THE DIGITAL DIVIDE:
ABORIGINAL DISTANCE LEARNING OPPORTUNITIES

Portfolio and Research Project in Distance Education & E-learning
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Introduction

The digital divide has been an important issue since the 1990s when the Internet became common in North America. The amount of internet users increased in America from 3% in 1995 to 80% in 2010 (Chen, 2013). The digital divide effects the ability of aboriginal people to participate in distance learning opportunities. Horton (4004) defines the digital divide as the gap between people who have access to computer technologies and the people who do not have this access. Access is defined as when a person is able to use “Information and Communication technologies at their home, or in their community” (Anthony & Keating, 2012, p. 1). An aboriginal person is an individual who has genetic and cultural ties to a First Nation, Metis or Inuit community (King, 2008). Distance education is when students study in the place of their choice and without face-to-face contact with an instructor (Bates, 2005). The audience of the research are distance education universities and aboriginal leaders. Distance education institutions want to increase their aboriginal student population. The Assembly of First Nations (A.F.N.) who represent six hundred aboriginal chiefs in Canada support increasing post-secondary opportunities in their communities (Simon, Burton, Lockhart & O’Donnell, 2014). The aboriginal people in North America will benefit from the results of this research paper. The digital divide in aboriginal reservations is caused by geographic isolation, political, and cultural differences between aboriginals and the dominant culture.

Research Goals.

- The purpose of the research paper is explain the various causes of the digital divide in aboriginal reservations in Canada and the United States.
- This paper will use current research to discuss the social-economic, political and cultural reasons for the digital divide in rural areas.
The research paper will make recommendations that inform post-secondary institutions about how to reach more aboriginal students.

**Research Questions.**

- What are the possible solutions of the digital divide that affect North American aboriginal people? (Primary Question)
- What practices are used at distance education universities to decrease the effect of the digital divide on aboriginal people? (Secondary Question)
- How does the digital divide affect the aboriginal community’s ability to access distance education institutions? (Secondary Question)
Abstract

Rural aboriginal communities in North America are affected by the digital divide. The digital divide is the gap between people who have access to technology and the people without this access. People who live in rural areas are more likely to be affected by the digital divide than people who live in cities. Most aboriginal populations are located in rural areas of Canada and the United States. These remote areas are affected by the digital divide due to low population, lack of infrastructure and higher service costs. Distance education is needed in rural areas because it gives students the opportunity to attend school and live in their own community.

Aboriginal people are underrepresented in post-secondary institutions. The audience of this research is distance education institutions and aboriginal communities in North America. This paper uses case studies, journal articles, books and websites to discuss the causes of the digital divide in aboriginal reservations. The methodology of this research paper is a review of the current literature during ten years from 2004 to 2014. Post-secondary institutions can increase access to distance learning by using various technology and delivery models.
Literature Review

**Digital Divide.**

Several authors have tried to define the concept called the digital divide or the technology gap. According to Horton (2004), the people in society who are affected by digital divide include African-Americans, Hispanics, Aboriginal people, high school dropouts, single-parents, and low-income families. Because they are not computer literate or have no Internet access, they fall behind. Cullen (2001) said, the digital divide is also defined as the number of people who are unable or who choose not to use computer technologies. These disadvantaged individuals fall further behind the rest of the population.

**Aboriginals.**

There are several definitions of North American aboriginal or indigenous people. According to the government of Canada (2011), an aboriginal person refers to a status or non-status Indian. Another source defines aboriginal people as the First Nations, the Metis and the Inuit (Government of Canada, 2011). The Inuit are the aboriginal people of the Arctic and the Metis are aboriginals of mixed racial heritage. Many aboriginal communities use the term First Nation in the name of their community. Hatcher (2008) states that aboriginal people are different from other ethnic groups, because they are the original inhabitants of the land. Scholars divide North American aboriginal cultures in Canada and the United States into ten groups that include the Arctic, the Subarctic, the Northeast, the Southeast, the Plains, the Southwest, the Great Basin, California, the Northwest Coast, and Plateau (History, 2015).

