, who shall report to the Indian Government.

(b) The Board shall, from among its members, appoint a Vice-Chairman, who, in the event of the disability or absence of the Chairman, has all the powers and shall perform all the duties of the Chairman.
12. The Members of the Board:

(a) May be paid remuneration for the performance of their duties as members of the Board; and,

(b) May be paid travelling and living expenses while absent from their ordinary places of residence and in the course of their duties as members of the Board.

(c) The rate in 12(a) and (b) shall be prescribed by Indian Government.

13. The Board shall make regulations subject to the review of Indian Government, regarding the calling of its' meetings and regulating the conduct of business at them and, generally, regulating the conduct of its' business affairs.

14. The Indian Government of the Indian Nation shall, in consultation with the Board of Education, appoint one (1) representative to the Board of Education of the Tribal Council.

15. The Board of Education may, in consultation with Indian Government appoint, and may financially support, staff of the education system to associations concerned with aspects of Indian education as sanctioned by Indian Government.
POWERS OF THE BOARD

16. The Board may, subject to the approval of the Indian Government of the __________________________ Band:

(a) Maintain and keep in good order and condition the real property of the education system and erect or lease and maintain such buildings and structures thereon, as in its opinion are necessary and proper.

(b) Develop regulations for the appointment, classification, promotion, suspension, transfer, remuneration, reclassification or removal of staff of the education system, or by resolution, delegate to a Committee of the Board, the power to classify, promote, suspend, transfer, reclassify or remove staff;

(c) Notwithstanding 16(b) above, not appoint, classify, promote, suspend, transfer, reclassify, or remove from the staff, or delegate to a Committee of the Board, to undertake these activities, if such acts are in contravention with any section of this Act;

(d) Develop regulations for the design, development, delivery, monitoring and evaluation of programs, policies and procedures, with particular emphasis on the degree to which the achievement of a quality education program is being attained;

(e) Act as a trustee of any money, or property given or bequeathed for the support of the education system;

(f) Develop financial regulations to:

i. lay out and expend such sums as it considers necessary for the support and maintenance of the education system;

ii. borrow money from any person or enter into overdraft arrangements with a bank or treasury branch.
(g) Not incur any liability or make any expenditure that will have the effect of impairing the financial status of the Band, unless an estimate thereof has been submitted to and approved by the Indian Government;

(h) In accordance with this Act, provide for the establishment of educational facilities, standards and programs of instruction, on or off Reserve, or change existing educational facilities, standards and programs of instruction as the Board considers necessary and this may include the creation or establishment of institutions at the post-secondary level;

(i) Enter into joint or service agreements for the education of students from the ________________ Band;

(j) Enter into an agreement with another Board of Education to establish a Joint Board responsible for the education of students from the ________________ Band;

(k) Make provision for the establishment and maintenance of advisory councils, exhibitions, scholarships and prizes;

(l) Pass bylaws and regulations consistent with the powers conferred on the Board by this Act.

**DUTIES OF THE BOARD**

17. Notwithstanding items (a) to (n) listed below and other sections of this Act, the Board of Education will have the overall authority and responsibility for the direction and operation of the education system. In particular, the Board shall:

(a) Subject to the approval of Indian Government, employ whatever staff is required for the delivery and management of the policies, programs and business of the Board;

(b) Prepare and transmit estimates of expenditures and revenues to Indian Government. The estimates are to be prepared in a format as prescribed by the Indian Government of the Band;
(c) Prepare and transmit, in a format approved by Indian Government, an annual operating plan and a monthly variance report;

(d) Prepare and transmit to Indian Government, for its approval, regulations respecting financial and personnel matters;

(e) Subject to the approval of, and as prescribed by Indian Government, appoint one or more auditors to audit the accounts and transactions of the education system at least once in each school year;

(f) Keep proper records and minutes of its proceedings and such other records as may be required;

(g) Take responsibility for the creation and implementation of curricula and programs of study that promote Indian culture, society, values, beliefs, history, tradition and language;

(h) At least once per year, conduct, in a manner approved by Indian Government, an operational and program review of the education system which documents student progress, system accountability, individual course relevance and effectiveness, promotion standards, grade and class achievement, and parent-teacher communication processes and submit the results to Indian Government;

(i) Conduct, or have conducted, on an annual basis, in a manner approved by Indian Government, an evaluation of all personnel employed by the Board and submit the results to Indian Government;

