# TRAINING SUCCESS FOR PERSONS WITH DISABILITIES: THE ROLE OF BUSINESS AND EDUCATION PARTNERSHIPS

By

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# ABSTRACT

The *Access Ability Program* was designed specifically to provide persons with disabilities access to technical computer training in a supportive environment and with assistance in transitioning to employment. Graduates receive a certificate in Computer Programming from the Open College, a division of the Open Learning Agency. The unique feature of the *Access Ability Program* is the active participation of the business community in all aspects of the program to increase the educational success and employment of persons with disabilities. This study evaluates the *Access Ability Program* to determine if, over the nine years of its existence, the program model of business and education partnerships enhance persons with disabilities access and completion of training as well as employment for graduates. Data were collected from student files, and surveys of the Business Advisory Council, graduates and rehabilitation counsellors. Comparative data were collected from similar programs. The *Access Ability Program* model of business/education partnership was found to increase students' access to training, enhance their successful completion of the training, and provided graduates with employment. Access Ability accepted students with a wide variety of disabilities and educational backgrounds and had a completion rate of 76%. As a result of business involvement 92% of the graduates were employed one year after graduation. The long-term graduate employment rate is 85%. This study demonstrates that partnerships involving business and education positively influences the quality of the training program and enhances the employment of persons with disabilities.

TABLE OF CONTENTS

## CHAPTER SIX SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

TABLES

Page

ABBREVIATIONS

1. Statistics Canada Health and Activity Limitation Survey..... HALS
2. Business Advisory Council..... BAC
3. Workers' Compensation Board..... WCB
4. Open Learning Agency..... OLA
5. Association of Rehabilitation Programs in Computer Training..... ARPCT
6. World Health Organization..... WHO
8. Vocational Rehabilitation of Disabled Persons..... VRDP
9. Projects With Industry..... PWI

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# CHAPTER 1

# INTRODUCTION

The lack of employment for persons with disabilities is a major societal problem. These individuals are ready, willing and able to be productive contributors. Like most of us, persons with disabilities view employment as the key to an independent, integrated, creative and fulfilling lifestyle (Gerber, 1990). Yet in Canada, they remain outside the workforce in increasing numbers because of system-induced barriers to employment. These include lack of support, finances, transportation, and structure, as well as attitudinal barriers (Statistics Canada, 1991a).

The objective of public policy and publicly funded programs for persons with disabilities is to ensure their equal representation in the labour force. To be in the labour force means "more than a pay cheque, it is a way to achieve independence, to contribute to society, and to create a sense of identity and self-worth" (King, 1993). For persons with disabilities labour market discrimination is the greatest barrier to finding secure jobs with good opportunities for advancement. Yet according to Young, Rosati, and Vandgergoot (1986), this represents one of the most under-utilized groups in the labour market.

People in this group are particularly under-represented in career/technical programs (Statistics Canada, 1991a). The *Access Ability Program*, a computer training program, was designed specifically to provide students with disabilities access to technical computer training in a supportive environment and with assistance in the transition to employment. The involvement of the business community in all aspects of the program is a unique feature which increases educational success and employment opportunities. This

type of partnership and the level of involvement is not commonly found in the private and public post-secondary education systems.

In operation since 1986, the *Access Ability Program* has never been formally evaluated by funding agencies against its objective of securing long-term employment for persons with disabilities. Considerable public money has been invested in programs and services for persons with disabilities, like the *Access Ability Program*, without demonstrated return on investment (Axworthy, 1996), in the form of increased participation of persons with disabilities in the labour force. Clearly, this is a matter of concern when government has been supporting the *Access Ability Program* since its inception. But the success of the program is not just a concern for the government. Potential participants are requesting outcome data, in particular the workforce placement rate of graduates before investing time and money in retraining.

The general purpose of this thesis therefore, is to evaluate the *Access Ability Program*. The specific purpose is to assess, whether the Access Abilities Program's unique business/education partnership enhances the employment of persons with disabilities following completion of the information technology training program. The underlying hypothesis is that these partnerships enhance the transition of persons with disabilities into the labour market.

In evaluating the *Access Ability Program* and drawing conclusions from the research data, I draw on direct experience, having managed the program since its inception.

## Size and Nature of the Problem

In 1991, more than 4.2 million Canadians - almost 16% of the national population - had some form of disability; the number of disabled Canadians of working age now totals 2.3 million (Statistics Canada, 1991a). These numbers will likely continue to grow as more people survive severe traumatic accidents and multiple disabilities.

Labour force participation rates (those working, or unemployed and actively looking for work) for persons with disabilities are not encouraging. In 1991, 1.2 million working-age Canadians with disabilities were not employed, while more than one million were neither employed nor actively seeking employment (Statistics Canada, 1991a). The latter number is about twice as high for those without disabilities (Roeher Institute, 1992). In comparison, the in the United States two thirds (11.4 million people) of working-age persons with disabilities are not employed (Harris & Accociates, 1994). According to surveys, the majority (over 70%) of persons in both countries were not working, but wanted to work (Harris & Associates, 1994; Statistics Canada, 1991a).

For the 539,000 persons with disabilities in British Columbia (BC), the labour force participation rate was 64%, compared to 83% for the non-disabled (Statistics Canada, 1991a). At 17%, the unemployment rate for persons with disabilities is significantly higher than the norm of 10%.

For economic reasons, workers who do not return to employment after experiencing an injury, illness or disability, are a major concern for employers. Increased disability payments result in increased employer premiums, and only four out of 12 Workers' Compensation Boards in Canada operate without a financial deficit. Depending on the

type of occupation, at any give time, 8% to 12% of the work force are drawing on weekly indemnity, workers' compensation, or long-term disability benefits. Loss of employment due to injury or illness causes serious financial consequences for workers, employers and society. Timely and cost-effective rehabilitation interventions are required to return injured workers to employment.

Co-operation between education and business sectors is essential for the development of successful rehabilitation strategies. Traditionally, business has doubted the ability of schools and colleges to prepare people for the future work force (Koch,1995). Recently, however, business and industry have shown increasing interest in educational involvement as a means of meeting their labour market needs (Tilson, Leucking & West 1996). New, innovative partnership models are required to capitalize on this renewed interest. While developing a better, mutually beneficial relationship will enhance the quality and relevance of education in general, it is essential for the rehabilitation of persons with disabilities. In this area, creative partnerships can help meet the social goals of rehabilitation agencies, business goals of employers and economic goals of persons with disabilities (Hooser & Rice, 1993).

Barriers to employment are key economic issues for this group. Since employment and earnings are tied closely to education and training, employment barriers will not fall unless educational barriers are also eliminated (Thompson-Hoffman & Storch, 1991). To gain access to employment, post-secondary graduates with disabilities must receive assistance with their transition from school to work (Johnson, *et al.*,1993; Kohler, 1993; Momm & Konig, 1989). In the absence of such assistance the unemployment rates for

this group is four times higher than for post secondary graduates without disabilities (Disability Resource Centre, 1992).

The effectiveness of the Canadian Charter of Rights and Freedoms, federal and provincial Human Rights codes, and Employment-Equity legislation has been limited in decreasing discrimination in the workplace, or increasing the employment of persons with disabilities (Roeher Institute, 1994). Discrimination occurs in a variety of ways and is difficult to prove. Legislation alone is not a significant deterrent to discriminatory hiring practices, especially since Canadian employment-equity laws do not enforce quotas for the recruitment and hiring of persons with disabilities, as is the case in other jurisdictions. In Canada, the issue of employer hiring quotas for persons with disabilities has been a long debate within the rehabilitation community. The recent report, Equal Citizenship for Canadians with Disabilities, The will to act did not recommend the adoption of a quota system (Federal Task Force on Disability Issues, 1996).

As a group, persons with disabilities in Canada experience significant levels of poverty; 60% report incomes of less than $10,000 per year and the group is over-represented in lower-paying jobs (Fawcett, 1996). The low-wage and insecure labour force that many persons with disabilities face is a powerful disincentive to shift from income assistance to paid work. For persons with disabilities social assistance systems in most provinces include powerful, economic disincentives to work. When a person receives social assistance, the cost of medical services, medication and devices necessary to compensate for the disability, are covered. As soon as a person with a disability enters the work force, typically a low-wage job without benefits, the public funding for expenses related to the disability are immediately discontinued. This almost always leads

to the person becoming financially responsible for expensive services that were previously covered by social assistance. As a result of these increased expenses workers with disabilities can be worse off, financially, than those on social assistance. To obtain the necessary support, it appears that persons with disabilities must remove themselves from the labour market. Also, the character of the entry-level labour market, specifically, its' part-time, low wage and no benefit jobs creates disincentives to people with disabilities. Employers in this category want flexible "just-in-time" workers and do not want to pay for the cost of modified working conditions required by persons with disabilities to enter the workforce. With such powerful disincentives, low wages and no medical support, work is a luxury few can afford. Since most persons with disabilities *want* to work ways and means must be found to remove these disincentives.

The economic impact of maintaining persons with disabilities outside the labour market is significant. Unemployment of persons with disabilities costs taxpayers in terms of higher disability and welfare expenditures and lost tax revenues. In Canada, in 1986, the direct cost of this problem exceeded $20 billion (Statistics Canada, 1991a). In 1991, the Health Activity Limitation Survey estimated this loss to equal 2.5% to 5% of Canada's annual Gross National Product. In 1993, losses were estimated to be as high as $46 billion (Statistics Canada, 1991a). In economic terms under-employment contributes to a waste of human capital. In humanitarian terms it is a waste of human potential. Neither the nature nor severity of the disability are primary reasons for persons with disabilities to be unemployed, under-employed or outside the labour market (Wright, 1980).

The real barriers to employment for this group are found not only in the social and economic system (Hubka & Killean, 1996; Harris, 1991; Rochlin, Decaro & Clarcq, 1985; Roeher Institute, 1992) but also in the education system which helps people to develop their human capital, that is, the level of education, skills and work experience that allows an individual to compete in the labour market. Even when individuals with disabilities make substantial investments to improve their human capital, other barriers often prevent them from becoming employed. Academic institutions are reluctant to make the employability of graduates a priority (Lewington, 1995). Their emphasis is more on accountability for the process of education, than the effect of education on individuals with disabilities (Johnson, 1993). Investments by persons with disabilities in education rarely produce the same employment benefits as those of non-disabled graduates (Roeher Institute, 1994; Hubka & Killean, 1996). In other words, for persons with disabilities access to training does not by itself guarantee success in the labour market.

Although a variety of provincial government services and nonprofit organizations provide vocational rehabilitation services to help Canadian residents with disabilities become employed, this group continues to be under-represented in the work force. A new type of service is needed to facilitate post-training employment (Tilson & Leucking, 1996). In particular, training programs need to match the skills and abilities of their graduates with the requirements of employers (Flynn, 1991; Rumrill, *et al.*, 1995).

In times of cut-backs to public budgets, programs and services must become more efficient in allocating resources, and more accountable for outcomes. In the past, persons with disabilities have been "recycled" from one program to the next. Instead, to be

effective, such programs should ensure participants develop the qualifications necessary to find and maintain suitable employment.

## The Background of the *Access Ability Program*

The roots of Access Ability go back to 1972, when IBM (US) developed a model training program for training persons with disabilities based on cooperation among vocational rehabilitation agencies, the education and training community, and the business sector. This program developed from a demand for mainframe computer programmers not being met by traditional education systems. Computer programming was ideal work for persons with disabilities because the nature or severity of disability had minimal impact on an individual's capacity to perform tasks.

Under the model the business sector performs specific functions and roles as a Business Advisory Council (BAC). Through a sub-committee structure, the BAC: 1) provides overall direction and guidance; 2) develops student selection criteria; 3) defines training goals; 4) develops curriculum outlines; 5) reviews and approves training courses; 6) provides assistance with business-readiness and technical training; 7) evaluates students; and 8) assists with the student placements (IBM Corporation, 1992). To date, in North America, 45 training programs, have been established on this IBM model. Two of these programs are in Canada, one in Toronto, the other the *Access Ability Program* in Burnaby.

The Workers Compensation Board (WCB) of BC brought the IBM model to Canada in 1986, when it established the *Access Ability Program* as major rehabilitation initiative intended to improve the profile of the WCB and it's Vocational Rehabilitation

Services. The initiative created a WCB/business sector partnership to offer a comprehensive computer training program and subsequent employment to severely injured workers.

The program has been very successful. The great majority of the program's graduates found employment. The program was transferred to the Open Learning Agency (OLA) of BC in 1990, to broaden access not just for injured workers, but also to all persons with disabilities in BC.

One of the specific features of the *Access Ability Program* is a program model that combines the knowledge and experience of an active and dedicated BAC, with a computer-training program. The 52-member BAC has been part of the *Access Ability Program* since 1986, and is primarily composed of information technology managers from major corporations who volunteer their time and expertise. Their time commitment is significant as the entire BAC meets monthly and numerous sub-committee meetings are held throughout the year. The BAC is involved in all aspects of the program, including student selection, evaluation and mentoring; curriculum development; and strategic planning. The BAC also plays a critical role in finding internships and placements for graduates. Mentors help students make a successful transition to the workplace. The direct involvement of business is a key element in assisting students find employment after graduation.

Graduates of the program receive a Certificate in Computer Programming from the Open College of the OLA. They may take five additional courses from other institutions in the public, post-secondary system to obtain the College's Diploma in Information Technology.

## Purpose of the Study

This study has three overall objectives: 1) to evaluate the *Access Ability Program* in terms of access to training, completion of training, and transition to employment for persons with disabilities; 2) to evaluate the role of the BAC in terms of its impact on the program and placement of graduates; and 3) to evaluate the contribution of selected program components to the employment of graduates.

## Structure of the Thesis

The six chapters of this thesis are: 1) Introduction; 2) Literature Review; 3) Models of Business Involvement in Training Programs; 4) Research Design; 5) Results; and 6) Summary, Conclusions and Recommendations. Chapter 2 assesses societal factors constraining the participation of persons with disabilities in the labour market and describes the importance of business/education partnerships to the education, training, and transition to employment of people in this group. Chapter 3 details the Access Ability model and related programs. Chapter 4 describes the methods and procedures used to summarize and evaluate the program. The evaluation was based on surveys of graduates, BAC members, and rehabilitation counsellors as well as archived data. Chapter 5 analyzes the data collected. Finally, Chapter 6 summaries the findings and provides policy and practice recommendations.

## Summary

In Canada, system induced barriers keep increasing numbers of persons with disabilities out of the workforce. The *Access Ability Program* was designed to address these barriers by involving business in all aspects of the program. It provides a high-quality, information-technology training program leading to employment. This thesis evaluates the *Access Ability Program* to determine if, over the nine years of its existence, the program model of business and education partnership has enhanced the access and completion of training of persons with disabilities as well as employment of graduates.

# CHAPTER 2

# LITERATURE REVIEW

## Introduction

This review begins by developing definitions of the term's disability, impairment and handicap. These terms are distinct concepts and should not be used interchangeably. The chapter then reviews the education, labour force participation, and income profiles of persons with disabilities in Canada. Public policy and legislation are assessed next, followed by discussion of the integration of persons with disabilities into the regular educational system. The review then identifies factors constraining this group's ability to compete and fully participate in the labour market, and considers the importance of public and private sector relationships in rehabilitation and education. Next, the transition to employment, and studies of education and training outcomes are reviewed. However, the literature search found few studies of post-training employment outcomes for persons with disabilities, in contrast to the abundance of literature on rehabilitation. The chapter concludes by considering the marketing approach to rehabilitation, and the economic and humanitarian arguments supporting investments in programs for persons with disabilities. Obtaining employment is seen as the only acceptable outcome for those who are able and want to work.

## What is a Disability?

Much confusion surrounds the term "disability" which means different things to different people. To some, disability connotes a physical impairment. To others, it means

a person with a disability is disadvantaged because of the disability in a given situation. Over the years, the term has covered the spectrum from minor impairment with little impact on activity, to conditions requiring complete reliance on others for assistance in life's most basic functions (Rehab Brief, 1993). These conflicting concepts of impairment and disadvantage led the World Health Organization (WHO) to develop an International Classification of Impairment, Disabilities and Handicaps (1980). This framework recognizes that disability is a process from an underlying cause it leads to impairments, then disabilities and eventually, handicaps. WHO (1980, p.28) defined these terms as follows:

- Impairment - any loss or abnormality of psychological, physiological or anatomical structures or function.
- Disability - any restriction or lack of ability (resulting from impairment) to perform an activity in a manner or within the range considered normal for a human being. In the Statistics Canada (1991a), adults are not regarded as having a disability if they use a special device that completely eliminates the limitation.
- Handicap - a disadvantage for an individual resulting from an impairment or disability that limits or prevents the fulfillment of a role that is normal (depending on age, sex, social and cultural factors) for that individual.

To complicate these definitions further, individual characteristics and attributes have a significant impact on the disability process. As a result, many impairments do not result in a disability and, in most cases, people with disabilities do not consider themselves handicapped.

The Canadian Society for International Classifications on Impairments, Disabilities and Handicaps revised the WHO definitions to include interactions between the individual and the environment (cited in Fawcett, 1996), recognizing that it is these interactions that transform impairment or disability into a handicap. For example, to accommodate the significant impairment and disability of a quadriplegic student, Access

Ability needed to consider the environmental factors affecting the student's access to the computer and personal care. Environmental factors like these interact with the student's disability to create handicaps. In this case, the program was able to provide technological aids, while other students assisted with personal care. In a different environment, these handicaps could have prevented the student from acquiring the training necessary to become employed. Generally, in the post-secondary sector, lack of resources and inability to provide personal support, make environmental handicaps more difficult to overcome.

Impairment, disability and handicap are relevant to vocational rehabilitation and the individual's prospects of finding, retraining for, and advancing in suitable employment (Wright, 1980). Within this context, a handicap is the relationship between individual and employment barriers relating to education, social behavior and attitude.

Because of the definitional confusion surrounding disability, Access Ability avoids using disabilities and their severity as acceptance criteria. In any case, the degree of disability is not determined by the program, but by the referring agency. The program's acceptance criteria depend on whether the disability prevents the student from entering or re-entering employment without further training.

## A Profile of Persons With Disabilities: Current Realities

Persons with disabilities are the largest, poorest, least educated and least employed minority in the US (Harris & Associates, 1994). Statistics in Canada are equally discouraging: people with disabilities constitute 16% of the population and are among the most economically disadvantaged (Statistics Canada, 1991a). The degree that persons with disabilities are disadvantaged can be illustrated by examining characteristics, like

education, employment and income; the availability of support services; and labour market forces.

## Education

According to Statistics Canada (1991a) persons with disabilities have on average a lower level of education than the non-disabled. Also, many members of this group were educated in segregated systems where a government-approved curriculum was not applied (Roeher Institute, 1992). As a result, many are educationally compromised. Unable to qualify for the post-secondary system they have no recourse but to try to enter the work force, despite lacking marketable knowledge and skills. Neither federal nor provincial training programs have offset this educational deficit; ten years ago only 2.1% of participants in all government training programs had disabilities (Roeher Institute, 1992), and there is little reason to believe participation has increased significantly since then. Furthermore, there were virtually no participants from this group in technically orientated programs (Roeher Institute, 1992, citing EIC, 1988-89). For people with disabilities, post-secondary education tends to be synonymous with vocationally focused adult special education (Statistics Canada, 1991a). However, there has been progress; persons with disabilities increased their overall education levels between 1986 to 1991 (Statistics Canada, 1991a; Harris & Associates, 1994).

For the non-disabled, attaining higher levels of education generally enhances skills, and increases participation in the labour market. For persons with disabilities, the same pattern holds; the higher the level of education, the better the chances of working. In 1991, university graduates with disabilities had almost twice the employment rate (73 %)

of those with only primary education (38 %) (Fawcett, 1996). High school graduates with disabilities have a 60% labour force participation rate and some post-secondary education increases their rate to 65%. In comparison, for the non-disabled who have completed some post-secondary courses, the labour force participation rate is 85% (Fawcett, 1996). These statistics indicate that an employment gap remains between persons with and without disabilities who have received similar education and training. In fact, 35% of persons with disabilities who have a post-secondary education are not able to find employment (Hubka & Killean, 1996). While increasing the education levels of persons with disabilities is important, these data suggest it is not the great employment equalizer it was once thought to be.

Labour Force Participation

Over 70% of persons with disabilities indicate that they want to work, but are limited to some extent by their disability (Statistics Canada, 1991a; Harris & Associates, 1991). The unemployment rate of persons with disabilities (14%) is higher than the non-disabled (10 %) (Human Resource Development Canada, 1995). Persons with disabilities who work are concentrated in low-level occupations in service, manual, clerical and agricultural occupations, and are less well represented in managerial, technical and professional occupations (Fawcett, 1996 & Roeher Institute, 1994). As a result, persons with disabilities are more susceptible to labour market shifts and are often last to be hired and first to be let go (Roeher Institute, 1994).

## Income

Although earnings from employment are the primary source of income for most Canadians aged 15-64, in all age categories and occupations employment earnings for persons with disabilities are below those of the non-disabled. Also, women with disabilities earn less than men (Statistics Canada, 1995). As a result of their inability to work, many persons with disabilities receive income from sources such as social assistance, Workers' Compensation, and long-term disability. There are significant variations in the amount of income an individual is entitled to from any one source. This variation results in drastically different living standards for people who are unable to work because of a disability.

## Development of Policy and Legislation for Persons With Disabilities

The rights of persons with disabilities have progressed along with improvements in social attitudes, technology and the national economies (Wright, 1980; Rubin & Roessler, 1987). According to Wright, the right to survive evolved into the right to dependency, and then to the right to independence. The transition has been extremely slow and, at times, social attitudes have seemed to regress. Over the years, nations have developed legislation and public policy on the rights of this group in broad areas such as access to education, employment equity, and human rights. Legislation is only a framework for equality; it does not provide equal opportunity nor does it prevent discrimination on the basis of disability.