The traditional roles of distance education is increase access to education and promote equity. Millions of people live in rural areas that do not have access to the Internet, because of
low population density, lack of infrastructure and higher service costs (Cullen, 2011). According the Statistics Canada (2011), there are 5.1 million aboriginal people in the United States and 1.4 million aboriginal people in Canada. The digital divide affects aboriginals because most of the 600 First Nations in Canada and the recognized 560 aboriginal communities in the United States live in reservations (I.W.G.I.A., 2008). The purpose of distance education is to decrease the education gap between aboriginal people who live in cities and aboriginal people who live in rural areas.

**Case Studies.**

There are several case studies about specific aboriginal groups in Canada or the United States. The case studies show the need for distance education in aboriginal reservations. The case studies are in chronological order from the least recent research to the most recent to show how research about rural aboriginal communities and distance education opportunities have evolved over the years. A common theme in the research studies was the issue of access to technology such as the Internet. The research focused on several cultural groups including aboriginals from the Arctic, the Southwest, the Northeast, and the Plains. Some of the case studies focused on adult aboriginal learners while other case studies were focused on aboriginal youth. The researchers presented various reasons for the digital divide among rural aboriginal communities.

**Kawaliak, Wells, Connell and Beamer**

The first case study was conducted by the Bow Valley College and the Ministry of Advanced Education and Technology. The researchers studied the learning needs of aboriginal adult students, aged 18-54, who live on a reservation in Alberta, Canada (Kawaliak, Wells, Connell & Beamer, 2004). The purpose of this case study is to create a model of distance
learning for Aboriginal students who attend post-secondary institutions. The four themes from the research data are the following: providing onsite education, success factors of students, instructor-student relationships, and barriers to technology (Kawaliak et al. 2004).

There is an educational gap between aboriginal people who live in the city and aboriginal people who live in rural areas. There are few post-secondary institutions that are located near aboriginal communities and aboriginal learners do not want to leave home to attend school (Kawaliak et al. 2004). Aboriginal people drop out of post-secondary institutions due to the lack of transportation to urban areas. Aboriginal people are underrepresented in post-secondary education, for example, only 42% of aboriginals attend high education compared to 68% of other Canadians (Kawaliak et al. 2004). Distance education has the potential of providing students in rural areas with access to qualified instructors. Aboriginals in Alberta do not have access to the Internet and personal computers.

The researchers in this case study developed a model for distance education in aboriginal communities. There should be more communication between post-secondary institutions and aboriginal communities. Post-secondary institutions need to make aboriginal communities aware of e-learning. Colleges and universities need to be aware of the limitations of Internet access in rural communities. There will be more opportunities for rural learners to enrol in blended programs that combine face-to-face and online learning (Kawaliak et al. 2004). The researchers discussed the importance of providing student support services for the aboriginal adult learners. Learners need physical and virtual spaces for independent and group work (Kawaliak et al. 2004). The aboriginal students will also have access to I.T. support and online etiquette training (Kawaliak et al. 2004).
The model presented in the case study can be applied to other aboriginal populations. Aboriginal people in rural areas are affected by the digital divide because reservations have less infrastructure. The environment in reserves can prevent the installation and maintenance of the Internet in rural communities (Kawaliak et al. 2004). The model presented gives rural aboriginal more input into their post-secondary education. The researchers worked with an aboriginal leader from the Piikani Nation for knowledge of First Nations culture (Kawaliak et al. 2004). The researchers dealt with issues that could be applied to other aboriginal groups.

**Subramony**

In 2003-2004, researchers conducted a case study about the Eskimo community in Borealis, Alaska, United States. Inupiat Eskimos are part of the Arctic cultural group. This case study discussed sociological issues that affect equitable access to technology (Subramony, 2007). It was a case study about the Boreal Slope School District in Alaska. The research argued that minority groups need to make the transition from being a technology consumer to being a technology producer (Subramony, 2007). Most discussions about the digital divide tend to focus on providing low-income communities with more access to computers and other technologies (Subramony, 2007). The researchers observed teachers, students, parents and leaders in the Eskimo community.

The researcher wrote a case study about the Boreal Slope School District (B.S.S.D.) in Borealis, Alaska. The researcher was an external scholar who was not affiliated with the school board. The researcher is from a non-Western culture and had sympathy for the Eskimo community who were trying to adapt to technology (Subramony, 2007). The B.S.S.D. runs ten technology-based K-12 schools in Borealis, Alaska. The researcher interviewed 46 people who included 25 Inupiat Eskimos and 21 white-Americans. The researchers conducted six classroom
observation sessions at Boreal High School (Subramony, 2007). The researcher collected
documents from the school such as enrollment records, course offerings, syllabi, lesson plans,
learning aids, instructional materials and student work (Subramony, 2007).