(j) Make available, subject to the approval of Indian Government, the regulations of the Board of Education;

(k) Encourage parental involvement by keeping the members of the __________________________ Band informed of the business and activities of the Board;

(l) Ensure the business and affairs of the education system are conducted in accordance with this Act and its accompanying regulations;
(m) Subject to the authority of Indian Government, secure protective insurance coverage;

(n) Formulate policies and regulations for the education system concerning its organization, administration, and operation. This shall include, but not necessarily be limited to:

i. Establishment of a Code of Ethics for the Board;

ii. Relations with other Indian Governments and Band Boards of Education, Elders, Guardian Agencies and Guardian Institutions, Tribal Council/Agency Governments and their Boards of Education, Indian Nations Governments, the Saskatchewan Indian Education Council, Boards of Governors of Indian controlled Colleges and Institutes, Provincial and Federal Governments and their agencies and representatives;

iii. Establishment of the School Year and Compressed School Year;

iv. Relations with parents, students and guardians, including policies and regulations regarding an appeal process that can be utilized by parents, students and guardians;

v. Relations with all personnel employed by the Board of Education;

vi. Establishment of Professional Development activities;

vii. Operation of a Library Resource Centre;

viii. Establish academic, curricular, capital and financial standards that reflect the needs and objectives of Indian education for students from the Indian Nation.
ACTION AGAINST THE BOARD

18. Notwithstanding Article 8(b), no action shall be brought against the Board, any Committee of the Board, or against any member thereof, on account of anything done or omitted to be done by them in the performance of their duties as prescribed under the authority of this Act.

PAYMENT OF TAXATION

19. Based on the authority and jurisdiction of our Treaty with the Crown and the Principles of Indian Nations Government, the Board and the education system will not be liable to any form of taxation by any Government other than the Indian Government of the _________________ Band, for property real and personal of the education system.

AMENDMENT

20. The Indian Education Act of the _________________ Band will be reviewed at least once in each calendar year. All resolutions proposing an amendment will be presented by Indian Government to the Band Membership for its approval or disapproval.

COMING INTO FORCE

21. This Act comes into force on the day of approval of this Act by the _________________ Indian Nation.

SUPERCEDED LEGISLATION

22. This Indian Education Act will be superceded only by the Constitution of the _________________ Indian Nation.
APPENDIX B

CHRONOLOGY OF KEY EVENTS

IN FIRST NATIONS

EDUCATION IN SASKATCHEWAN

[Source: Saskatchewan Education, 1991]
Appendix B: Chronology of Key Events in Indian and Métis Education in Saskatchewan

The following chronology, which indicates key events in the history of Indian and Métis education, is adapted from A Five Year Action Plan for Indian and Métis Curriculum Development (1984). Events from 1984 to the present have also been included.

1910
- Métis and Non-Status Indian children excluded from federally funded schools.

1938
- attention of provincial officials to the fact that there are approximately 3,500 Indian and Métis children in Saskatchewan largely unschooled.
- provincial officials believed schooling of Indian and Métis children a federal responsibility.

1939
- lack of educational facilities in northern Saskatchewan.

1941
- first provincial grant to a school district for the schooling of Métis children for, in the words of the provincial official responsible, "temporary relief to the symptom of this problem of economic maladjustment".
- question raised as to most appropriate curriculum for Indian and Métis children - regular or vocational with modified academic.
- parental and board opposition to the attendance of Métis children in local schools.

1942
- survey of Métis children.
- grants to schools initiated - $2.00 per child per month.

1944
- election of the Cooperative Commonwealth Federation (CCF) government which took responsibility for Métis education.
- introduction of the philosophy of equal educational opportunity.

