People with Disabilities: Employment and Assistive Technology in Northern British Columbia

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ABSTRACT

With the advances in assistive technology, it was anticipated that people with disabilities would be able to participate in the workforce at a greater rate; however, people with disabilities are still underrepresented in the workforce in Canada. In addition, little research has been conducted on the desire of people with disabilities to be self-employed. To explore the desire for self-employment and why the advances in assistive technology have not increased the number of people with disabilities in the workforce, a mixed methods sequential exploratory study was used. The respondents said that their disability was the main factor that prevented them from working, not the lack of assistive technology, although most were not aware of the various assistive devices that were available to them. In addition, the majority of respondents wanted to be self-employed. The results suggest that more education about assistive technology is needed.
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GLOSSARY

Assistive Technology: is any device that would help persons with a disability engage in employment and employment-related activities, which they would be unable to perform without the device because of the disability. It may also be referred to as an assistive device, aid, or tool. It may be purchased off the shelf, adapted, or custom made.

Employment: can be paid employment, self-employment, and volunteer work unless specifically stated.

Person with a disability: is any individual who has a severe mental or physical impairment that restricts that individual’s ability to perform daily living activities
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CHAPTER ONE

INTRODUCTION

With the advances in assistive technology, it was anticipated that people with disabilities would be able to participate in the workforce at a greater rate; however, people with disabilities are still underrepresented in the workforce in Canada (WCG International Consultants Ltd, Human Capital Strategies, Sorensen & Associates, & Spark Group, 2004). Currently, researchers have focused on personal characteristics, such as age and education level, which separate those who are employed and unemployed. A few studies have looked at the barriers that people with disabilities faced when seeking employment; however, much of the research has focused on the employers' perspective when hiring people with disabilities. In addition, much of the current research has focused on people with disabilities in urban settings, and does not take into account the unique issues that may be present in rural and northern communities. Further, there has been very little research on self-employment and people with disabilities. Research has focused on vocational-rehabilitation counsellors' opinions on self-employment as a vocational rehabilitation strategy. A few studies have looked at the benefits and negative impacts people with disabilities experience once they have become self-employed, and what led them to choose self-employment. Little research has been conducted on how many individuals with disabilities would like self-employment as an option and what they would require in order to become self-employed.

To determine why the number of people of disabilities in the workforce has not increased as a result of the advances in assistive technology, this study explored the experiences of people with disabilities regarding assistive technology and employment in a
rural and northern setting. The study also explored the desire of people with disabilities who live in northern communities to become self-employed and some of the barriers they face.

Community Partner

The British Columbia Paraplegic Association (BCPA) was a community partner in this research project. The BCPA sought funding for this research from the Vancouver Foundation, assisted in gaining access to research participants, and provided overall support for the research project.

The BCPA was formed in 1957 and has since expanded their activities and influence in the province. The BCPA mission statement is "to assist persons with spinal cord injuries and other disabilities to achieve independence, self-reliance and full community participation" (BC Paraplegic Association [BCPA], 2004, p. 5). Today, their core services are peer support, rehabilitation, vocational/employment services, community advocacy, case management, service coordination, and information services (BCPA, 2004, 2007). They helped pioneer initiatives that led to a freestanding rehabilitation facility and the development of the acute spinal cord injury unit at Shaughnessy Hospital in Vancouver, British Columbia. They also advocated for accessible housing, parks, community centers and wheelchair sports (BCPA, 2004, 2007).

The BCPA is interested in this research project because they wish to expand their existing technology service "Technology for Independent Living" (TIL), to fill a gap in providing a custom design service for individuals with disabilities requiring customized assistive technology and who wish to be self employed. Previously the BCPA had a demonstration project called Special Employment Technology Service (SETS). This project demonstrated there was a need for a service that customized assistive technology for people
with disabilities in the Lower Mainland. The success of this project led the BCPA to want to expand this or a similar service to other parts of the province. The results of this study will provide the BCPA with an understanding of the issues people with disabilities face when seeking employment throughout northern BC and help them develop programs that will address the issues.
CHAPTER TWO
LITERATURE REVIEW

Defining Disability

The definition of disability is constantly changing. There is no agreed definition because disability is defined based on the context for which it will be used. The definition of disability affects people's attitudes, government policies, legislation, and eligibility criteria for various social programs (L'Institut Roeher Institute, 2001).

In an attempt to create a universal definition of disability, the World Health Organization (WHO) has created a universal classification of disability and health for policy makers called The International Classification of Functioning, Disability, and Health (ICF). The WHO believes that the ICF will aid in policy development, economic analysis and research by allowing for consistent definition of disability across all levels of governments and researchers (World Health Organization, 2002). In the ICF the WHO defines disability as:

an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations.

Thus disability is a complex phenomenon, reflecting an interaction between features of a person's body and features of the society in which he or she lives. (World Health Organization, 2008)

This definition is based on the biopsychosocial model of disability, which brings together both the medical and social model of disability. Independently, the medical and social models of disability are seen as inadequate in conceptualizing disability. The medical model
views disability as something that needs to be or can be fixed and it ignores the social factors in contributing to the level of disability; alternately, the social model sees disability as a socially created construct which is imposed on the individual with impairments, and ignores the individual’s actual limitations (Llewellyn & Hogan, 2000; World Health Organization, 2002). The biopsychosocial model of disability views disability as an interaction between health conditions, such as injuries, and contextual factors, which include both environmental and personal factors (World Health Organization, 2002). In using this model, the WHO has included the strengths of both the medical and social models of disability by placing the focus on both individual and social factors that affect disability.

Defining Disability in Canada

In Canada, the Federal and Provincial governments have the power to define disability. The definition of disability changes depending on the context in which it will be used. Some government organizations provide services to people with disabilities and how disability is defined will determine access to the services they provide. Other government agencies such as Statistics Canada use a broader definition of disability in order to gain a better understanding.

The Participation and Activity Limitation Survey (PALS) conducted by Statistics Canada uses the same framework as the ICF. The PALS defines persons with disabilities as individuals who “reported difficulties with daily living activities, or who indicated that a physical or mental condition, or health problem reduced the kind or amount of activities they could do” (Statistics Canada, 2006, p. 8). This definition of persons with disabilities is broad and inclusive because Statistics Canada’s role is to provide accurate information that allows
for the development and evaluation of public polices and programs and not in the administration of these polices and programs.

Service Canada is a government agency that provides disability benefits through the Canada Pension Plan (CPP). Section 42(2) of the CPP legislation considers a person to be disabled:

...only if he is determined in prescribed manner to have a severe and prolonged mental or physical disability, and for the purposes of this paragraph,
(i) a disability is severe only if by reason thereof the person in respect of whom the determination is made is incapable regularly of pursuing any substantially gainful occupation, and
(ii) a disability is prolonged only if it is determined in prescribed manner that the disability is likely to be long continued and of indefinite duration or is likely to result in death. (Canada Pension Plan, 1985)

The CPP legislation only considers people to be disabled if they are incapable of being employed and if the disability is a lifelong issue. Through this definition the CPP legislation forces people with disabilities to decide if they will attempt to find employment and lose their benefits because they are considered capable of working, or they must label themselves as incapable of ever working and receiving benefits. This legislation creates a barrier for people with disabilities to find employment because of the fear of losing benefits.

In British Columbia (BC), the government has employment and assistance programs for persons with disabilities. These programs provide a variety of different supports such as disability benefits, and career planning to individuals with disability. The definition of disability in the Employment and Assistance for Persons with Disabilities Act has a broader definition of disability compared to the CPP legislation. Section 2(2) of the Employment and Assistance for Persons with Disabilities Act defines a person with a disability as an individual:
... who has reached 18 years of age as a person with disabilities for the purposes of this Act if the minister is satisfied that the person has a severe mental or physical impairment that
(a) in the opinion of a medical practitioner is likely to continue for at least 2 years, and
(b) in the opinion of a prescribed professional
   (i) directly and significantly restricts the person's ability to perform daily living activities either
      (A) continuously, or
      (B) periodically for extended periods, and
   (ii) as a result of those restrictions, the person requires help to perform those activities.

(3) For the purposes of subsection (2),
(a) a person who has a severe mental impairment includes a person with a mental disorder, and
(b) a person requires help in relation to a daily living activity if, in order to perform it, the person requires
   (i) an assistive device,
   (ii) the significant help or supervision of another person, or
   (iii) the services of an assistance animal. (Employment and Assistance for Persons with Disabilities Act, 2002)

This definition of a person with disabilities is broad and attempts to include all individuals with disabilities who may benefit from the various programs that are provided by the BC government, whereas the CPP definition of a person with disabilities attempts to limit access to the program by restricting the definition to exclude those individuals who are able to find gainful employment. This definition also removes the barrier created by the CPP legislation by not including the stipulation that people with disabilities must be incapable of working which allows people with disabilities to attempt to find employment without the fear of losing their supports. Although the barrier is not found in the definition of disability, the BC government, in a separate policy, limits the amount of money a person with a disability can earn in one month. The BC government places an earning limit of $500 a month for those individuals who are on income assistance. Once this limit has been reached, the individual will either have any earnings over $500 a month deducted from their monthly allowance or lose their benefits entirely (Ministry of Housing and Social Development, 2008).
Disability in the Workforce

There has been an increasing interest by governments to get people with disabilities participating in the workforce. Two reasons for the increasing interest are the shortage of skilled workers and the aging population. One way to alleviate this shortage is to increase the workforce participation of individuals with disabilities (WCG International Consultants Ltd. et al. 2004; Williams, 2006).

The 2001 PALS provided insight into the lives of people with disabilities in the labour force. It provided Canadian data for labour force participation, type of disability, education levels, type of occupation, income, and types of job accommodation required. In 2001, the PALS found that 3.6 million Canadians living in households had some type of disability (Behnia, Cossette, Langlois, & Duclos, 2004). Of those 3.6 million Canadians with disabilities, 2 million were between the ages of 15 and 64 and less than half, 45%, of those individuals were in the labour force compared to 80% of non-disabled Canadians (Williams, 2006). Furthermore, in the 2006 Annual Report on the Employment Equity Act showed that people with disabilities only make up 3.2% of the workforce in both the federally regulated public and private sectors (Government of Canada, 2006). People with disabilities also had an unemployment rate of 26%, higher than the non-disabled population unemployment rate of 6%, and 333% greater than those without disabilities (R.A. Malatest & Associates Ltd., 2003). The unemployment rate for men with disabilities was also greater than that of women with disabilities. This difference was more pronounced when the survey participants stated that their disability was severe. For men with a severe disability the unemployment rate was 19.0% compared to 14.9% for women with a severe disability (Williams, 2006).
Education

One reason that is often suggested for the disparity between the employment rates of persons with disabilities and non-disabled people is that persons with disabilities do not have the education required for the job market compared to those who do not have a disability. The 2001 PALS survey found that employed people with disabilities were more educated than their unemployed counterparts; however, people with disabilities overall were less educated compared to non-disabled people (Williams, 2006).

Type of Disability Found in the Workforce

Individuals with disabilities who participate in the workforce experience a variety of disabilities and these disabilities affect how they are able to work. The most common disability mentioned by PALS survey participants was pain, followed by mobility, agility, hearing, psychiatric and finally, learning disabilities. The 2001 PALS survey showed that of those individuals with disabilities 21% felt that they were not limited at work or school. PALS also showed that in the previous five years 30% of employed persons with disabilities had to change jobs, 33% changed the type of work, 43% had to change the hours they worked and half felt that they were limited in the type of work they could perform in their current job because of their disability (Williams, 2006).

Occupation and Industry

The occupations engaged in by people with disabilities are similar to those for people without disabilities. The most common occupations were those in the sales and service fields followed by business, finance and administration and trades and transport. There was however, a disparity in management occupations. Only 6% of persons with disabilities were in management occupations compared to 11% of non-disabled people (Williams, 2006).
People with disabilities work in the same industries at the same rates compared to non-disabled individuals with two exceptions. The 2001 PALS found that people with disabilities were more likely to work in health care and social assistance industries and less likely to work in the retail trade industry, compared to their non-disabled counterparts (Williams, 2006).