This case study focused on the cultural differences between Eskimo culture and the
dominant Western culture. The Eskimos are a cultural group who are trying to adopt to Western
technologies such as the Internet (Subramony, 2007). A technology-based school is rare for a
rural aboriginal community. Borealis, Alaska is a community in the Arctic that differs from
other communities. The digital revolution makes the digital divide worse by dividing society
into information haves and information havenots (Subramony, 2007). The Eskimos are part of a
traditional agricultural-hunting society. Aboriginals are trying to adapt a Western technology
such as the Internet to their local values (Subramony, 2007). Aboriginal youth are influenced by
two cultures; aboriginal culture at home, and the dominant Western culture at school.

The researcher made several conclusions about the Eskimo’s relationship with
technology. First, the Eskimo Inupiat youth use computers with ease, while older Eskimos used
computers slowly (Subramony, 2007). Second, the girls outnumber boys in computer classes at
Boreal High School (B.H.S.) (Subramony, 2007). Eskimo boys prefer learning from hands-on-
activities more than lectures. Third, using the computer was a social activity for Inupiat Eskimo
youth, but there was inappropriate use of technology (Subramony, 2007). The Inupiat Eskimo
youth’s use of computer technology was superficial.

The isolated environment of Borealis, Alaska prevents the Eskimo community from
becoming producers of technology. The Eskimo youth want to leave Borealis to get post-
secondary education, but they return home. Students in the rest of United States have access to
companies such as Intel in Portland, Oregon or Apple in San Jose, California (Subramony,
In large cities, such as Seattle, Washington, there are role models such as computer programmers and engineers (Subramony, 2007). The Inupiat youth understand technology as consumers, but few of them have skills at the producer level (Subramony, 2007). Cultural minorities are at risk of falling behind during the digital revolution.

Betts

The third case study is about the Pueblos, who are part of the Southwest aboriginal cultural group. It is about a computer lab that was established by the United States Department of Commerce to solve the digital divide in a rural aboriginal community in Arizona, United States (Betts, 2009). The digital divide is the gap between education institutions that use technology and the people who do not have access to this technology (Betts, 2009). The Community Resource Lab (C.R.L.) was established by the Pueblo aboriginals, the United States Department of Commerce, and Telecommunication and Information Infrastructure Assistance Program (Betts, 2009). This case study was focused on activities around the Community Resource Lab and the aboriginal community’s use of the Internet. The purpose of the project was to improve training and learning opportunities.

The methodology of this case study included qualitative and quantitative methods. In 1999-2000, the research sample was 166 aboriginal people who include 87 males and 79 females (Betts, 2009). The researcher visited the computer lab during high school classes and weekends for observations and interviews of the aboriginals. In the sample, 53% were high school graduates and 83% were aboriginal people (Betts, 2009). The research data was about how the aboriginal people used the computer lab and how they felt about it. The researcher recorded the data from the case study in videos, charts, pictures, interviews and questionnaires (Betts, 2009).
The audience of the research results are the Pueblo tribal leaders and the United States Department of Commerce.

This case study focused on the need to solve the digital divide on aboriginal reservations. In 2004, 80% of American households owned personal computers (Betts, 2009). In contrast, only 22% of Pueblo aboriginals on the reservation owned personal computers (Betts, 2009). The only computers in the reservation were located at the tribal headquarters, the police department, and the fire department (Betts, 2009). The Community Resource Lab (C.R.L.) became a resource for the Pueblo community and part of the reservation’s growing infrastructure.

The Community Resource Lab (C.R.L.) is an example of Western culture affecting traditional aboriginal culture. Pueblo culture has religious and cultural traditions that are more important than education. Many Pueblo people are trilingual and speak Spanish, English and an aboriginal language (Betts, 2009). The aboriginal community does not have a print tradition because their culture was based on oral communication (Betts, 2009). The low level of literacy among the aboriginal community make it harder to use computers. There is tension between the traditional tribal culture of the Pueblos and the new Western ideas from the Internet.