1944-54
- time of expansion of facilities and services to Indian and Métis population.
- in southern Saskatchewan, schools built by Department of Social Welfare in Métis communities.
- in the north, as a result of the Piercy Report, the provincial government took responsibility for organizing, financing, maintaining, staffing and supervising northern schools.
- the schooling was based on the idea that the lives of the Métis could be made "better", more useful, happier, better integrated into the "mainstream" society.
- assumption that Métis children lacked culture, proper society and economy.
- schools aimed at "civilizing" the whole family.
- teachers - moral uplifters and social development agents.
- desire of provincial government to control Indian education in the province as well as Métis education.
- by 1954, material success - virtually all children in school, schools built, teachers and teacherages provided.
• however, by 1954 - realization that other factors were at work - inequalities, rather than increased equality, became apparent.
• northern educational investments fell behind the south.
• academic success of northern students called into question.
• discontinuity between northern Indian and Métis and northern non-Aboriginal and Métis communities - in Indian and Métis communities - higher pupil-teacher ratios, more language and cultural differences; high lower grade population; age/grade displacement, early school leaving.
• question raised "Education for What?" - loss of traditional skills; not sufficient education to get non-traditional jobs in the north or to migrate to the south.
• no high schools had been built in the north.
  1955
• acceptance by provincial government officials of the importance of starting any education from a knowledge of the culture of the people.
• beginning of cultural awareness training for members of northern Saskatchewan work force, in particular for Department of Natural Resources.
  1960
• damning studies of Indian and Métis education in Saskatchewan.
• education provided labelling "Schooling for Failure".
• horrifying statistics.
  • two-thirds of all students in the north - one or more grades behind where they should be.
  • one-quarter of all northern students were in grade one; two-thirds of all northern students were in grades one to four.
• school leaving occurred at the grade five level.
• failure rate in grade one in 1960 was 49% in northern schools.
• teachers in Indian and Métis schools were found to have low academic credentials; were southern-oriented and not trained to work with northern children's cultural experience.
• the provincial government proposed: integration; remedial programs to supplement the child's experience; relevant curriculum; and special training for teachers.
  1960s
• co-ordinated efforts.
• vocational programs established.
  1961
• cooperation of the provincial government, the federal Indian Affairs Branch and the University of Saskatchewan for the creation of a summer course entitled "The School Program in Indian and Métis Communities".
• the class placed special emphasis on the basic cultural patterns of the Indian and Métis and was aimed at providing teachers with better insight into the cultural background of their students.
  1961-62
• beginning of era when federal and provincial superintendents interviewed and employed students from the Teachers' College and College of Education for the next term. These teacher trainees were then required to do practice teaching in northern or federal schools. The practice teaching served as a prerequisite for the next year's summer course. "The School Program in Indian and Métis Communities". The fall orientation courses and in-service workshops were all geared towards increasing the teacher’s understanding
of the child, his/her home and community.

1963
• implementation of another summer course, primarily for northern teachers, on curriculum adaptation.
• another study documenting "the general inadequacy of the present program" in Indian and Métis education in Saskatchewan.
• Northern Education Committee and representatives of the Independent Order of the Daughters of the Empire (IODE) made recommendations to the Minister of Education for the improvement of northern education.
• Superintendent of Schools for Northern Areas appointed to supervise classrooms, in-service recruitment and placement; an assistant superintendent charged with classroom supervision and northern student counselling.
• Textbook and Curriculum Committee established to study the application and adaptation of provincial courses of study to northern areas.
• approval given for central northern school board to be composed of Indian and Métis representatives from different communities to advise and assist in overall education program.
• creation of Indian and Northern Education Program, University of Saskatchewan.

1964
• creation of the Indian and Northern Curriculum Resource Centre at University of Saskatchewan to provide basic library on all facets of Indian and Métis life, audio-visual materials, reproduction facilities, and resource personnel to assist teachers in the field in curriculum research, adaptation and creation.
• organization of the Society for Indian and Northern Education (SINE) to form a network of people in the field and publish a journal on Indian and Métis education "The Northian".

1965
• change of Education Act creating the Northern School Board consisting of three Métis residents of the north, three civil servants and two observer-members all appointed by the Minister.

1969
• establishment of the Federation of Saskatchewan Indians (F.S.I.) Education Task Force to investigate Indian education in Saskatchewan.

1970s
• diffusion of efforts.

1971
• Department of Education hired Native Education Program Consultant to provide liaison with all those in province involved in the education of children of Indian and Métis ancestry.
• Advisory Committee on the Education of Children of Indian and Métis Ancestry (formerly the Textbook and Curriculum Committee) continued to meet in the early 1970s. The committee co-operated with the Federation of Saskatchewan Indians (F.S.I.), Saskatchewan Métis Association, the Department of Indian Affairs (D.I.A.) and Saskatchewan Teachers' Federation (S.T.F.) in initiating a number of special projects in schools in the province with large Indian and Métis enrolment.
• Master's thesis studying evidence of prejudice in social studies textbooks concluded that the elementary school students in Saskatchewan know and understand the Indian dimension of Canadian history and culture.
• an Indian Languages program established - pilot projects teaching Cree as a
second language set up.