Employment Equity

Employment equity had its roots in the civil rights movement of the 1960s and 1970s. During this period, most of the education and training programs in North America designed specifically for people with disabilities segregated them from mainstream society. It wasn't until after the civil rights movement that people with disabilities began to assert themselves and demand equity in their daily activities. In Canada, people with disabilities asserted themselves through government lobbying and, in 1981, a Special Parliamentary Committee on the Disabled and Handicapped submitted the Obstacles report (1981) which included 130 recommendations to Parliament. Many recommendations were implemented, but the most significant was the inclusion of people with disabilities in the Charter of Rights and Freedoms, Employment Equity Act, and Canadian Human Rights Act. The Obstacles report began the integration of persons with disabilities into the mainstream of Canadian society. Since its publication, numerous other Government reports have addressed specific needs of persons with disabilities. The most recent was the report of the Federal Task Force on Disability (1996) entitled - Equal Citizenship for Canadians with Disabilities - The will to act. This report put forth 52 recommendations. The underlying theme was that it is "time to act," so that persons with disabilities could live their lives in ways that are consistently equal and inclusive.

The purpose of the 1986 Employment Equity Act was to ensure equal access to employment for traditionally under-represented groups. The Act requires federally regulated companies to use processes that ensure inclusive hiring practices, in working towards a representational work force. It does not enforce a quota system, however.

Probably for this reason, the Employment Equity Act has had no substantial impact on overall persons with disabilities representation in the work force (Roeher Institute, 1992).

In the US, the Americans With Disabilities Act (1992) is anti-discrimination legislation that requires employers to make reasonable accommodations for persons with disabilities, provide equal opportunities in employment and allow qualified persons with disabilities to perform essential job functions. To date, this Act has been as ineffective as its Canadian counterpart and has not helped to create the anticipated employment opportunities. European countries address employment equity through hiring quotas (Lewington, 1995), and many countries have legislation requiring equitable hiring. Germany leads the way with over 20 years of experience with a quota system that provides financial incentives and tax relief for hiring, and fines for breaking the law (Lewington, 1995).

Human Rights

Persons with disabilities have always faced discrimination in various employment practices. To address this problem, the Canadian Human Rights Act (1982) specifically protects the rights of persons with physical and mental disabilities from discrimination in employment on the basis of their disability. Also, the Act protects all individuals by requiring the "right of equal protection and equal benefit of the law."

The Act allows for the establishment of special employment-related programs to address the disadvantages faced by people with disabilities. These programs are designed to achieve greater equality in the workplace for persons with disabilities, and are often placed under employment equity legislation and Federal and Provincial affirmative action

initiatives. The Act also protects organizations from being accused of reverse discrimination. Additionally, the Federal Task Force on Disability Issues (1996) recommended that the Act be amended to include a duty to accommodate people with disabilities.

Persons with disabilities can obtain Government vocational rehabilitation services through three major programs: 1) the Canada Assistance Plan (CAP), 2) the Vocational Rehabilitation of Disabled Persons (VRDP), and 3) the Workers Compensation Board (WCB). In addition, numerous private disability plans are available. Directly, or through the services of affiliated agencies, these programs provide a variety of services including assessment, counseling, technical aids and vocational training. All services focus on assisting persons with disabilities to enter or re-enter competitive employment.

## Access to Education

Modern universally available education has been available for some 100 years, as is education and training for persons with disabilities. Until recently, special schools for people with disabilities were the norm in most countries. Special schools were first established in the 1700s to teach individuals who had specific disabilities. The first schools to be established taught deaf and blind children; the general education of other "handicapped children" evolved more slowly. The first school exclusively for crippled children was founded in Germany in 1832 (Wright ,1980). BC also established special schools, such as Woodlands, for persons with mental disabilities, and Jericho Hill for persons with hearing impairments. These schools no longer exist and students have been integrated into the regular school system.

This segregation of persons with disabilities has been a problem in the educational system for a number of years and will likely persist. Although, persons with disabilities appear to be integrated into the regular school system the concern is that they are just being "enveloped" within another system. The concern is increasing because support services and technologies are not yet available for complete integration. As a result, many persons with disabilities have a compromised primary education and lack the academic qualifications for post-secondary education (Roeher Institute, 1992).

Vocational training for people with disabilities followed the same path as the public school system, from segregation to integration. Vargo, Blevins and Ebert (1987) identified three generations of vocational training. In the first generation, training took place in large residential institutions that provided custodial care with little emphasis on vocational skills training. Training in these institutions focused on institutional needs such as laundry, housekeeping, and janitorial work, rather than the needs of clients for training that would lead them to paid employment. The second generation, referred to as the industrial model, had the rehabilitation workshop as the primary trainer. Workshops developed in response to the need to develop assessment, training, and other rehabilitation services for persons with disabilities. The workshops were established by large nonprofit organizations such as Goodwill and The Red Cross. In BC, the Opportunity Rehabilitation Workshop was established. While all of these workshops varied greatly, they provided a modified work environment that prepared people for job placements in the community. In many cases, however, these workshops provided little more than sheltered employment for people with disabilities and did not integrate trainees into paid employment.

Most of this type of training is at the entry level, and results in below-standard skills, with employment of lower responsibility, lower wages and fewer, if any, benefits (Federal/Provincial/Territorial Review of Services Affecting Canadians with Disabilities, 1993). Also, this type of training is not recognized by the public post-secondary system and, therefore, cannot be laddered into further training leading to certificates, diplomas or degrees (Roeher Institute, 1994). The community living movement did not support this sheltered workshop approach to rehabilitation and training for persons with disabilities. (InterFacts Consulting, 1994). They concluded that, in most cases, short-term entry level training does not result in financial independence for persons with disabilities.

The third generation of vocational training programs evolved as an alternative to workshops, and emphasized competitive community-based training and placement. Types of training environments include work crews, enclaves, and supported work, which are characterized by individual integration and ongoing support. At the same time, the public post-secondary system was responding to integration demands of persons with disabilities, by developing special education services (Faris, 1976; Hill, 1992). The Pathways to Integration-Mainstream Report (Federal/Provincial/Territorial Review of Services Affecting Canadians with Disabilities, 1993, p.23) summarized the 3 stages of development of services for people with disabilities as follows

- "Warehouse Approach" - a segregated services approach which removes people from meaningful participation in society.
- "Greenhouse Approach" - specialized services targeted to people with disabilities
- "Open House" – where persons with disabilities have access to mainstream services and participate in the daily life of their community.

In BC, the Faris Report (1976) was the first government study to identify that adult special education needs attention. The report recommended that a special fund be made available for services for disadvantaged groups. The Hansell Report (1977) elaborated on

the needs of adult special education. This report led to the establishment of Adult Special Education Programs in the public, post-secondary system. These programs assist with integration of students with disabilities into the educational institution.

## Factors Affecting Labour Force Participation

This section examines factors that affect the participation of persons with disabilities in the labour force. They are complex and interrelated, and this section will provide only a brief overview of this complexity. This subject is important because employment income, to a great degree, determines a person with a disability's quality of life. Unemployment is equated to a life of poverty on disability income and support services.

People with disabilities face special challenges when attempting to find employment. The challenges can be grouped into the two broad categories: (1) personal characteristics and, (2) environmental factors (Rochlin, Delcaro & Clarcq 1995).

### Personal Characteristics

Personal characteristics are unique for each person with a disability. These characteristics can be modified to some degree or accommodated for, by the person with a disability.

#### Type, severity and cause of a disability.

The type, severity and cause of a disability have affects the participation of persons with disabilities in the labour force (Fawcett, 1996). The HALS (Statistics Canada, 1991a) data classifies disabilities by their type, namely: hearing, seeing, speaking, agility,

mobility, and mental/learning or unknown physical causes. The severity is classified as mild, moderate, or severe, and the causes of disabilities are grouped into work-related, non-work related, disease-related, or present since birth. A complex interplay exists between type, severity and cause of a disability and this interplay affects the participation of an individual in the labour force. Persons with mobility and agility disabilities tend to have the lowest employment rates and persons with multiple disabilities experience even greater barriers to employment. The more severe a person's disability, the less likely they will be to participate in the labour force. In general, persons who require more workplace accommodation because of the type and severity of their disability, are less likely to be hired by employers (Roeher Institute, 1994). In a competitive labour market, employers have choices when hiring and more often than not, tend to overlook qualified people with disabilities, who might require some accommodation, in favour of able-bodied persons.

Persons who become disabled, after having been in the workforce, have higher labour force participation rates (Statistics Canada, 1991a) than those who have no work experience (Hooser & Rice, 1993). Persons with disabilities with no work experience find it difficult to obtain employment because they have to overcome the combined barriers of lack of work experience and disability.

Gender and age.

Gender and age are significant factors affecting employment rates for persons with disabilities. HALS (Statistics Canada, 1991a) in Canada and Harris & Associates (1991) in the US found greater labour force participation rates for males than females. These

surveys also reported lower participation rates for person's aged 15-24 and 45-64. While this reflects the general trend for the whole population, for every specific category, the impact of unemployment on persons with disabilities is greater (Fawcett, 1996).

Education level.

Generally, the higher an individual's level of education, the more likely they are to participate in the labour force. Persons with disabilities are no exception (Fawcett, 1996) however, the problem is that significant numbers do not qualify for post-secondary education and, therefore, cannot acquire the education and training required by most of today's employers. As a result, the National Association of Disabled Students has called for the adoption, by educators, of less restrictive eligibility criteria (Hubka & Killean, 1996). While this would enhance access to post secondary education, in all likelihood it would lead to increased drop-outs and failures due to lack of academic preparation. The net result would be the same. The solution to increasing post secondary participation for persons with disabilities lies in improving their primary education and setting up selective entry into post secondary programs based on a combination of aptitude, academic ability and personal suitability. It also requires educational institutions to provide services and supports that meet the needs of persons with disabilities.

Environmental Factors

Environmental factors are external to the person with a disability and, as a result, exert greater influence on their employment than personal factors.

Employer attitudes.

Attitudes and hiring practices of employers are major factors in the low and limited types of employment available for persons with disabilities (Harris, 1991). Greenwood and Johnson (1985) found that employers expect increased absenteeism and decreased productivity on the job from persons with disabilities. These employer "myths" are not supported by evidence. On the contrary, studies have shown employees with physical disabilities to have an equal or better safety record, job performance, attendance, and turnover rate than non-disabled workers (Stevens, 1986 & Employment Development Department, Committee for the Employment of the Handicapped, 1981)). Stevens (1986) also found 51% of the cost of workplace accommodations to be negligible; 30% cost less than $500. As well, 90% of corporations incurred no additional insurance costs by hiring persons with disabilities. Employers have reported a 60% willingness to hire disabled workers but only 30% actually do (Rehab Brief, 1979). These data suggest that employer attitudes are the single most important factor influencing the hiring of persons with disabilities.

Accommodation and hours of work.

In North America, the physical environment for persons with disabilities has improved considerably as a result of consumer advocacy and strict building codes. Most educational institutions and employers can accommodate those with physical disabilities related to mobility, agility, or sensory impairment (Fawcett, 1996). These accommodations include wheelchair ramps, automatic door-openers, and specialized adaptive equipment for individuals with sensory impairments. Nevertheless, Fawcett

(1996), comments on the difficulty in determining the numbers kept out of the labour force because of inadequate physical modifications.

A significant environmental factor is the modification of hours of work, such as working part-time or starting later in the day, to accommodate the special needs of people with severe disabilities (Hubka & Killean, 1996). According to Statistics Canada data (1991b), up to 40% of persons with severe disabilities, who were working or seeking employment, required modified employment hours. Many employers are unable or unwilling to modify hours of work in this manner (Hubka & Killean, 1996).

Systemic factors.

Systemic factors include the policies, regulations, guidelines, and procedures of the governments, workers compensation boards, and insurance companies, that can influence the programs, services, or income of persons with disabilities. Lacking recognized channels of input, individuals have little influence over the programs and services these organizations develop. As a result, there is significant lack of coordination between and within organizations, and persons with disabilities are relegated to being passive recipients of services (Roeher Institute, 1994).

One example is the provisions of provincial Vocational Rehabilitation Services under the Vocational Rehabilitation of Disabled Persons Act (VRDP). This Act allows the provision of services only to persons with physical and mental disabilities who are deemed by a doctor to be "capable of pursuing regularly a substantially gainful occupation" (Health and Welfare Canada, 1988). At issue is whether doctors and

rehabilitation counsellors are appropriate "gate keepers" of services that would assist persons with disabilities to become independent.

Throughout Canada, persons with disabilities told the Federal Task Force on Disability Issues (1996) the ineffectiveness of federal and provincial employment equity and human rights legislation in reducing systemic barriers. They are demanding governments, at all levels, hold employers accountable for complying with equity and human rights legislation. As a result, governments are requiring federally regulated employers to, not only, report their employee equity statistics, but also to, ensure they take steps to hire persons with disabilities if they are not represented in their workforce.

Support services.

Many persons with disabilities require support services to engage in acts of daily living, participate in education, and engage in employment. These services take the form of attendant care, technical aids, rehabilitation services, environmental accommodation, and transportation. In many cases, supports are highly individualized and expensive to obtain and maintain. Under federal and provincial legislation, these services are often more available at home, than at school or work. Most, provincial disability-related social services require an individual to be unemployed in order to gain access to support services. This policy generates a dilemma, in that persons with disabilities who require support services must either stay at home, or work and attempt to pay for the services themselves. If they choose to work, they often join "the working poor" (Roeher Institute, 1992). This policy is clearly counterproductive. In the educational arena, for example

studies have shown that students with disabilities complete programs at a rate equal to non-disabled students when they are provided the necessary support (Weinstein, Stowitschek & Affleck, 1991).

Specialized transportation services are also essential if persons with disabilities are to obtain education and engage in work; public transportation does not meet their needs (Roeher Institute, 1994; Hubka & Killean, 1996). Adapting to the schedule of the transportation system, reduces flexibility to travel according to the demands of school or work. Once again, a choice must be made; does the worker stay late to meet the project deadline, or go home because of the travel schedule? If the latter, they risk letting the team down.

Economic disincentives.

Persons with disabilities experience significant financial disincentives to work; they may lose their financial support if they demonstrate an ability to engage in full-time employment (Fawcett, 1996). Six out of 10 persons with disabilities reported they would lose income, health care, and other government and private insurance benefits if they worked Harris and Accociates (1991). Benefits include subsidized medication, medical services, transportation discounts, devices of assistance, and homemaker support. When subsidized benefits cease, individuals must assume full financial responsibility for these goods and services previously provided. In many cases, this financial loss means persons with disabilities end up with less income when employed than prior to employment (Roeher Institute, 1992). Also, it is difficult to reinstate benefits terminated when

employment commenced. Consequently, considerable financial risk is involved for those who demonstrate an ability to work.

As well, individuals are often eligible for and receiving benefits from more than one source, such as worker's compensation, the Canada Pension Plan, or private insurance. These combinations often provide a total income, higher than it is possible to receive by working.

Clearly, scenarios like these are disincentives for returning to work. Such funding mechanisms do not accurately reflect the true loss experienced from an inability to work. Individuals would have an incentive to return to work if they continued to receive support services, such as transportation, attendant care and medical aid, until their working income equalled their disability income.

## Public and Private Sector Relationships in Rehabilitation and Education

Partnerships between business and education have evolved considerably over recent years. At first, employers limited their participation to either providing financial support, or working in an advisory role such as a volunteer member of an advisory board. A long-standing debate has existed between business and education groups regarding the role that business should take. Employers, for the most part, have found institutions unresponsive to their needs, but this opinion gap has been closing. In 1995, the Conference Board of Canada defined the purpose of the business-education partnership as one that "enhance(s) the quality and relevance of education for learners, and is mutually beneficial for partners, and treat(s) fairly and equally all those served by the partnership." (Lewington, 1995).

Business and education began establishing relationships in the 1800s when rapid industrial growth necessitated the creation of educational institutions and programs capable of responding to changing training needs of the work force (Gordon, 1987). More highly educated and skilled workers were needed, and employers encouraged educational institutions to meet these needs. The partnerships formed in the 1970s were initially motivated by public relations concerns, financial donations, and donations of equipment and scholarships (Gordon, 1987), but they evolved and continued on the basis of mutual trust and goals (Fabian, Luecking & Tilson,1995). Both educational institutions and businesses were looking to develop mutually beneficial long-term relationships. However not all educational institutions saw such relationships as positive. Some feared they signaled the commercialization of education, and would lead to the loss of autonomy and academic freedom. Nevertheless relationships continued to develop. Interactions included advisory committees, board memberships, contract training, business services, consulting, industry research, and guest lectures (Gordon, 1987). The role of advisory committees, for example, was to monitor the curriculum and learning environment, to ensure that programs continued to meet the changing needs of employers.

At the same time, educational institutions were under increasing government pressure to meet labour market needs, and to prepare graduates for the workforce. Starting in the 1980s, business expressed increasing concern that this mandate was not being met. As a result, the Conference Board of Canada and the Commission on Achieving Necessary Skills published profiles identifying the employability skills required by business (Conference Board of Canada, 1996). Employers adopted two responses to the gap in skills. First, they increased corporate training to adapt workers to

new technologies; second, they increased partnerships with educational institutions to ensure that new graduates were suitably educated (Perry, 1991).

Partnerships between business, education and rehabilitation organizations are a recent phenomenon (Leneway, 1991). Hooser & Rice (1993) suggest that the social goals of rehabilitation, business goals of employers, academic goals of educational institutions, and economic goals of persons with disabilities can all be achieved through creative partnerships. The purpose of these partnerships is to prepare persons with disabilities to earn a living, and to assist them to function at home, in the community, and at work (Roeher Institute, 1994). For these partnerships to work, business must be prepared to act in more than an advisory capacity. Educational institutions must give up some of their academic autonomy, and the community must provide the necessary rehabilitation resources and expertise to assist persons with disabilities make the transition to work (Rochlin, Decaro & Clarcq, 1985). Partnerships should offer all participants a mutually beneficial relationship, and be committed to the goal of increasing the employability of persons with disabilities. To accomplish this goal, partners commit to working within their sphere of influence to change attitudes and behavior towards helping persons with disabilities in the transition to employment ( McCarthy, 1982). The most powerful modifier of attitudes and behavior is direct positive contact (Levey, Jessorp, Rimmerman & Levy, 1993). The more contact employers have with a person with a disability, the more likely they are to hire that person. Therefore, business takes a leadership role in the development, management and implementation of partnership programs (Mannon, 1992; Vargo *et al.*,1987). Educational institutions and rehabilitation organizations rely on the input from business to develop the programs and services necessary to prepare persons

with disabilities for successful employment and careers. If business perceives that their recommendations are not being treated with respect and responded to appropriately, this valuable involvement will likely disappear (Pigott, 1983).

According to Eiley (1996 p.73) the essential components of a business-education partnership are: "constant input from employers; work placements with industry; focus on growth employment fields; accent on the practical over the theoretical; and an industry backdrop of emerging technology and innovation". Similarly, Vargo, Stevens, Blevins and Ebert (1987, p.100) describe the essential components in rehabilitation as: "targeted training and employment; employment readiness; program staff aware of business and economic realities; and employer and participant feedback". Rochlin, Decaro and Clarcq (1985) created a comprehensive list of principles for business, education, and rehabilitation partnerships illustrating the degree of involvement required to change the attitudes and behaviors that affect the employment of persons with disabilities. These principals involve:

1. Treating each disabled person as an individual
2. Maintaining a broad perspective
3. Restructuring and modifying jobs
4. Developing a relationship
5. Facilitating communication
6. Selective approach to placement
7. Developing creative marketing strategies to employment
8. Engaging in follow-up with graduates and employers
9. Designing valid education and rehabilitation services and programs
10. Enhancing the knowledge base of education and rehabilitation personnel

Business, education, and rehabilitation partnerships are essential to the successful placement of persons with disabilities following completion of training programs (Greenwood & Schriner, 1988; Vargo *et al.*, 1987; Clark, 1993; Levy *et al.*, 1993). Business partners assist students to make the business connections necessary to obtain employment; rehabilitation partners provide the support services required to make the transition to employment; while education partners deliver the required skills and credentials.

## Transition To Employment

Johnson (1993) defines transition as "the movement of students through a total set of events, processes, and options that begins well before their leaving school and continues into adult life, with post-school involvement in post-secondary education and training, employment, community living and social and recreational pursuits" (231).

Various forms of transition have been evolving since the 1960s, including: work study, career education and the transition movement (Browning, Brown & Dunn,1993). In the work-study movement of the 1960s, students' academic, social, and vocational curriculum was integrated with work experience. In the 1970s, the career-education movement assisted individuals in identifying their potential for academic, social and personal fulfillment, and participating in work activities to meet their individual needs. In the US, the transition movement of the 1980s, defined the transition framework through legislation. The School-to-Work Opportunities Act requires schools to provide the following services: career guidance; integrated school-based and work-based learning; work experience; and activities to link school-based and work-based elements (Leneway,

1991). Skills were learned through the school-to-work transition process include problem solving, team-work, and decision-making.

Transition movements specifically related to persons with disabilities began in the 1970s, and included the Projects With Industry model and Bridges model (Magee, Fleming & Geletka, 1982; Tilson, Luehing & Donovan, 1994). Critical features of these models include community involvement, and follow-up support for employers and persons with disabilities. These models focused on an outcome-orientated process encompassing a broad array of services and experiences that, for the first time, used employment as an objective measure of outcome (Brolin, 1992).