**Fahy, Steel and Martin**

This fourth case study is about aboriginal people who are in the Plains aboriginal group. In 2007-2008, Athabasca University Learning Communities Project (L.C.P.) conducted the research study about four aboriginal communities in Northern Alberta, Canada. The Canadian province of Alberta uses profits from natural resources to fund post-secondary education (Fahy, Steel & Martin, 2009). The Learning Communities Project (L.C.P.) was funded by a donation from an oil sand developer. The communities that were studied by the researchers were
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Wabasca, Fox Lake, Fort McKay and Fort Chipewyan (Fahy et al. 2009). The purpose of this research study is to find out the learning preferences of Alberta’s residents.

Alberta’s population is different from the other Canadian provinces. Distance education in the province is supported by Campus Alberta, and the Roles and Mandates Policy Framework (Fahy et al., 2009). This province has the lowest median age of 36 years old, while the rest of Canada has the median age of 39.5 years (Fahy et al. 2009). The province also has a growing aboriginal population which increased 45% from 1996 to 2006, compared to a non-aboriginal growth rate of 8% (Fahy et al. 2009). Most people who live in Northern Alberta are from rural aboriginal communities. Distance learning has the potential to improve access to education for people who live in rural areas.

This case study is about the various barriers to post-secondary institutions. Aboriginal people are living far from post-secondary institutions because they are a large percentage of the population in Canada’s northern communities (Fahy, Steel & Martin, 2009). In 2002, the Association of Canadian Community Colleges (A.C.C.C.) told the federal government that they believed colleges were already accessible to rural populations (Fahy et al. 2009). There was a lack of access to education in rural areas because enrollment at colleges in Northern Alberta decreased 11% (Fahy et al. 2009). There was a lack of financial support from higher education institutions for aboriginal people (Fahy et al. 2009). Other barriers to distance education include lack of Internet access, lack of computer expertise and unreliable infrastructure (Fahy et al. 2009). These various barriers were the reasons for the lower rate of Aboriginal people enrolment in university-level programs compared to other Canadians.

The researchers summarized the perspective of aboriginal people on distance education. The digital divide did not affect the aboriginal people in Alberta, Canada, because they had
access to a computer (Fahy et al. 2009). They believed that they had the necessary computer skills for online learning. Over 40% of the residents said they preferred online learning to face-to-face learning (Fahy et al. 2009). Half of the aboriginal people in the study took an online course before (Fahy et al. 2009). About half of the residents in the communities took training and were interested in taking post-secondary courses (Fahy et al. 2009). The communities had a positive view of distance education.

Philpott, Sharpe and Neville

This case study is about the Northeast aboriginals in Labrador, Newfoundland, Canada (Philpott, Sharpe & Neville, 2009). The researchers from the Community University Research Alliance conducted the research in five rural aboriginal communities in Labrador, Newfoundland that includes Postville, Nain, Rigolet, Hopedale, and Makkovik (Philpott et al. 2009). The purpose of the research was to discuss the perspectives of aboriginal students who were enrolled in online learning. The Canadian province of Newfoundland is a rural society with isolated communities of Innu, Inuit, and Metis. The researchers interviewed teachers, principals, parents, and students from the Labrador School District to find out the factors that make e-learning successful for students.

This study is part of a larger project called the Community University Research Alliance (C.U.R.A.) that was established to start research on the use of online learning in Newfoundland, Canada. The focus of C.U.R.A. is on kindergarten to grade 12 students and graduating students going to higher education (Philpott et al. 2009). The Community University Research Alliance is located at Memorial University of Newfoundland (M.U.N.). The three main goals of C.U.R.A. are building high-quality research in e-learning, increasing the amount of research, and improve communication between the partners and stakeholders (Philpott et al. 2009).
Distance education is needed in Labrador, Newfoundland, Canada; because, the aboriginals are a disadvantaged group of people. There was a very low rate of school attendance in the Innu community, for example, 33% of children do not attend school and 100% of 15 year olds are at least five years behind in their education (Philpott et al. 2009). The school population in Newfoundland and Labrador has decreased from 621 schools with 136,228 students in 1987 to only 280 schools with 72,084 students in 2009 (Philpott et al. 2009). According to Statistics Canada, rural and aboriginal students also perform below average in academic achievement (Philpott et al. 2009). Aboriginals are not benefiting from the Internet; because, they have less literacy and computer skills. Distance education has the potential to improve education opportunities in aboriginal communities.