1972
- Indian Control of Indian Education position paper issued by the National Indian Brotherhood (officially adopted as policy by the Minister of Indian Affairs, February 2, 1973).
- creation of the Saskatchewan Indian Cultural College.
- Local Initiatives Project on Curriculum Development from an Aboriginal Perspective begun through the Indian and Northern Education Program.
- Indian and Métis curriculum materials developed and published.
- development of an Industrial Arts Curriculum adapted to the needs of northern students.
- supplementary unit for grade 8 Social Studies course on Indian history and culture.

1973
- Indian Teacher Education Program (ITEP) implementation at the University of Saskatchewan - the first teacher training program in Saskatchewan for Indian and Métis people - first adaptation of the content of university courses to meet the needs of Indian and Métis students.
- after September 1972, functions of the Department of Education in the north were transferred to the Department of Northern Saskatchewan (D.N.S.).
- northern schools followed the provincial curriculum; however, the Academic Education Branch, D.N.S. was empowered to make changes to existing courses at all grade levels to meet the needs of northern students - teachers, the board, consultants and the branch worked together on curriculum development - the initiative could come from any of the participants.

1974
- two major projects launched in northern Saskatchewan - a Cree language project and ethno-history research program to compile a general history of the Indian and Métis people of northern Saskatchewan.
- instructional services consultant employed by D.N.S. to design and produce learning materials appropriate for northern studies.
- innovative grants instituted by D.N.S. to encourage individual schools to develop approaches to meet the particular needs of the community children.
- increasing number of schools on Indian reserves being taken over by local bands.
- Saskatchewan Human Rights Commission study showing that Indians were treated unfavourably in Saskatchewan Social Studies textbooks, characterized as "savage, hostile and warlike".
- government appointees to the Northern School Board were replaced by northern appointees.

1975
- research by F.S.I. showed that by grade two, 50% of Indian students has failed at least once; 93% of Indian students dropped out by grade 12; Indian students were generally one to three grades behind non-Indian students of the same age in math and reading skills; Indian students in integrated schools remained socially segregated.

1976
- establishment of the Northern Teacher Education Program (NORTEP).
- Northern School Board became an elected board with nine members representing different northern regions.
- Division III Social Studies Course on the people of northern Saskatchewan
offered in five communities - "mini-course" for Division II in production.

- initiation of the Saskatchewan Indian Community College in Saskatoon.
- creation of the Saskatchewan Indian Federated College at the University of Regina - offered Bachelor of Arts in Indian Studies.
- Northern Teacher Aide Training Program in northern Saskatchewan.
- Indian and Métis Education Committee established in Regina to access needs and recommend programs.

Late 1970s

- Bachelor degrees offered in Indian Art, Indian Social Work, Indian Education, and Indian Management and Administration; Bachelor of Education (Indian Education) offered through the Saskatchewan Indian Federated College.
- F.S.I. report showing the rapid growth of Indian and Métis school enrolments, but the gross inadequacy of reserve school facilities.
- organization of the Prince Albert District Teacher Training Program through the University of Regina - first community based teacher training.
- Saskatchewan Indian Cultural College researched, produced, published and piloted a variety of materials on Indian history, culture and contemporary life - resource people from the College toured schools offering culture days - 1979-80 school year - 93 visits.
- Saskatoon City Community Liaison Committee to investigate the conditions of Indian and Métis people in the city - task force on education.

1980-84

- creation of the Gabriel Dumont Institute of Native Studies and Applied Research Inc. - an educational institution controlled by the Métis and Non-Status people of Saskatchewan.
- beginning of the Saskatchewan Urban Native Teacher Education Program (SUNTEP), a program of the Dumont Institute aimed at the needs of urban Indian and Métis people.
- creation of the Saskatchewan Indian Education Commission by the chiefs of the Federation of Saskatchewan Indians.
- Joe Duquette High School started as an alternate school of Saskatoon Separate School Board - curriculum place heavy emphasis on Indian and Métis culture and values.
- re-emergence of the Department of Education as an initiator of programs for Indian and Métis people - Community Education Branch created with mandate to make urban schools more instrumental in combatting problems of the urban poor.
- community schools designated and developed with new emphasis.
- HECTEP - Home Economics Teacher Education Program established to provide qualified home economics teachers for northern Saskatchewan schools.
- Task Force on Northern Education set up by Minister of Northern Saskatchewan - reported successes of past decade, but concluded progress scattered - student absenteeism, dropout, academic deceleration so high still call into account very nature of education in north.
- Indian and Métis Curriculum Review Committee established by Department
of Education to recommend principles for curriculum development for Indian and Métis students, to facilitate development, production and implementation of Indian and Métis-oriented curriculum, and assist in co-ordination of activities in development of Indian and Métis curriculum.