*Income*

Employment income for people with disabilities is lower compared to people without disabilities. The median employment income for employed persons with disabilities was approximately 17% lower than that for non-disabled workers. This number also varied depending on the severity of disability; the more the severe the disability, the lower the employment income of the individual (Williams, 2006).

*Job Accommodations*

The 2001 PALS also asked people with disabilities who were both employed and unemployed or not in the workforce the type of job accommodations they required or would require to participate in the workforce. People considered to be not in the workforce were individuals who were or believed that they were incapable of working, or not actively seeking employment. People considered to be unemployed were individuals who were capable of working but were currently not working (Statistics Canada, 1992). The most common accommodations stated by both groups were modified or reduced work hours and job redesign, such as changing job duties. For participants that were in the workforce, job accommodations were granted for the majority, but 25% of the workers with disabilities were not provided with the job accommodations they required (Williams, 2006).
Employment and People with Disabilities

With the high number of people with disabilities that are unemployed, there has been research looking at why people with disabilities are underrepresented in the workforce. The literature focuses on the employers’ perspective regarding hiring people with disabilities, characteristics that differentiate people with disabilities who are employed versus unemployed, and barriers faced by people with disabilities when seeking employment.

Employer Perspective

One of the main barriers to employment for people with disabilities is employers’ attitudes (Annable, 1993; Colorez & Geist, 1987; Gilbride, Stensrud, Ehlers, Evans, & Peterson, 2000; Henry & Lucca, 2004; Hernandez et al., 2007; Neufeldt, 1998; WCG International Consultants Ltd. et al., 2004). Gilbride et al. (2000) conducted a study in two American states to get a better understanding of employers’ attitudes towards hiring people with disabilities. They found that among the employers who responded to their survey, the majority had hired a person with a disability before and were willing to hire others. The researchers also found that employers in the Midwest were more willing to hire a person with a mental disability, whereas employers in the Southeast were more willing to hire a person with physical disabilities. This difference may result from the employers’ personal experiences with these disability groups or there may be a difference in the common stereotypes of people with disabilities between the Midwest and Southeast States (Gilbride et al., 2000).

Hernandez, Keys, and Balcazar (2000) conducted a literature review of employers’ attitudes towards people with disabilities. They found that employers’ global attitudes towards people with disabilities were positive; however, when specific attitudes were
assessed employers' attitudes were more negative. For example, employers would state that overall, people with disabilities have the skills that would allow them to be successful at work; however, when asked about specific work traits, employers stated that people with disabilities would be less flexible, productive, and promotable. It is unclear if these negative attitudes are the result of stigma, lack of awareness and education, personal experiences, or stereotypes (Hernandez et al., 2000). A better understanding of where these attitudes originate from may help in developing strategies for reducing these negative attitudes. Employers also stated a willingness to hire people with disabilities; however, this expressed willingness to hire has not resulted in an increased level of employment for people with disabilities (Hernandez et al., 2000).

WCG International Consultants Ltd. et al. (2004) conducted a study that examined the recruitment and retention of people with disabilities in BC. They conducted a survey of employers and found that 69% of managers had a high level of awareness of disabilities; however, only 31% of the businesses surveyed had employees with disabilities. They found that companies that had employees with disabilities were more aware of the issues facing people with disabilities and had better support systems. Employers stated that communication and sight impairments were the hardest to deal with at work. The same researchers found that 10% of companies had a disability management plan and 22% had supports such as flexible work hours or a friendly and encouraging work environment for persons with disabilities. The most common form of assistance employers wanted was funding for training or workplace modifications, and many believed that government should be responsible for providing assistance (WCG International Consultants Ltd. et al., 2004). The main barriers that employers identified for hiring people with disabilities were the costs of worksite
accommodations, lack of awareness of where or how to recruit and support people with disabilities, and their belief that there is competitive pressure in their industry that requires new employees to be able to be productive immediately. The researchers for WCG International Consultants Ltd. also conducted case studies of seven companies. The major themes that came out of these case studies were: finding people with disabilities to hire was difficult; for small employers cost was a major concern; familiarity with people with disabilities is a key factor in opening doors; connecting with various disability organizations increases awareness for employers; and some industries work with sub-contractors and have little or no direct input on hiring policies (WCG International Consultants Ltd. et al., 2004).

**Characteristics of Employed and Unemployed People with Disabilities**

There have been several studies that have examined the characteristics of employed and unemployed people with disabilities. Many of these studies used people who suffered a spinal cord injury (SCI) to determine the characteristics of those individuals who were employed and unemployed to find out what characteristics predict employment. The characteristics that several researchers have found that distinguish the two groups are age, gender, education level, and level of injury. Several studies have found that the age at which the individuals suffered the SCI influenced their return to work prospects. Specifically, researchers found that the younger the individuals were when they suffered the SCI the more likely they were to be employed (Conroy & McKenna, 1999; Krause, 1996; Krause & Anson, 1996; Krause & Broderick, 2006).

The gender of the individuals also influenced their employment status. Several researchers found that being male was positively associated with being employed. This difference is believed to be related to cultural and social norms. Females may have external
pressures, such as family obligations, that will keep them out of the workforce (Krause, 1996; Krause & Anson, 1996; Krause & Broderick, 2006; Tomassen, Post, & van Asbeck, 2000). However, the 2001 PALS survey in Canada found that unemployment was higher in males than females. This disparity may have resulted from differences in sampling issues, such as the size of the sample, where the research occurred, and the composition of the sample.

Education level is also another characteristic that predicts employment after a SCI. Several studies have found that a higher education level both pre and post injury was positively associated with employment (Conroy & McKenna, 1999; Krause, 1996; Krause & Anson, 1996; Krause & Broderick, 2006; Murphy, Brown, Athanasou, Foreman, & Young, 1997; Schönherr, Groothoff, Mulder, & Eisma, 2005; Tomassen et al., 2000). Finally, the severity of the injury also had an impact on the employment status of people who suffer from SCI. The less severe the injury, the more likely an individual with a SCI will be employed (Conroy & McKenna, 1999; Krause, 1996; Krause & Anson, 1996; Krause & Broderick, 2006; Tomassen et al., 2000).

Some studies have found that other characteristics also improved the prediction of employment after SCI. Tomassen et al. (2000) found that having a minimally physical job pre-injury predicted employment post-injury. Researchers also found that being a minority, rating one’s health as poor, and overestimating physical limitations predicted unemployment (Krause, 1996; Krause & Pickelsimer, 2008). Conroy and McKenna (1999) found that individuals who were able to drive were more likely to return to work. The same authors also found that perceived discrimination and environmental barriers were positively associated with employment. The researchers suggest that perceived discrimination and environmental
barriers were related with employment because they resulted from the individuals’ actual experience in the workforce (Conroy & McKenna, 1999). That is, people who are in the workforce will experience more discrimination and environmental barriers compared to those who are not in the workforce, therefore positively associating these variables with employment.

There is conflicting evidence on how time since injury affects employment outcomes. Conroy and McKenna (1999) in a cross-sectional study found that more time that had passed since the participants' injury the more likely they were to be employed. In longitudinal studies however, researchers found that having less time since SCI increased employment (Krause, 1996; Krause & Broderick, 2006). This difference may result from the participants and the method the researchers used. To determine how length of time after injury influences employment status further research needs to be conducted.

Murphy et al. (1997) conducted a survey to determine predictors that determined which individuals were in the workforce and the length of time they were employed after SCI. These authors found that age, sex, impairment type, length of schooling prior to their injury, education post injury and compensation entitlement were predictors of the length of time they were employed after a SCI. The participants worked more after injury if they were paraplegic, male, older, returned to school after their injury, were more educated before their injury, and were not entitled to compensation.

Researchers have also examined the impact of locus on control on the employment outcomes of people who have a SCI. Locus of control is the extent to which one views rewards, punishment, or other events in their life as caused by their own actions or by factors beyond their control (Icek, 2002). Locus of control is measured across three dimensions,
internal, powerful others, and chance. Individuals who scores high on the internal dimension believe that they control what happens in their lives. Individuals who score high on the powerful others dimension believe that other people such as a physician has control over their life. Individuals who score high on the chance dimension believe that the events that happen in their life are completely due to chance (Wallston, Strudler Wallston, & DeVellis, 1978). Researchers have found that locus of control is related to employment outcomes for people with SCI (Krause & Broderick, 2006; Murphy & Young, 2005; Murphy, Young, Brown, & King, 2003). Krause and Broderick (2006) found that individuals with disabilities who were employed tended to have an internal locus of control. In contrast, people with disabilities who were unemployed were more likely to have a “chance” locus of control or a “powerful others” locus of control. Murphy et al. (2003) also found that an internal locus of control increased employment outcomes and chance locus of control increased the likelihood of being unemployed; however, they did not find that powerful others locus of control significantly influenced employment outcomes. These results suggest that people with disabilities who believe that they have a direct impact on their situation are more likely to be employed. A potential explanation for this finding may be that people with an internal locus of control would be proactive in finding employment and take personal responsibility for the situation in which they find themselves. If people with disabilities believe they have little control over their situation, they may believe that things such as luck influence their ability to find employment instead of taking responsibility for finding employment.

Barriers to Employment for Persons with Disabilities

The Canadian Council on Rehabilitation and Work (CCRW) conducted focus groups across Canada with individuals with disabilities and their experience in finding employment.
They found that many people with disabilities have the skills, training, and education required for the type of employment they were seeking but remained unable to find suitable employment. Even though these individuals have the qualifications and skills required they remain less likely to be employed than their non-disabled counterparts (Annable, 1993).

The CCRW focus group members stated that they thought that discrimination and lack of education among employers was the main barrier to finding work even though many of them had not experienced overt discrimination (Annable, 1993). The focus group members were also frustrated with having to compete with other job seekers for entry-level jobs, which they felt they were over qualified for as well as having to take positions that were not in their desired occupations (Annable, 1993). Focus group members also talked about the various disincentives to finding employment. Some of the focus group members received CPP benefits and were qualified for specific work but if they started to work, even part-time, they would lose their benefits (Annable, 1993).

A study conducted by Hernandez et al. (2007) illustrated that people with disabilities found that negative employer attitudes, limited transportation options, and lack of formal education were the main barriers to finding employment. Hernandez et al. (2007) also asked about experiences with vocation rehabilitation services, but reported mixed results. Participants were happy with the short-term help, such as access to computers, but were less satisfied with the long-term needs of employment; the employment opportunities they were provided were viewed as menial, temporary, and low paying. The counsellors also did not return telephone calls and failed to follow through on various services the focus group members had requested. In addition, the focus group members felt that the counsellors did not pay attention to their employment goals and if they did not follow through on the
employment opportunities provided to them by their counsellor, other services they required were not provided (Hernandez et al., 2007).

Another study that examined the experiences of persons with disabilities with disability services found that their experiences with these services could be positive but could also create barriers. These services allowed individuals with disabilities to develop their skills, as well as receive support and encouragement from staff and others that are in the same situation. However, these services can also become barriers if they provide the person with a disability with inappropriate interventions or if there is a high turnover rate of staff (Henry & Lucca, 2004). Either of these situations could create a feeling of mistrust and resentment, potentially preventing person with a disability from finding employment.

O'Day (1998) looked at barriers for people with multiple sclerosis (MS) who wanted to be employed. Participants stated that symptoms such as fatigue or mobility problems caused them to quit or prevented them from working. The participants felt that these symptoms prevented them from being a reliable employee, which was a source of frustration for the participants. They also felt that their symptoms caused employers and other employees to bully and discriminate because they did not understand the various symptoms of MS. The support networks of some of the participants also discouraged them from working. The major barrier for some of the participants was the fear of losing benefits and health care coverage if they returned to work. Other participants reported that the lack of knowledge and information about the various services that were available to them to help them get training or find employment was a major barrier (O'Day, 1998).

Yeager, Kaye, Reed, and Doe (2006) conducted a survey to examine the experiences of people with disabilities with employment and assistive technology. These researchers
found that the majority of respondents (76%) felt that the biggest barrier to achieving employment was the disability itself. Other barriers selected by the survey participants were the potential loss of benefits, lack of education, employer attitudes, problems with self-esteem, lack of transportation, financial issues, lack of jobs, fear, accessibility issues, lack of assistive technology, and communication barriers (Yeager et al., 2006).