In Canada, no federal school-to-work legislation exists, but programs are in place in various provinces. For example, in BC all students must go through a career preparation program and engage in 20 hours of work experience. No broad policy or transition program related specifically to persons with disabilities is in effect. Funding for programs and services like assessment, counseling, job placement, and follow-up is outside the educational system. As a result, services are not integrated with education and often leave persons with disabilities unemployed following their education and training (Hubka & Killean, 1996; Roeher Institute, 1992).

Transition to employment for persons with disabilities depends on interactions between personal characteristics and the labour market (Roeher Institute, 1992 &1994; Federal/Provincial/Territorial Review of Services Affecting Canadians with Disabilities, 1993). Personal characteristics include the individual's human capital, and demographic and social background. Labour market characteristics include work environment and management.

Accommodation and integration to post-secondary education is insufficient to equalize career entry opportunities for persons with disabilities (Roeher Institute, 1994). Transition to work requires institutions to have a commitment to providing disability-specific expertise and resources. For an institution to fully respond to the career development and transition needs of students with disabilities, qualified professionals must intervene early, often, and throughout the students' post-secondary years (Rumrill, Gordon, Brown & Bowen, 1995). To achieve employment outcomes for graduates, post-secondary institutions must do more than simply removing the physical barriers to education. If post-secondary education is the bridge to competitive employment for persons with disabilities, then institutions must take seriously the responsibility for developing comprehensive services for transition (Deloach, 1989; Koch, 1995; Hubka & Killean, 1996). However, the post-secondary system has made little attempt to evaluate the outcomes of a college education for individuals with disability (Deloach, 1992), yet in British Columbia yearly graduate outcome evaluations are performed and reported for all institutions.

Employers are of critical importance in the transition process, yet only a small amount of empirically supported literature is available on their role (Kohler, 1993; Tilson *et al.*, 1994). The key components of successful transition seem to be "real" work experience, involvement of employers, and matching employment requirements with the skills and abilities of a person with a disability (Tilson *et al.*, 1996). Employers must be involved throughout the transition process, which includes developing curricula and employment transition mechanisms associated with vocational preparation (Browning *et al.*, 1993; Roesseler, 1987). Employers must also see a benefit from being involved.

Wehman (1992) suggests that in addition to the systems needed to provide transition services, a significant contribution is required from individuals with disabilities. Such individuals must be motivated active learners in order to complete school and make the transition to higher education and employment. The labour market only provides employment for persons with disabilities who are competitively employable.

Co-op education is a significant component of the transition process for persons with disabilities (Hubka & Killean, 1996; Roeher Institute, 1992) and both employers and students agree that a co-op program is invaluable. Employers receive additional labour and the opportunity to assess a prospective employee, while students receive valuable work experience. Through work experience, students increase their employability skills, improve motivation, and gain valuable professional contacts. In a nation-wide survey of Projects with Industry, 50% of internships resulted in either a contract or full-time employment (Viewpoint, 1991). Clearly, establishing direct linkages between persons with disabilities and potential employers is a crucial factor in increasing their employment (InterFacts Consulting, 1994).

Persons with disabilities require personal support, support from training institutions and support from partners in the labour market (Roeher Institute, 1994) in order to ensure a successful work experience. Such an experience requires all those involved in the transition process to focus equally on the needs of the participant and the requirements of the employer. The primary concern of most employers is the bottom line, namely "does this hiring decision help the company to operate efficiently and economically?"

Therefore, program job-development activities should approach the employer from a business, rather than an equity, perspective.

## Studies of Education and Training Outcomes

For any human service intervention, knowledge of participant outcome is essential in this era of accountability and limited financial resources. Governments at all levels are considering the results of interventions before deciding what services to support. In addition, persons with disabilities want evidence of results, before investing their time, energy, and money with training providers. Professionals in the training field are beginning to realize the only acceptable result of a training intervention is competitive employment. As a result, many training institutions are providing transition services for participants. It is surprising, to find so little outcome data in the literature.

Despite a comprehensive search of the rehabilitation, education, and training literature, little outcome data could be found on education and training graduates with disabilities. McInnes in the Access to Post-Secondary Education for Persons with Disabilities, Research Forum ( Disability Resource Centre, 1992) commented on the lack of research, stating "we just couldn't find anything that specifically dealt with the transition from post-secondary education to employment for persons with disabilities." (p. 52)

In the absence of outcome data, associated with training programs for persons with disabilities, I decided to contact Mr. Charlie Harles[1] & Mr. Lueking[2] because of their positions and extensive experience in the field of rehabilitation, training and employment for this group. Harles indicated that Project with Industry legislation requires projects to report graduate outcomes for only three months following interventions; long-term employment rates are not reported. Lueking commented that because the rehabilitation, education and training industry in the US developed around input and process, many institutions and service providers are not responsible for placing graduates in competitive employment. With this lack of accountability, there has been little interest in researching employment outcomes.

Only one longitudinal study and several short-term follow-up studies were found in the literature. The best outcome results are reported by community-based education/training partnerships.

Longitudinal Studies

DeLoach (1992) conducted a follow-up survey of 898 students with disabilities who graduated from the University of Illinois, between 1948 and 1988 (501 graduates responded). The overall employment rate, was 83% with 10% graduates working part-time. The majority of graduates maintained a long-term attachment to the work force and only 1% had never been employed (DeLoach, 1992) concluded that "disability does not preclude employment in numerous and diverse occupations." (p.62) Furthermore, the

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[2] Co-Author of A Working Relationship, *The Job Development Specialist Guide to Successful Partnerships with Business*

study found no relationship between disability and the type of employment undertaken by graduates. This group was acknowledged to be academically outstanding and extremely motivated.

One-year Follow-up Studies

In a one-year follow-up study of California graduates with disabilities and undergraduate degrees Howard and Johnson (1986) found 51% employed, 41% taking further education, and 8% unemployed. From this study, the authors concluded that a college education enhances the employability of persons with disabilities, but not to the same level as non-disabled graduates. In another one-year, follow-up study, Johnson & Rubin (1986) reported an unemployment rate of 48% among college graduates with disabilities. This unemployment rate was twice that for non-disabled graduates (21%).

In Employment Opportunity For Post-Secondary Students and Graduates With Disabilities: A National Study, Hubka & Killean (1996), reported that academic qualifications and career aspirations do not translate into employment opportunities. To graduates, who responded to this survey, the barriers to employment following graduation included a lack of work experience, employer attitudes, and physical barriers. They found that 45% of graduates received training that did not prepare them for employment. The employment rate for this sample of adults, with some post-secondary education, was 63%, with 74% working full-time and 26% working part-time. In comparison HALS data suggests an employment rate of 61% for adult Canadians with disabilities and some post-secondary education (Statistics Canada, 1991a).

The relationship between training and education, and positive labour market transitions for persons with disabilities is ambiguous (Roeher Institute, 1994). As well persons with disabilities with only some high school make the transition to work more frequently than those with high school graduation and some post-secondary education (Roeher Institute, 1994). Apparently, factors other education and training are affecting the employability of persons with disabilities. Some of these factors were discussed earlier. It seems that while education and training are critical in labour force participation for the non-disabled, for persons with disabilities, increasing the level of education will not necessarily result in employment (Roeher Institute, 1992). In fact, of persons with disabilities who have some post-secondary education, four out of 10 cannot participate in the labour force (McInnes cited in, Disability Resource Centre, 1992).

Scott (1992) conducted a follow-up study of 42 women with physical disabilities who had earned certificates, diplomas, and degrees from various post-secondary programs in Manitoba, Canada. Their success in finding employment was no higher (52%) than for women with physical disabilities who lacked post-secondary education. The graduates in this study encountered attitudinal, architectural, and systemic barriers to employment.

Education/Training Partnerships

Training programs that have established a partnership with business report the highest placement rates (Harles, 1992). It should be noted, however that many of these are self-reports, rather than objective, empirical studies of outcomes. For example, the South Carolina Vocational Rehabilitation Department (1996) conducted a follow-up

study of 210 graduates, who completed its program from 1984 to 1996. Overall, 89% reported being employed one year following graduation. Based on tax revenue alone, therefore, the program was cost-effective. The annual program cost was $366,900 and graduates paid $617,148 in total taxes in the year following graduation. This represents an excellent return to the taxpayer on a minimal investment. In addition, to obtaining employment, graduates reported advancements and promotions, suggesting that the program provides careers, not just jobs. The program relies on the careful selection of students, student internships, and assistance from business in developing the curriculum, mentoring students, and marketing students for internships and graduates for employment.

The Center for High-Tech Training for the Disabled in Orlando, Florida reported a 90% placement rate, one year following graduation, over a nine-year period. The success of the program is attributed to partnerships among business, education, and rehabilitation (Clark, 1993). A community-based training and/or placement program called Partners In Progress developed in Alberta, Canada, was modeled after Projects With Industry, with all training occurring on the employers' premises (Vargo *et al.*, 1987). Fifty trainees entered the program and the outcome data indicates an 86% retention rate, and a 90% job acquisition rate. Vargo *et al.* (1987) indicates that features contributing to the program's success include functional partnerships between business, government and rehabilitation. In addition, the program adheres to a careful selection process that matches the skills of trainees to the demands of the job. Also, the program provides extensive job support for both employers and persons with disabilities.

IBM Corporation (1992) collected data on all IBM-supported projects which they supported in the Association of Rehabilitation Programs in Computer Training between 1974 to 1994 The number of projects ranged from a low of 16 in 1980, to a high of 36 in 1991. The number of yearly placements for all projects ranged from 219 in 1981, to 341 in 1990, and the placement rate for all projects ranged from a low of 79% in 1990 to a high of 89% in 1988. However placements were reported for the year of graduation regardless of when the placement actually occurred. For example, of the 263 placements in 1990, 79 were from previous years classes. Therefore, these results are long term placement trends rather than yearly graduate placement rates.

Leneway (1991) compiled Projects With Industry (PWI) placement rates from data obtained from the Rehabilitation Service Administration PWI grants office, for the period 1983 to 1988, from 112 federally funded projects.

The placement rates were:

| Year | % Placement |
|---|---|
| 1985 | 52% |
| 1986 | 65% |
| 1987 | 59% |
| 1988 | 69% |

Leneway concluded that business involvement in PWI programs enhances the employment of persons with disabilities compared to Vocational Rehabilitation programs that do not include business representation.

BC Colleges and Institutes: Student Outcomes Surveys

The Strategic Information Research Institute (1994,1995) provides student outcome data for comparison with education and training outcomes for persons with disabilities. In these surveys, persons with disabilities were identified through self-disclosure. The surveys polled former students who had completed most or all of the credits required to graduate from career and vocational programs, or academic programs, in publicly funded college-sector institutions.

The 1994 computer science program survey separated results from programs of one year, and more than one year, duration. One year following graduation, the full-time employment rate for one-year certificate programs was 40% compared to 75% for longer programs.

The 1995 computer science program survey separated results for programs awarding degrees, diplomas, or certificates. Graduates with degrees had a employment rate of only 47% because 50% went on to further studies. The employment rate for graduates with diplomas was 84%, with 24% proceeding to further study. Graduates with certificates had an employment rate of 65%, with 32% going on to further studies. Of the employed graduates with certificates, 41% did not find employment related to their field of study.

## Marketing and Rehabilitation

Marketing is an essential component not only of business success, but also for the success of social organizations. According to Young, Rosati and Vandergoot (1986),

marketing strategies comprise three processes: 1) assessing the needs of the customer, 2) tailoring the product and services to meet these needs, and 3) maintaining long-term relationships with the customer and the product. In this context, an employer is a rehabilitation organization's customer or client and the trainee with a disability is the program's product (Corthell & Boone, 1982). This marketing approach requires rehabilitation organizations to balance the service needs of trainees with employers (Rehab Brief, 1985).

Sales need to be differentiated from marketing. The primary focus of the former is on selling and promoting the product; the aim is to generate more sales (Virgil, 1985). A sales approach does not help persons with disabilities obtain employment. It promotes the trainee rather than meeting the employer's needs. In contrast, marketing looks outward and strives to meet the customer's needs. With this approach, persons with disabilities are provided with the services and training necessary to become competent and valuable employees, and training programs establish long-term relationships with satisfied customers (Young *et al.*, 1986). Through partnerships with customers, training organizations are able to overcome many barriers to employment for persons with disabilities (Fabian, Leucking & Tilson, 1995; Leneway, 1991).

## The Cost of Failure

Economic and human costs are associated with the failure to provide rehabilitation services, education, and employment for persons with disabilities (Roeher Institute, 1994; Rubin & Roessler, 1987). Both should be considered when justifying the programs,

services, and support this group requires. Obtaining private and public support is best achieved by a balanced approach to both arguments.

The Economic Argument

While the direct and indirect costs of disability-related unemployment in Canada resist precise measurement, based on the unemployment rate, they are substantial. In 1991, 14% of the persons with disabilities were unemployed, compared to 10% for the non-disabled population (Statistics Canada, 1991a). Many unemployed persons with disabilities indicated their ability and willingness to work (Gerber, 1990).

The economic argument of the cost of failure is based on an analyses which offset the cost of investing in programs and services for persons with disabilities, against the benefits of reduced social expenditures and the resulting increase in income and other taxes. Many of these cost-benefit studies report favourable ratios, some as high as 10:1 (Levitan & Taggert, 1982) and 5:1 (Nowack, 1983). Harles (1992) reported that in 1991 Projects With Industry placed 13,500 persons with disabilities at a cost of $1,400 per placement. In this case, the US federal government invested $15.75 million and recouped $54 million in one year; a 3:1 return on investment. Multiplied over several years, considerable savings result. Berkowitz (1984) argues that increasing the lifetime earnings of persons with disabilities by investing in their rehabilitation makes good economic sense.

The economic argument tells less than the whole picture, however, because a substantial investment in rehabilitation programs has not increased the employment rate of persons with disabilities, nor has it curbed the increasing cost of income maintenance

and support services (Fawcett, 1996). Also, persons in this group report that their "lot in life" has not substantially improved when it comes to paid employment (Harris & Associates 1991; Hubka & Killean, 1996; Human Resource Development Canada, 1996). Unless other barriers to employment are greatly reduced, economic argument, taken alone, is less than persuasive.

The Humanitarian Argument

The humanitarian argument is based on a sense of social responsibility; it is "the right thing to do". Humanitarian acceptance of the necessity to provide programs and services to persons with disabilities began as an early 1960s social movement (Rubin & Roessler, 1987). The shift in public attitude developed in parallel with disabled consumers advocating for more services based on their right to equal citizenship (Hubka & Killean, 1996). During the 70s and 80s persons with disabilities continued to advocate for their rights to freedom of choice and independence. As a result of public attitudes and disabled advocacy Canada included this group in the Charter of Rights and Freedoms, Employment Equity Act and the Canadian Human Rights Act. These acts established the framework for persons with disabilities to participate fully in all aspects of Canadian society.

The humanitarian argument has appeal, but in a world of scarce resources, society is faced with making choices about which services to provide (Wright, 1980). These choices should not be made solely on the basis of either the humanitarian or economic argument but rather, on a blend of the two in an environment where it is everyone's responsibility to make the best use of scare resources.

## Summary

In 1991, more than 4.2 million Canadians, almost 16% of the population had some form of disability and of those 2.3 million were of working age (Statistics Canada, 1991a). The labour force participation rates for this working age group is not encouraging with over 1.2 million being unemployed (Statistics Canada, 1991a). According to surveys, the majority of persons with disabilities (70%) are willing and able to work (Harris & Associates, 1991; Statistics Canada, 1991a).

Persons with disabilities have lower education levels; concentrated in low-level occupations; and lower incomes than the non-disabled. Public policy and legislation have not overcome the inequities experienced by for this group. The Charter of Rights and Freedoms, Employment Equity Act and the Charter of Human Rights have provided a framework for equality, but persons with disabilities still face significant personal and environmental challenges, when attempting to find employment. Employer attitudes and hiring practices continue to limit the employment opportunities for persons with disabilities. In addition, systemic factors such as policies, regulations, guidelines, and procedures result in uncoordinated and ineffective programs and services for persons with disabilities. This combined with the lack of support services required to engage in acts of daily living, participate in education and engage in employment render persons with disabilities to life outside the working mainstream of our society.

Partnerships between business and education have proven to meet the business goals of employers, academic goals of educational institutions, and the economic economic goals of persons with disabilities. The focus of these partnerships is to prepare persons

with disabilities to enter or re-enter the workforce. These partnerships work because business takes a leadership role in the development, management and implementation of the partnership programs (Mannon, 1992; Vargo *et al.*, 1987). The essential components of business-education partnerships are constant input from employers, qualified students, quality training, and work placements (Eiley, 1996; Vargo *et al.*, 1987). These partnerships are essential to the successful selection, training, work experience and transition to employment for persons with disabilities (Clark, 1993; Levy *et al.*, 1993). A key component to successful transition is matching work experience employment requirements with the skills and abilities of persons with disabilities. Also, persons with disabilities require personal support from training institutions to make the transition to employment. Employers will hire persons with disabilities if they are competitively employable and can demonstrate an ability to add value to their corporations.

Despite a comprehensive search of the literature little outcome data could be found on the training students with disabilities. Training program models such as PWI and ARPCT with established partnerships with business report higher placement rates than those from public institutions (Roeher Institute, 1992; Harles, 1992; Hubka & Killean, 1996; Statistics Canada, 1991a).

A marketing approach should be used by programs to assist persons with disabilities to enter or re-enter the workforce. This approach recognizes that both students and employers are customers of the program. The student is the customer while they are being trained to enter the workforce. Once trained the students become the products and the employer becomes the customer. As such, the program has the responsibility of preparing the person with the disability to become a competent and valuable employee.

Using this approach in business-education partnerships overcomes many barriers to employment for persons with disabilities (Fabian, Luecking & Tilson, 1995).

Private and public support for developing services and programs for persons with disabilities can only be achieved by considering both the economic and social argument. This balanced approach requires society to use its scare resources wisely.

The next chapter outlines several models of business involvement in training programs for persons with disabilities. These specialized programs were established to overcome the challenges this group faces in obtaining education, training and employment.

# CHAPTER 3

## MODELS OF BUSINESS INVOLVEMENT IN TRAINING PROGRAMS

This chapter offers three general models of employer involvement in training programs for persons with disabilities, followed by a detailed description of the model adopted by the *Access Ability Program*. The three models are Projects with Industry, IBM's Program to Train Disabled Persons, and Industrial Training Committees. The *Access Ability Program* adopted the IBM model when the program was first established at the Workers' Compensation Board of British Columbia in 1986.

### Projects With Industry

Projects With Industry (PWI) was authorized by the US Rehabilitation Act of 1973 (Greenwood, Johnson & Schriner, 1992). The intent of the legislation is to prepare persons with disabilities for suitable employment (Harles, 1992). A unique feature of this Act is the requirement that it be implemented through direct partnerships with employers rather than state vocational rehabilitation agencies (Leneway, 1991). The Act builds on the fact that since business and industry provide jobs, they should have a major role in job training and placement. The program model is one of equal partnership between business and the delivery agency; business participates in the design and delivery of the training program, as well as in the placement of graduates. In the PWI model, business is involved in policy and decision-making, not in the ineffective advisory capacity that tends to prevail in most training institutions. As a result, PWI programs have established a business-like approach to training and placement by developing standards for success.

Success is measured annually not in terms of clients served, but by placement rates and cost per placement (Magee, Fleming & Geletka 1982). Programs are evaluated and funding renewals depend on performance. McCarthy (1982) argues that PWI is the most effective and extensive cooperative venture between business and rehabilitation in the US. Largely, business can be credited with the success of the PWI approach, because of its role in eliminating the employment myths surrounding persons with disabilities, and reducing negative attitudes of employers toward hiring from this group (Pati & Morrison, 1982; Boswell, 1984).

## The IBM Program to Train Disabled Persons

The Association of Rehabilitation Programs in Computer Training (ARPCT) is an affiliation of approximately 42 individual projects providing information-technology training for persons with disabilities in Canada and the US. IBM played a major role in developing these training projects and continues to provide support.

The program began with the new opportunities that were created for persons with disabilities by the advent of computer technology (IBM Corporation, 1992). As a leader in information technology, IBM developed a program model to assist persons with disabilities to take advantage of these new employment opportunities. Following intensive investigation it was decided that training persons with disabilities as computer programmers, rather than data entry clerks, would provide an appropriate entry into the information technology field. Computer programming was ideal because success required intellectual rather than physical ability. Also, computer programmers were in demand and the starting salaries were sufficient to offset the loss of disability benefits. Programmer

training, which was offered by most projects, has been joined by many new occupations in the information technology industry, including network administration and technical support services.

The first program began in 1972 at the Woodrow Wilson Rehabilitation Center in Virginia, and the second in 1974 at the California Department of Rehabilitation, where the program model currently used by most projects was developed.

The IBM model is based on active and continuing cooperation between public and private sectors. The essence of the model is a partnership between business, government, education and community agencies. Each partner's participation on the BAC is integral to the project. Several key elements of the model are unique and require emphasis.

First, business involvement is frequent, active and hands-on (Clark, 1993). The BAC operates like a management team with decision-making authority and is not just advisory. Business is involved directly with students through interviewing, evaluating, and mentoring them and assisting in their placement. The BAC is essential to the success of the program (Jones, 1985; Leneway, 1994; Clark, 1993). In every sense of the word, business develops an ownership interest in the program and its graduates. Members of the business community provide their time, expertise and support, but do not contribute financially. Business involvement in all aspects of the project provides graduates with a network of contacts in the information technology industry. Second, project staff members are responsible for obtaining project funding, recruiting, screening, and training students. Staff members are also responsible for the day to day administration of the program. Third, rehabilitation agencies that refer individuals with disabilities are

responsible for providing support services for students and their projects, including special devices, technical aids, and transportation.