- organization of the Indian and Native Education Council, a special subject council of the S.T.F. - annual conference AWASIS to facilitate and support teachers and others in providing quality education for all Indian and Métis students.
- unit of Métis people developed for Northern Lights School Division No. 113 (formed in 1979 from Northern School Board).

Initiatives from 1984 to the Present

1984
- An evaluation of the Community Schools program showed significant progress was being made toward achieving program goals.
- Directions recommended that policies and procedures be formulated to ensure the unique needs of northern, Indian, and Métis students are met.
- Background Paper on Native Education commissioned for presentation to the Minister’s Advisory Committee on Curriculum and Instruction Review as a ‘state of the art’ statement on Indian and Métis education.
- The Indian and Métis Education Development Program was established by Saskatchewan Education as an incentive program to encourage the development of innovative Indian and Métis education programs.
- Saskatchewan Education maintains its commitment to a permanent advisory committee on Indian and Métis education first with the Indian and Métis Curriculum Advisory Committee (1984) and subsequently with the Indian and Métis Education Advisory Committee (1989).

1985
- Inner-City Dropout Study re-affirms that dropouts of Indian and Métis students in inner city Saskatoon and Regina are unacceptably high.
- Reaching Out and a subsequent Plan of Action resulted from a series of consultations with individuals and organizations directly involved with Indian and Métis education.
- Community Schools Association formed to promote, support, and develop community schools through networking, publications, and an annual conference.

1988
- Rationale and Recommendations for the Teaching of Indian Languages in Saskatchewan Schools presented to the department by IMCAC.

1989
- Northern Education Task Force Report presented to the Minister in November.
- Task force on multiculturalism recommended that Saskatchewan recognize Aboriginal peoples as the original multicultural society in the province.

1990
- Saskatchewan Indian Federated College graduated its first educators from its revised on-campus program.
- Community Education Branch renamed the Indian and Métis Education
Branch.

- Indian bands continue to assume responsibility for education of students living on reserves (over 90% of schools on reserves were band controlled in 1990-91).
- Consensus Saskatchewan speaks to the vision for 2005 of there being equity between Aboriginal and non-Aboriginal students receiving grade 12 diplomas.

Initiatives Underway

- The Universities of Regina and Saskatchewan have initiated a restructuring of their education programs and include cross-cultural education as a component of new courses.
- Museum of Natural History, Regina, commences work on the First Nations Gallery.
- Wanuskewin, a Northern Plains Indians Interpretive Centre is being developed near Saskatoon.
APPENDIX C

CRITERIA FOR EVALUATION OF TECHNOLOGY RESOURCES
CRITERIA FOR EVALUATION OF TECHNOLOGY RESOURCES

Rothschild (1988) suggests certain criteria for evaluating technology resources:

- Is the language gender-neutral?
- If so, does the language reflect gender awareness, or is the language superficial reflecting no change in approach or thought?
- Are women included, if they should be, in the subject matter?
- If so, how are they included? Are they appendages, or are they integrated into the subject matter? Do they appear only in stereotypical roles? Are their traditional roles accepted uncritically?
- If women are the main focus of the study, how are they treated? Are they symbols or a category apart, or do they emerge as real and diverse human beings?
- Does the study question or lead to questioning of the traditional approaches to the study of technology that have omitted feminist perspectives? Does it build gender awareness and present a diversified approach? (pp. 69-70)
APPENDIX D

THE

INDIAN TEACHER

EDUCATION PROGRAM

UNIVERSITY OF SASKATCHEWAN

[Source: University of Saskatchewan, 1995]
HISTORY - TRENDS: 1972 - 1995

1) The Indian Teacher Education Program began in 1972-73 as a two and a half year program leading to the Standard "A" Certificate. The initial years were represented by Aboriginal teacher aides who came to the program to upgrade their credentials to teacher certification.