Velasco (1996) conducted a study that looked at cultural influences and vocational rehabilitation services in California. Velasco's participants were refugees from China, and were members of the Hmong people. This researcher found that among Hmong women with a psychiatric disability, their families did not want them to work. The family members were surprised that Americans with disabilities were forced to work because in their culture a person with a disability was to be taken care of by his or her family; if the person with a disability worked, it was considered a disgrace (Velasco, 1996). Another study, conducted in Lebanon, found that families were reluctant to allow their family member with a disability to leave the house for work. They did not want them to work because they saw it as unsuitable, they were worried about their safety, and they believed that the individual was incapable of working (Wehbi & El-Lahib, 2007). Canada is a multicultural society consequently, these cultural influences are important to consider when looking at employment outcomes for people with disabilities.

**Self-employment and People with Disabilities**

The self-employment rates for people with disabilities are varied. Seekins and Arnold found that the rate of self-employment for people with disabilities is 21.2% compared to 7.8% in the general population (as cited in Rizzo, 2002). A census conducted in the United States (US) in 1983 found that 14.7% of people who reported that their disability prevented
them from working were self-employed, whereas the self-employment rate in the general population was 8% (Arnold & Seekins, 1995). In Canada, a study found that 17% of individuals with spinal cord injuries considered themselves self-employed (Canadian Paraplegic Association, n.d.) whereas 15% of Canadians considered themselves self-employed (Statistics Canada, 2003). These rates, although varied, suggest that people with disabilities may choose self-employment more often compared to able-bodied individuals.

**Vocational Rehabilitation Counsellors’ Perceptions**

Although people with disabilities appear to be choosing self-employment at a greater rate compared to non-disabled people, vocational rehabilitation counsellors have not encouraged self-employment as an option for people with disabilities. A study conducted in the US by Ravesloot and Seekins (1996) examined how vocational rehabilitation counsellors’ opinions of self-employment for people with disabilities affected the use of this particular vocational rehabilitation strategy. Ravesloot and Seekins found that the use of self-employment as a vocational rehabilitation strategy was positively correlated with the counsellors’ attitude toward self-employment as a rehabilitation outcome. That is, the more favourable the counsellors’ attitude towards self-employment, the more they used this strategy. Ravesloot and Seekins also found that the counsellors’ attitude reflected the particular states’ policy towards self-employment as a vocational rehabilitation strategy for individuals with a disability. If an organizational or state policy supports self-employment for people with a disability, there is a greater likelihood that the vocational rehabilitation counsellors will use or be open to using self-employment as a vocational rehabilitation strategy.
Kendall, Buys, Charker, and MacMillan (2006) conducted a survey of opinions of vocational rehabilitation counsellors in Australia. They found that rehabilitation counsellors had a positive view about self-employment for people with disabilities. The counsellors believed that self-employment is a valid choice and should be used if the individual wants to become self-employed. Counsellors with a positive attitude towards self-employment believed that the clients' social skills and supports were key to business success, whereas those counsellors with a negative attitude towards self-employment believed that business skills were most important factor to success. Kendall et al. also found that if the counsellor worked in an organisation where there was little support for self-employment as a vocational outcome for people with disabilities, the counsellor's opinion on self-employment for people with disabilities was also negative; thus, the counsellor did not support self-employment for people with disabilities.

Researchers have also found that self-employment as a vocational rehabilitation strategy is used more often in rural communities compared to urban ones. Arnold and Seekins (1995), in examining the attitudes of urban and rural counsellors, found that rural counsellors evaluated self-employment more positively and found the process more familiar compared to their urban counterparts. However, Arnold and Seekins did not find differences in the characteristics counsellors used when considering self-employment for a client, the counsellors' organization policy regarding self-employment as a rehabilitation strategy, or the complexity and clarity of the process involved in helping people with disabilities become self-employed. Overall, they found that self-employment as a rehabilitation strategy was used more often by rural counsellors compared to urban counsellors. The researchers did not
speculate why rural counsellors supported self-employment as a rehabilitation strategy more than their urban counterparts did.

In the US, the Rehabilitation Services Administration funded a national demonstration project that allowed consumers to choose the type of rehabilitation services they were going to receive. The results of this project were that among those participants who became employed as a result of the services they received, over 13% chose self-employment over regular employment (Callahan, Shumpert, & Mast, 2002). Callahan et al. believe that this project demonstrated the importance of allowing persons with disabilities the ability to choose self-employment as an option.

**Choosing Self-employment**

Palmer, Schriner, Cetch, and Main (2000) conducted interviews with four people with disabilities who were successfully self-employed to see what led them to choose self-employment. Three of the participants became self-employed through chance events such as a conversation with friends or seeing a need they could fill. Another influential factor was the availability of financial resources, as several of the participants used personal savings or received funding from family and friends for start-up capital. One participant approached a lending agency for a small business loan but was refused, and the participant believed it was because of his disability. Other factors that influenced the decision to become self-employed were contextual factors such as an understanding of own abilities, their understanding of what being self-employment entailed, and having training and support available to provide assistance (Palmer et al., 2000).

Neufeldt and Albright (1998) conducted research throughout the world that examined the various initiatives that helped people with disabilities become self-employed. They found
that there were four reasons why people with disabilities chose self-employment. The first reason to avoid discriminatory attitudes and practices that can be found in workplaces. The second reason was the lack of access to the labour market. The third reason for choosing self-employment was the desire to be one’s own boss, and finally the possibility of having a more flexible workday to accommodate their needs (Neufeldt & Albright, 1998)

**Personal Characteristics of People with Disabilities Who Are Successfully Self-employed**

Tseng and Parker (1976) conducted a study to determine attributes possessed by successful self-employed persons with disabilities. Tseng and Parker found that people who were successful in self-employment had 11 common characteristics. They found that the client’s perception of success, attitude towards work, being married, self acceptance, being personally conservative, having family support, wanting to be one’s own boss, autonomy, having self-control, a desire for income, and an attitude of self-sufficiency were the key characteristics that distinguished people who were successful in self-employment and those who were not successful (Tseng & Parker, 1976). This is not a recent study and the results may no longer be valid; however, no recent studies have examined the personal characteristics of people with disabilities who are successfully self-employed.

**Benefits of Self-employment**

There are several benefits of self-employment for people with disabilities. These include financial benefits, enjoyment of working, fulfilling personal expectations, and challenging stigma. The financial benefits for people with disabilities include being able to provide for themselves and their families and not relying upon government programs to provide an income. Another benefit identified by people with disabilities was the enjoyment of working which included being in control of their workload and their work activities
Self-employment also allowed people with disabilities to meet their personal goals, contribute to society and to do something that they want to do instead of settling for unsatisfactory job opportunities (Doyel, 2002; Griffin & Hammis, 2003; McNaughton et al., 2006). Some people with disabilities who are self-employed also believed that they could reduce stereotypes of people with disabilities by showing people their capabilities (McNaughton et al., 2006).

Negative Effects of Self-employment.

McNaughton et al. (2006) conducted focus groups with people with disabilities who were self-employed and found that one negative effect of self-employment is the reduction of government benefits. Other negative effects were the feeling that they were being taken advantage of because they had a disability, and that they received more praise than they deserved for the work that they had done. These experiences made them feel that they were denied learning opportunities because they did not receive appropriate feedback (McNaughton et al., 2006).

Assistive Technology

In Canada, there is a distinction between what constitutes assistive devices and assistive technology. Assistive devices were defined in the 2006 PALS as any specialized equipment and/or aids that allow people with disabilities to carry out their daily activities (Statistics Canada, 2008). The government of BC defines assistive devices in Section 2(1) of the Employment and Assistance for Persons with Disabilities Act (2002) as “a device designed to enable a person to perform a daily living activity that, because of a severe mental or physical impairment, the person is unable to perform”. Industry Canada (2008) defines
assistive technology as “any hardware, software, or system that overcomes or reduces the barriers inherent in standard technology. For example, standard computer input devices such as keyboards and mice require a certain level of mobility and dexterity from users.” The BC Ministry of Housing and Social Development (2007) defines assistive technology as “a Disability Support that includes computerized reading and writing systems, speech recognition systems, electronic magnification systems, assistive listening and communication systems, and alternate input and output devices that are required for clients to engage in employment and employment-related activities.” The distinction between the definition of assistive devices and assistive technology is based on how they will be used. Assistive technology is used for any devices that aid in employment or employment related tasks; alternately, assistive devices are used for everyday activities, which may include employment.

In 2006, Statistics Canada conducted a survey that focused on assistive devices for people with disabilities. They found that 2.7 million Canadians, 15 years and older required assistive devices to help them with their daily activities. Of those Canadians that required an assistive device, 61% had the assistive device they needed, 29% had some of their needs met and 10% had none of their needs met (Statistics Canada, 2008). That 10% of Canadians that had none of their needs met equated to 262,800 people who did not have the proper equipment to function on a day-to-day basis. Of those Canadians between the ages of 15 and 64, 12% did not have any of their assistive devices needs met, 32% had some of their needs met, and 55% had all their needs met; people 65 and over were the most likely to have all the assistive devices they required (Statistics Canada, 2008).
When it comes to how adults with disabilities pay for their assistive devices, the majority of them pay for the devices themselves. In Canada, 70% of adults rely on a parent or family member to pay for their assistive devices. Government programs and health care systems pay for 12%, the private sector pays for 7%, the assistive device belongs to someone else for 4%, and the other or not applicable categories were selected by 7%. In BC, 80% of people with disabilities had to pay for their own assistive devices. Government paid for 7% of the assistive devices, the private sector paid for 4%, the assistive device belongs to someone else for 3%, and the other or not applicable categories were selected by 6% (Statistics Canada, 2008).

When asked why their needs were unmet, the majority identified cost as the major issue. Over 56% of survey respondents said that they could not afford the assistive devices. The second most common reason reported by 9% of respondents was because the respondents did not know where to get the devices (Statistics Canada, 2008).

Finding Assistive Technology for Employment

The use of assistive technology has been shown to help people with disabilities to perform tasks that would be difficult for them to perform without the assistive device (Butler, Crudden, Sansing, & LeJeune, 2002). Some studies have shown that the job modifications that are required for people with disabilities to become employed are often low cost and low tech devices (Gamble, Dowler, & Orsline, 2006; McKinley, Tewksbury, Sitter, Reed, & Floyd, 2004).

Inge (2006) looks at assistive technology as a workplace support. She states that the persons with a disability need to identify their employment goals and interests before attempting to determine their technology needs. Inge states that the requirement of
identifying and acquiring the technology before they find employment may delay the process of finding employment. It may delay the process of finding employment because the individual may learn how to use that piece of equipment and then find that piece of equipment is not be compatible with the workplace. Inge further states that if assistive technology is going to be identified before employment, the devices should increase the person’s functioning in all environments instead of being workplace specific.

Langton and Ramseur (2001) examined successful accommodation strategies that can open up employment opportunities for people with disabilities. They stated that any worksite accommodation should follow nine steps: needs identification, technology assessment, job/task analysis, problem solving, cost analysis, solution development, implementation, training, and follow-up. Specialists need to look at the worker’s skills, abilities, limitations, type of work to be completed, location of the work, and the overall work environment to determine the appropriate assistive device the individual requires. Once a device is chosen, appropriate training and follow-up is needed to make sure that the device is assisting the individual and if the device does not provide the appropriate assistance, different options should be explored (Langton & Ramseur, 2001).

Timmons, Boeltzig, Fesko, Cohen, and Hamner (2007) looked at the One-Stop Career Center System in the US that provides assistive technology services for people with disabilities. The researchers found the centers that were successful had three features in common: providing an accurate assessment of assistive technology needs, standardized procedures in assessing the clients’ needs, and employing the opinions of experts in the assistive technology field. The most important feature successful centers required was a highly educated staff with regular training, which includes practice in using the equipment.
(Timmons et al., 2007). The researchers found that staff that were formally trained and kept up to date in the various types of available assistive technology were better equipped to help people with disabilities find the appropriate technology. Timmons et al. also found that just having the knowledge of the technology was not sufficient. What helped the most was having the staff regularly use the technology so that they understood what the technology was capable of and the situations in which it could be used. The final feature was the ability to make the most of limited financial resources. This was done by creating a lending library where individuals with disabilities who found employment but could not afford to purchase the equipment were able to borrow the device on a temporary basis until the employer could help address their needs. These service centers also had different levels of assistive technology. The first level would be assistive technology that was relatively simple to use and could be used by many different disability groups, the second level would be more complex, and the third level of technology would be only implemented on a case to case basis because of its complexity. These centers also used one source in purchasing the assistive technology, which allowed the centers to review and monitor their purchases and determine the extent of the need for equipment.