## Industrial Training Committees

The term, "Industrial Training Committee," is often used as a generic description of industry-sector training partnerships. These partnerships involve representatives from education, labour, employers, and government. Their primary purpose is to identify, design, and encourage the delivery of, appropriate skills training for industry. In the majority of cases, committees are advisory and have no policy or decision-making authority for industry training. Many models of industrial training committees have developed in Canada over the years with mixed success (Pigott, 1983).

The common elements linking the three models discussed in this section is a partnership in which business has policy and decision-making authority and direct access to students. Also, everyone involved in the program understands and supports the training focus on preparing students to meet the employment standards of business and industry. In all three models, this partnership has resulted in the high placement rate of graduates.

## *Access Ability Program* Model

At its inception in 1986, Access Ability adopted the IBM model to demonstrate that a partnership between the WCB and business could result in the employment of severely injured workers. Business involvement in all aspects of the program is its most significant and important element. While Access Ability could function without an effective BAC, it

would not be as successful. Access Ability is now administered by Workplace Training Systems.[3]

The mission statement of Access Abililty is ambitious, namely, *to provide a unique, high-quality information technology training and placement program that maximizes employment opportunities for persons with disabilities in BC.*

To meet industry standards Access Ability must provide high-quality training. More importantly, to meet the needs of persons with disabilities, the program must create placement opportunities for graduates. To accomplish the program's mission the following specific goals have been developed:

- To attract and develop qualified candidates
- To ensure that physical and financial resources are ongoing
- To maintain an active and effective BAC
- To place qualified students in appropriate internship environments
- To assist program graduates in locating employment opportunities
- To build industry and public sector awareness of the program
- To attract and maintain the highest quality staff for the program
- To be recognized by stakeholders (funders, employees, Business Community, OLA and students) as a high quality results orientated program
- To maintain a curriculum that meets the current needs of industry
- To strive for the highest possible quality of delivery of all aspects of the program.

Each of the objectives has specific measurable outcomes that are evaluated each year, through a strategic planning process. Program staff and the sub-committee chairs of the BAC develop the strategic plan.

[3] Workplace Training Systems (WTS), was established in 1989. Operating as a cost recovery business division of the Open Learning Agency. The business focus of WTS is to utilize a consultative approach in the provision of customized performance improvement and workplace-centered training for clients in all sectors of the BC economy.

Program Description

Access Ability is located at the Burnaby Community Skills Centre. Representing an innovative approach to teaching computer programming to persons with disabilities, this high-quality, fast paced program is taught in a mainstream educational setting rather than in a segregated rehabilitation facility. Graduates who are able to successfully market their skills and abilities in a competitive workplace exemplify the quality of instruction and support in the 13-month program.

Access Ability receives administrative services such as human resources, accounting and registry but no direct operating funds from OLA. A partnership between Human Resources Development Canada, Workers' Compensation Board of BC and Vocational Rehabilitation Services of the BC Ministry of Education Skills and Training provides the necessary funding in the form of grants and tuition fees.

The program is managed under the guidance of OLA's Workplace Training Systems. It is administered by a Senior Account Manager; program coordinator/instructor; and one full-time instructor; two sessional instructors and one part- time instructional assistant; and one part-time administrative assistant.

The program is taught in a simulated business environment with each student located at an ergonomic workstation designed for computer-training purposes. The classroom design fosters an interactive training approach where instructors combine lectures, computer-based instruction, skills-practice, and individual and group projects. A total immersion approach to learning encourages students to develop both their information-technology, communication and interpersonal skills.

The program teaches not only the technical aspects of computer programming but also the skills associated with getting and keeping a job. These "professional socialization" skills are an integral part of the program they include teamwork, oral communication, report writing, and interpersonal presentation and interview skills. The program is organized into four phases.

| | |
|---|---|
| Phase 1 | Information Technology for Business; Business Communications; Programming1; Word Processing; and Introduction to Operation Systems |
| Phase 2 | Applied Accounting Principles and Financial Applications; Database Modeling and Implementation; Programming 2; Data Communications 1; and Windows Based Visual Basic Programming 1. |
| Phase 3 | Object Orientated Programming Systems; Windows Based Visual Basic Programming 2; Project Based Systems Analysis; and Data Communications 2 |
| Phase 4 | Directed Work Experience in Computer Information Systems (Internship) |

The program takes an innovative approach to overcoming employment barriers by involving the business community in interaction with the students through a structure of sub-committees and activities. These Selection, Evaluation, Placement, Mentor Committees; guest lectures; and regular monthly BAC meetings at the Centre. As a result of direct personal involvement, over 52 potential employers interact with students, observe their development, and evaluate their skills and abilities. They do not hesitate initially to provide internships for students and later to provide job placement support.

The program's student population draws from individuals who have a permanent physical disability, which severely limits their ability to work. Students are not accepted because of prior academic achievement but rather acceptance is based on their desire, personal suitability, and aptitude for computer programming. Each student is interviewed

intensively by program staff, and tested for computer programming aptitude using the SRA Computer Aptitude Test Battery and the Raven Progressive Matrices. If a student meets the cut off scores on the aptitude tests, an interview is set up with the Selection Committee for final selection into the program. After selection, program staff works with the student's rehabilitation counsellor to arrange for the support services required. These may involve transportation, adaptive technology, and additional finances.

Each September, 20 students begin the 13-month program, with the first nine months spent in the classroom, followed immediately by a four-month internship. The classroom portion is divided into three, three-month phases. After each phase, students write formal examinations for each course. Additionally, they undergo individual oral evaluations by teams of three BAC members. At least one member on each team is technically proficient. The instructors prepare oral evaluation questions and answers and each student is asked the same set of questions. The BAC does not know the written test results of the students prior to the evaluation. Each student is evaluated on interpersonal, communication, and technical skills. Following the evaluations, the team leaders meet as a group with the program staff to discuss the progress of each student. BAC team leaders, in consultation with program staff can recommend students be put on probation or be asked to withdraw if it is clear they are unable to meet the program requirements. This decision is not made lightly. Following the evaluations instructional staff meets with students individually to provide feedback on their performance in the program and on the evaluation. Advice and strategies for improvement are discussed. Minimal time off is given between phases, as the classroom portion is fast paced and intensive, to accommodate a full course load, in a short time frame.

In phase three, students prepare for internship interviews by finalizing their resumes and practicing interview skills with the program staff and Placement Committee. This committee participates actively in practice interviews as well as securing an appropriate internship opportunity for each student. Students are carefully matched to internship opportunities by the program staff and Placement Committee. Matches are based on the requirements of the internship and the technical and personal skills of the student. The matching process ensures that the capabilities of the student and the needs of the employer are balanced, so that both gain value from the experience. The internship is worth six academic credits, providing the student submits a full internship paper, receives a positive internship evaluation from the employer, and a positive report from program instructors.

Graduates receive 45 credits and a Certificate in Computer Programming from the OLA. Graduates may, if they wish, take a further 15 upper level credits from any public post-secondary institution and obtain a Diploma in Information Technology from the OLA. These additional credits are grouped into six business credits and nine technical credits, to provide graduates with sufficient flexibility to meet their future learning needs.

Throughout the program, program staff continually works with students and their rehabilitation counsellors to resolve the multitude of disability-related problems students' encounter. The program staff and BAC want the students to succeed and will do whatever they can to ensure this success. For example, program staff assist students to resolve transportation problems impairing their ability to attend classes, often including arranging for and obtaining funding. Lack of adequate transportation prevents many persons with disabilities attending school and returning to work (Interfacts Consulting, 1994). The

instructors often modify computers, software and instructional resources to accommodate a student's special learning needs. Although program staff are not professional counselors, they provide students with day-to-day support well beyond the traditional instructional role of faculty in post secondary institutions. The BAC's Mentor Committee assists students with the transition from school to a new working environment. Addressing student's needs enhances their ability to complete the program and make a successful transition to work.

It is relevant to note that BAC member organizations must deal with many internal human resource issues to provide internships and hire graduates. Several organizations have established internship opportunities just for Access Ability students. Others have modified their hiring practices by creating entry-level positions requiring a certificate rather than a diploma to accommodate Access Ability graduates. In these situations, graduates are encouraged to begin working on their diploma as soon as they are hired..

Instructional Environment

Typically, Access Ability students have no, or limited, prior computer experience and possess few study skills. Because most have been out of school for some time they tend to lack confidence in their academic skills. Also, many students come from practical trades backgrounds, and are more comfortable with a practical rather than a theoretical approach to learning. These student characteristics combined with the short classroom portion of the program (9 months), and the emphasis on placement, demand an integrated approach to teaching. All courses within the curriculum are treated as "value added"; that is, the subject matter taught in one course is integrated into the course material of

another course. The learner thus achieves a greater depth of understanding as material is often covered several times, in different courses. For example, in phase one components of Introduction to Operating Systems are taught in a sequence that requires their immediate application in the Programming 1 Course. Also, the major paper in Business Communications is based upon technical knowledge from the Information Technology for Business course. This paper later becomes the subject matter for the student's formal, oral class presentation. Word processing is a daily tool for reports, letters, memos, and resumes.

This approach to teaching and learning recognizes that adult learners need to immediately apply news skills and knowledge. Rote learning to pass exams is discouraged in favour of the development of the ability to apply knowledge. Students are encouraged to work in groups but to become independent learners who know where, when, and how to access external resources. The internet is proving a valuable student resource for developing independent learning.

Program staff are responsible for ensuring internship placement is successful for both students and employers. In preparation, all classroom lectures and theory are supported by practice. The introduction of concepts is followed by a practical application, and class assignments and exams must demonstrate applied rather than rote knowledge.

Students begin the program as a cohort and work throughout the year in small groups. Teamwork provides opportunities to learn from the combined expertise of the group; one student's strength can compensate for another's weakness. As a result, students bond together, discover common learning challenges, and assist each other to

learn. Students work hard to do their best and tend not to feel intimidated by the performance of others.

Computer-based training reinforces instructor-led lectures and provides students an opportunity to reinforce and revisit concepts they did not understand or missed because of absence. All computer-based training, exercises, and handouts are placed in a common folder on the file server for the students to access at any time. A flexible and open learning environment assists students to learn at their own pace and in their own time. The computer lab is open to students from 7:00 a.m. to 9:00 p.m. Monday to Friday, and 9:00 a.m. to 4:00 p.m. on Saturday. Instructors affirm that the program's integrated approach to learning works well in preparing adult students for work.

Business Advisory Council

The 52 member BAC is primarily composed of information technology managers from 45 corporations in Greater Vancouver. Members volunteer their time and expertise but are not required to engage in any fund-raising activities. Each new member is provided an orientation package on the program and asked to join a sub-committee. BAC members learn about the *Access Ability Program* by attending monthly meetings and working on sub-committees. WTS takes full responsibility for ensuring the program has sufficient operating funds.

Technically, the BAC functions as an advisory body to the Program Manager, hence the term BAC. No legal or academic responsibility is established or implied by acceptance of BAC membership. The model assumes that the BAC will be involved in all significant decisions and that consultation between the BAC and program staff will be

regular, open, and honest. The BAC has a leadership role and as such does not hesitate to make recommendations which the program manager and OLA act upon. In addition to its leadership role, advisory, and decision-making roles BAC members are actively and personally involved with students through a structure of functional sub-committees.

Each sub-committee operates under well-defined policies and procedures. Sub-committee chairs are responsible for recruiting new members and orientating them to the sub-committee's functions. In most cases, existing members coach new members. For example, student oral evaluations are always conducted by a team of three evaluators with an experienced team leader. The following sub-committees are in operation:

*Selection Committee:* Reviews and approves the selection criteria and application process; reviews files and interviews applicants, and recommends their suitability for the program. Evaluators adopt an employer's perspective. If an applicant is deemed unemployable for any reason the committee would recommend against acceptance. Together with program staff the committee makes the final selection decision. Members participate in the on-going formal oral evaluations to obtain feedback on their selections.

*Curriculum Committee*: Reviews the curriculum annually with program staff to ensure graduates continue to meet the skills requirements of the information technology industry. Seeks input from business, industry and the Placement Committee to determine future skills requirements. Approved by the OLA Academic Committee to make course changes within the 45 allocated credits for the program.

*Evaluation Committee*: Approves criteria and process for each student's three formal oral evaluations. After discussing problem cases with program staff, and reviewing student examinations, the committee has the authority to place students on probation or recommend withdrawal from the program.

*Placement Committee*: Assist students develop their resumes and coaches job-seeking and job retention skills. Through contacts within the business community, market students for internships and graduates for placements. This key function requires the personal involvement of members to ensure internship and employment opportunities remain available.

*Mentor Committee:* Provides students with one-on-one opportunities to meet with members of the business community. Mentors advise trainees about the realities of the information technology workplace, and provide encouragement, advice, and opportunities for students to associate with business professionals. A significant number of mentors are Access Ability graduates; once established in the computer industry, they want "to give something back."

*Public Relations Committee*: Promotes the program to BAC and other companies who may be in a position to intern or employ graduates. Uses personal contacts to access print, television, and other media.

*Strategic Planning Committee:* Develops annual strategic plans for the program and all sub-committees to provide guidelines for Program activities including communication mechanisms that conveys the nature of the BAC and its activities, and contributions made by individuals. Objectives and goals are formulated against which the progress of each committee can be measured. Committee membership comprises the BAC sub-committee chairs, and staff members. The Strategic Plan is shared with all BAC members.

## Summary

To assist persons with disabilities gain skills and become employed, the *Access Ability Program* relies on the collective commitment of all the partners. The interaction of members of the education, business, and rehabilitation communities with persons with disabilities is a unique feature of this program model. Partners work together to break down the barriers to employment for persons with disabilities. The research design discussed in the next chapter takes into consideration the unique features of the program model and the commitment of each partner to the employment of graduates.

# CHAPTER 4

# RESEARCH DESIGN

## Introduction

This chapter describes the methods and procedures used in this study to evaluate the *Access Ability Program*. Data were collected from student files, and surveys of the BAC, graduates, internship employers, and rehabilitation counsellors. Comparative data were collected from similar programs including Projects With Industry and the Association of Rehabilitation Programs in Computer Training.

The study was designed to evaluate the characteristics of the *Access Ability Program* that enhance the transition of people with disabilities into education/training and employment. The study has three overall objectives: 1) to evaluate the program in terms of access to training, completion of training, and transition to employment; 2) to evaluate the role of the BAC in terms of its impact on the program and placement of graduates; and 3) to evaluate the contribution of program components to the employment of graduates.

## Framework of the Study

The study's underlying assumptions were derived from the literature and provide the theoretical framework for developing the survey questions. The assumptions are that:

1. Assistance is required to overcome systemic barriers that prevent persons with disabilities from obtaining competitive employment.
2. Persons with disabilities require work experience following education and training to successfully move into competitive employment.

3. The greater the business communities' direct involvement with students through all aspects of the program the more likely its is that students will develop employability skills required to obtain competitive employment. These skills are developed by interacting and learning from business role models.
4. Education and training programs must provide an environment that is physically accessible and supportive of the personal needs of persons with disabilities
5. Public policy in Canada has not significantly improved the employment of persons with disabilities, even for those who have completed degrees, diplomas and certificates.
6. When a business is involved in programs for persons with disabilities, it increases the likelihood that the business will hire other persons with disabilities.

## Limitations of Research

Because this study does not have a comparison group, the results must be interpreted conservatively. Fitz-Gibbon (1978) cautions that in evaluations where only the experimental group is measured, difficulties arise when measuring results. A comparison group should be included to determine if the program produced the results, or if similar results could have been achieved by another intervention. The limitations of this study are that:

1. The disabilities of people in the study are not necessarily comparable to those participating in other education/training programs. Most national studies on persons with disabilities include a wider range of disabilities.
2. Individuals surveyed have a vested interest in the program, and therefore that perspective will influence their responses. As a result, they may not be truly objective in responding to questions.
3. The outcomes may be more positive than in other similar programs because a significant number of participants had prior work experience. Prior work experience is a major factor influencing placement rates from all programs (Hubka & Killean, 1996).
4. Females have a higher unemployment rate than males in all age categories following education and training programs (Statistics Canada, 1995). Given the limited number of female graduates in the program positively influences the employment outcomes of the program "tend to be higher" or "are more positively skewed".
5. The program screens all potential students to ensure they have the aptitude, desire and personal suitability to complete the academic requirements of the program.

The senior account manager responsible for the program collected the data, therefore steps were taken to reduce researcher bias. In this regard, all survey questions were piloted on graduates, BAC members, and rehabilitation counsellors to ensure they were clear, concise, and comprehensive. A random selection of graduates from most graduating classes were asked to provide comments on the survey. All BAC sub-

committee chairs were asked to provide feedback on the surveys. Rehabilitation counsellors from a variety of organizations were asked to comment on the survey. Each group feedback was incorporated into the final survey questions which, as much as possible, were designed to encourage objective responses. In addition, survey respondents were asked to remain anonymous to preserve the objectivity of their responses. Every effort was made by the researcher to survey all graduates, BAC members, and rehabilitation counsellors. Follow-up phone calls were made to increase the response rate. The analysis of results and subsequent conclusions combines objective data with subjective interpretation.

## Research Design and Questions

The evaluation reported here examines those aspects of the *Access Ability Program* and BAC that influence the transition of persons with disabilities to employment. Fundamentally, the research design provides a basis for comparing results with program intent. To this end, the evaluation was designed to address the following research questions:

1. How successful is the *Access Ability Program* in terms of:
    a) providing access to training for persons with a disabilities
    b) successful completion of the program by students
    c) successful transition to employment by graduates
2. What is the impact of the BAC on:
    a) program structure;
    b) graduate employment

3. How important are the program's components to the successful placement of graduates.

The *Access Ability Program*'s student selection criteria are based on aptitude for computer programming and personal suitability, rather than prior academic achievement. The program staff and BAC view the careful selection of students as an inclusive practice that does not compromise the quality of the program or placement of graduates. Furthermore, BAC understands their role as one of assisting the Access Ability to produce industry-qualified graduates with a high rate of placement.

This study uses primarily post-test design, which can only answer questions related to the way a program works (Fitz-Gibbon & Morris, 1978). This limitation in design is offset by comparing outcome data with other comparable programs (equivalent groups), including Projects With Industry and the Association of Rehabilitation Programs in Computer Training. In addition, the data are compared with the 1994, 1995 and 1996 BC Colleges and Institutes Student Outcomes survey, a non-equivalent group. This comparison is important because Access Ability graduates compete with public post-secondary graduates for competitive employment opportunities. Access Ability graduates need the skills and abilities to compete equally for employment with non-disabled graduates.

Evaluation design determines when evaluation instruments will be administered and to whom. This study adopted a survey approach and used the perspectives of the graduates, business, and rehabilitation counsellors. To answer the research questions, surveys were administered to the BAC, program graduates, and rehabilitation counsellors. Administrative files provided background data on the graduates' aptitudes

for computer programming, and demographics such as age, sex, education, disability, and computer experience.

This study was not limited by any lack of agreement on goals, objectives and performance criteria used to evaluate the program (Wholey, 1994). The goals, objectives and performance criteria are well documented in the program's Strategic Plan. Neither does the study lack data, as surveys were completed by a majority of graduates, BAC members and rehabilitation counsellors.

## Study Subjects

The subjects in this study were drawn from a population, which included all graduates of the *Access Ability Program* to date, all current BAC members, and all rehabilitation counsellors from organizations who refer clients to the program. For the first three years of the program all graduates were WCB clients. Beginning in 1990, when the program was transferred to OLA, 60 percent of the subjects were WCB clients and 40 percent from a variety of other disability organizations (see Graduate Survey). The majority of students in the latter group were funded by Vocational Rehabilitation Services of the Province of BC. Subjects were asked to complete the survey on a voluntary basis and were assured that their input would be kept confidential.

The research was initiated by WTS in anticipation of the need for student and graduate outcome data for the *Access Ability Program* to receive ongoing government and fee payer funding. The study was a secondary analysis of data already collected for program administration reasons, therefore it did not go through the UBC ethics committee.

Graduates

Since 1987 to date, 158 students enrolled in the *Access Ability Program* and 121 have graduated. For the first three years of operation at WCB the program capacity was 15 students. When the program transferred to OLA, in 1990, capacity increased to18 students, and then in 1993, increased to 20 students. The only year the program ran at less than full capacity was in 1993. Overall, the graduation rate for the nine years of program operations averaged 76%.

Entry criteria for the program include a physical disability, an aptitude for computer programming, and personal suitability. A student's aptitude for computer programming is determined by acceptable scores on the Raven Standard Progressive Matrices and SRA Computer Aptitude Test Battery (CATB). The Raven is an untimed and non-verbal test of an individual's general learning ability. The CATB has been well-validated as a selection test for entry-level computer programmers (Science Research Associates, 1985). All ARPCT programs use the CATB as part of the selection criteria for computer programming students (IBM Corporation, 1992). Many corporations, including the Insurance Corporation of British Columbia, screen prospective computer programming employees with the CATB.

A student must have a permanent disability that adversely impacts his or her ability to enter or re-enter the work force without further training. Most students referred to the program have an orthopaedic disability. A student's personal suitability is determined through interviews with program staff and the Selection Sub-committee of the BAC. The majority of graduates are male (92%) and over the age of 25, reflecting the high number of WCB students. WCB rehabilitation clients tend to be male workers who cannot return

to their previous employment. The low number of women selected into the program reflects the low number of referrals and not selection bias. Also, fewer women than men select technology orientated education and training programs (Lips & Temple, 1990). This may also reflect a referral bias by counsellors who are unaccustomed to re-training women in technology orientated occupations. Another factor maybe the fewer number of women sustaining career-ending injuries that require them to re-train for another occupation. Furthermore, in a national data base 82% of the individuals sustaining spinal cord injuries are men (Go, Devivo & Ricahards 1995). Program staff expended considerable effort to increase referrals of women, without success. This suggests the need for further research into why women either are not referred to the program or do not apply on their own.