2) When the Province and the College of Education moved to the three year Standard "A" certificate program, ITEP did likewise. This change also gave students an opportunity to exit after meeting the three year Standard "A" requirement, or continue on to attain the four year Bachelor of Education degree and Professional "A" Certification.

3) Once the Province mandated a four year Bachelor of Education-Professional "A" program, ITEP followed this initiative, and students entering the program after 1984 were required to meet all aspects of the four year program.

4) ITEP was designed in such a way that all students would take the prescribed professional courses for certification. One of the built-in features of the program was to have students receive one of their areas of specialization in Indian and Northern Education. They then had the option of selecting an academic area of specialization or another professional area.

5) Early discussion and agreements with the College of Arts and Science set the stage for the development of "enhanced" courses in English, Native Studies and History. The course materials were enriched to provide more relevant and meaningful learning experiences for Aboriginal students. In the past year the Native Studies Department has been receptive to the requests of ITEP and offered two specific courses for students in ITEP. These courses were NatSt 110.6 (Introduction to Native Studies) and NatSt 211.6 (Native Literature). Students can select areas of specialization that they feel are of importance and interest to them. New specializations are being addressed every year. This broadens the opportunity for students to select an area of study that needs to be addressed in the various school systems in which they will be teaching.

6) The placement of interns in band schools has given the various band systems the opportunity to become directly involved in the preparation of First Nations teachers.

It has also given the children exposure to excellent role models. The interns are now able to work in the school system where they will want to teach in the future. It is also a way of contributing to the preservation and enhancement of the language. ITEP has attempted to place as many students as
STATEMENT OF GENERAL OBJECTIVES

The Indian Teacher Education Program is designed to meet the following objectives:

1. Prepare Aboriginal people for classroom teaching and provide an educational experience which will give individuals more freedom to specialize in specific areas in education.

2. Increase the number of Aboriginal teachers in Saskatchewan and other parts of Canada who will meet the social and cultural needs of the Aboriginal community, as well as contribute to school systems where Aboriginal and non-Aboriginal children make up the student population.

3. Give Aboriginal adult students an opportunity to develop the necessary academic skills to be successful in completing all requirements for the B.Ed. degree and a Professional "A" Certificate.

4. Prepare students to function effectively in a cross-cultural setting and overcome any barriers that might hinder this process.

5. Reinforce cultural awareness and identity so the teacher will encourage students to appreciate their heritage.

6. Implement opportunities whereby Aboriginal students can become active members of the teaching profession and promote a learning environment that fosters a positive self-image.

7. Inspire students to be role models so that other Aboriginal students will realize their potential and recognize the contribution they can make to their community and society at large.

8. Develop and implement relevant materials and techniques in the classroom that will better serve the needs of Aboriginal children.

9. Give students an opportunity to broaden their educational horizons and provide avenues for them to specialize in areas that are becoming new focuses in education.

10. Provide students with an opportunity to obtain an area of specialization in an Aboriginal language that will allow them to instruct and communicate in this area and, consequently, be instrumental in the preservation of the language.
11. Provide Aboriginal students with a Resource Centre that will facilitate and enrich the general offering of the College, and provide for students specific and relevant materials to enhance the content related to Aboriginal culture.

12. Provide Aboriginal students with an Elder-in-Residence Program that will enhance their spiritual and cultural understanding.
APPENDIX E

INTERVIEW SCHEDULE
INTERVIEW SCHEDULE

A conversational style semi-structured interview:
Questions:

A. First, I want to find out about you as a person. I’m interested in your background in First Nations education.

1. Where did you go to school?

2. Did you attend only band-controlled schools, or provincial schools as well?

3. If you attended both systems, what grades did you attend band-controlled schools?

B. Now I’m interested in finding out about your perceptions of or what you think about technology.

1. What do you think I mean when I say “technology”?

2. What does it mean to you?

3. Can you give me a few examples?

4. Have you had experience with:
   - computers?
   - CD-ROMs?
   - Laser disks?
   - Multimedia?
   - Library online catalogues?
   - The Internet?
   - Distance education technology?
   - Other types of technology?