The researchers created an e-learning model for aboriginal youth in Labrador. Online learning creates a higher level and range of courses for students. Without online courses, students would never get the prerequisites they need for post-secondary education (Philpott et al., 2009). Online learning gives aboriginal students the opportunity to have academic success and compete with other students in the province. There was a perception that aboriginal youth have weak academic skills (Philpott et al. 2009). Online courses help students to develop personal skills such as confidence, leadership, time management and computer literacy (Philpott et al. 2009). Online teachers are important to the success of their students. The teachers provide support by being available, patient and knowledgeable of their subject area (Philpott et al. 2009). Online courses suits the rural environment of Labrador that has delays in travel, due to weather and cultural events.

The online learning model is unique to aboriginal community in Labrador, Newfoundland, Canada. The online courses follow the provincial time zone, and the aboriginal
school that follows another time zone, the Labrador time zone (Philpott et al. 2009). The aboriginal students missed part of their face-to-face classes at school to attend the online courses. The students access the online courses at their regular face-to-face school instead of at home. The lack of student supervision makes it easier for students to use social media when they should be doing school work (Philpott et al. 2009). This e-learning model cannot be applied to other aboriginal communities.

Kaler
The researchers interviewed eight aboriginal high school students from the Flathead and Blackfeet nations in Montana, United States (Kaler, 2012). The students were enrolled in free online courses offered through the Montana Digital Academy (Kaler, 2012). It was the students’ first experience with online courses. The students came from the Salish-Kootenori, Blackfeet and Nez Perce aboriginal groups, which is part of the Plateau cultural group of aboriginal people. The purpose of this case study is to determine that factors that make aboriginal high schools successful in online courses.

Distance education is needed in the Montana reservation. The courses offered at the local high school were limited compared to cities. There was low academic achievement in the reservation, for example, only 20% of aboriginals in grade 8 can read at their grade level or higher (Kaler, 2012). Aboriginal students are also underrepresented in gifted programs and overrepresented in special education programs (Kaler, 2012). Poor attendance was a problem in high schools in the reservation. Aboriginals live in poor communities and attend schools where it was hard to recruit teachers (Kaler, 2012). The online learning environment has the potential to improve education opportunities for aboriginal people.
This case study described a potential online learning model for aboriginal students. The students liked the flexibility of being able to access online courses anytime (Kaler, 2012, p. 68). The content and the pace of the online courses can be tailored to the individual students. Since Aboriginal culture is different from the dominant North American culture, aboriginal students learn better when instructors apply Native culture to their online courses (Kaler, 2012). Aboriginal students were more comfortable in virtual environments because there was less chance of being stereotyped by instructors (Kaler, 2012, p. 69). Students were also challenged by the new learning environment, the subject matter and the computer skills. The research described how online courses can accommodate aboriginal students.

Simon, Burton, Lockhart & O’Donnell

The last case study is about the Elispogstog First Nation, who are part of the Northeast aboriginal group. The Elispogstog is the largest aboriginal group in the province of New Brunswick in Canada (Simon, Burton & O’Donnell, 2014). In November and December 2011, researchers interviewed members of this aboriginal community to find out about their experiences with post-secondary distance education. Distance education is an important issue in this province, because 50% of the population in the province of New Brunswick live in rural communities (Simon et al. 2014). Post-secondary distance education gives student the option to stay in their community while completing their education.

This case study is the first research project in Atlantic Canada. The Elsipogtog First Nation study is part of a long-term research project about aboriginal people in Central and Eastern Canada. The study was conducted by the Elsipogtog First Nation and the First Nation Help Desk in the Membertou First Nation in Cape Breton, Nova Scotia (Simon et al. 2014). The researchers collected data that was based on interviews with the Elsipogtog First Nation. This
aboriginal group has a population of 2,000 and is located three hours east of Fredericton, New Brunswick (Simon et al. 2014). In 2006, few Elsipogtog aboriginals had any post-secondary education. There was 1,285 adults in the Elsipogtog First Nation and only 65 people had university degrees and 385 people had trades certificates (Simon et al. 2014).

This case study focused on the political relationship between the aboriginal people and the Canadian government. The authors discussed how politics increased the digital divide among aboriginal communities. The Assembly of First Nations (A.F.N.) who represent six hundred aboriginal chiefs support post-secondary education for their communities (Simon et al., 2014). First nations want to control the delivery and content of online courses (Simon et al., 2014). Aboriginal people want their education to be influenced by their own culture, language, and values. Distance education allows First Nations to assert their sovereignty by giving aboriginals the option to stay in their local communities while attending school (Simon et al. 2014). Distance education reduces the effect of government policies that make aboriginals leave their communities.