Business Advisory Council

The BAC currently comprises 52 senior information technology personnel from 48 major corporations in Greater Vancouver.

Rehabilitation Counsellors

Rehabilitation counsellors in the study work in rehabilitation organizations that refer to the *Access Ability Program.* These organizations include: Workers' Compensation Board of BC; Vocational Rehabilitation Services of the BC Ministry of Education, Skills and Training; BC Paraplegic Association; GF Strong Rehabilitation Centre; Canadian National Institute for the Blind; and a number of other rehabilitation agencies.

## Data Collection

Surveys were completed during the months of December 1996, January and February 1997. BAC surveys were administered in-person at a regular council meetings or faxed with a letter of introduction (Appendix 1). Forty-eight council members completed surveys out of possible 52 members (a 92% response rate).

Graduate surveys were handed to graduates or completed by phone or mailed or faxed with a covering letter (Appendix 2). Of 121 program graduates, 105 received surveys, three were deceased and 13 could not be located. Only seven of the 105 graduates did not complete the survey for a response rate of 93%. The high response rate in both graduate and BAC surveys can be attributed to persistent follow-up by program staff. Anonymity was assured and maintained, and all respondents were promised a summary of the findings.

Surveys and a covering letter (Appendix 3) were mailed to 67 rehabilitation counsellors. Twenty-nine surveys were returned for a response rate of 43%. The low response rate can be attributed to the decision not to make follow-up calls to the counsellors.

Data was also collected from each of the graduate's administrative files (Appendix 4) and included aptitude test results, prior computer experience, and demographic data.

## Data Analysis

The three surveys and the student information database provided the data for evaluating the *Access Ability Program*. The surveys used multiple choice and dichotomous questions to simplify the responses and data tabulation. The multiple choice

response format required the respondent to select from among three or more pre-specified responses, whereas dichotomous questions allow only two responses such as "yes" or "no".

Each survey question was analyzed and tabulated by "n" and percent; "n" that is, by the total number of responses, and the percentage of valid responses to each survey question. Cross tabulations were constructed to determine any association between a given value for one variable and one or more other variables. For example, the program's place rate is a given variable compared to other variables such as graduates age, education and gender.

Graduate Survey

This survey instrument was constructed with input from instructors, BAC members, and graduates (Appendix 2). All parties agreed the survey assessed the success of Access Ability in terms of a student's access to training, successful completion, and successful transition to employment. The survey also determined the student's perspective of the degree to which the program provided necessary support services, and the impact of the BAC on student internships and graduate employment.

Cross tabulations of the survey responses were constructed to determine any associations between:

- Employment status one year following graduation compared to: years on disability benefits; prior education; pre-requisites for post-secondary education; and employment or contract with the internship employer.
- Current employment status compared to graduate's type of disability.

BAC Survey

This survey instrument was constructed with input from the BAC and instructors (Appendix one). All agreed that the survey tested the impact of the BAC on program delivery, students' readiness for employment, and placement of graduates.

BAC members were asked to rate the aspects of the *Access Ability Program* most important to its success. They were also asked what, in their opinion, was the BAC's most important contribution to the success of the program. BAC members were asked about their influence on hiring persons with disabilities by their corporation.

Cross tabulations of the survey responses were constructed to determine any associations between:

- Size of the corporation and the offering of an internship or employment to a graduate
- Internship with a BAC employer and graduate employment following the internship
- An organization joining the BAC and offering an internship.

Rehabilitation Counsellor Survey

This survey instrument was constructed with input from instructors and counsellors (Appendix 3). The survey asked the counsellors to rank the importance of program components in terms of graduate employment.

Student Information Database

The student information database contains demographic and test data on each student selected into the program. This database contains information such as age,

gender, education level, qualification for post-secondary education, disability type, information technology experience, and aptitude scores.

Cross tabulations were constructed to compare a student's employment one year following graduation to aptitude, age and disability, and prior computer experience.

## Summary

The surveys were designed to collect data on the *Access Ability Program* characteristics perceived by graduates, BAC members, and rehabilitation counsellors as leading to successful transition to employment. High graduate and BAC survey response rates were obtained by program staff follow-up. Responses to each survey question were analyzed. In the absence of a control group, the results are compared to other comparable private and public programs. In the next chapter the results of the surveys are tabulated and interpreted.

# CHAPTER 5

# RESULTS

## Introduction

This chapter analyzes data from student administrative files and the three surveys in terms of the study's objectives: 1) evaluation of access to training, successful completion of training, and successful transition to employment; 2) evaluation of the BAC's impact on the program and placement of graduates; 3) evaluation of the contribution of program components to graduates obtaining employment.

In Canada persons with disabilities are under-represented in federal and provincial training programs and poorly represented in technical training programs (Roeher Institute, 1992). Furthermore, when persons with disabilities invest in training and education their subsequent rate of employment and relative economic status is still not equal to the non-disabled (Fawcett, 1996). The labour force participation rate of persons with disabilities, who have completed some post-secondary courses, is 65% in comparison to 85% for the non-disabled (Fawcett, 1996). In 1991, the unemployment rate for persons with disabilities was 17% compared to 10% for persons without disabilities (Statistics Canada, 1991a). Persons with disabilities expect education and training to lead to employment income sufficient to offset the loss of disability benefits (Hubka & Killean, 1996). In reality, employment earnings for men and women with disabilities in all age categories and occupations are below that of the non-disabled (Statistics Canada, 1995).

Business and education partnerships are essential to the successful transition from education to work of persons with disabilities (Greenwood & Schriner, 1988; Vargo *et al.*, 1997; Clark, 1993; Levy, Jessop, Rimmerman, & Levy 1993). For this partnership to be

effective, business must act in more than an advisory capacity, and educational institutions must give up some of their academic (Rochlin, Decaro & Clarcq, 1985). The partnerships must offer a mutually beneficial relationship and a shared commitment to the goal of increasing the employability of graduates.

The graduate survey is a longitudinal evaluation of program graduates from 1987 to 1996. Ninety-eight graduates completed the survey. The BAC data represents the 1997 BAC membership's perception of the program. BAC members have changed throughout the years, although, many of the original corporations are still represented. The rehabilitation counsellor data represent the opinions of 24 rehabilitation counsellors who referred clients to the program as early as 1987. The administrative files provide demographic data and other background for all students.

## Objective One - Access, Completion and Placement

The data in this section are analyzed in terms of access to training, successful completion of training and transition to employment.

### Access to Training

This section of the study demonstrates the access to computer training provided to persons with disabilities by the *Access Ability Program*. The number of students with disabilities graduating from BC post-secondary institutions with a computer related certificate or diploma is limited (Centre for Education Information Standards and Services, 1996). For example, no such students graduated in 1995 from the Computer Systems Analysis programs at Capilano College, University College of the Fraser Valley, or Langara and only one graduated in Computer Programming at Vancouver Community College (Centre for

Education Information Standards and Services, 1996). These statistics suggest Access Ability provides a significant portion of the post-secondary computer training available to students with disabilities in B. C.

Access Ability is offered by the Workplace Training Systems of the Open Learning Agency, at the Burnaby Community Skills Centre. The centre is wheelchair accessible and a custom-designed lab accommodates persons with disabilities. Students are assigned their own computer, work station, and ergonomic chair and have access to adaptive equipment, as required.

Data for tables 1 through 5 inclusive was obtained from the administrative files of students enrolled in the program. Table 1 shows the types of disabilities of all students accepted into the program.

**Table 1. Classification of Disabilities for All Students Accepted into the Access Ability Program**

| Disability | n | % |
|---|---|---|
| Quadriplegia | 17 | 12 |
| Paraplegia | 11 | 7 |
| Visual impairment | 4 | 2 |
| Hearing impairment | 1 | 1 |
| Head injury | 3 | 2 |
| Back injury | 33 | 22 |
| Amputation | 16 | 10 |
| Arthritis | 8 | 5 |
| Knee injury | 12 | 7 |
| Shoulder injury | 8 | 5 |
| Birth disorders | 6 | 4 |
| Fractures, leg, ankle, arm | 24 | 16 |
| Allergies | 2 | 1 |
| Diabetes | 3 | 2 |
| Other | 6 | 4 |
| Total | 158 | 100 |

(Source - Administrative file)

A wide variety of disabilities have been represented in the program during the nine year period. Nineteen percent of the students had spinal cord disabilities (paraplegia and quadriplegia), 22% back injuries, and 10% were amputees. Orthopaedic disabilities account for the majority of students accepted into the program. The low number of students with sensory disabilities, including hearing and vision impairments, is a function of the low number of referrals from organizations specific to these disabilities. Individuals with sensory disabilities often have lower levels of basic skills because of a compromised K-12 education (Hubka & Killean, 1996). Often, therefore they do not meet the program's educational requirements and are not referred.

Table 2 illustrates computer experience of students prior to entering the program. In selection interviews with program staff, potential students often express concerns regarding their ability to take computer training in the absence of prior experience.

**Table 2. Computer Experience of Students Entering the *Access Ability Program***

| Experience | n | % |
|---|---|---|
| None | 40 | 30 |
| Past jobs / daily life | 64 | 48 |
| A few courses | 25 | 19 |
| 1 year | 2 | 1 |
| Certificate | 2 | 1 |
| Total | 133 | 100 |

(Sources – Administration file)

The data suggest prior computer experience did not contribute to a student's decision to enter the program. Thirty percent of students had no experience, and a further 48% only limited prior experience, typically confined to basic familiarity with application software.

Only 2% of the students had considerable skills. Typically the student's computer experience was limited to a basic understanding of application software programs. These results are consistent with the large numbers of students referred to the program after career-ending, traumatic injuries in primary industries, where computer usage is limited.

Table 3 illustrates the age of students when entering the *Access Ability Program.* Students tend to be mature workers referred by rehabilitation organizations, rather than recent high-school graduates or college graduates.

**Table 3. Age of Students Upon Entering the *Access Ability Program***

| Age | Graduates | Percent |
|---|---|---|
| 20 or under | 4 | 3 |
| 21-25 | 22 | 14 |
| 26-30 | 29 | 18 |
| 31- 35 | 42 | 27 |
| 36-40 | 31 | 19 |
| 41-45 | 17 | 11 |
| 46-50 | 13 | 8 |
| Total | 158 | 100 |

(Source - Administrative file)

Although students of all ages were admitted to the program, the Selection Committee favours adult learners with work experience. Unlike most public post-secondary institutions, Access Ability does not actively recruit high-school graduates (Centre for Information Standards and Services, 1996). Only 17% of program graduates were younger than 26, while 65% were older than 30. In comparison the median age for students in computer systems analysis programs in BC was 32 (Centre for Information Standards and Services, 1996). Because the program provides a supportive environment for adult learners, rehabilitation

counsellors report they refer many older clients who may not adapt well to traditional public and private post-secondary training environments.

Studies report that the longer a person sustains a work disruption, due to an injury/disability, the less likely they are to return to work (Pati, 1985; Shrey & Lacerte 1995).

Table 4 shows the gender breakdown of students accepted into the program.

**Table 4. Gender of Students Entering the *Access Ability Program***

| | n | % |
|---|---|---|
| Male | 142 | 90 |
| Female | 16 | 10 |
| Total | 158 | 100 |

(Source - Administrative file)

The data clearly indicate Access Ability has not been successful in attracting females; only 10% of students were female, compared to 30% in similar programs in the public system (Centre for Information Standards and Services, 1996). Considerable efforts have been made by program staff to recruit more females. The gender disparity reflects the low number of referrals from rehabilitation counsellors rather than any bias in the selection criteria. WCB in particular, tends to refer male high-earners for retraining in an occupation paying wages equal to those earned prior to their disability.

Aptitude testing is an essential component of the selection process. At Access Ability, the main entrance criterion is student's aptitude for computer programming, rather than prior academic performance. Students selected are judged to have the ability to meet the program's academic requirements and acquire the skills required by employers.

Table 5 shows test scores on the Raven Standard Progessive Matrices and the SRA Computer Aptitude Test Battery for students accepted into the program

**Table 5.**

**Test Scores of Students Entering the *Access Ability Program***

(a) Raven Standard Progressive Matrices

| Score | n | % |
|---|---|---|
| 46-50 | 18 | 13 |
| 51-55 | 52 | 36 |
| 55-60 | 71 | 51 |
| Total | 141 | 100 |

(Sources - Administrative file)

The Raven is a non-verbal test of an individual's level of intellectual functioning. On this test, 87% of the students scored higher than the cut-off of 51. Students were accepted into the program with scores lower than the cut-off level if they excelled on the SRA Computer Aptitude Test Battery.

(b) SRA Computer Aptitude Test Battery

| Diagramming | n | % |
|---|---|---|
| less than 15 | 22 | 14 |
| 15-20 | 21 | 14 |
| 21-25 | 38 | 25 |
| 26-30 | 44 | 28 |
| 31-35 | 30 | 19 |
| Total | 155 | 100 |

(Source - Administrative file)

The SRA Computer Aptitude Test Battery is an industry-standard test, often given to new employees, to determine their aptitude for computer programming. The diagramming sub-scale is the best indicator of a student's programming ability (Science Research Manual, 1995). A raw score of 21 has been used for the past 6 years as the cut-off for a student's acceptance into the program (IBM Corporation, 1992). Seventy-two percent of students met the cut-off score. Students with scores below the cut-off were accepted into the program, only

if they had very high Raven scores or if the program staff or Selection Committee felt the student demonstrated significant desire to enter the program.

Table 6 shows the number of years a graduate was on disability benefits prior to entering the program.

**Table 6. Number of Years Graduates Received Disability Benefits Prior to Enrolment in the *Access Ability Program***

| Years | n | Percent |
|---|---|---|
| Never | 1 | 1 |
| 1 year | 32 | 33 |
| 2 years | 31 | 32 |
| 3 years | 15 | 15 |
| 4 years | 7 | 7 |
| 5 years | 5 | 5 |
| 6 or more years | 7 | 7 |
| Total | 98 | 100 |

(Sources - Graduate Survey)

Sixty-six percent of students received disability benefits for 2 or more years prior to entering the program. According to Shrey and Lacerate (1995) and Pati (1985), this reduces their re-employment potential. The majority of these students had spinal cord injuries or were disabled from birth.

Table 7 illustrates the grad level of graduates on entering the *Access Ability Program.*

**Table 7. Educational Level of Graduates Upon Entry to the *Access Ability Program***

| Education | n | % |
|---|---|---|
| Grade 9 | 1 | 1 |
| Grade 10 | 8 | 8 |
| Grade 11 | 7 | 7 |
| Grade 12 | 65 | 67 |
| GED | 17 | 17 |
| Total | 98 | 100 |

(Source - Graduate Survey)

Thirty-three percent of graduates had grade 9, 10, 11 or a GED level of education and 67% completed high school. In contrast, 97% of students in Computer Systems Analysis programs in the public system completed grade 12 (Centre for Information Standards and Services, 1996).

Table 8 illustrates the post-secondary experience of graduates on entering the *Access Ability Program.*

**Table 8. Post-Secondary Experience of Graduates Upon Entering the Access Ability Program**

| Post-Secondary Experience | n | % |
|---|---|---|
| Post-Secondary: Trade Qualification | 32 | 33 |
| Post-Secondary: Certificate (1 year) | 5 | 5 |
| Post-secondary: Diploma (2 years) | 6 | 6 |
| Post-secondary: Degree (four years) | 2 | 2 |
| No Post-secondary Education | 53 | 54 |
| Total | 98 | 100 |

(source – Graduate Survey)

Fifty-four percent of students did not have any post-secondary education. The high number of trade-qualified students (33%) reflects the career-ending disabilities sustained by this group. Since prior academic achievement is not a selection criteria for the program, it is not surprising that only 13% of graduates had a certificate, diploma or degree from another institution, in contrast to 60% in similar programs in the public system (Centre for Information Standards and Services, 1996). Rehabilitation counsellors report they refer students with prior post-secondary credentials only if they have a long history of unemployment. Many rehabilitation counsellors are willing or able to fund only one re-training program for a client.

Table 9 shows the graduates who possessed pre-requisites for public post-secondary education on entering the program.

**Table 9. Pre-requisites for Public Post-secondary Education by Access Ability Graduates**

| Prerequisites | n | % |
|---|---|---|
| Yes | 57 | 58 |
| No | 41 | 42 |
| Total | 98 | 100 |

(Source - Graduate Survey)

Forty-two percent of Access Ability graduates would not have been accepted into public post-secondary education programs without further upgrading. These students were accepted based on their tested aptitudes and performance in the selection interviews.

Many students accepted into Access Ability would not have received the financial support to upgrade their education prior to taking further training. The majority of funders have a one-year limit on client training supports; therefore, the requirement for extensive educational upgrading prior to entering post-secondary training programs acts as a barrier to higher education for persons with disabilities.

Counsellors who referred clients to Access Ability were surveyed to determine their reasons for doing so.

The data in table 10 shows the reasons given by rehabilitation counsellors for referring clients.

**Table 10. Reasons for Referrals by Rehabilitation Counsellors**

| Reason | n | % |
|---|---|---|
| Placement rate | 18 | 62 |
| 12 month program | 4 | 14 |
| Business involvement | 2 | 7 |
| Clients education level | 1 | 3 |
| Selection process | 1 | 4 |
| Other | 3 | 10 |
| Total | 29 | 100 |

(Source - Counsellor Survey)

Sixty two percent of counsellors referred clients because of the high placement rate of the program, reflecting the fact that most referring counsellors work for agencies with a mandate to return their clients to employment, for example WCB and Vocational Rehabilitation Services. The second most important reason for referring clients is the length of the program. Rehabilitation counsellors save rehabilitation dollars by sponsoring clients for 13 months, rather than for a two-year public, post-secondary diploma program. Also, in accepting students with a lower educational level the program allows counsellors to put students in training without first spending the time and money for upgrading. Referring counsellors like the selection process because they know the program will accept their clients only if they have the potential not only to graduate but also obtain employment. Finally, counsellors recognize the value of business involvement in the program but they are more focused on the employment of graduates.

Access to training: conclusions.

The data indicate that Access Ability provides effective access to computer training for persons with disabilities. In 1996, Access Ability graduated 15 students. In contrast, in the same year, only 12 persons with disabilities graduated from similar programs in the public system (Centre for Information Standards and Services, 1996). Granted this is not an equal comparison because the Outcomes Survey sampled only self identified graduates with disabilities, but it does reflect in relative terms the low number of persons with disabilities graduating from public institutions.

Successful Program Completion

Successful completion of training is, in part, a measure of the support services provided to students throughout the program. Program staff and the BAC are committed to helping students adjust to the academic environment and through the transition to employment. Table 11 shows the yearly class size and the number of graduates for the nine year study period. This data was obtain was obtained form the student's administrative file.

**Table 11. Yearly Class Size and Number of Graduates Per Year**

| | Class Size | Graduates | Completions |
|---|---|---|---|
| Year | n | n | % |
| 1987/88 | 15 | 11 | 73 |
| 1988/89 | 15 | 11 | 73 |
| 1989/90 | 15 | 11 | 73 |
| 1990/91 | 18 | 16 | 89 |
| 1991/92 | 18 | 13 | 72 |
| 1992/93 | 18 | 14 | 78 |
| 1993/94 | 19 | 15 | 79 |
| 1994/95 | 20 | 15 | 75 |
| 1995/96 | 20 | 15 | 75 |
| Total | 158 | 121 | 76 |

(Source - Administrative files)

These data were obtained from the administrative files of the program. The average graduation rate of 76% for nine years is very high by any standard, for a program for persons with disabilities. The high completion rate is assumed to be attributed to both the selection process and the support services provided to students while they are in the program.

When the program transferred to the Open Learning Agency from the WCB in 1990, capacity increased to 18 students. The higher graduation rate for the class of 1990/91 may reflect the fact that everyone associated with the transfer was committed to successfully establishing the program in the new organization. Also, the number of high quality students may have increased when the program became available to all persons with disabilities, rather than only WCB clients. Furthermore, this commitment may have enhanced the efforts of the BAC and program staff to assist students complete the program and obtain employment. Another motivator was the need to for the program to demonstrate success to obtain continued funding from the WCB, and the federal and the provincial governments.

Table 12 indicates graduates' opinions of whether Access Ability prepared the foundation for their entry into the workforce.

**Table 12. Access Ability Graduates' Opinion of Whether the Program Prepared Them to Enter the Workforce**

| Opinion | n | % |
|---|---|---|
| Yes | 87 | 96 |
| No | 4 | 4 |
| Total | 91 | 100 |

(Source - Graduate Survey)

Seven students did not respond to this question. Ninety-six percent of graduates said the program had prepared them to enter or re-enter the workforce, in contrast to only 50% of graduates in similar programs in the public system (Centre for Information Standards and

Services, 1996). The latter figure is consistent with the findings of Hubka and Killean (1996) that for a large percentage (45%) of post-secondary graduates with a disability, their programs did not prepare them for jobs and, as a consequence, they were unable to obtain employment.

Table 13 shows the student enrollments by type of disability and their graduation rate.