**Experience with Assistive Technology in the Workplace**

Driscoll, Rodger, and de Jonge (2001) looked at the barriers people with disabilities face when integrating assistive technology in the workplace. To determine the barriers in integrating assistive technology in the workplace they conducted five interviews with people who have successfully integrated assistive technology into their work and their employers. Driscoll et al. found that users’ and employers’ attitudes had an impact on the integration of assistive technology into the workplace. Users had to be persistent and assertive in getting
the required information on the various types of assistive technologies and advocating for the technology they wanted. The researchers also found that positive employer attitudes were required for successful integration of both the person with a disability and the technology into the workplace.

One barrier that Driscoll et al. found was the lack of knowledge about assistive technology and the various services that were available to both employers and employees. The majority of the employees knew that they required some type of assistive technology; however, they did not know what types of technologies were available to help them perform their work. The employees also felt that being able to view or consult another user of the technology who had a similar disability would allow them to understand both the potential and the limitations of the technology. The employers also had limited knowledge of the various assistive technologies that were available to them and felt that it was the employees' responsibility to find technology they required. Some employers looked for specialists to help in the search process and integration of the assistive technology; however, the majority of employers did not know that there were services available to aid in the search and integration of assistive technology.

Driscoll et al. (2001) found that the employers placed responsibility on the individual using the technology. The individuals were responsible for purchasing and integrating their own assistive technology into the workplace. They were responsible for starting the process of acquiring and maintaining the assistive technology, learning how to use the technology, and problem solving any issues came about in integrating the technology. Driscoll et al. found that the more the users were involved in the process of acquiring the technology, the greater the success of the assistive technology integration.
Other barriers that Driscoll et al. (2001) identified were in the actual use of the equipment. For example, some assistive technology was not compatible with the computer systems that the offices used. Further, the participants stated that having a backup system, such as another computer, or alternative computer access methods, is a factor in ensuring successful integration. In addition, employees and employers talked about the difficulty in learning how to use a device; there were time delays, frustration, and decreased productivity during the time the employee was being trained on the equipment.

Rodger and de Jonge (2005) identified five themes regarding integrating assistive technology in the workplace. The five themes were identifying the right technology, acquiring the technology, customizing and learning to use the technology, supporting the technology in the workplace, and empowerment at the workplace. Rodger and de Jonge found that people with disabilities had to rely on trial and error in selecting the proper device. The participants did not know what technology was available to them, or where to look to get the information they required. The participants also reported that the technology was complex and modifications were required to increase the efficiency of the technology, they could not afford to pay for the modifications required. These authors also found that their participants needed to develop self-advocacy skills for successful integration of the technology into their workplace.

Yeager et al. (2006) conducted a study of the experiences of people with disabilities and assistive technology in the workforce. These researchers found that 28% of the respondents felt that assistive technology helped them “immensely” at work and 36% felt that assistive technology at work helped them “a lot”. When asked what specific benefits they obtained from their assistive devices, 84% felt that it improved their productivity, 73%
felt that it improved their self-esteem, 59% had better attendance, and 43% had more paid work hours. When the respondents asked their employer for an assistive device, the majority received the device they requested and only 7% were outright denied the device (Yeager et al., 2006). Unfortunately, Yeager et al. (2006) also found that many of the respondents listed their disability as the primary reason for not working, and few of them saw technology as a way to overcome their limitations to become employed. These researchers believe that one possible reason for this discrepancy is that people were unaware of the technology available and the positive impact this technology can have on their ability to function in the workplace.

Hedrick, Pape, Heinemann, Ruddell, and Reis (2006) explored employment and assistive technology. These researchers found that the cost of assistive technologies deemed as important for work 3.5 times more expensive than other devices. For people with disabilities who are self-employed, they found that the mean cost of assistive technology devices was 68% to 124% more expensive than for any other type of employment. Hedrick et al. did not hypothesize why there was such an increase in the cost of assistive technology devices for people with disabilities that are self-employed, but suggested that this would be a significant barrier to people who have a desire to become self-employed.

Research conducted on assistive technology and people with disabilities in the workforce has focused on the process in which persons with a disability acquire their assistive device and the integration of that device in their workplace. One study looked at the experiences of people with disabilities using assistive technology into the workplace; however, it did not look at the barriers that people with disabilities face in finding appropriate assistive technology in order to become employed. Little research has been conducted on the needs and barriers faced in acquiring assistive technology for people with disabilities who are
self-employed. This thesis will examine the issues people with disabilities faced when seeking assistive technology, employment, or self-employment in northern and rural BC.

*Current Study*

To explore the issues people with disabilities face in acquiring and using assistive technology, and seeking employment in northern BC a mixed methods sequential exploratory design was used, which involved collecting qualitative data followed by a quantitative phase (Creswell & Clark, 2007). For the first phase an exploration of the experiences of people with disabilities acquiring and using assistive technology and seeking employment in northern BC, focus group data have been collected from members of BCPA and service providers in Prince George. The initial reason for collecting qualitative data was that there are no existing instruments which examined the experiences of people with disabilities with assistive technology, employment, and self-employment. The main themes and issues identified by the focus group members were developed into a survey. The second, quantitative phase followed up on the first phase to get a broader view of the issues people with disabilities face with assistive technology and employment through out northern BC. In the quantitative phase, survey data were collected from members of BCPA in northern BC.
CHAPTER THREE
QUALITATIVE PHASE

Method

The limited research and survey tools regarding the experiences of people with disabilities in finding assistive technology and employment or self-employment, and the general lack of information in this area, necessitated conducting focus groups in order to identify potential themes and issues that individuals with disabilities in northern BC face. The process of holding these focus groups was reviewed by and received ethics approval of the Research Ethics Board at the University of Northern British Columbia (UNBC). Two focus groups were conducted. One focus group consisted of people with disabilities who are clients of BCPA, and the second focus group consisted of service providers. The focus group with people with disabilities was conducted in order to discover the issues faced in finding employment and assistive technology and to identify questions that needed to be asked and answered in the survey. A service provider focus group was conducted to obtain an understanding of the challenges they face in providing services in northern BC. In addition, the service providers work with a large number of people with disabilities and provided insight into the challenges that people with disabilities face on a daily basis when seeking employment.

Participants

People with Disabilities Focus Group

A total of nine participants took part in the people with disabilities focus group. All were members of the BCPA in Prince George and had a physical disability. The group had two females and seven males. The ages of the participants ranged from 27 to 54 with an
average age of 44. The majority of the participants were paraplegics ($n = 6$). One focus group participant was an incomplete paraplegic, another was a quadriplegic, and a third had cerebral palsy. The length of time that the participants had been living with their disability varied from three years to 44 years. One participant was born with a disability but the group, on average, had lived with their disability for 18.5 years. Five of the participants were employed, one of which was self-employed, three were unemployed, and one was living on a pension.

_Service Providers' Focus Group._

A total of 10 participants took part in the service providers’ focus group. These individuals came from various organizations found in northern BC and two participants represented organizations in southern BC. The participants provided a wide range of services, including employment agencies, assistive technology services, and community support services for people with disabilities. The average time the participants have worked in this field was 11 years.

_Measures_

A short demographic questionnaire and a semi-structured interview protocol were developed to determine general themes and issues of assistive technology and employment agencies available in northern BC. For the focus group with people with disabilities, the demographic questionnaire was developed to gather information regarding employment status, age, type of disability and the length of time they had experienced their disability (Appendix A). For the focus group with service providers, the demographic questionnaire was developed to gather information regarding the type of services the agency provides and the length of time they have been doing this type of work (Appendix B). The semi-structured
interview protocol was developed to facilitate a free and open discussion of the issues and knowledge of assistive technology and employment agencies available to people with disabilities in the community (Appendix C; Appendix D).

Procedure

Participants for the people with disabilities focus group were recruited through the BCPA offices in Prince George. Potential participants for the service providers’ focus group were contacted by mail or email and asked if they would like to participate in the study. An information letter was sent to all potential participants explaining the purpose of the study and the time and the place where the focus group would occur. For those individuals who did not respond to the invitation, an employee at the BCPA offices contacted them and personally invited them to participate in the focus group until an adequate number of participants was attained. The focus group ran for approximately one and a half to two hours. At the beginning of the focus group, the researcher provided an overview of the process, which included the purpose and background of the study, guidelines for discussion, and issues of confidentiality. Focus group participants were informed that they would be provided a summary of the focus group discussions and the main themes that emerged from the focus group so that they could review and give feedback on the interpretation of the findings. Before obtaining consent from the participants, the researcher asked if there were any questions or issues to be addressed. Consent to participate in the study was obtained and the participants were asked to sign a consent form. The focus groups’ discussion was digitally recorded and for the people with disabilities’ focus group, the researcher’s thesis supervisor and another researcher took handwritten notes.
Data Analysis

In order to identify the main themes in the data the general procedures found in Creswell and Clark (2007) were used. First, each focus group’s digital recording was transcribed and compared to the notes to verify accuracy. Second, the transcript was reviewed several times to get an understanding of the various issues that were discussed and general topics areas were recorded in the margins of the transcript. Third, specific quotes were selected that characterized the general topic areas in the focus groups’ discussion. These quotes were then placed on index cards for further categorization. Finally, quotes were organized into general themes and subthemes.

Once the main themes and subthemes were identified, the researcher created written summaries, which included the main themes and subthemes and interpretation of the themes. To assess validity of the summaries, member checking was employed. The researcher sent the participants the summaries and asked if the findings were an accurate reflection of the focus group discussion and their experiences. The participants were asked to respond only if the summary contradicted their memory of the focus group discussion. One out of the 19 focus group participants responded and that person said that it was an accurate representation of the discussion.

Results

Twelve themes and subthemes emerged that people with disabilities encounter when seeking employment and the use of assistive technology. This section will present the twelve themes and subthemes that emerged from the focus groups. The 12 themes and subthemes that emerged from the focus group discussions were disincentives, assistive technology, transportation, stigma, employer issues, being emotionally able to work, bureaucracy and
funding, difficulty fining funding, requirements for funding opportunities, barriers to self-employment, finding employment, and experiences with employment agencies.

1. Disincentives

The first disincentive identified in both focus groups was the possible loss of benefits, such as Canadian Pension Plan Disability (CPPD). There are limits to what people with disabilities can earn in a year without losing the benefits they currently have. These limits are low, $4200 a year for Federal funding and $500 a month for BC provincial government funding. These limits deter people with disabilities from seeking employment because of the fear of not being able to obtain long-term employment and then they will have to re-qualify for the benefits, which may take several months or years. Several participants talked about the possibility of losing benefits when they went back to work and closely monitoring the number of hours worked in order to ensure maintenance of benefits. One participant said “some of those guys are working and they work closely with somebody else to ensure they don’t go over their hours so that they can still maintain their benefits and get back in the workforce on a level that is suitable to them.” The participants also said that the CPPD system is an all or nothing system saying, “if you go back to work you’ll lose your benefits, or you lose some medical and that, those are some of the supports that people need.”

Another disincentive identified in the focus group with people with disabilities was the low wages. If people with disabilities cannot find employment that will cover living expenses, finding employment is not a viable solution or justifies losing their benefits. One participant expressed this point very clearly by saying:

Sometimes people are worried to, the risk of whatever funding source they do have, if they work a little too much then what happens to the other costs that they incur [such as] medical, equipment, and other stuff. If their wage isn’t high enough to compensate for that then they might not even cont., to push ahead or try.
2. Assistive Technology

Lack of knowledge of assistive technology was another theme that came out of the focus group with people with disabilities. When asked about assistive technology available to them, the participants responded with the question of “which was what exactly?” When told what it was, they did not know of any assistive technology that would help them to become employed or self-employed.