The researchers described how distance education can accommodate aboriginal communities. The Elsipogtog community currently took online courses from local universities including St. Thomas University, the University of New Brunswick, Dalhousie University and Mount St. Vincent University (Simon et al. 2014). Online courses are convenient for students who have family and work responsibilities. More aboriginal students can be reached with distance education if the post-secondary institution offered more technology choices were offered (Simon et al., 2014). The Elsipogtog First Nation can work with universities to create more courses with blended delivery. Aboriginal communities need to be involved in the development of the curriculum and delivery.
Solutions to the Digital Divide

Canadian and American post-secondary institution are using various solutions to accommodate aboriginal students. The universities are using various technology to reach more students with distance education. The University of Alaska Fairbanks offers courses through podcasts and mobile phones (University of Alaska, 2015). Oklahoma State University allows students to get course credits through C.D.s, D.V.D.s, MP3 players and the Internet (Oklahoma State University, 2015). The post-secondary institutions can deliver courses with blended learning or local on-campus courses. University of Manitoba has learning centers where students can participate in web conferencing (University of Manitoba, 2015). University of New Mexico has education centers in community college and branch campuses across New Mexico (University of New Mexico, 2015). Various universities are using technology and various delivery options to increase their aboriginal student population.

Various community colleges have solutions to minimize the effect of the digital divide in aboriginal reservations. Some of the colleges have included aboriginal culture in the courses. Nanavut Arctic College hired an aboriginal instructor to teach the post-secondary course to aboriginal students (Cultural Survival, 2015). Yellowhead Tribal Consortium is an educational institution that is run by four aboriginal groups including Alexander First Nation, O’Chiese First Nation, Sunchild First Nation and Alexis First Nation (Cultural Survival, 2015). The colleges used various technologies in the courses instead of relying on the Internet. At Nunavut Arctic College each student was given a 2,000 page research package (Cultural Survival, 2015). Northern Lakes College course was taught in-class in Wabasca and Athabasca, Alberta with videotapes and lecture notes (Cultural Survival, 2015). The colleges used various formats and types of delivery to accommodate aboriginals.
Methodology

A review of the current literature was the main methodology used in this research paper. The information in this paper came from sources such as case studies, journal articles, books, and government websites. The paper used case studies about North American aboriginal people to show the social-economic, cultural and political causes of the digital divide in aboriginal reservations. The research will form the basis of the recommendations of how distance education institutions can improve their accommodations for aboriginal students.

Analysis

Comparison of Case Studies

Two case studies about aboriginals in Alberta, Canada

The case studies about aboriginals in Alberta include Kawaliak et al. (2004) and Fahy et al. (2009). In both case studies, the researchers are trying to find out how to better meet the learning needs of aboriginal people. In 2002, the Association of Canadian Community College (A.C.C.C.) told the federal government colleges were already accessible to rural population (Fahy et al. 2009). The research studies discussed how post-secondary institutions can become more accessible to rural populations. There are few post-secondary institutions that are located near Aboriginal communities (Kawaliak et al. 2004). Aboriginals have a lower enrolment at post-secondary institutions than other ethnic groups. In both case studies, aboriginals were affected by the digital divide in reserves. The potential benefit of both research studies was to increase access of distance education to aboriginal communities.

Two case studies about aboriginals in East Coast of Canada.
The case studies about aboriginals in the Eastern provinces include Simon et al. (2014) and Philpott et al. (2009). Simon et al., (2014) is about the Elispogstog First Nation in New Brunswick, Canada. Philpott et al. (2009) is about Innu, Inuit, and Metis in Newfoundland, Canada. Both of the case studies are about the aboriginal communities in the East Coast of Canada. In both research studies, the authors discussed how the digital divide affects the aboriginal community. Aboriginals are not benefiting from the Internet, because of low literacy rate, lack of computer skills and cultural differences (Philpott et al. 2009). Less than 7% of aboriginals in Manitoba, Nunavut, British Columbia and Saskatchewan in Canada have access to Internet. Simon et al. (2014) discussed the political relationship between the First Nations and government.

Two case studies about aboriginals in the West Coast of the United States.