C. Next, let’s discuss where you got most of your information about technology.
1. Where did you learn about:
   - computers?
   - CD-ROMs?
   - Laser disks?
   - Multimedia?
   - Library online catalogues?
   - The Internet?
   - Distance education technology?
   - Other types of technology?

2. As you are entering your internship, do you feel adequately prepared in the use of the technology in schools and classrooms?

   D. What personal experiences have had an impact on your attitude toward your use of technology?

   E. Now let’s discuss what you think about First Nations women’s use of technology.

   1. What do you see as some of the biggest barriers to First Nations women learning about technology?

   2. What do you see as some of the biggest barriers to First Nations women using technology?

   3. What gets in the way of First Nations women advancing in the area of technology?

   F. What things do you think can facilitate or help First Nations women to learn about and use technology?

   G. What action do you think should be taken to empower First Nations women in the field of technology?

   H. What do you think First Nations women need to exercise leadership in the field of technology?

   I. Are there any comments or concerns you wish to express that were not addressed in the interview questions?
APPENDIX F
APPLICATION TO
ETHICS COMMITTEE
RESEARCHER'S SUMMARY

1. PROJECT TITLE: First Nations Preservice Women Teachers' Experiences and Perceptions Regarding Technology

2. SUBMITTED BY: Dr. Patrick Renihan
   DEPARTMENT: Educational Administration, College of Education
   STUDENT: Frances Luther, #576391
   PROGRAM: Ph.D. in Educational Administration

3. ABSTRACT:

   The purpose of this study is to gain an indepth understanding of First Nations preservice women's experiences and perceptions regarding technology. Individual conversational style interviews will be used to guide the researcher in answering the following questions:

   A. What are First Nation women's perceptions of technology?

   B. What are First Nation women's experiences with technology?
C. Where do First Nations women get most of their information about technology?

D. Do First Nations teachers feel adequately prepared in the use of technology?

E. What personal experiences impact on First Nation women’s attitude toward the use of technology?

F. What are some of the barriers to change in the advancement of First Nations women in the field of technology?

G. What are some of the facilitators to change in the advancement of First Nations women in the field of technology?

H. What action needs to be taken to empower First Nations women in the field of technology?

I. What do First Nations women need to exercise leadership in the field of technology?

**Academic Validity**

This project is a worthy area of investigation because information is needed to help ameliorate the present status of First Nations women and their relationship to technology. The recent technological advancement in educational resources has made it necessary for First Nations students to become technologically literate in order to access information, culturally relevant or otherwise, in the wide variety of multi-media information resources formats available for use in schools. This need for advancement in the field of technology education, however, is especially true for minority women, such as First Nations women, who are under-represented in the field (Liedtke, 1995).

4. **FUNDING:**

No additional funding is being provided for this research.
5. **SUBJECT:**

First Nations preservice women teachers will be involved in this study. The women selected will be individuals at the pre-intern stage of their program. The participants will have met the following criteria:

1) must be enrolled in the Indian Teacher Education Program at the University of Saskatchewan.
2) must be at the pre-intern stage of their educational program.
3) must have come through the band-controlled school system.

In total there are one hundred and ninety Indian Teacher Education Program students. Twenty of these are at the pre-internship stage. Fourteen of the pre-interns are women, six are men.

The administrator of the Indian Teacher Education Program was contacted in regard to the nature of this study. The researcher will request voluntary participation in the study of the preservice teachers.

6. **PROCEDURES:**

The researcher will utilize an ethnographic qualitative approach to investigate the experiences and perceptions of First Nations preservice women teachers regarding technology. A conversational style interview approach will be used to collect data. The interviews will follow a set of predetermined guiding questions (Appendix D). The data collected will help provide a collective mirror (Blackler, 1992) for First Nations educators and policy makers to use in decision making surrounding issues of First Nations women and technology.

7. **CONSENT FORMS:** (See Appendix G)

8. **OTHER COMMENTS:**

*Risk or Deception:* There are no known risks resulting from participating in this study.
Confidentiality: Interview - See "Combined consent, validation and release form" in Appendix G. Confidentiality and anonymity will be ensured through the use of pseudonyms in reference to the participants in this study.

9. FEEDBACK AND DEBRIEFING:

The subject will have the opportunity to review transcripts of audiotapes and the researcher’s summary of the information collected from the interview. A summary of the findings will be available to the participants upon request.

The Research Proposal has been reviewed and is recommended for approval.