When the focus group with people with disabilities was asked how they would pay for their assistive technology for employment purposes, modifications, or repairs, one member pulled out his credit card, to symbolize that it was all on them. If he needed an assistive device, he would have to pay for it. The service providers’ focus group also talked about the cost of the assistive technology. The participants said that cost is the main barrier for the utilization of the devices. One participant said “that’s what I find dealing with people on a daily basis, is you can generally find what you want or what they want it’s just a matter, if they can actually afford to get it or whether their insurance will cover it basically.”

3. Transportation

Another theme that was discussed was transportation. Many people with disabilities use the public transit systems to get to and from work. In small communities, there is no public transit system or it is inadequate. The public transit system may have limited hours and days during which it operates and this restricts the number of hours or days that a person with a disability can work. One focus group participant stated, “it doesn’t matter whether it’s social or getting to work, you already mentioned the transit system that’s available to get you back and forth to work, but I mean it’s still, I mean you can’t work late.”
In addition, if you are able to take the bus you are ineligible for other transit services such as handyDART. One focus group participant recalled the difficulty an individual with disabilities had with the transit system saying, “I know with some of the people we work with that can take a bus, that they aren’t eligible for, Handy-Circle or Carefree um you can [have] one or the other, you can’t have both and certainly the busses don’t go to all the places that Carefree goes to.”

Another issue is the weather. If a person with a disability lives in a community where there is a lot of snow and ice, this seriously limits his or her ability to get around in winter. Scooters, and wheelchairs are not designed to function in the snow and ice, which limits the person’s ability to get to work or around. One focus group participant, recalling an employee’s difficulty getting around the city in the winter said:

there was so many days in this town that he was unable to come to work because of the conditions of the roads and sidewalks, um, he was quite capable of coming, doing the work when he got there but unfortunately the road conditions um, weren’t clear enough for him to get there, so, um, I think in that aspect um it would be a barrier for many people in scooters and people in wheelchairs.

4. Stigma

The focus group members talked about the stigma they face when looking for employment. One focus group member talked about having to “work twice as hard at the same job that a man would have to work at, at the same job just, just to stay even with the man, women have to try harder I mean that’s, we have to try twice as hard just to be, half as good as an abled bodied person at the same job, I mean that’s not gonna happen.” Focus group members talked about how employers only see the disability, not what people with disabilities are capable of, and having to try and shift employer’s focus to the abilities of people with disabilities. One focus group member who is an employment counsellor said,
“it’s important [for] some employers when you start showing the abilities that certain people have, they go ‘well that’s interesting’ and then they take a second look at this person and see their abilities and not [their disability].” People with a disability have to break through the stigma before they will even be considered for an employment opportunity.

5. Employer Issues

There were several employer issues discussed in the focus group that prevented people with disabilities from becoming employed. One of the issues identified was that there are several costs associated with hiring a person with a disability especially for small businesses. Some of these costs include adaptive equipment and structural changes that may be needed to accommodate a person with a disability. One participant said:

for small business for example you know if I were a small business person and somebody with a disability wanted to work for me, to a certain extent I would go okay well all things being equal, you know you have the same skills or education, ah, yeah I guess, I could look at hiring you, but then there is, oh shoot, I gotta build a ramp, I gotta build a work bench, I gotta put a hoist in, ah, this person has a disability, the pharmaceutical costs.

The lack of knowledge of many employers in regard to the cost of accommodations can also be a barrier for many in hiring people with disabilities. One focus group member talked about the cost of accommodation, “employers really feel that when they hear accommodation or you know an extra expense is what they’re hearing, right. Ah, um, and typically I think on average the typical accommodation is you know up to mainly 500, less than $500 really.” In addition, there is a lack of knowledge of the incentives available to cover these costs, “people who are looking for work, there are funds available for, to go through say Service Canada such as the Opportunity Fund so that we can accommodate some of these assistive technology.”
6. Being Emotionally Able to Work

Another barrier that was brought up was being emotionally able to work. One participant said it very clearly after he became a paraplegic, “You work through all this emotional bullshit to get through what you’re going through it you know, put yourself in a chair whatever eh, so to get through all that and then you’re expected to be this person that will go out there, you know, better now, is everybody built that way, I don’t know, I doubt that they are so what do they do right.” This speaks to the emotional toll acquiring a disability has on an individual and the further toll of then being expected to go out and find employment.

7. Bureaucracy and Funding

The most discussed issue in both focus groups was related to funding and the bureaucracy involved in applying.

8. Difficulty finding funding. Many focus group members talked about how difficult it is to find funding opportunities and how many different steps are involved in getting the funding, which can result in individuals giving up. One participant said, “I think there’s probably funding out there it’s just not, I don’t think it’s on the surface, I think everyone has to dig to get it, it probably takes weeks if not months of research to find how to get funding from some obscure place.” Another participant talked about why they give up looking for funding by stating, “it seems that to get started looking for funding and what not it’s such a jump through the hoop process and they just get so tired of it and they walk away.”

9. Requirements for funding opportunities. Many of these requirements for funding require that people with disabilities deem themselves “totally incapable, incompetent, and unable to do anything.” Through this process, people with a disability may begin to see
themselves as incapable and rely upon these programs for the rest of their lives instead of seeking out employment. If they then choose to seek employment, they risk losing the support of these programs.

In addition, people with a disability have to apply for funding before they are employed. An employment counsellor said, “If you’re employed then you’re not eligible for employment funding, or operational funding unless you’re underemployed which is 20 hours or less, right then you can still receive our services.” This requirement restricts people’s ability to advance in their chosen careers because they may require different assistive devices for the various positions that are available to them.

10. Barriers to Self-employment

Self-employment has its own unique challenge. Many people with disabilities do not have the disposable income that would be needed to start a business. One participant talked about finding money to start a business, “just require a lot of, of capital, and if you don’t have someone there, a bank or you know some sorta funding or partner or you know a way to get those funds, I mean it could be quite a struggle.”

In addition, one participant talked about the risks they have to take to become self-employed, which includes the risk of losing her benefits to try to start her own business and having a hard time getting her benefits back if she was unable to perform the job. One participant said:

you don’t know from one month to the next … how much you’re gonna actually take in, and you know to come off, of in my case, CPPD, um, which only allows you to earn $4200 and then you’re off and basically you know if your consultation business doesn’t pay you enough then you’re out of pocket, and they basically say well you can come back on if your disability gets worse, well it’s not my disability is worse it’s just the work.
The benefits that people with disabilities are given are to cover day-to-day costs and other expenses such as medical costs. One employment counsellor said:

that someone I was assisting just ran into is that he had a business opportunity right there waiting for him within you know a week um however he had to come up with 25% of the cost, and people, many people with disabilities don't have that kind of money because I mean their money goes to other things, medical costs etc., and for him that was a barrier I think he lost out on that opportunity.

Without an outside source for funding, self-employment opportunities, individuals with a disability may miss potential self-employment opportunities.

11. Finding Employment

Focus group members talked about finding employment through networking and volunteering. These activities provide the opportunity for potential employers to get to know them as individuals and observe their capabilities, not just their disabilities. This may lead to a paid position in their desired field. One participant described this experience, “I want this thing done, I can’t pay you, but would you mind doing it?’ Oky dokey, give it to me and I’ll see what I can do. Then that [opportunity] goes to something else that guy … needs someone, ‘well my friend wants to hire you part time,’ okay there you go, you have job you want.”

12. Experiences with Employment Agencies

While some focus group members had a positive experience with the employment agencies, the majority did not. One complaint was being sent for training for a particular field that when the training was completed was not useful for the job. One participant said, “they have degrees in computer science and they could find jobs and they were coming to us looking for specific training in computer. Now they wasted 4 years of training for stuff that you might as well stuff it because it’s not worth nothing.”
Another focus group participant talked of the lack of knowledge in regards to what employment opportunities are available in their community. She/He said, “I told them I wanted to get into the web design, oh there’s no work in [that field] ... I’ve already had three job offers doing web design I haven’t even finished my courses yet, what gives here, I mean who is telling the truth, am I right or are they right, I think they’re lying through their teeth, I just, they’re just ignorant they don’t know what they’re talking about.”

A third focus group member talked about the inappropriate employment suggestions given to him by an employment counsellor. She/He stated that the employment counsellor did not take into account his/her age, disability, employment history and education when suggesting the types of employment he/she should pursue:

well I was told, you know, since you worked in the forestry industry most of your life, I have transferable skills ... [the employment counsellor] tried to indicate I should work in a sawmill or an office like, cause I have a background in forest industry. Yeah well what kind of background just nothing transferable I don’t know anything about the sawmilling business I’ve been a truck driver and equipment operator most of my life. I worked out in the bush I’ve never been in the mill ... [the employment counsellor] tried to tell me that, I could work in an office in the mill ... cause of the computer part of it.

Discussion

This phase of the research focused on discovering the main themes that people with disabilities face when seeking employment, and using assistive technology in northern BC. These identified themes were used to develop the survey used in the quantitative phase.

The survey has several sections. The first section of the survey focuses on assistive technology. This section asked people with disabilities about their knowledge of assistive technology and their perceived need for assistive technology to become employed. It also asked about where they would go to learn about assistive technology, if they knew where they could purchase assistive technology in their community, and if they could purchase the
assistive technology they required to work. A second section focused on the issues people with disabilities face when seeking employment, including disincentives, transportation, stigma, lack of jobs, and the costs involved in hiring people with disabilities. Questions were also asked about barriers when seeking employment, what most limits them from working and the desire for and support needed for self-employment. A third section of the survey examined the funding process, including funding for employment opportunities, assistive technology, and self-employment opportunities. It specifically asked about the difficulty of finding funding opportunities, the process of applying for funding, and the time it took to get the funding. A final section focused on the knowledge and experience with employment agencies, and if these services were helpful.
CHAPTER FOUR
QUANTITATIVE PHASE

Introduction

This phase of the research project built on the first qualitative phase by obtaining a broader view of the issues people with disabilities face with assistive technology, and employment throughout northern BC. This phase utilized the survey that was developed using data from both the literature review and the qualitative phase.

Research Questions

As a result of the focus group discussions in the previous qualitative phase, several questions were raised and developed into research questions that the results of the survey will help answer. The research questions are:

1. How many people with disabilities in northern BC know what assistive technology is, and are there differences based on gender, age, onset of disability, race/ethnicity, type of community, and education level?

2. Are people with disabilities aware of the assistive technology they would need to become employed?

3. Could people with disabilities afford to pay for the assistive technology themselves?

4. Do people with disabilities know where to go to test and purchase assistive technology?

5. Of those people with disabilities that are employed, have they received assistive technology that has helped them work and if not, why have they not received the assistive technology?

6. What are the benefits of assistive technology for employment or volunteerism?
7. What barriers do people with disabilities perceive in northern BC when seeking employment?

8. What do people with disabilities think most limits them from working?

9. Do people with disabilities want to be self-employed?

10. What are the barriers to them becoming self-employed?

11. What impact does funding have on assistive technology use and knowledge, and employment status?

12. What is the knowledge and utilization level of employment agencies in northern BC?

**Method**

In this phase, a survey was distributed to members of BCPA throughout northern BC to get a broader view of the issues they face when seeking assistive technology, and employment in northern BC.

**Measure**

The survey was developed to examine assistive technology and employment for people with disabilities using the themes identified in the focus groups, then it was further refined using the literature and from previous survey questions. Questions were developed that examine various aspects of the themes identified in the focus groups. The survey enquires about demographic characteristics and background of the participants, their experience, and knowledge of assistive technology, experiences with employment agencies, funding, employment, and self-employment.

The survey was further vetted by conducting a pilot study. The pilot study took place at the Disability Service center at UNBC. Participants provided feedback on the layout of the
survey, the clarity of the questions, and time it took to complete the survey. Once the questions were refined, the survey was distributed as described below.

Participants

The participants were clients of the BCPA offices in Prince George. The BCPA offices in Prince George have clients throughout northern BC. All clients of BCPA have some type of physical disability and have experience with the phenomena of interest. They provided informed responses based on their own lived experiences.