The case studies about aboriginals in the West Coast of the United States include Betts (2009) and Kaler (2012). Betts (2009) case study is about the Pueblo community, the southwest aboriginals, in Arizona, United States. Kaler (2012) is a case study about the Blackfeet Nation in Montana, United States. Both case studies discuss how aboriginal culture is different from the dominant Western culture. The worldview of the aboriginal people influences their attitude towards new technologies. The Pueblo aboriginals had an oral tradition and the Internet is part of print communication (Betts, 2009). Blackfeet aboriginal students learn better in online classes when the instructors applied Native culture in the course (Kaler, 2012). Betts (2009) discussed how there was a digital divide on the Pueblo reservation in Arizona. Kaler (2012) discussed how aboriginal culture affects the online learning experiences of aboriginal students. Betts focused on how all age groups in the Pueblo community adapt to computers.
A case study about the Arctic cultural group.

This case study is about high school students from an Eskimo community in Borealis, Alaska, United States. This case study is about Eskimos who are trying to adapt to technologies from Western culture. The purpose of the case study was to describe how cultural minorities such as the Eskimo are vulnerable to being disempowered in the competitive global market. The Eskimo community live in a culturally isolated town that is part of a traditional hunting and agricultural society (Subramony, 2007). Borealis, Alaska is adapting to the dominant Western culture and industrialization from the rest of the United States. The Eskimos were questioning the impact of a technology-based education on their community (Subramony, 2007). The aboriginal youth in Borealis are influenced by two cultures; aboriginal at home and Western at school. This case study focused on the cultural causes of the digital divide in an aboriginal community.

Causes of the Digital Divide

The digital divide in aboriginal communities is due to geographical isolation. Most aboriginal communities are located in rural areas of North America. People who live farther than 80 kilometre from a university or college are less likely to attend a post-secondary institution (Statscan, 2004). Most aboriginal communities are located in rural areas of North America, for example, most of the 600 Canadian First Nations and 560 American aboriginal groups live in remote areas (Statistics Canada, 2011). There are few post-secondary institutions that are near reservations and aboriginal people want to stay in their communities (Kawaliak, Wells, Connell & Beamer, 2004). Aboriginal people drop out of higher education because of lack of transportation to urban areas. Aboriginal people are not benefiting from post-secondary institutions.
The political relationship between aboriginals and the government worsens the digital divide. The aboriginal population is underrepresented in post-secondary enrollments, for example, the Canadian Census (2001) there is a “48% dropout rate for aboriginal students compared to 35% for the rest of general population” (page. 7). The Assembly of First Nations (A.F.N.) who represent six hundred aboriginal chiefs support increasing post-secondary education opportunities for their communities (Simon, Burton, Lockhart & O’Donnell, 2014). Aboriginal communities wanted to control the delivery and content of the online courses. There is a lack of financial support for potential aboriginal students from higher education institutions (Fahy, Steel & Martin, 2009). Distance education is important to maintaining rural communities by allowing aboriginals to stay home and attend school.

The aboriginal culture influenced the digital divide in the rural areas. Aboriginal people have a culture that is different than the dominant Western culture. Aboriginals are from a non-Western culture who are trying to adapt to the Western technology of the Internet (Subramony, 2007). The aboriginal populations live in a traditional society that is based on agriculture and hunting. Betts (2009) states that aboriginal culture is based on oral communication and the Internet is based on print communication. The aboriginal people also tend to fall behind because they have less literacy and computer skills (Philpott, Sharpe & Neville, 2009). The aboriginals’ community cultural values is in conflict with the values of Western technology.

**Australian aboriginals and North American First Nations.**

The Australian aboriginals have similarities to the North American First Nations. Both groups of aboriginals live in rural areas that have less infrastructure. The Australian aboriginal communities live in remote areas, while the rest of the Australian population lives in cities on the coastline (Twyford, Crump & Anderson, 2009). In North America, aboriginal people in rural
areas are less likely to have higher education than aboriginals in cities; similarly, this trend is also true in Australia: Aboriginal people in cities were more likely to have high school education than those in remote areas (Australian Bureau of Statistics, 2014). Aboriginal people in Australia and in North America each have a culture that is different from the dominant Western culture. Aboriginal people are a disadvantaged ethnic group, for example, only 5% of aboriginals attend university compared to 23% of other Australians (Twyford et al. 2009). Aboriginal people are affected by the digital divide since they have less access to computer technology. The solutions to the digital divide in Australian distance education institutions can be applied to North American aboriginal communities.