_____________________________  ________________________________
Signature of Advisor            Signature of Student Researcher

______________________________
Signature of Department Head
APPENDIX G

CONSENT AND RELEASE FORMS
UNIVERSITY OF SASKATCHEWAN

Consent Form for Interview

Study Title: First Nations Preservice Women Teachers’ Experiences and Perceptions Regarding Technology

Researcher: Frances Luther

Objective: The purpose of this study is to gain an indepth understanding of First Nations preservice women’s experiences and perceptions regarding technology. This study may assist educators and administrators in making decisions regarding technology instruction in First Nations controlled educational institutions.

Procedure: The voluntary subject will be asked to participate in an interview of approximately 60 minutes.

Benefits: By contributing to this research, the participant will be making a significant contribution to the understanding of First Nations women and technology education.

Risks: There are no known risks resulting from participation in this study. Anonymity of the participants will be honoured in summary data collected, as well as in the conclusions. All information gathered through the interview process will be confidential.

I,_________________, understand that this research has been approved by the University of Saskatchewan Advisory Committee on Ethics in Behavioral Science Research and I agree to participate. I also understand that I am free to withdraw from or refuse to participate in this study at any time.

_________________   ___________________   Date: _______

(Participant’s Signature) (Researcher’s Signature)
UNIVERSITY OF SASKATCHEWAN
Validation and Release Form for Interview

Study Title:  First Nations Preservice Women Teachers' Experiences and Perceptions Regarding Technology

Researcher:  Frances Luther

Ethical guidelines will be observed throughout the study to safeguard the interests of each participant.

1. Participants will be informed as to the purpose and nature of the study.

2. Participants will participate voluntarily.

3. Each participant will have the opportunity to review the researcher's summary of the information collected from the interview to determine the accuracy of that summary. Changes will be made as deemed to be appropriate by the participant.

4. To guarantee anonymity of the participant, pseudonyms will be used in any references to the data.

5. The information collected during the course of the study will be used for academic purposes only, and the confidentiality of the data will be maintained with respect to all other purposes.

6. Only the researcher and her advisor will have access to the data on the tape recordings, transcripts of tapes and observational field notes generated during the study. The participant will have access, upon request, to the information which he/she has personally provided. Further information pertaining to the research may be obtained from the researcher (Tel.608-785-8134/507-895-4104) or the researcher's advisor, Dr. Patrick Renihan, Department of Educational Administration, University of Saskatchewan (Tel.306-966-7019).

Participant's Signature:______________________

Researcher's Signature:______________________ Date:__________
APPENDIX H

LETTERS OF REQUEST FOR

AND GRANTING OF PERMISSION
706-108 Cedar Drive  
La Crescent, MN 55947  
18/11/95

Orest Murawsky, Director  
Indian Teacher Education Program  
University of Saskatchewan  
Saskatoon, SK

Dear Orest:

I am writing to request your consent to conduct research for a doctoral project with Indian Teacher Education Program students.

My dissertation topic is: First Nations Preservice Women Teachers’ Experiences and Perceptions Regarding Technology. As First Nations women are under-represented in the field of technology, this study will provide an in depth understanding of First Nations preservice women’s experiences and perceptions regarding technology. The findings may assist educators and administrators in making decisions regarding technology instruction in First Nations controlled educational institutions.

The participation of the students will be voluntary and the confidentiality and the anonymity of the responses will be ensured. The procedures for this study will be approved by the Ethics Committee of the University of Saskatchewan.

If you have any questions regarding this research, please contact me at 608-785-8134. You may also contact my advisor, Dr. Patrick Renihan, at his office, 306-966-7019 for further clarification or information.

I would appreciate your permission to conduct this research during the months of January to April, 1996.

Thank-you for your consideration of this request.

Respectfully yours,

Fran Luther
MEMORANDUM

TO:        Fran Luther
FAX:   (608) 785-8119
FROM:  Orest Murawsky, Director
        Indian Teacher Education Program
DATE:  15 January 1996

It was nice to see you last week. I am pleased that your initial interviews went so well. We will be pleased to participate in your study and will give you whatever support we are able to give. I am sure your work will benefit First Nations education. Feel free to contact us whenever you are able to do more interviewing and I will set up the ITEP boardroom for you.

Fran, if you need a more formal go ahead from ITEP just let me know. Good luck with your research.

/ef

cc: Dr. P. Renihan