Procedure

The survey was mailed out to 152 clients of the BCPA offices in Prince George with a postage paid self-addressed envelope. The respondents were asked to fill out and mail back the paper survey. Participants were informed that an electronic version of the survey was available. Once completed, the electronic version of the survey could be emailed directly to the researcher or printed and mailed to the researcher using the envelope that was provided with the paper survey they received in the mail. The participants were given one month to fill out the survey and mail it back. However, if the survey was not received by the researchers after two and a half weeks participants were contacted by a BCPA staff member reminding them to complete the survey and mail it back and offering assistance to complete it if needed.

The participants received $25.00 to thank them for filling out the survey. The participants were asked to fill out an address form and mail it back with the survey in order to be compensated. These forms have been kept separately from the survey responses.

Data Analysis

To answer the research questions, the survey data were analysed using descriptive statistics, mainly counts and percentages. To determine if the differences in proportions were
significant, a two-way contingency table analysis was used. An alpha level of .05 was used to evaluate significance for all statistical tests. If there were more than two possible categories follow up pair-wise comparisons were be conducted, using the Holm’s sequential Bonferroni method to control for Type I error (Holm, 1979).

Results

Of the 152 surveys that were distributed, one was returned as undeliverable, one participant was recently deceased, and 36 people responded, for a response rate of 24%. By using BCPA members, we focused on people with disabilities who have mobility impairments in northern BC; however, we make no claims that the sample is representative of all people with disabilities in northern BC.

Demographics

The demographic characteristics of the 36 survey respondents are presented in Table 1. Respondents tended to live in a city (50%), and were Caucasian (78%), male (69%), of working age (83%), unemployed (67%), and either paraplegic (42%) or quadriplegic (36%). Respondents also acquired their disability mostly between the ages of 25 to 44 (47%); one respondent was born with their disability. The respondents were also highly educated with most having some type of post secondary education (53%), including trade school, college, or university. The majority of respondent’s main source of income was from CPPD (67%).
### Table 1

**Demographic Counts of the 36 Survey Respondents**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>18-44</td>
<td>10</td>
</tr>
<tr>
<td>46-64</td>
<td>20</td>
</tr>
<tr>
<td>65+</td>
<td>6</td>
</tr>
<tr>
<td><strong>Age of Onset of Disability</strong></td>
<td></td>
</tr>
<tr>
<td>Birth-24</td>
<td>10</td>
</tr>
<tr>
<td>25-44</td>
<td>17</td>
</tr>
<tr>
<td>45+</td>
<td>9</td>
</tr>
<tr>
<td><strong>Highest Level of Education Attained</strong></td>
<td></td>
</tr>
<tr>
<td>No High school</td>
<td>12</td>
</tr>
<tr>
<td>High School</td>
<td>5</td>
</tr>
<tr>
<td>Post-Secondary</td>
<td>19</td>
</tr>
<tr>
<td><strong>Type of Community</strong></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>18</td>
</tr>
<tr>
<td>Town</td>
<td>6</td>
</tr>
<tr>
<td>Village</td>
<td>6</td>
</tr>
<tr>
<td>Rural</td>
<td>6</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>28</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td>Aboriginal</td>
<td>6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1</td>
</tr>
<tr>
<td>Did not answer</td>
<td>1</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>11</td>
</tr>
<tr>
<td>Unemployed</td>
<td>14</td>
</tr>
<tr>
<td>Completely prevent from working</td>
<td>8</td>
</tr>
<tr>
<td>Did not answer</td>
<td>3</td>
</tr>
<tr>
<td><strong>Disability Type</strong></td>
<td></td>
</tr>
<tr>
<td>Low Vision</td>
<td>1</td>
</tr>
<tr>
<td>Hard of hearing</td>
<td>2</td>
</tr>
<tr>
<td>Paraplegic</td>
<td>15</td>
</tr>
</tbody>
</table>
Knowledge of Assistive Technology

This section examines the knowledge level of assistive technology in northern BC and if it differs based on gender, age, age at onset of disability, race/ethnicity, type of community, and education level. Respondents were asked if they knew what assistive technology was, and 23 (64%) respondents said that they were aware of what assistive technology was, with only 13 (36%) saying that they did not know.

Gender. Of the 23 respondents that were aware of assistive technology 16 (69%) were male and seven (30%) were female. Gender and knowledge level of assistive technology were not significantly related, Pearson $\chi^2 (1, N = 36) = 0.00$, ns, Cramer’s $V = .003$ The results suggest that both males and females were equally aware of assistive technology.

Age. Among 18 to 44 year olds, 9 of 10 (90%) knew what assistive technology was; whereas, 13 of 20 (65%) of 45 to 64 year olds and one of 6 (11%) for 65 plus year olds knew what assistive technology was. To determine if these differences in proportions were significant a two-way contingency table analysis was conducted. Age and knowledge level of assistive technology were significantly related, Pearson $\chi^2 (2, N = 36) = 8.77, p < .05$, Cramer’s $V = .49$. Table 2 shows the results of the follow-up pair-wise comparison analyses. The pair-wise comparison between 18 to 44 age group and the 65 plus age group was
significant; however, the other pair-wise comparisons were not significant. The results suggest that the respondents that were younger were more aware of assistive technology compared to the older respondents.

Table 2
Results for the Pair-wise Comparisons for Knowledge Level of Assistive Technology and Age

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Pearson Chi-square</th>
<th>p value (Alpha)</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-44 vs. 64+</td>
<td>8.60*</td>
<td>.003 (.017)</td>
<td>.73</td>
</tr>
<tr>
<td>45-64 vs. 64+</td>
<td>4.34</td>
<td>.04 (.025)</td>
<td>.41</td>
</tr>
<tr>
<td>18-44 vs. 45-64</td>
<td>2.31</td>
<td>.14 (.050)</td>
<td>.27</td>
</tr>
</tbody>
</table>

* p value ≤ alpha

Age at onset of disability. Among those respondents who were aware of assistive technology, 80% (8 of 10) acquired their disability between the ages of birth to 24 years old, 65% (11 of 17) acquired their disability between the ages of 25 to 44, and 44% (4 of 9) acquired their disability after the age of 45. Age at onset of disability and knowledge level of assistive technology were not significantly related, Pearson $\chi^2 (2, N = 36) = 2.61$, ns, Cramer’s V = .27. There was no difference on the knowledge level of assistive technology based on the age at which respondents acquired their disability.

Race/Ethnicity. Of the 35 respondents who declared their race/ethnicity, 75% (21 of 28) of Caucasians that knew of assistive technology compared to 29% (2 of 7) of other races/ethnicities. The race/ethnicity of the respondents and the knowledge level of assistive technology were significantly related, Pearson $\chi^2 (1, N = 35) = 5.36$, $p < .05$, Cramer’s V = .39. The results suggest that Caucasians are more aware of assistive technology.

Type of community. Of respondents who knew what assistive technology was, 67% (12 of 18) lived in a city, 67% (4 of 6) lived in a town, 50% (3 of 6) lived in a village, and 67% (4 of 6) lived in a rural community. Type of community and knowledge level of
assistive technology were not significantly related, Pearson $\chi^2 (3, N = 36) = 0.62$, ns, Cramer's $V = .13$. These results suggest that the type of community people live in had little impact on their knowledge level of assistive technology, but the sample was small which reduces the ability to detect differences.

*Highest level of education attained.* Of respondents who knew of assistive technology, 33% (4 of 12) did not have high school, 60% (3 of 5) had completed high school, and 84% (16 of 19) had postsecondary education. The level of education the respondents had and the knowledge level of assistive technology were significantly related, Pearson $\chi^2 (2, N = 36) = 8.29$, $p < .05$, Cramer's $V = .48$. There was difference on the knowledge level of assistive technology based on the highest level of education attained. Table 3 shows the results of the pair-wise comparisons. The only pair-wise difference that was significant was between those who did not graduate from high school and those who have some type of postsecondary education. The results suggest that people who have some type of postsecondary education were more likely to know more about assistive technology compared to those who have not finished high school.

Table 3

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Pearson Chi-square</th>
<th>$p$ value (Alpha)</th>
<th>Cramer's $V$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No high school vs. Post Secondary Education</td>
<td>8.32*</td>
<td>.004 (.017)</td>
<td>.52</td>
</tr>
<tr>
<td>2. High school diploma vs. Post Secondary Education</td>
<td>1.41</td>
<td>.236 (.025)</td>
<td>.24</td>
</tr>
<tr>
<td>3. No high school vs. High school diploma</td>
<td>1.04</td>
<td>.309 (.050)</td>
<td>.25</td>
</tr>
</tbody>
</table>

* $p$ value $\leq$ alpha
**Assistive Technology for Employment**

This section examines if people with disabilities are aware of the various types of assistive technologies available to work. When the respondents were asked if they knew about the various types of assistive technology that are available to them to help them engage in employment, 47% were aware of the assistive technology available, and 53% were unaware of the assistive technology available to them. The respondents were then provided a list and asked to select all the assistive technologies or accommodations that they would require to help them engage in employment. Responses are summarised in Figure 1. The respondents selected workplace accommodations the most often, such as accessible washrooms, transportations, parking, and elevators. The option of being unaware of an assistive device that would help them become employed was only selected 6 times. This suggests that respondents were aware of assistive devices or accommodations that would assist them in becoming employed.

**Finding Assistive Technology**

This section examines if people with disabilities know where they can test or purchase assistive technology. The percentage of people with disabilities who knew where they could test assistive technology was 29%, and the percentage of those who did not know where they could go to test assistive technology was 71%. Participants were also asked if they knew where they could purchase assistive technology. The percentage of people with disabilities who knew where to purchase assistive technology was 34%, and the percentage of those who did not know where they could go to purchase assistive technology was 66%. The majority of the respondents did not know where they could go to test or purchase assistive technology.
Figure 1. Counts for assistive technology or accommodations that people with disabilities would require to engage in employment. Respondents could endorse multiple responses.
Costs of Assistive Devices

This section examines if people with disabilities think they could afford to pay for the assistive devices they require. When asked if they could pay for the assistive device they require to work themselves only 11% said they could pay for the assistive device, and 89% said that they could not afford to pay for the assistive device. These proportions suggest that the respondents believe that they could not afford to pay for their own assistive devices.

Assistive Technology and Work

This section examined if people with disabilities who are or have been employed have received the accommodations or assistive technology they require to work, and if they have not, why they have not received the assistive technology or accommodations. Of the 36 respondents, 13 are working or have worked in the past. When asked if they have received the assistive technology or accommodations that they require to work, 62% (8 of 13) said that they have received the assistive technology or accommodations they required, 38% (5 of 13) have not received the assistive technology or accommodations they require. The majority of the respondents have received accommodations or assistive technology they require to work.

Of the five individuals who had not received the assistive technology or accommodations they require to work, they were asked to state why they have not received them. Being unaware of something that would help was selected three times. The other responses which were too expensive, on a waiting list, not available locally, and condition was not severe enough were each selected once. These results suggest that the awareness of assistive technology or an accommodation is limited, or that the assistive technology that these respondents require to work does not yet exist.
Benefits of assistive technology use at work. When asked about the impact assistive technology use or accommodation had on their productivity at work, 38% (5 of 13) said that productivity remained the same, 31% (4 of 13) said that it slightly increased, 23% (3 of 13) said that it greatly increased, 8% (1 of 13) said that it decreased. When asked about the impact of assistive technology use or accommodations had on the number of hours they could work, 85% (11 of 13) said that there was no difference, and 15% (2 of 13) said that they slightly increased. When asked about the impact of assistive technology use or accommodations had on their attendance at work 69% (9 of 13) said that it stayed the same, 15% (2 of 13) said that it slightly increased, 8% (1 of 13) said that it greatly increased, and 8% (1 of 13) said that it decreased. When asked about the impact of assistive technology use or accommodations had on their self-esteem 46% (6 of 13) said that it stayed the same, 39% (5 of 13) said that it increased and 15% (2 of 13) said that it greatly increased. These results suggest that assistive technology use and accommodations at work can increase productivity, and the workers’ self-esteem, but does not greatly affect the number of hours or days they can work.