Aboriginal people in Australia are underrepresented in post-secondary institutions in Australia. A solution to the low rate of aboriginal enrolment in higher education is to make it easier for aboriginal people to enter university through alternative routes. The Australian National Training Authority and the Australian Vice Chancellors Committee (A.V.C.C.) developed a national policy on transferring credits from vocational education to higher education (Bandias, Fuller & Pfitzner, 2011). Vocational education provides students with work-related skills and higher education leads to undergraduate and post-graduate degrees. Aboriginal students depend on transfer credits to enter post-secondary institutions, for example, 66% of aboriginals gained admission to university through alternative entry arrangements (Bandias et al. 2011). Australian universities with a large population of transfer students include Swinburne University, Charles Sturt University, The University of Western Sydney and Royal Melbourne Institute of Technology (Bandias et al. 2011). Stakeholders who have an interest transfer credits are students, universities, and private institutions.
Access to quality education is a problem in rural Australia. Western Institute of Technical and Further Education (W.I.T.A.F.E.) is delivering vocational education to students in remote aboriginal communities by distance learning (Twyford et al. 2009). The distance learning partners are the University of Newcastle, Charles Darwin University, the New South Wales Department of Education and Training (D.E.T.N.S.W.), the Northern Territory Department of Employment, Education & Training (N.T.D.E.E.T.) and Optus (Twyford et al. 2009). Schools of the Air (S.O.T.A.) deliver lessons through radio to primary and secondary students (Twyford et al. 2009). S.O.T.A. replaced radio communication with Internet and video-technology. A disadvantage of distance education is it is not desirable for students who need regular support from instructors and peers. Distance education is needed in rural aboriginal communities; because, commuting long distance to post-secondary institutions is not practical or affordable.

**Recommendations**

The recommendations for the distance education institutions are based on the theory of transactional distance. This theory depends on whether students are left alone with their learning materials or whether instructors can communicate with their students (Peters, 2001). An effective distance learning model should include the three types of interaction (Bates, 2005). There is interaction between the students and the learning materials. There is interaction between the student and the instructor. There is also interaction between the students in the course. The instructors will communicate with students through phone, e-mail, Webex and skype. The design of the distance learning will be based on open learning, which is a policy that removes the barrier to learning.
The post-secondary institutions can reduce the effect of the digital divide by using a variety of technologies to deliver courses. Digital technologies have forced higher education institutions to redefine their teaching practices (Guri-Rosenblit, 2009). There are limitations to using internet technology in aboriginal communities since many aboriginal people do not have regular access to the Internet. The post-secondary institutions can increase opportunities for blended learning which combines face-to-face and online instruction (Cleveland-Innes & Garrison, 2010). Post-secondary institutions can open local learning centers because aboriginals live far from higher education. They can offer courses through print technology and radio because it is more accessible than computers. Mobile learning can be used in distance learning because they have multimedia and are more portable than computers (Bates & Sangra, 2011). Using various technologies will make distance education more accessible to aboriginal communities.

Conclusion

Aboriginal people in rural areas of North America are affected by the digital divide because of geographical isolation, politics and cultural differences between aboriginal culture and the dominant Western culture. Aboriginal people are defined as the First Nations, the Metis and the Inuit. They are different from other cultural groups in North America because they are the original inhabitants of North America. The digital divide is worse in the rural areas than the cities and most aboriginal populations live on reservations. Rural areas are less likely to have Internet access due to the lack of infrastructure. Aboriginal people are more likely to live farther than 80 km, the commuting distance from higher education. Distance education helps to maintain rural aboriginal communities by preventing them from leaving home to urban areas for education. Aboriginal culture was based on an agriculture and hunting society which is trying to
adapt to the Western values of the Internet. Aboriginal communities in North America are similar to the indigenous people of Australia who also live in remote areas and underrepresented in post-secondary institutions. The solutions to the lack of distance education opportunities in reservations including applying the theory of transactional distance, blended learning and using various technologies in the courses. The information from this research paper is relevant because post-secondary institutions want to increase their aboriginal student populations. The research will be used to help inform distance education institutions on how to improve accommodations for aboriginal students.
References


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