**Table 13. Enrollments and Graduation Rates from the *Access Ability Program* by Type of Disability**

| | Enrollees | Graduates | % of Graduation by Disability Group | % Enrollees Graduating by disability group |
|---|---|---|---|---|
| Disability | n | n | % | % |
| Quadriplegia | 17 | 13 | 77 | 13 |
| Paraplegia | 11 | 9 | 82 | 9 |
| Visual impairment | 4 | 3 | 75 | 3 |
| Hearing impairment | 1 | 1 | 100 | 1 |
| Head injury | 3 | 2 | 3 | 2 |
| Back injury | 33 | 19 | 58 | 19 |
| Amputation | 16 | 12 | 75 | 12 |
| Arthritis | 8 | 6 | 75 | 6 |
| Knee injury | 12 | 6 | 50 | 6 |
| Shoulder injury | 8 | 6 | 75 | 7 |
| Birth disorders- | 6 | 6 | 100 | 7 |
| Fractures | 24 | 13 | 54 | 13 |
| Allergies | 2 | 1 | 50 | 1 |
| Diabetes | 3 | 1 | 33 | 1 |
| Other | 6 | 0 | 0 | 0 |
| Total | 158 | 98 | N/A | 100 |

(Source - Administrative file and graduate file)

Twenty-eight students with a spinal cord disability started the program and 22 graduated for a 79% completion rate, a gratifying result given the severity of the disability and the amount of support students require to attend class and participate fully in the program. Only 58% of students with back disabilities and 54% with amputations graduate. This high drop-out

rate compared to other disability groups, has not been explained. For back injuries, the intensive computer work and back pain may be incompatible to the extent that students feel unable to continue the program. More puzzling is the drop-out rate for students with amputations. In general, however, the data suggest that the majority of students with severe disabilities can complete rigorous training when provided a supportive learning environment.

Table 14 discloses graduates' perceptions of the importance of aspects of Access Ability to their graduation.

**Table 14. Access Ability Graduates' Opinions on the Resources Required to Graduate**

| Aspect | Very important | Important | Not Important |
|---|---|---|---|
| Computer Resources | 53% | 44% | 3% |
| Instructional Resources | 53% | 44% | 3% |
| Supportive Environment | 45% | 47% | 8% |
| Business Involvement | 68% | 23% | 9% |
| Internship | 74% | 23% | 4% |

(Source - Graduate Survey)

Most graduates rate the key aspects of the program as either important or very important. Business involvement and internships are considered the most valuable aspects of the program, consistent with the fact that 71% of internships result in either full time or contract employment. Graduates are of the opinion that the Access Ability provided them with the essential resources to graduate and prepared them to enter the competitive workforce.

Transition to Employment

Transition to employment following a training intervention is becoming increasingly important to students with disabilities, rehabilitation counsellors and government. Students

with disabilities expect training providers to accommodate their special needs while in training and then assist them in locating employment upon graduation. Rehabilitation counsellors are held increasingly accountable for rehabilitation outcomes; they now sponsor clients only on programs that focus on skills training and job placement. Because of limited financial resources, governments at all levels are investing only in retraining programs which lead to employment for persons with disabilities. Accommodating and integrating this group in the post-secondary system does not result in equal employment opportunities (Roeher Institute, 1994). Access Ability adopted the IBM training model of business-education partnerships to increase the employability of graduates. While the program's breadth of training is critical, the focus of program staff and students is on the ultimate goal of employment.

The following tables illustrate the importance of co-op education to the transition to employment for Access Ability graduates. Graduates not only obtain long-term competitive employment, but also have demonstrated an ability to perform equal to their non-disabled colleagues.

Table 15 shows the employment status of graduates one year following graduation.

**Table 15. Employment Status of Access Ability Graduates One Year After Graduation**

| Employment status | n | % |
|---|---|---|
| Employed full-time | 86 | 88 |
| Employed part-time | 4 | 4 |
| Unemployed | 7 | 7 |
| On Disability Benefits | 0 | 0 |
| Other, *returned to school* | 1 | 1 |
| Total | 98 | 100 |

(Source - Graduate Survey)

One year after graduation, 92% of the graduates, who answered this question, were employed, with 88% working full-time and 4% part time. Graduates working part time were doing so because of ongoing health problems that prevented them from working full time. The unemployment rate was 7%, no graduates had returned to disability benefits, while one went on to further training. In contrast, 65% of graduates from similar programs in the public system were employed (Strategic Information Research Institute, 1995). Other ARPCT and PWI programs report graduate employment rates similar to Access Ability (IBM Corporation, 1992, Vargo *et al.*, Stevens & Ebert, 1987; Harles, 1992).

Table 16 shows how BAC employers, who hired graduates rated their on-the-job performance, compared to employees with similar education and experience, one year after graduation. Graduates must be able to perform on the job to sustain their long-term employability.

**Table 16. BAC Employers' Rating of On-the-job Performance of Graduates**

| Rating | Employers | Percent |
|---|---|---|
| superior | 0 | 0 |
| above average | 2 | 9 |
| equal | 20 | 91 |
| below average | 0 | 0 |
| inferior | 0 | 0 |
| Total | 22 | 100 |

(Source - BAC Survey)

According to the data, only 22 BAC corporations hired graduates. BAC members were of the opinion that 91% of graduates employed in their organizations, one year after graduation, performed at a level equal to their non-disabled counterparts, while 9% exceeded the average.

The results suggest persons with disabilities can perform equally with able-bodied people given the proper training and opportunity to work.

An important measure of success for Access Ability is the long-term employability of graduates. Cross tabulations were constructed (Tables 17-22 ) for variables that had the potential to impact on the placement of graduates one year following graduation. The variables examined included: type of disability, years on disability benefits, prior education, aptitude, age, gender and employment with internship employer.

Table 17 looks at the association between the student's type of disability with employment status one year following graduation. The type, severity and cause of the disability impact on the participation rate of people with disabilities in the work force (Fawcett, 1996). In general, the more severe a person's disability the less likely they are to participate in the labour force.

**Table 17. Type of Disability Compared to Employment Status of *Access Ability Program* Graduates One Year Following Program Completion**

| N=98 | employed f/t | employed p/t | unemployed | returned to school |
|---|---|---|---|---|
| Quadriplegia | 12 | 1 | 0 | 0 |
| Paraplegia | 9 | 0 | 0 | 0 |
| Visual impairment | 3 | 0 | 0 | 0 |
| Hearing impairment | 1 | 0 | 0 | 0 |
| Head injury | 2 | 0 | 0 | 0 |
| Back injury | 17 | 1 | 1 | 0 |
| Amputation | 10 | 0 | 1 | 1 |
| Arthritis | 5 | 0 | 1 | 0 |
| Knee injury | 5 | 1 | 0 | 0 |
| Shoulder injury | 6 | 0 | 0 | 0 |
| Birth disorders | 4 | 0 | 2 | 0 |
| Fractures- leg & arm | 10 | 1 | 2 | 0 |
| Diabetes | 1 | 0 | 0 | 0 |
| Allergies | 1 | 0 | 0 | 0 |
| Total | 86 | 4 | 7 | 1 |
| % of n | 88% | 4% | 8% | 1% |

(Source - Graduate Survey)

Results indicate neither the cause nor type of disability appears to impact on Access Ability graduates' employability one year following graduation. One student (1%) went on to further education, compared to 16% of graduates from similar programs in the public sector (Centre for Information Standards and Services, 1996).

Table 18 compares the number of years graduates were on disability benefits with their employment status one year following graduation. It is generally understood that the longer a person is on disability benefits the less likely they are to succeed in training and subsequent employment (Shrey & Lacerate, 1995).

**Table 18. Prior Years on Disability Benefits by Access Ability Graduates Compared to Employment Status One Year Following Program Completion**

| N=98 Years on disability benefits prior to starting program | Employed f/t # | (%) | Employed p/t # | (%) | Unemployed # | (%) | Return to school # | (%) | Total # |
|---|---|---|---|---|---|---|---|---|---|
| 0 - 1 year | 1 | (100) | 0 | | 0 | | 0 | | 1 |
| 1 year | 24 | (83) | 3 | (10) | 2 | (7) | 0 | | 29 |
| 2 years | 26 | (93) | 1 | (4) | 0 | | 1 | (4) | 28 |
| 3 years | 21 | (91) | 0 | | 2 | (9) | 0 | | 23 |
| 4 years | 5 | (71) | 0 | | 2 | (29) | 0 | | 7 |
| 5 years | 3 | (100) | 0 | | 0 | | 0 | | 3 |
| 6 Years or more | 6 | (86) | | | 1 | (14) | 0 | | 7 |
| Totals | 86 | (87) | 4 | (5) | 7 | (8) | 1 | (1) | 98 |

(Source - Graduate Survey)

Although the number of graduates is small in some years, there does not appear to be an association between employment one year after graduation and the length of time students were on disability benefits prior to entering the program. The exception is a 29% unemployment rate for graduates who were on disability benefits for four years and a 14% unemployment rate if they were on benefits more than six years. These results support the need for early vocational rehabilitation.

Table 19 compares graduate's prior education to their employment status one year following graduation.

**Table 19. Prior Education of Access Ability Graduates Compared to Employment Status One year Following Graduation**

| N=98 Highest grade completed: | Employee f/t # | (%) | Employed p/t # | (%) | Unemployed (%) | # | Return to school # | (%) | Total # |
|---|---|---|---|---|---|---|---|---|---|
| Grade 10 | 9 | (100) | 0 | | 0 | | 0 | | 9 |
| Grade 11 | 7 | (100) | 0 | | 0 | | 0 | | 7 |
| GED (12) | 15 | (88) | 0 | | 2 | (13) | 0 | | 17 |
| Grade 12 | 55 | (85) | 4 | (6) | 5 | (9) | 1 | (2) | 65 |
| Totals | 86 | (91) | 4 | (5) | 7 | (7) | 1 | (1) | 98 |

(Source - Graduate Survey)

One year after graduation, all of the graduates with a grade 10 and 11 education were working, which supports the program's selection criteria; 13% of graduates with a GED, and 9% of graduates with a grade 12 were unemployed. It is generally believed that the basic skills acquired by a grade 12 education enhance a person's employability; however, these results support the findings of the Canadian Labour Force Development Research Report 3 (Roeher Institute, 1994) which found no clear relationship between education, training, and labour force participation for persons with disabilities. Clearly, factors other than education and training impact this group's participation in the labour force. The relationship of prior education to placement following training requires further study.

Table 20 shows the one year employment status of graduates having the pre-requisites to enter post-secondary education. Pre-requisites for entering a technical training program should be more reliable predictors of graduate employment than grade 12 completion.

**Table 20. Pre-requisites for Post-secondary Education of Access Ability Graduates Compared to Employment Status One Year Following Graduation**

| N=98 Pre-requisites To qualify for P/S | Employed f/t # (%) | Employed p/t # (%) | Unemployed # (%) | Return to school # (%) | Total # |
|---|---|---|---|---|---|
| No | 35 (85) | 1 (2) | 5 (12) | 0 | 41 |
| Yes | 51 (89) | 3 (6) | 2 (4) | 1 (2) | 57 |
| Totals | 86 (88) | 4 (4) | 7 (7) | 1 (1) | 98 |

(Source - Graduate Survey)

The unemployment rate of graduates lacking the pre-requisites for post-secondary education was 12% compared to 4% for those who were qualified. While the attainment of academic pre-requisites have been demonstrated to be a benefit they should not be used to

screen potential students out of the program, as a far greater percentage (88%) of students without academic pre-requisites completed the program and obtained employment.

Table 21 compares graduates, aptitudes and their employment one year following graduation. The test data was obtained from the student's administrative file and the employment data was from the graduate survey.

**Table 21. *Access Ability Program* Graduates' Aptitude Test Results Compared to Employment Status One Year Following Graduation**

| | Raven | | | SRA Diagramming | | | | |
|---|---|---|---|---|---|---|---|---|
| Employment N= 98 | 46 – 50 | 51 –55 | 56 –60 | <15 | 15 – 20 | 21 – 25 | 26-30 | 31-35 |
| | # | # | # | # | # | # | # | # |
| Employed f/t | 8 | 40 | 38 | 11 | 9 | 24 | 28 | 14 |
| Employed p/t | 0 | 1 | 3 | 0 | 0 | 2 | 1 | 1 |
| Unemployed | 1 | 2 | 4 | 1 | 1 | 3 | 1 | 1 |
| Returned to School | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | 9 | 43 | 46 | 12 | 10 | 29 | 30 | 17 |

(Sources - Administrative files and Graduate Survey)

Nine graduates who had not met the Raven cut-off score of 51 were employed, while 7 who had achieved or exceeded it were unemployed. Twenty-two graduates who did not meet the cut-off score of 21 for the SRA were employed, while 5 who achieved or exceeded it were not working. Test results indicate the Raven and SRA testing instruments are reliable, but not infallible, screening devices. They should be used cautiously to exclude students from Access Ability.

Table 22 compares the age of graduates on entry to their employment status one year following graduation.

**Table 22. Age of *Access Ability Program* Graduates Compared to Employment Status One Year Following Graduation.**

| Employment N= 98 | < 20 | 21 -25 | 26 - 30 | 31 -35 | 36 - 40 | 41 - 45 | 46 -50 |
|---|---|---|---|---|---|---|---|
| employed f/t | 3 | 12 | 17 | 26 | 19 | 7 | 2 |
| employed p/t | 0 | 0 | 1 | 0 | 2 | 0 | 1 |
| unemployed | 0 | 0 | 2 | 2 | 1 | 1 | 1 |
| returned to school | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Total | 3 | 12 | 21 | 28 | 23 | 8 | 3 |

(Sources - Administrative files and Graduate Survey)

Graduates of all age groups were working one year following graduation. There does not appear to be an association between employment status one year following graduation and age on entry. These findings contrast to those of Statistics Canada (1991a) and Harris and Associates (1991) which reported that a lower labour-force participation rate for older workers.

Table 23 shows the employment status one year following graduation of graduates by gender.

**Table 23. Gender of Access Ability Graduates Compared to Employment Status One Year Following Graduation**

| Employment N=98 | Male n | (%) | Female n | (%) |
|---|---|---|---|---|
| employed f/t | 78 | (88) | 8 | (89) |
| employed p/t | 4 | (4) | 0 | |
| unemployed | 6 | (7) | 1 | (11) |
| returned to school | 1 | (1) | 0 | |
| Totals | 89 | | 9 | |

(Sources - Administrative files and Graduate Survey)

Six male and one female graduates were not working one year following graduation. The sample size of women is too small to draw any conclusion from these data.

Table 24 shows whether graduates obtained employment or a contract with their internship employer.

**Table 24. Full-time Employment, or Contract with Internship Employer by Access Ability Graduates**

| Employment/Contract N=98 | n | % |
|---|---|---|
| Yes | 71 | 72 |
| No | 27 | 28 |
| Total | 98 | 100 |

(Source - Graduate Survey)

Seventy-two percent of graduates obtained employment or a contract with their internship employer; only 28% of employers did not extend the internship. This high retention percentage can be attributed in part to program staff matching the skills and abilities of graduates with employers internship job requirements. Consequently, graduates are able to meet employer's expectations, and therefore, are more likely to be retained following the internship. Since the program's inception, only one internship was terminated prematurely because the student could not perform the required duties.

This finding supports the work of Kohler (1993), Tilson, Luecking, and West (1994) and Roeher Institute (1992) on the importance of students with disabilities gaining relevant work experience to enable them to transition to work. Lack of relevant work experience is one of the greatest barriers to employment for people with disabilities (Hubka & Killeran, 1996).

Table 25 compares graduate's employment one year following graduation with their obtaining a contract or employment by the internship employer.

**Table 25. Access Ability Graduates Obtaining Employment or Contract with Internship Employer Compared to Their Employment One Year Following Graduation**

| N=85<br><br>Employment | Employed f/t<br>#  (%) | Employed p/t<br>#  (%) | Unemployed<br>#  (%) | Return to school<br>#  (%) | Total<br>#  |
|---|---|---|---|---|---|
| Did not obtain f/t employment or a contract with internship employer | 18  (67) | 4  (15) | 5  (18) | 0  (0) | 27 |
| Obtained f/t employment or a contract with internship employer | 68  (95) | 0  (0) | 2  (3) | 14  (2) | 71 |
| Totals | 86  (87) | 4  (5) | 7  (7) | 1  (1) | 98 |

(Source - Graduate Survey)

Eighteen percent of the graduates who did not obtain a contract or employment with an internship employer were unemployed one year after graduation, in contrast with only 3% for the graduates who did. These data support the findings of Hubka and Killean (1996), Roeher Insitute, (1992), and Viewpoint (1991) on the importance of a internship in obtaining employment for persons with a disability. Program staff recognize that establishing working relationships between employers and persons with disabilities is important to employability; they work to maintain strong business relationships.

Tables 26 through to 29 inclusive show four employment characteristics of graduates who obtained training-related employment with their internship employers.

**Table 26. Graduate Employment Status with Internship Employer**

| Employment status<br>N=98 | n | % |
|---|---|---|
| Graduate obtained employment | 49 | 50 |
| Graduate internship led to a short term contract | 22 | 22 |
| Graduate did not obtain employment/contract | 27 | 28 |
| Total | 98 | 100 |

(Source - Graduate Survey)

Fifty percent of graduates obtained long-term attachments (greater than 1 year) with their internship organization. These results support the findings of Tilson, Luecking and Donovan (1996) that the critical components of transition are real work experience and matching employment requirements with the skills and abilities of the person with a disability. Furthermore, the data indicate employers are prepared to hire persons with disabilities following their internship if they demonstrate their ability to perform to the employers expectations.

**Table 27. Graduates' Starting Positions with Their Internship Employer**

| Position | n | % |
|---|---|---|
| Programmer | 45 | 63 |
| PC support | 11 | 15 |
| Help desk | 7 | 10 |
| LAN administrator | 2 | 3 |
| other | 6 | 9 |
| Total | 71 | 100 |

(Source - Graduate Survey)

Seventy-one graduates obtained employment or a contract with their internship employer. Sixty-three percent of these graduates started in programming positions with their internship employers, while 28% were employed in other computer-related occupations. This demonstrates a 91% correlation between training and employment. In contrast, 68% of computer programming graduates from similar programs in the public system were employed in training-related jobs, and only 30% were in jobs exactly related to their training as programmers (Strategic Information Research Institute, 1995).

Table 28 shows whether graduates remained in the position for which they were hired or were promoted to higher positions.

**Table 28. Access Ability Graduates' Promoted by Internship Employer**

| Current position | n | % |
|---|---|---|
| Promoted position | 25 | 61 |
| Same position | 16 | 39 |
| Total | 41 | 100 |

(Source - Graduate Survey)

Thirty graduates of the 71 who obtained employment or a contract with the internship employer did not respond to this survey question, therefore, the analysis should be interpreted cautiously. It may, or may not, be significant that of those graduates that did respond, 61% had been promoted, to a higher position, suggesting they can compete for employment opportunities based on their skills and abilities.

Table 29 illustrates the Access Ability graduates starting employment salary with their internship employer.

**Table 29. Access Ability Graduate's Starting Contract or Employment Earnings with Their Internship Employer**

| Salary | n | % |
|---|---|---|
| Under 25,000/year | 24 | 35 |
| $26,000 - $35,000 | 39 | 57 |
| $36,000 - $45,000 | 5 | 7 |
| $46,000 - $55,000 | 0 | 0 |
| Over $55,000 | 1 | 1 |
| Total | 69 | 100 |

(Source - Graduate Survey)

Only two graduates did not respond to this question. This is a low number given the confidential nature of income to most people. Fifty-seven percent reported income of between $26,000 and $35,000; 7% from $36,000 to $45,000: while only 1% earned $46,000 or more.

Tables 30 and 31show the re-employment characteristics for graduates who did not obtain position with their internship employer.

**Table 30. The Duration of Unemployment for Access Ability Graduate's Not Retained by Their Internship Employer**

| Period of unemployment | n | % |
|---|---|---|
| 0 - 3 months | 23 | 64 |
| 4 - 6 months | 7 | 19 |
| 7- 12 months | 5 | 14 |
| 2 years | 1 | 3 |
| 3 years | 0 | 0 |
| 4 years or more | 0 | 0 |
| Total | 36 | 100 |

(Source - Graduate Survey)

A total of 36 graduates indicated they had a period of unemployment after leaving their internship. This is an increase of nine unemployed graduates when compared to the 27 graduates who did not obtain employment/contract according to table 26. This suggests some of the contracts with the internship employer were of a very short-term nature. Sixty-four percent of graduates who were not retained by the internship employer, on a long-term basis, obtained employment within three months. A further 19% between 4 and 6 months, for total of 83%. Only one graduate remained unemployed for a prolonged period (i.e. 2 years).

Program staff and BAC members assist graduates with their job search because they continue to experience hiring practice discrimination in the workplace (Harris and Associates, 1991; Rehab Brief, 1979). To overcome these barriers, students are helped make the business connections required to obtain employment.

Table 31 shows if graduates obtained employment with a BAC employer or an employer not associated with the program, when the internship did not result in employment.

**Table 31. Graduates' Employer Upon Returning to Work**

| Employer | n | % |
|---|---|---|
| BAC member | 15 | 44 |
| Not on BAC | 19 | 46 |
| Total | 34 | 100 |

(Source - Graduate Survey)

BAC corporations provided 44% of the employment opportunities for graduates who were not retained by their internship employer, further illustrating the commitment of BAC members to graduate employment. The results support the findings of Levey, Jessop, Rimmerman and Levy (1993) that the more contact employers have with a person with a disability, the more likely they are to hire from this group.

In contrast to Table 15 (graduate employment status one year after graduation) Table 32 shows the current employment status of all graduates (as of March 1997).

**Table 32. Current Employment Status of Access Ability Graduates**

| Employment status | n | Percent |
|---|---|---|
| Employed full-time | 79 | 81 |
| Employed part-time | 4 | 4 |
| Unemployed | 8 | 8 |
| On Disability Benefits | 5 | 5 |
| 0ther,in school and *retired* | 2 | 2 |
| Total | 98 | 100 |

(Source - Graduate Survey)

Eighty-one percent of all graduates are currently working full time and 4% part-time. The graduates working part-time required modified employment hours to accommodate their disability. Hubka and Killean (1996) found employers were unwilling to modify hours to accommodate workers with disabilities. It appears that graduates were not afraid of losing

their financial support from government or private insurance if they felt confident in their ability to maintain employment and earn a livable income.