Barriers to Employment

This section examined what barriers people with disabilities perceive in northern BC which prevents them from seeking employment. The 36 respondents were asked what barriers they have encountered that prevented them from seeking employment. The responses are found in Figure 2. The most commonly selected barrier that prevented them from seeking employment was the potential loss of their current income. Respondents also identified the weather in the winter, lack of accessible transportation, and no employer could/would
My disability is a barrier
Employers could/would accommodate me
Community is too small
No jobs available
Weather
Lack of accessible transportation
Training is not adequate
Been a victim of discrimination
Being isolated from other workers
Information about jobs not adapted
Family Responsibilities
Loss of current supports
Loss of income

Number of Times Selected

Figure 2. Counts for barriers that prevent people with disabilities from seeking employment. Respondents could endorse multiple responses.
accommodate them as barriers that prevent them from seeking employment. Some respondents added in their disability as a barrier to seeking employment.

In an open-ended question asking about other issues that have prevented them from looking for work, people talked about not knowing what they are capable of with their disability. As an example, one respondent said, “I don’t know what I can do with my disability. I sit here and think and say what can I do?”

**Most Limiting Factors**

Respondents were asked to rank the top three limitations that prevent them from working. To determine which factor was most limiting the rankings were reverse coded for each factor and then summed. Once the responses are summed, the highest number represents the most limiting factor and the smallest number is the least limiting factor. The responses and rankings are found in Table 4. The most limiting factor was “my disability”. Access in general to get in and around places was another key limiting factor. Potential loss of benefits was also frequently mentioned by the respondents as a limiting factor.

Table 4

*Counts and Reverse Coding Value of the Most Limiting Factors That Prevent People with Disabilities from Seeking Employment*

<table>
<thead>
<tr>
<th>Factors</th>
<th>Number of Times Selected as:</th>
<th>Reverse Coding Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
<td>Second</td>
</tr>
<tr>
<td>My Disability</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Access</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Potential loss of benefits</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Lack of transportation</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Lack of jobs</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Potential loss of health coverage</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Attitudes of employers/the public</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Lack of education</td>
<td>1</td>
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<td>Lack of assistive technology</td>
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<tr>
<td>Fear</td>
<td>1</td>
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<tr>
<td>Poverty, lack of financial stability</td>
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<td>Problems with self-esteem</td>
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People with Disabilities and Self-employment

This section examines the desire of people with disabilities to become self-employed and the barriers to them becoming self-employed. The percentage of people with disabilities who would like to be self-employed was 68% (23 of 34), and the percentage of those who did not want to be self-employed was 32% (11 of 34), showing that the majority of respondents would like to be self-employed. When asked if they would have their family’s support to start their own business 79% (26 of 33) said they would have their family’s support, and 21% (7 of 33) said they would not have their family’s support. The majority of respondents report they would have their family’s support to start their own business.

Respondents were asked if they would have the financial resources available to them to start their own business. Only 12% (4 of 34) said they would have the resources to start their own business, 76% (26 of 34) said they did not have the resources, and 12% (4 of 34) were unsure. This suggests the majority of respondents do not have the financial resources to start their own business. The respondents were also asked where they would go to seek the financial resources to start their own business. The respondents were asked to select all that applied. Of those who responded, 35% (18 of 52) did not know where they would go, 27% (14 of 52) would seek provincial and federal grants, 21% (11 of 52) would go to a bank or credit union, 13% (7 of 52) would use personal savings, and 4% (2 of 52) would seek help from family and friends. These results suggest that people with disabilities are unaware of where they can get the financial resources to start their own business.

There was also an open-ended question about barriers to becoming self-employed. Many of the respondents said that their disability was a barrier to them becoming self-employed, with one responded saying “I am a quadriplegic I need a miracle.” Others talked
about assistance, education, and money to become self-employed, with one respondents stating “ability to hire own assistant – financial means, additional education, assistive technology.” These responses highlight some of the barriers people with disabilities face when seeking self-employment.

**Funding**

This section examines the impact funding has on employment status and the barriers to funding. Of the 36 respondents, a large majority of respondents (28 of 36) had never applied for funding, with only eight having ever applied for funding for training opportunities or employment purposes. Only one of the eight respondents had ever applied for funding for assistive technology and self-employment, therefore statistical analyses could not be conducted. Of those eight respondents who have applied for funding for training opportunities or employment purposes, six of them found it easy to find and acquire the funding. The other two respondents found it difficult to find and acquire the funding. However, they all received the funding they applied for.

The one respondent that applied for funding for assistive technology for employment purposes found it very difficult to acquire the funding, and took longer than expected to receive the funding. The same respondent also applied for funding to start his or her own business. The respondent said that finding and acquiring the funding was neither easy nor difficult but he or she is still waiting to see if the funding applied for is received. Overall, the process in applying for funding was not difficult and all of the respondents who applied for funding received the funds.

There was also an open-ended question about how to make the funding process easier. The respondents who answered that question talked about knowing where to go to get
funding, with one respondent saying "knowing what channels to go through" and another respondent saying that funding opportunities need "a higher public profile." The respondents also talked about the amount of bureaucracy and restrictions that came along with the funding process. These comments illustrate some of the difficulty that some of the respondents had when looking for funding opportunities and the application process.

**Employment Agencies**

This section examines the knowledge level and utilization of employment agencies in northern BC. Respondents were asked if they were aware of employment agencies available to them which would help them find employment and if they had utilized these services. The percentage of people with disabilities who knew about employment agencies was 58% (21 of 36), with only 42% (15 of 36) of respondents not knowing about the employment agencies available to them. The percentage of people with disabilities who had utilized employment agencies was 30% (7 of 23), and the percentage of those who had not utilized employment agencies was 70% (16 of 23). The majority of people are aware of employment agencies; however, they do not utilize these services.

Of those who have utilized employment agencies, the satisfaction level of the services they received was split with 50% (3 of 6) saying they were satisfied and 50% (3 of 6) saying they were unsatisfied. The respondents felt that the employment counsellors listened to them (67%; 4 of 6), and they were provided with appropriate employment opportunities that were appropriate to their current situation (67%; 4 of 6); however only one participant became employed through the employment agency. When asked if the employment agency helped them acquire funding and assistive technology that would aid in finding employment, two respondents said they received help and four did not receive help.
CHAPTER FIVE

DISCUSSION

The present study was conducted to get a broader view of the issues people with disabilities face when seeking assistive technology and employment in northern BC. A survey was conducted with 152 people with disabilities, who were recruited from the BCPA membership to provide insight into their experiences in finding assistive technology and employment or self-employment. Respondents (N = 36) tended to be paraplegic or quadriplegic, and most acquired their disability between the ages of 25 to 44. Respondents were also highly educated with most having some type of post secondary education, however, most were unemployed. The type of disability was limited because of the nature of the community partner organization that was used to recruit participants. The BCPA mainly provides services to people with physical disabilities, primarily individuals who are paraplegic or quadriplegic.

One of the main themes arising from the focus group discussion was the lack of awareness of assistive technology, which was similar to the findings of Driscoll et al. (2001). The results of the survey, however, differed from the focus groups because overall the majority of respondents were aware of assistive technology. However, there were some differences between subgroups in the survey. One difference is that the more educated people with disabilities were the more likely they were aware of assistive technology. This may result from their interaction with the organizations available to them on campuses that are intended to help them find accommodations or tools that will aid them in their academic career. Another difference in the awareness of assistive technology was found in the current age of people with disabilities. People with disabilities who were younger were more aware
of assistive technology. They may have more awareness of assistive technology because they have a greater desire to become part of the workforce and are actively seeking out assistive technology that will help them become employed. The race/ethnicity of people with disabilities also had an impact on the awareness of assistive technology. Caucasians were more aware of assistive technology compared to Aboriginals and Hispanics. More should be done to increase the awareness of assistive technology for people with disabilities; however, special attention should be placed on increasing the awareness of assistive technology for individuals who do not have a post secondary education, individuals who are older and non-Caucasians.

The awareness of assistive technology that would help people with disabilities become employed was not as high as awareness of assistive technology in general. When presented a list of possible accommodations and assistive technologies that were available, the respondents selected workplace accommodations such as accessible washrooms, transportation, parking, and modified hours most often, not specific assistive technologies, such as modified computers. This finding may have resulted from the type of disability the participants have because their disability may not require the specialized devices that other disability groups may require. These results are similar to Yeager et al. (2006) where they found that people with mobility issues focused more on workplace accommodations instead of specific technologies.

The literature discussed the importance of people with disabilities being able to have one-stop shopping centers to test, and purchase assistive technology for work. These centers would have a staff highly educated regarding the assistive technology available, and an awareness of how these assistive devices could help in performing work related tasks.
The majority of respondents in northern BC did not know where they could go to test, or purchase assistive technology. This is a barrier to acquiring assistive technology because even if people with disabilities are aware of an assistive technology that would help them become employed, they do not know where they can go to see if the device is appropriate for their needs or to purchase the device. More needs to be done to educate people with disabilities about where they can purchase and test the various assistive technologies. This can be done through increasing the profile of retailers that provide assistive technology by means of educating non-profit organizations, health care providers, or creating a web based information forum.

In addition, people with disabilities who sought out help in finding employment through employment agencies were not informed of the assistive technology available to them that may help them become employed. This may result from the staff’s lack of knowledge of the various assistive technologies that are available intended for this purpose. The lack of knowledge of the staff creates a barrier for people with disabilities to find assistive technologies that may help them become employed. Employment agencies that are there to help people with disabilities find employment, and part of their responsibility should be assisting people with disabilities to find and acquire assistive technology that will help them perform job related tasks instead of just finding them employment opportunities.

Another issue is the cost of assistive technology. The majority of respondents could not afford to pay for the assistive technology themselves. The literature has identified this as a barrier in acquiring assistive technology (Statistics Canada, 2008; Timmons et al., 2007). In the focus groups, when asked about purchasing the devices the participants said they would have to pay for it out of their own pockets but if they were lucky their workplace would help
pay for the device or they would find a government organization that would give them a device. If they could not find a way to pay for the device, they would go without it. This finding suggests that cost is a major barrier to acquiring assistive technology and if the technology is needed for people with disabilities to become employed, more should be done financially in assisting people with disabilities to acquire assistive technology that would help them become employed.

A positive finding is that among people with disabilities who are currently employed the majority have received the accommodations or assistive technologies they require to work. Of those who have not received the accommodation or assistive technologies, most of them said that they were unaware of something that would help them perform their duties. This finding has several possible explanations. One explanation is that the awareness of assistive technology for work related tasks is not as high as the survey suggests. Another explanation is that an assistive device that would help these individuals does not exist or the assistive devices that are available are not suitable for their type of work. An additional explanation is that the assistive devices are available; however, individual needs have not been accurately assessed and as a result an inappropriate assistive device is used leading to a belief that there is no assistive device available that would help in the performance of job duties.

Among people who use assistive technology at work, the majority of respondents reported having no additional benefits or a slight benefit in their work productivity and self-esteem. "Remained the same" and "slightly increased" were the two most popular responses to questions about productivity and self-esteem. These findings are different from that of Yeager et al. (2006) who found that assistive technology had a profound impact on self-
esteem and productivity. The difference in findings may have resulted from the number of participants, or the variety of disability groups that were represented. These findings suggest, as in Yeager et al., that making assistive technology more readily available may increase the ability of people with disabilities to perform work related tasks thereby increasing this population’s employment opportunities.

When presented with a list of potential barriers to seeking employment the most selected barrier was the potential loss of their current income. This barrier was also discussed in the focus group and is found in the literature (Annable, 1993; O'Day, 1998; Yeager et al., 2006). The earning exemptions that government places on disability benefits are so small, $4200 a year federally, and $500 a month provincially, that any type of employment opportunity could easily exceed the earning exemptions for disability benefits and lead to the potential loss of all or some current income. Once their disability benefits have been lost, the persons with a disability has to reapply for the reinstatement of their disability benefits; this process takes time and allows for potential denial of the disability benefits because they are considered able to work. This highlights the importance of governments re-examining the earning exemptions for disability benefits and the process of reinstating disability benefits for people with disabilities who make an effort to become employed.

A barrier that was not found in the literature, but was discussed in the focus groups and was a finding in the current survey, was the weather. Many of the respondents had mobility issues and required the use wheelchairs to get around their communities. In northern BC throughout the winter, the roads and sidewalks are covered in snow and ice. The snow and ice create a considerable barrier to those who rely on wheelchairs to get around because it is difficult to safely navigate through the snow and ice in a wheelchair. Focus group
members talked about not even trying to go to work or alternately attempting to use the roads because they are cleared first making it easier to get around. However, they might then get stuck attempting to get from the road back on the sidewalk and then have to wait for people to help them. This daily experience creates a great deal of frustration, which led to a focus group member eventually quitting his or her job. Little can be done about the weather in northern BC; however, there are city bylaws in place that require business owners to shovel the sidewalk in front of their business. These bylaws need to be enforced to reduce some of the frustration people with disabilities face trying to get to work and decrease the impediment of weather for people with disabilities seeking and maintaining employment.

When asked to rank what they felt most limited them from working, respondents overwhelmingly selected ‘my disability’ as the most limiting factor. This finding is consistent with that found in Yeager et al. (2006). Yeager et al. concluded that this finding is the result of our society’s notion that people with disabilities cannot work, and the disability benefits require that they declare themselves as unable to work; however, the current survey found that the respondents were unaware of what they are capable. This draws attention to the need to inform not only society on the abilities of people with disabilities, but also people with disabilities as well. This may include educating people with disabilities on the various technologies that are available to them that may help them to work, the various employment opportunities that are available, or what they are capable of doing.

Access in general to get in and around places was selected as the second most limiting factor. This may be the result of the types of communities in the North. Many of the communities have limited access for people with disabilities. This issue was also brought up in the focus group. Many participants talked about the various employment opportunities in
smaller communities, but they could not take those jobs because of the lack of accessibility in the community. This finding highlights the need for smaller communities to become more accessible for people with disabilities, which will help people with disabilities utilize the employment opportunities in those communities.

This study also wanted to look at the desire of people with disabilities to become self-employed. The majority of respondents wanted to become self-employed. They also believed that they would have the support of their families to take on such an endeavour. However, they did not have the financial resources to start their own business and when asked where they would seek the resources to start their own business, the majority did not know where to get resources they would need. When asked about the barriers they face when looking at self-employment, many people said their disability was their biggest barrier. They were unaware of how they could work, especially on their own. Many respondents said that they would have to hire an assistant to help them with the day-to-day business, which would instantly add additional costs to starting their own business. This problem is also confounded because the main source of income for the majority of respondents was CPPD, which is there to help people with disabilities with day-to-day expenses not to start a business. In addition, having CPPD as a main source of income may prevent people with disabilities from receiving loans from financial institutions because they would be considered unemployed. These findings call attention to the desire of people with disabilities to become self-employed and the added difficulties people with disabilities may face when seeking self-employment.

During the focus group discussions, one of the major issues that the participants focused on was funding and the process one had to go through to get funding. When asked about what would make funding easier the respondents talked about increasing the profile of
funding opportunities and decreasing the bureaucracy involved in applying for funding. The focus group members talked about the hours of paper work they had to fill out just to find out that they would not get the funds or that the funds were no longer available. The results of the survey differed from the focus group with most respondents having little trouble in the application process; however, the majority of respondents had never applied for funding. Even with this discrepancy, the findings suggest that the funding process needs to be modified, funding opportunities should be highly visible for people with disabilities, and the current funding application process needs to be streamlined to make it more straightforward.

There are employment agencies for people with disabilities to help them find work. The majority of respondents were aware of the various employment agencies available to them; however, the majority had never utilized the service. Of those respondents who had used employment agencies, the experience was neither positive nor negative; however, it did not result in employment for the majority of them. This finding contradicts the focus groups experience with employment agencies. Focus group members found that the employment counsellors suggested inappropriate work and training opportunities, and did not listen to, or did not understand their limitations or their current situation. Hernandez et al. (2007) also found that experiences with vocational rehabilitation counsellors in the United States were also mixed and rarely resulted in meaningful employment. These findings illustrate that the way employment agencies currently operate may not provide people with disabilities the appropriate assistance they require to find meaningful employment.
CHAPTER SIX
CONCLUSION

There are many issues people with disabilities face when seeking assistive technology and employment in northern BC. One issue is that people with disabilities see their disability as the main barrier to employment and not the lack of assistive technology. More should be done to increase the awareness of assistive technology that is available to help them work. In addition, more should be done to increase the awareness of the capabilities that people with disabilities have among both employers and their own community.

People with disabilities also see disincentives such as the potential loss of disability benefits as a barrier to employment. Governments should explore the possibility of increasing the earning exemptions for people with disabilities to make working more appealing. Government should also change the process of reinstating disability benefits, if those with a disability lose their job or can no longer work, to make it easier and faster for them to have their disability benefits reinstated. If disability benefits were reinstated faster, people with disabilities may not worry about the possibility of losing their disability benefits if they were to seek employment.

With the desire for self-employment among people with disabilities being so high, specialized programs may need to be developed that will help them develop business plans and finance business start-ups. People with disabilities face additional costs that able-bodied persons do not face such as purchasing specialized assistive technology, and hiring assistants to help with duties they cannot carry out. Also, they may not qualify for bank loans because their only income is from CPPD, preventing people with disabilities from receiving loans from banks because they would be considered unemployed. The researcher does not suggest
that every person with a disability should be allowed to attempt to start their own business, but it should be an option for those who have the desire and talents to become self-employed.

Another issue is the effectiveness of employment agencies in finding people with disabilities employment. Many people with disabilities who have utilized employment agencies did not find employment through these agencies. In addition, the employment counsellors did not suggest assistive technologies that may have helped them become employed. The vocational rehabilitation counsellors at employment agencies should be aware of the tools that are available to people with disabilities that would help them find employment.

Limitations of the Study

There are several limitations to this study that must be observed when interpreting the findings. One limitation is that the sample size is small, mostly male, middle aged and Caucasian, which limits the ability to generalize the results of the study to other populations. Another limitation is that the participants were recruited from a non-profit organization, BCPA, which limited the disability type seen in the study. The disability group used in this study was only people with physical disabilities, and did not include a large number of people with other types of disabilities. A related limitation is that many of the participants acquired their disability later in life, which may have confounded some of the findings. The fact that the majority of respondents have acquired their disability may have added complexity to the issues because of the emotional and psychological impact losing ability can have on an individual. The findings that emerged from the study should not be generalized to other disability groups. However, the findings will be useful to BCPA and other organizations that provide services to people with disabilities living in northern BC.
Suggestions for Future Research

In light of the findings of the current study, further research needs to be conducted to clarify if people with disabilities are aware of the various assistive technologies available to them, given the differences between the focus group and survey participants. Further research could be conducted on why people with disabilities see their disability as a barrier to employment even with the advances in assistive technology. In addition, further research could be carried out to explore the effectiveness of employment agencies and how they could improve their services to increase the employment success of their clients. Another area that needs further exploration is the funding process, and it has an impact on the employment of people with disabilities.

Implications for Policy and Practice

One of the key findings of this study is the lack of knowledge of the various assistive technologies available to people with disabilities as well as the limited awareness of where people with disabilities can go to try, and purchase assistive technology. Therefore, more education by governments or non-profit organizations is needed to increase the awareness of where people can go to test, purchase, and learn about assistive technology. The education should not only focus on people with disabilities, but health professionals, and non-profit organizations who work with people with disabilities. One option would be for the government to create a high profile one-stop center that would provide assistive technology with highly trained staff which people with disabilities could be referred to by non-profit organizations, or health professionals. One organization in BC that has been successful for students that require assistive technology is the Special Education Technology – BC (SET-BC). The service provides an assessment of the student’s needs, a loan of assistive device,
training in the use of the device, technical support and maintenance, and continued follow-up (SET-BC, 2009). A similar organization to SET-BC that assist people with disabilities find assistive technology for employment purposes may help increase the knowledge level of assistive technology for work. There are organizations, such as the Neil Squire Society, that provide assessments and assistive technology for people with disabilities, however, these services are located in major urban centers which limits accessibility of the organization for individuals living in northern BC because of the travel required to utilize the services. In addition, these organizations are fee-for-service, which is also a barrier to utilizing this type of service because people with disabilities do not have the disposable income to pay for such a service. A center that provides people with disabilities with an assessment of their needs, the ability to test assistive devices, and assist them in finding funding that would help them purchase the assistive technology they require to work would be the most beneficial in helping people with disabilities find and acquire assistive technology for employment.

The desire for self-employment was quite high in this study. Developing a program that will help support people with disabilities in becoming self-employed should be explored. The program should include helping people with disabilities develop a business plan, seeking funding opportunities either through government or through a financial institution, implementing the business plan, and on going support. Having a program that provides all these services will help people with disabilities explore the possibility of becoming self-employed and provide them with the knowledge of steps involved in becoming self-employed.

Both the provincial and federal governments should examine the earning exemptions for their disability benefits. The earning exemptions are so small that they create a barrier to
seeking employment for many people with disabilities because of the fear of losing disability benefits. The earning exemptions for disability benefits should reflect an income closer to someone working a fulltime job at minimum wage. Another way this barrier may be reduced is through changing how disability benefits are reinstated. Instead of having to reapply for disability benefits, which could take several months to years, a shortened process that allows for disability benefits to be quickly reinstated could be implemented.

Government also needs to make funding opportunities more visible for people with disabilities; many respondents have never applied for funding, with several respondents saying that a higher public profile would help them in the funding process. In addition, governments should make the application process more transparent and reduce the steps involved in acquiring funding. Increasing the public profile of funding opportunities and reducing the steps involved in acquiring funding may encourage more people with disabilities to seek funding that would help them become employed.

Final Comments

This study highlights the complex issues involved in why people with disabilities are underrepresented in the workforce. Even though there is an increase in assistive technology that may help people with disabilities become employed, many still feel that their disability prevents them from working. This may result from the limited knowledge of the various devices that may help them, and being unaware of where they could go to try, and purchase the assistive technology. In addition, people with disabilities still face many barriers to becoming employed, which include but are not limited to, accessibility issues within the workforce as well as in their communities, stigma, and government policies. Both the federal and provincial governments need to re-examine their policies on disability benefits and
funding opportunities, to make these programs more accessible for people with disabilities.

This study draws attention to several of the issues people with disabilities have when seeking employment, however more research needs to be conducted to further explore these issues.
REFERENCES


Canada Pension Plan, R.S.C. 1985, c.8, s.42(2).


*Employment and Assistance for Persons with Disabilities Act, S.B.C. 2002, c.41., s.2.*


APPENDIX A

Demographic Data for Service User Focus Group

Age: ____________________________

Gender (please circle): Male Female

Type of Disability (for example: paraplegic, arthritis in your hands)

________________________________________________________________________

________________________________________________________________________

How long have you been living with a disability?

________________________________________________________________________

________________________________________________________________________

What is your employment status? ____________________________
APPENDIX B

Questionnaire Service Providers

Name of Agency: ________________________________________________________________

What type of service does your agency provide?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

How long have you been doing this work?

__________________________________________________________________________
APPENDIX C

Focus Group Questions for Service Users

1. Introductions

2. What have been the barriers you have experienced when seeking employment?
   a. What has helped you in gaining employment?
   b. Have you received assistive technology that has helped you gain employment?
      i. How has the assistive technology been paid for? (i.e. Insurance or out of pocket?)

3. Have you considered self-employment?
   a. What do you see as barriers and facilitators to gain self-employment?

4. What is your knowledge and experience using assistive technology?
   a. Are you utilized any of the various services available in northern British Columbia?
   b. Have you received modified assistive technology?
   c. Has it helped you gain employment?
   d. Have you thought of an assistive device that would help you gain employment?
   e. Show examples of assistive devices developed through the BCPA’s Special Employment Technology Service. Are you aware that these types of assistive technologies are available to you?
APPENDIX D

Focus Group Questions for Service Providers

1. Introductions
2. What is the employment status of the majority of your clients?
3. What are the barriers and facilitators in gaining meaningful employment that you have seen for your clients?
4. Do you help support or encourage self-employment for your clients who have physical disabilities? Why or why not?
   a. What have been barriers for your client in becoming self-employed?
   b. What have been facilitators for your client in becoming self-employed?
5. What has been your experience in providing assistive technologies to your clients in northern B.C.?
   a. What are the barriers and facilitators in providing assistive technology to your clients?
   b. How easy is it for them to have the assistive technologies modified?
   c. Has providing assistive technologies to your clients help them gain meaningful employment? How or how not?