The graduate unemployment rate of 8% was slightly lower than the 9% rate for British Columbia as a whole (Statistics Canada, October 1997). There was a 7% decrease in full-time employment, the same rate of part time employment, and same rate of unemployment in comparing the current graduate employment rate to their employment one after graduation (table 15). The small percentage (5%) of graduates returning to disability benefits can be expected given the ongoing medical problems that periodically take them out of the workforce.

The graduates who were not working reported the lack of relevant work experience as the most important reason for being unemployed, followed by the lack of relevant computer skills. They also felt that non-retention by internship employers increased their exposure to unemployment.

Table 33 shows the current employment earnings of graduates.

**Table 33. Current Employment Earnings of Access Ability Graduates**

| Salary | n | % |
|---|---|---|
| Under 25,000/year | 6 | 7 |
| $26,000 - $35,000 | 30 | 36 |
| $36,000 - $45,000 | 39 | 47 |
| $46,000 - $55,000 | 4 | 5 |
| Over $55,000 | 4 | 5 |
| Total | 83 | 100 |

(Source - Graduate Survey)

The income reported by the majority of graduates appears sufficient to overcome the economic disincentives to return to work (InterFacts Consulting, 1994; Fawcett, 1996; Roeher

Institute, 1994). Graduates are not afraid of losing their financial support from government or private insurance if they feel confident in their ability to maintain employment and earn a livable income. In contrast, to Access Ability graduates, the median earned income of people with disabilities in Canada was $15,000 (Roeher Institute, 1992).

In contrast to Table 17 (type of disability compared to employment status of graduates one year after graduation) Table 34 compares the graduate's type of disability to their current employment status.

**Table 34. Current Employment Status as of March 1977 of Access Ability Graduates by Type of Disability**

| N=98 Disability | Employed f/t | Employed p/t | Unemployed | Disability benefits | Other |
|---|---|---|---|---|---|
| | n | n | n | n | n |
| Quadriplegia | 10 | 1 | 0 | 1 | 1 |
| Paraplegia | 6 | 1 | 1 | 1 | 0 |
| Visual impairment | 3 | 0 | 0 | 0 | 0 |
| Hearing impairment | 1 | 0 | 0 | 0 | 0 |
| Head injury | 1 | 0 | 0 | 0 | 1 |
| Back injury | 18 | 0 | 0 | 1 | 0 |
| Amputation | 8 | 0 | 2 | 1 | 1 |
| Arthritis | 4 | 1 | 1 | 0 | 0 |
| Knee injury | 5 | 1 | 0 | 0 | 0 |
| Birth disorders | 5 | 0 | 1 | 0 | 0 |
| Fractures-arm & leg | 9 | 0 | 3 | 1 | 0 |
| Diabetes | 1 | 0 | 0 | 0 | 0 |
| Allergies | 1 | 0 | 0 | 0 | 0 |
| Number of graduates | 79 | 4 | 8 | 5 | 2 |
| Percent employed | 81% | 4% | 8% | 5% | 2% |

(Source - Graduate Survey)

As in table 17, there appears to be no clear association between type of disability and the current employment status of graduates. Eighty-four percent of the graduates were currently employed: 81% full-time, with the 4% part-time being spinal cord injured graduates limited

by their disability. The 8% unemployment rate for graduates is similar, to the British Columbia rate of 9%. Only 5% of the graduates are on disability benefits.

Table 35 compares corporations providing internships, by number of employees in the corporations, before and after joining the BAC. The data were obtained from the survey of BAC members.

**Table 35. Number of Employees of the BAC Corporation Compared to Offering an Internship to Access Ability Graduates**

| | | Number of Employees | | | | |
|---|---|---|---|---|---|---|
| Offered internship | | 0 – 40 | 41 – 100 | 101 – 200 | Over 200 | Total |
| N = 44 Before Joining BAC | Yes | 0 | 0 | 0 | 16 | 16 |
| | No | 6 | 3 | 2 | 17 | 28 |
| N=45 After Joining BAC | Yes | 1 | 0 | 1 | 20 | 22 |
| | No | 6 | 3 | 1 | 13 | 23 |

(Source - BAC Survey)

Before joining the BAC, twenty-eight corporations did not offer an internship to persons with disabilities. The 16 corporations that did offer internships employed more than 200 workers. These data suggests that only large corporations routinely accommodate persons with disabilities. Large corporations tend to be more concerned with employment equity. As well, they have the capacity to intern and hire an entry-level person. Many large

corporations are federally regulated and must have an equity plan and report their equity statistics on an annual basis.

After joining the BAC, 22 BAC corporations offered internships, the majority of which (20) were corporations with over 200 employees. Only two small BAC corporations made the same offer. BAC members in small corporations indicated they did not have the capacity to accommodate persons in entry-level positions. BAC members who had not offered an internship were asked to provide reasons to determine what program changes could be made to increase their ability to offer an internship.

Table 36 indicates the reasons BAC members did not provided an internship.

**Table 36. BAC Members' Reasons for Not Providing an Internship**

| Reason | n | % |
|---|---|---|
| Graduates do not have relevant technical skills | 8 | 29 |
| Employees must have a degree | 5 | 18 |
| Facility not suitable for a person with a disability | 3 | 11 |
| Union does not allow internships | 2 | 7 |
| Students are not competitive to other co-op students | 2 | 7 |
| No applicable positions available | 3 | 11 |
| Do not need IT staff / no requirement | 3 | 11 |
| Hiring freeze | 1 | 3 |
| Outsourcing IS | 1 | 3 |
| Total | 28 | 100% |

(Source - BAC Survey)

The reasons given above for not offering an internship appear reasonable. In some cases, the impediments to graduate employment can be overcome by a greater corporate commitment to interning persons with disabilities. Each of the above reasons were encountered and overcome by BAC members who championed the hiring of persons with disabilities. Also, it should be acknowledged that Access Ability graduates, in a one year

program, cannot attain the higher levels of technical skills associated with university graduates. Many high tech corporations require these higher level technical skills.

Table 37 compares corporations offering employment, by the number of employees in the corporation, before and after joining the BAC.

**Table 37. Number of Employees in the Corporation Compared to Providing Employment to an Access Ability Graduate**

| | | Number of Employees | | | | |
|---|---|---|---|---|---|---|
| Offered employment | | 0 – 40 | 41 – 100 | 101 – 200 | Over 200 | Total |
| N = 31 | Before | 2 | 0 | 0 | 19 | 21 |
| | After | 3 | 1 | 1 | 5 | 10 |

(Source - BAC Survey)

Twenty-one BAC corporations offered employment or a contract. The majority of these employment offers (19) were from corporations with over 200 employees. Ten BAC corporations did not offer employment or a contract.

These findings suggest Access Ability should continue to recruit large corporations to join the BAC, not withstanding the valuable role played by BAC members from smaller corporations in assisting the program and the students, and participating on the sub-committees.

Transition to employment summary.

The *Access Ability Program* assists graduates make the transition from the classroom to an internship then on to full time employment. Eighty-six percent of the graduates are working full time one year following graduation and a further four percent were working part-time. These same graduates employment status as of March 1997 was eighty-one

percent working full-time and a further four percent working part-time. Graduates are employed in information technology occupations and are being hired based on their performance. Employers rated their performance equal to other employees with similar education and training. Larger BAC corporations provide the graduates the majority of internships and employment. There appears to be no association between a graduates employment status and their disability, age, gender, prior education, pre-requisites for post-secondary education, aptitude and years on disability benefits.

## Objective Two - Role and Impact of the BAC

Business, education, and rehabilitation partnerships are essential to the successful employment of persons with disabilities following graduation. For these partnerships to be successful, measured by the employment of graduates, each partner must commit to assisting this group in transition to employment. These partnerships work directly with students and employers to change attitudes and behaviours about the place of persons with disabilities in the labour force.

Table 38 shows the BAC's ranking of their contributions towards the success of the *Access Ability Program.*

**Table 38. Views of the BAC Members' Regarding Their Contribution Towards the Success of the Program**

| Contribution | cited first | % | cited second | % |
|---|---|---|---|---|
| General involvement | 14 | 31 | 2 | 4 |
| Selection interviews | 11 | 24 | 4 | 9 |
| Curriculum input | 7 | 16 | 10 | 22 |
| Marketing internships/graduates | 8 | 18 | 14 | 31 |
| Strategic plan | 3 | 7 | 3 | 7 |
| Funding | 1 | 2 | 3 | 7 |
| Hardware input | 0 | 0 | 1 | 2 |
| Public relations | 0 | 0 | 1 | 2 |
| Oral evaluations | 0 | 0 | 7 | 7 |
| other | 1 | 2 | 0 | 0 |
| Total | 45 | 100 | 45 | 100 |

(Source - BAC Survey)

Thirty-one percent ranked general involvement with the program as the BAC's number one contribution, in keeping with the committee's decision-making authority, and direct contact with staff and students. Twenty-four percent ranked the BAC's involvement in selection interviews as its most important contribution, recognizing the significance of this function to the success of the program, while a further 18% cited marketing first followed by 16% for curriculum input. Overall, 89% of BAC members chose one of these four components as most important. BAC members cited marketing internships and graduates as number one in the second ranking. This data supports Leneway (1991) findings of marketing graduates as the most important function of business in these partnerships. Table 39 shows graduate's opinions on the importance of BAC input to the program.

**Table 39. Graduates' Opinions on the Importance of BAC Functions**

| Function | Very Important | Important | Not Important |
|---|---|---|---|
| Obtaining Internships | 74% | 22% | 4% |
| Marketing Graduates | 65% | 29% | 6% |
| Curriculum | 63% | 36% | 1% |
| Funding | 57% | 35% | 7% |
| Selection Interviews | 47% | 46% | 5% |
| Oral Evaluations | 47% | 47% | 6% |
| Practice Interviews | 47% | 46% | 7% |
| Public Relations | 43% | 54% | 2% |
| Hardware Input | 25% | 64% | 12% |
| Guest Lectures | 22% | 64% | 14% |

(Source - Graduate Survey)

The most important BAC functions, according to graduates, were obtaining internships (74%), and marketing graduates (65%), in keeping with the program's focus on post-training employment.

Table 40 shows the commitment of BAC members towards influencing the hiring practice within their corporations. This commitment is part of the marketing function of the BAC.

**Table 40. Influence of BAC Participation on Corporations Offering an Internship**

| Degree of influence | n | % |
|---|---|---|
| very influential | 12 | 52 |
| influential | 11 | 48 |
| not influential | 0 | 0 |
| Total | 23 | 100 |

(Source - BAC Survey)

The 23 BAC members who's corporations offered an internship felt their influence was required for students to obtain the internship. The degree of competition for entry-level positions is such that Access Ability graduates must challenge other public post-secondary graduates who may have more formal education and appear more qualified.

Table 41 shows whether internships were provided by corporations on the BAC or non-BAC corporations.

**Table 41. Was the Internship Employer a BAC Member**

| BAC corporation | n | % |
|---|---|---|
| Yes | 75 | 77 |
| No | 23 | 23 |
| Total | 98 | 100 |

(Source - Graduate Survey)

BAC corporations provided 77% of student internships. This finding reflects the personal commitment BAC members make towards creating opportunities within their corporation for students. Many large BAC corporations provide multiple student internships on an annual basis, while others have created a policy to take an intern each year. Student internships have been difficult to obtain outside the BAC. Only one or two new employers are recruited each year. This finding emphasizes the importance of maintaining an active BAC.

Table 42 shows that the BAC members believe they influence the hiring of persons with disabilities within their corporation in general, not only Access Ability graduates.

**Table 42. BAC Members' Influence in Hiring a Person with a Disability**

| Hiring influence | n | % |
|---|---|---|
| Yes | 26 | 59 |
| No | 18 | 41 |
| Total | 44 | 100 |

(Source - BAC Survey)

Fifty-nine percent of the members believe they have influenced the hiring of persons with disabilities in their corporations, since joining the BAC, demonstrating the potential of individuals who take the initiative to promote the hiring of persons with disabilities.

Table 43 compares corporations providing graduates employment following an internship to their membership on the BAC.

**Table 43. A Comparison of Whether the Internship Employer was on the BAC to Access Ability graduates obtaining employment with the Internship Employer**

| N=95 Internship Employer | Did not obtain f/t employment or a contract with internship employer | | Obtained f/t employment or a contract with internship employer | | Totals |
|---|---|---|---|---|---|
| | # | (%) | # | (%) | # |
| Internship employer not on BAC | 6 | (27) | 16 | (73) | 22 |
| Internship employer on BAC | 20 | (27) | 53 | (73) | 73 |
| Totals | 26 | (27) | 67 | (73) | 95 |

(Source - Graduate Survey)

BAC and non-BAC internship employers offer an equal percentage (73%) of graduates contracts or employment following internship, indicating that graduates appear to be retained

for their skills and abilities, rather than the influence of the BAC members on hiring decisions. The results suggest that once a person with a disability demonstrates their skills and abilities, to an employer, they are more likely offered employment.

Table 44 compares the relationship between a corporation joining the BAC and subsequently offering an internship.

**Table 44. Relationship Between an Organization Joining the BAC and Subsequently Providing an Internship**

| N=42 | Corporation did not offer an internship prior to joining BAC | | Corporation offered an internship prior to joining BAC | | |
|---|---|---|---|---|---|
| | # | (%) | # | (%) | Total |
| Corporation did not provide internship subsequently | 19 | (68) | 3 | (21) | 22 |
| Corporation provided an internship subsequently | 9 | (32) | 11 | (79) | 20 |
| Totals | 28 | (100) | 14 | (100) | 42 |

(Source - BAC Survey)

Of those corporations who had not offered an internship prior to joining the BAC, 9 (32%) offered an internship subsequently, while 19 (68%) did not. Of corporations who had offered an internship prior to joining the BAC, 11 (79%) offered an internship subsequently, while 3 (21%) did not. Looked at differently, of the 22 employers who did not provide an internship after joining the BAC, 3 (14%) had previously done so. And so the 20 employers who did provide and internship after joining the BAC, 11 (55%) were continuing existing policy. This data suggests joining the BAC influences corporations to offer and continue offering internships to persons with disabilities.

Objective Three – Importance of Program Components

Program components were ranked by the BAC, graduates, and referring counsellors in order of relative importance. Table 45 ranks the importance of program components in the opinion of the BAC, graduates and rehabilitation Counsellors.

**Table 45. BAC, Graduate, and Counsellor Ranking of the Importance of Program Components**

| | BAC | | Graduates | | Counsellors | |
|---|---|---|---|---|---|---|
| Component | n | % | n | % | n | % |
| Selection criteria | 12 | 27 | 2 | 2 | 7 | 29 |
| Supportive environment | 9 | 21 | 3 | 3 | 1 | 4 |
| BAC involvement | 8 | 18 | 12 | 13 | 4 | 17 |
| Instructional resources | 7 | 16 | 18 | 20 | 2 | 8 |
| Curriculum | 5 | 11 | 6 | 7 | 1 | 4 |
| Internships | 2 | 16 | 35 | 35 | 5 | 21 |
| Mentoring | 1 | 5 | 0 | 0 | 1 | 4 |
| Class size | 0 | 2 | 2 | 2 | 0 | 0 |
| Computing resources | 0 | 0 | 7 | 8 | 2 | 8 |
| Physical access | 0 | 0 | 1 | 1 | 1 | 4 |
| Oral evaluations | 0 | 0 | 4 | 4 | 0 | 0 |
| Other | 0 | 0 | 1 | 1 | 0 | 0 |

(Source – BAC, Graduate and Counsellor Surveys)

The BAC rated selection as the most important program component contributing to the success of Access Ability. BAC members understand the importance of only selecting those students who have the skills and abilities to complete the academic program and then apply these attributes in the workplace.

In contrast, the graduates rated obtaining internships (35%) as the most important program component, recognizing their importance to obtaining employment. Also, the graduates gave instructors considerable credit (20%) for their success. Furthermore, graduates recognize the overall contribution of the BAC to the program's success.

Rehabilitation counsellors place a high value on selection, hence, it is not surprising that they felt selection was the most important program component. All too often persons with disabilities are accepted into programs, either do not complete or do not find employment following graduation. Also, rehabilitation counsellors recognize the importance of their clients obtaining work experience through internships. They also value the contribution BAC makes to the overall success of the program.

## Summary

The results indicate Access Ability met the objective of providing persons with disabilities access to training, assisted them to complete their training and helped them make a successful transition to employment. In the process, program graduates achieved a long-term employment rate of 85%. Data indicate that the involvement of BAC members in all aspects of the program is important to results, particularly through the creation of internships for students and employment for graduates.

Access Ability provided access to training by including students with a wide range of disabilities, age, computer experience, and educational backgrounds. Over 76% of students graduated by providing them with support services and an academic environment that accommodated their disability and learning needs. As a result, 96% of the graduates were of the opinion that Access Ability prepared them to enter or re-enter the workforce. This is supported not only by the high graduate employment rate but also by the BAC who rated graduates performance equal to their non-disable counterparts.

The internships were found to be an essential factor in assisting persons with disabilities transition from school to work. Seventy-two percent of the internships resulted in employment or a contract. This high rate was accomplished through the careful matching of the student's skills and abilities with the employer's internship job requirements. The data indicate employers are prepared to hire persons with disabilities if they are competitively employable.

Being involved on the BAC increases a corporation's willingness to intern and hire a person with a disability. As a result of joining the BAC, there was a 32% increase in corporations who had never interned a student offering internships to *Access Ability Program* graduates. The study indicates persons with disabilities are employable if given opportunities to train to industry standards and assistance with their transition to employment.

# CHAPTER 6

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## Summary

The summary reviews the results of the evaluation based on the three objectives mentioned in the Introduction. The first objective was to evaluate the program in terms of the graduates' ability to access training, their successful completion of the training and their successful transition to employment. The second objective was to evaluate the impact of the BAC on the success of the program. The third objective was to determine the importance of the program components such as the Selection Committee and the Evaluation Committee, on the employability of graduates.

The goal of this research was to evaluate the *Access Ability Program*, particularly, in terms of the partnership involving business, education and rehabilitation agencies and its impact on the post-training employment of persons with disabilities. The underlying hypothesis is that the *Access Ability Program* achieves high placement results through an active partnership with the business and rehabilitation communities.

### Access to and Completion of Training and Placement

The *Access Ability Program* was found to increase the students' access to training, enhance their successful completion of the training, and provide support for the transition of the program' graduates to employment.

Access to training.

The program offers access to training for persons with disabilities, based on their aptitude, personal suitability, and employability. It does not select for prior academic achievement. Students must function at the Grade 12 educational level rather than possess the standard post-secondary academic pre-requisites of Math 12, Physics 11 and English 12. This policy allows the program to accept students with good academic skills who have not completed the standard academic courses. Test scores provide indicators of an applicant's aptitude for information technology occupations. According to the data, the RAVEN and SRA Computer Aptitude Test Battery, in combination, appeared reasonable predictors of a student's ability to complete the program and obtain employment.

These tests, however, should not used to exclude all candidates who do not meet the required aptitude levels. The program has always accepted students that, during the interview, demonstrated exceptional motivation and desire to become computer programmers. The selection process accepts students with a wide range of disabilities, differing ages and varying educational backgrounds and information technology experience. Nevertheless, aptitude testing has contributed to the success of the program.

A rigorous selection process is required because the majority (62%) of the counsellors that refer clients to the program expect them to graduate and obtain employment. The BAC considers student selection as one of the most important program components. The selection process accepts one student for every four screened out. The aptitude tests were chosen as sorting devices, supplemented by thorough interviews

conducted by the BAC and program staff. This comprehensive selection process is one of the major reasons students successfully complete the program and obtain employment.

Access Ability accepts persons with a wide variety of disabilities such as spinal cord injuries, serious back problems and amputations. The high graduation rate is noteworthy given the severity of some of these disabilities.

Students of all ages were accepted into the program although most were between the ages of 26 to 40. Of the students selected 90% were male and only 10% female. The low number of women selected for the program relates directly to the number of their applications. Program staff tried to recruit more women by contacting women's disability groups and advertising in local papers. None of these methods has produced an increase in the number of female applicants.

Thirty-four percent of students accepted into the program did not have a Grade 12 education. Of the remaining 66%, 58% would have qualified for public post-secondary training without further upgrading. *Access Ability*, therefore, provides access to a public post-secondary education for people who may not have access to other programs.

Seventy-eight percent of students had no or very limited experience with information technology prior to enrolling in the program. Selection criteria based on prior experience would exclude these students from the program. In many cases, these people are making the transition from primary industries, where there is limited use of computers. Experiential selection criteria, therefore, would exclude the target population. Instead, an aptitude for computer programming was identified through testing.

Successful completion of the training.

The study concludes that *Access Ability* provides a learning environment that helps students successfully complete the program. This learning environment is not typical of public post-secondary training programs. It offers support on a personal and academic level, modifies equipment to accommodate disabilities, provides different types of instructional techniques, uses an integrated approach to learning, provides mentors who have previously been through the program, and uses an active BAC to provide access to internships. Ninety-six percent of the graduates were of the opinion that the program prepared them to enter the workforce.

The program staff ensures a supportive learning environment by helping students with their personal needs as well as their learning requirements. Personal assistance often includes helping students with transportation, finances and counselling. Tutorial support is provided to assist with individual learning requirements as well as one-on-one instruction. Equipment is adapted to accommodate disabilities, for example, large print screens, adaptive keyboards and ergonomic workstations. An integrated system of learning builds on the skills learned in each course rather than having each course "stand alone". This allows students to gradually increase their knowledge confidently. Mentoring by successful graduates of the program provides meaningful assistance to the students. They trust their mentors and get exposure to the "real world". This prepares them for the work environment and provides valuable support.

The program manager is responsible for all financial aspects of the program and maintaining an active liaison with the BAC in order to keep the program tuned to the needs of employers and to provide first hand knowledge of employers' expectations. The

knowledge that internships will be provided lessens the stress about job placement and allows the students to focus on completing the course.

Over 90% of the graduates were of the opinion all aspects of the program were important to their graduation but graduates also clearly emphasized that the involvement of the BAC and the internships were the most important factors. Thus, the high program completion rate (76%) is a reflection of the selection process and the learning environment that supports students in many innovative ways throughout the program.

Transition to employment.

According to the study, one of the most important aspects of the program is the commitment of the program staff and the BAC to assisting students make the transition from the classroom to employment. Each student's transition to employment is accomplished by focusing on employment throughout the program, by matching internships to student's skills, abilities and personal characteristics and by the personal involvement of BAC members. The mentor committee, chaired by a successful graduate also plays an important role in supporting the student's entry into the business world. For the past several years, all mentors have been graduate students employed within the information technology industry. Mentors provide advice, support and inspiration to students.

The instructors are responsible for matching the student's skills and abilities with the requirements of the internship job description. Only qualified students are referred to internship opportunities. The potential internship organization is usually referred more than one student for consideration and is under no obligation to take a student. Since the

program's inception only one internship was terminated prematurely because a student could not perform the required duties. As a result of this individual matching process, more than 70% of the internships result in subsequent employment, showing the effectiveness of this approach in training programs for persons with disabilities.

The data are consistent with the findings of Kohler (1993) and Tilson, Luecking, and West (1994) who stressed the importance of an internship in obtaining employment for a person with a disability. This is also in line with findings of a study by the Roeher Institute (1992) which found that co-op education was a significant factor in helping students with disabilities make the transition to work. These studies indicate that work experience assists all students, whether disabled or not, with the transition to employment.

Not surprising, most (91%) of the graduates are employed in information technology jobs. Almost two thirds (69%) have been promoted to higher positions, suggesting that persons with disabilities can compete for career advancements, once they have been given the opportunity to demonstrate their skills and abilities.

Of those graduates unable to obtain employment with their internship employer 64% were able to obtain full time employment with other organizations within 3 months. Another 19% were able to obtain full time employment within 6 months of completing the program. BAC organizations hired almost half (44%) of these unemployed graduates, indicating their willingness to help graduates find work, and suggesting BAC members promote the hiring of graduates within their organization.

One year after graduation, the large majority (92%) of the graduates had employment. Eighty-eight percent of the graduates were working full-time and 4% part-

time. This record is truly remarkable, as it is even higher than that of non-disabled students graduating from certificate programs (65%) and diploma programs (84%) and equal to degree graduates (Strategic Information Research Institute, 1995). In contrast, only 37% of students with disabilities graduating from public post-secondary education programs were employed. Half of these were working less than 30 hours per week (Hubka & Killean, 1996). This lack of full-time employment opportunities for graduates with disabilities is considered a significant problem. Those working part-time indicate they could and would prefer to work full-time (Hubka & Killean, 1996). In contrast, most (81%) Access Ability graduates continue to work full-time and only a few (5%) have returned to disability benefits. The unemployment rate of graduates (8%) is similar to the 1997 British Columbia unemployment rate of 9%. The 1974 to 1991 employment rates for ARPCT programs are consistent with those of Access Ability (IBM Corporation, 1992). The high placement of these programs supports models based on business and education partnerships.

It is equally remarkable that the employment rate of Access Ability graduates appears to be unrelated to the nature and severity of disability. These findings contrast with both conventional wisdom and Statistics Canada (1991a) data, which indicate that the more severe a person's disability the less likely they are to participate in the labour force. Findings from other studies for example indicate individuals with spinal cord injuries have extremely low employment rates and earnings (Kruse, *et al.*, 1996). Access Ability graduates do not follow this trend. The majority (81%) of graduates with spinal cord injuries are working full-time or part-time earning competitive industry salaries. Of the remaining 19% only 5% are unemployed and 14% returned to disability benefits.

Returning to disability benefits, for this group, is understandable given the nature of the disability and the tendency for recurring medical problems. These findings suggest that the employability of persons with severe disabilities may not only depend on the nature of the injury but also on other characteristics.

Also at odds with conventional wisdom was that there seems to be only a weak association between a student's age and prior education and employment following graduation. This is in contrast to Statistics Canada (1991a) data that indicate older persons with disabilities have more difficulty obtaining employment. Assisting graduates with the transition to work helps overcome the negative influence of advancing age. Prior education may be less of a factor for employers, because students graduate with a Certificate in Computer Programming from the Open Learning Agency. This credential has become well known and respected for quality in the business community. Given the low number of women in the program the impact of gender on employment was not possible to establish.

Slightly more (95%) graduates who had the pre-requisites for post-secondary education were working full-time one year following graduation, than those without (87%). There is no obvious explanation for this result other than the possibility, once in the workplace these graduates can draw on this prior academic experience to demonstrate a higher level of skills and abilities outside the technical aspects of the job. One would not want to speculate too much on this finding given the multiple of characteristics associated with obtaining and maintaining employment.

All the graduates rated by employers were equal to (91%) or above average (9%) when compared to other employees with similar training and experience. This result

indicates those persons with disabilities, who receive training to industry standards, perform as well as the non-disabled. The survey of BAC members indicates they do not compromise their hiring decisions by promoting and influencing the hiring of graduates within their own, or with other corporations. Many corporations demonstrated their satisfaction with Access Ability graduates by hiring more than one graduate over the past nine years.

Graduates are of the opinion (94%) that the marketing of students by the BAC results in the high employment rates of the program. Also, the BAC members influenced the offering of internships by their corporations resulting in almost 80% on the internships provided by BAC corporations.

Role and Impact of BAC

The value of the BAC in the *Access Ability Program* was evaluated by assessing its functions in terms of contribution to the program, assistance in the placement of graduates and role and impact in changing corporate attitudes.

Contribution to the program.

While graduates saw all functions of the BAC as important, including selecting students, advising on curriculum, and orally examining students, they rated the BAC's role in obtaining internships and marketing the program as the most important functions. These results support previous research by Browning, Brown and Dunn (1993) and Roessler, (1987) on the importance of employers being involved throughout the transition process. The data also supports Leneway's (1991) findings that marketing graduates, to

obtain an internship and subsequent employment, is the single most important function of business involvement in education, training and placement programs.

Members of the BAC rated their general involvement in the program as it's most important contribution to the program's success. This role involves offering advice to the program and preparing students for employment. Also, the BAC are of the opinion that their role selecting qualified students and developing an industry relevant curriculum is very important to the success of the program. Another very important role of the BAC is marketing students in order to obtain internships and employment. Three quarters of the internships were with BAC organizations, reflecting their commitment to graduates. Despite making many new employer contacts each year, the program has not been able to obtain more than two internships a year with non-BAC organizations This result demonstrates a critical need to maintain a large, active and supportive BAC.

Placement of graduates.

All BAC members felt that their involvement in the Council to some degree influenced their corporation's offering an internship. This influence does not appear to be required as an equal percentage (73%) of BAC and non-BAC corporations offered employment following the internship. These graduates were hired because they had proven themselves in the internship and were, therefore, able to obtain employment on their own merits. These results further support Levy, Jessop and Rimmerman (1993) that employers change their hiring practices based on positive experiences with persons with disabilities.

Changing corporate attitudes.

A large majority (91%) of BAC corporations offering students internships and graduates employment, had a workforce of 200 or more employees. This supports the common understanding that only larger organizations have the resources to provide internships to students and offer entry-level positions. Generally, small firms will hire only experienced technical employees as they do not have the human resources to mentor entry-level employees. While these results demonstrate the need for Access Ability to continue recruiting large corporations for the BAC, the number of internship employers must be expanded given the trend towards corporate downsizing, outsourcing, and the growth of small business. The program cannot rely on large BAC corporations to continue providing the majority of internships and employment opportunities.

Two-thirds (77%) of BAC corporations did not offer internships or hire persons with disabilities before having a representative on the BAC. After joining the BAC, a third (32%) of these corporations offered internships to persons with disabilities for the first time. The results suggest that corporations that become involved in programs for persons with disabilities can change their attitudes towards hiring individuals from this group.

## Program Components

The BAC, graduates, and rehabilitation counsellors ranked the relative importance of program's components to the employability of graduates. The components assessed were selection, supportive environment, BAC involvement, instructional resources, curriculum, internships and mentoring.

The BAC members ranked the selection process as the most important program component. Rehabilitation counsellors were of the same opinion. These opinions assume that given the right students, the other parts of the program will produce graduates who are competitively employable. In contrast, students rated internships as the most important program component, given the importance of gaining work experience to their goal of obtaining full time employment.

To the BAC, the second most important component of the program was its supportive environment, reflecting the program's commitment to meeting the personal, environmental and academic needs of students with disabilities. In contrast, students and counsellors rated BAC involvement and internships, respectively, as the second most important feature

## Conclusions

This evaluation demonstrates that partnerships involving business, educational institutions and rehabilitation organizations positively influence the quality of the training program, and enhance the employment of persons with disabilities. For the *Access Ability Program*, the BAC advanced the participation of persons with disabilities in the workplace by its active involvement in all aspects of the program. The council's contributions included selecting qualified students, providing internships and marketing graduates to the information technology community. BAC involvement in placement of graduates in competitive employment was a critical element of the program. BAC members also influenced the hiring of persons with disabilities within their organizations by acting as internal champions. As such, they helped create a positive climate for workers with disabilities within their organization. For example, BAC members created

new entry-level job descriptions and changed union/management agreements to intern and hire Access Ability students.

No student was denied access to the program because of a perceived limitation imposed by a disability. Program staff accommodated each student's special needs, and assisted employers to adapt their environments for graduates. In many cases, this meant taking adaptive equipment into the workplace, and conducting orientation sessions for employees on how to assist persons with disabilities. Without these interventions, employers may not have been willing or able to accommodate the special needs of graduates.

Graduates, who obtained employment within their physical capacity, maintained their employment and did not return to collecting disability benefits. An investment in training for persons with disabilities seems to make good economic sense. As a result of training, persons with disabilities become economically independent of direct government assistance. This result supports the economic argument and previous research by Harles (1992) on the "Projects with Industry" programs that reported a 3:1 return on training investment in the first year. In addition to the economic results, an equally important perspective is that persons with disabilities report their "lot in life" significantly improves when they are working in paid employment (Harris & Associates, 1994).

Aptitude testing was found to be a reliable component of the selection process. More employed graduates passed the RAVEN (83%) than the SRA (64%), therefore, the cut-off score for SRA may be too high. Further study is required to determine the value of using testing to select this group. The results suggest tests alone should not, however,

be used to exclude students from the program. Each potential student must be individually evaluated to determine his or her overall suitability for the program.

The positive assessment of the *Access Ability Program* is instructive for other programs that train and obtain meaningful employment for persons with disabilities. These lessons include:

- Develop a mission statement that confirms the commitment to train and to place graduates.
- Hire staff who are committed to the mission of the program.
- Create partnerships with public and private organizations.
- Select students who have the abilities, interest, and motivation to complete the program.
- Train students to meet industry standards.
- Evaluate students based on their ability to meet industry standards.
- Provide support services to students while they are in training and in the workplace.
- Include a significant work experience component.
- Match student's skills and abilities to the work experience opportunity.
- Adopt a customer-service ethos towards students, graduates, employers, and the community.

Further research is required on the possibility of transferring the program model to other occupations and client groups. The unanswered question is the degree of business commitment to the program model itself, rather than to persons with disabilities. For example, is the commitment and dedication of the BAC transferable to helping able-bodied people make the transition from school to work? How important is it to the

program model that the BAC comes from similar occupations? In my opinion, it is very important that the BAC members have similar occupational interests. For example, during BAC meetings, members often discuss similar work related issues within their corporations. As such, there is some commerce (business) going on between BAC members. Other areas of future research include: 1) a long term study on the mobility of graduates to other firms; 2) a long term study to determine the degree to which graduates take further education and training; 3) a study to determine the mechanisms by which students either refer themselves to the program or are referred by rehabilitation organizations; 4) a study to determine the reasons why small to medium firms do not participate in the program and what can be done by the program to increase their involvement; 5) a comparative study on the effects of a quota system for hiring persons with disabilities in the public and private sector.

Access Ability's success may be measured by the number of students now employed and on their way to a satisfying career in a demanding field. But numbers alone do not describe the impact the *Access Ability Program* had on individual lives. After two years in the public service one graduate started her own business and hired three employees, one of whom has a disability. Another, a quadriplegic, is now working after 10 years of disability benefits. One graduate was rated the top achiever in a department of 80 people. A BAC member brought union and management together to find a way to offer an internship on an annual basis. Other BAC members, who had never before shown interest in persons with disabilities, become champions in promoting their hiring.

The final word comes from a graduate who returned to work after being on disability benefits for over 4 years–"I am just enjoying the work".

## Recommendations

In light of the study, the following recommendations summarize the principal factors that should be incorporated into employment training programs for persons with disabilities. These recommendations include implications for program policy and practice.

1. Involve employers in the design, implementation and delivery of these programs and give them decision-making authority.
2. Establish clear linkages between programs and the needs of employers to increase employment opportunities for graduates.
3. Develop a comprehensive selection process that screens students for abilities, interests, and personal suitability rather than prior experience or academic achievement, using the principle of inclusion rather exclusion. Where available, take advantage of valid and reliable aptitude tests.
4. During the selection process, put time and effort into helping applicants determine what they are ready, able and motivated to do. This will help select motivated learners, achieve high completion rates, and result in employed graduates.
5. Structure the program so that employers have direct involvement with students throughout the transition process.
6. Incorporate a requirement for work experience of sufficient depth and length to allow students to apply their skills and learn on-the-job applications.
7. For work experience placements, match the skills and abilities of students with the employer's requirements and work environment. The work experience must meet

both the needs of the employer and the student. Only the right match of technical and soft skills gives students an opportunity to successfully demonstrate their ability to compete in the competitive business world.

8. Recruit women into the program by working to overcome bias and gender disparities in technical occupations.
9. Encourage small business to offer internships and hire graduates, by increasing their representation on the BAC and working to educate this sector about the costs and benefits of including persons with disabilities in their workforce.
10. Assist all disability groups to increase their completion rate, by working with their rehabilitation counsellors to ensure these students receive appropriate and timely medical treatment and physical therapy while in the program. Also, ergonomic changes to the training site may be required to accommodate persons with disabilities physical limitations.
11. Governments should increase their investment in support services, education/training, and transition services for persons with disabilities. This investment makes good economic and humanitarian sense.
12. Governments should remove all systemic barriers to persons with disabilities participation in education/training and employment
13. All organizations must remove their economic disincentives if there is any hope of significantly improving the employment of persons with disabilities.

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Appendix One
Business Advisory Council Survey

# Research Survey

## Business Advisory Council Member

Name _____ Corporation _____

1. How many employees are there in your corporation?

| | | | |
|---|---|---|---|
| (a) 0 -10 | ___ | (e) 101 -200 | ___ |
| (b) 11 - 40 | ___ | (f) over 200 | ___ |
| (c) 41 - 80 | ___ | | |
| (d) 81- 100 | ___ | | |

2. How many years have you been on Business Advisory Council?

| | | | |
|---|---|---|---|
| (a) 1 year | ___ | (f) 6 years | ___ |
| (b) 2 years | ___ | (g) 7 years | ___ |
| (c) 3 years | ___ | (h) 8 years | ___ |
| (d) 4 years | ___ | (i) 9 years | ___ |
| (e) 5 years | ___ | (j) 10 years | ___ |

3. Does your corporation support your participation on the Business Advisory Council?

Yes ___ No ___

4. What are your personal reasons for being involved with the Business Advisory Council?

(Rank order with 1 being the highest)

| | | | |
|---|---|---|---|
| (a) Social responsibility | ___ | (g) Corporate directive | ___ |
| (b) Public relations | ___ | (h) Community service | ___ |
| (c) Preview students | ___ | (i) Enhance employment status | ___ |
| (d) Network with peers | ___ | (j) Workers for labour shortage | ___ |
| (e) Disability awareness | ___ | (k) Potential contracts with BAC | ___ |
| (f) Employment equity | ___ | (l) Other (specify)_____ | ___ |

5. Has your corporation offered an internship or hired a person with a disability in the information technology area prior to your involvement in the Access Ability program?

| | | |
|---|---|---|
| (a) Internship | Yes ____ | No ____ |
| (b) Hired | Yes ____ | No ____ |

6. **If no to 5**, why not?

| | |
|---|---|
| (a) No corporate employment equity policy | ___ |
| (b) Corporation does not actively recruit employees with a disability | ___ |
| (d) Qualified applicants have not applied for positions | ___ |
| (e) People with disabilities were not competitive in a employment interview | ___ |

(f) Other (specify) _____

7. Has your involvement on the Business Advisory Council influenced the hiring of people
with disabilities in your corporation?
Yes ___ No ___

8. **If no in 7** indicate reasons.
(a) _____
(b) _____

9. Has your corporation provided an internship for an Access Ability student since your becoming a BAC member?
Yes ____ No ____

10. **If no in 9** indicate reasons. (indicate more than one if applicable)
(a) Graduates do not have relevant technical skills ___
(b) Union does not allow internships ___
(c) Employees require a post secondary diploma ___
(d) Employees must have a degreee ___
(e) Facility not suitable for a person with a disability ___
(f) Students are not competitive to other co-op students ___
(g) Employees would not accept a person with a disability ___
(h) Other specify _____

11. **If yes in 9** how much did your participation on the Business Advisory Council influence your corporation offering an internship?
very influential _____ influential ____ not influential ____

12. If **not influential** indicate reasons.
(a) Students are competitive with other co-op students ___
(b) Student had the skills required for an opening ___
(c) Hired other students in past ___

13. Did your corporation offer employment or a contract following the internship?
Yes ____ No ____

14. **If yes to 13** how would you compare the Access Ability graduate to other employees without a disability with similar training and experience?
superior ____ above average ____ equal ___ below average ___ inferior ___

15. If you have had an Access Ability graduate in your corporation for more than one year how would you compare the graduate to other employees with no disability with equivalent training and experience?
superior ____ above average____ equal ____ below average ___ inferior ____

16. What do you think are the most important aspects of the Access Ability Program that result in success? (Rank order with 1 being the highest)

| | | | |
|---|---|---|---|
| (a) Selection criteria | ____ | (g) Internships | ____ |
| (b) Mentoring | ____ | (h) BAC involvement | ____ |
| (c) Oral evaluations | ____ | (i) Class size | ____ |
| (d) Curriculum | ____ | (j) Computing resources | ____ |
| (e) Physical Access | ____ | (k) Instructional resources | ____ |
| (f) Supportive environment | ____ | (e) Other ( specify) _____ | |

17. What benefits does your employer gain from your involvement on the Business Advisory Council? (Rank order with 1 being the highest)

| | | | |
|---|---|---|---|
| (a) Social responsibility | ____ | (g) Corporate directive | ____ |
| (b) Public relations | ____ | (h) Community service | ____ |
| (c) Preview students | ____ | (i) Enhance corporate status | ____ |
| (d) Corporate interaction | ____ | (j) Workers for labour shortage | ____ |
| (e) Disability awareness | ____ | (k) Potential contracts with BAC | ____ |
| (f) Employment equity | ____ | (l) Other (specify)_____ | |

18. What do you consider the most important contributions of the Business Advisory Council to the success of the Access Ability program ( Rank order with 1 being the highest).

| | | | |
|---|---|---|---|
| (a) Selection interviews | ____ | (g) General involvement | ____ |
| (b) Guest Lectures | ____ | (h) Marketing Internships | ____ |
| (c) Strategic Plan | ____ | (i) Marketing graduates | ____ |
| (d) Curriculum input | ____ | (j) Hardware input | ____ |
| (e) Public relations | ____ | (k) Funding | ____ |
| (f) Oral evaluations | ____ | (l) Other specify _____ | |

**Thank you for completing the survey**

**Please Fax back the survey to Werner Schulz 660-2251**

Appendix Two
Graduate Survey

# Graduate Research Survey
## on
## Access Ability Graduates

Name_____ Date_____

## A. Background Information

1. What was you income source prior to starting the Access Ability Program?
   - (a) UI ____
   - (b) Disability Benefits ____
   - (c) W.C.B. ____
   - (c) Private Insurance ____

2. How many years were you on disability benefits prior to commencing the Access Ability Program?
   - (a) 1 year ____
   - (b) 2 years ____
   - (c) 3 years ____
   - (d) 4 years ____
   - (e) 5 years ____
   - (f) 5 plus years ____

3. How did you come to learn about Access Ability
   - (a) Recommended by Rehabilitation Counsellor ____
   - (b) Former student ____
   - (c) Business Advisory Council ____
   - (d) Advertisement ____
   - (e) Private research ____
   - (f) Other specify _____

4. Why did you choose to attend the Access Ability Program?
   (Rank in order of importance, 1 highest)
   - (a) Rehabilitation counsellor ____
   - (b) Selection Criteria ____
   - (c) 1 year program ____
   - (d) Computer resources ____
   - (e) Placement rate ____
   - (f) Business involvement ____
   - (g) Curriculum ____
   - (h) Instructional resources ____
   - (i) No choice ____

5. What was you educational background prior to commencing the Access Ability Program?
   Grade level successfully completed
   - (a) grade 9 ____
   - (b) grade 10 ____
   - (c) grade 11 ____
   - (d) grade 12 ____

| | | | Specify Program |
|---|---|---|---|
| High School Graduation | Yes ____ | No ____ | _____ |
| GED | Yes ____ | No ____ | |
| Trade qualification | Yes ____ | No ____ | _____ |
| Certificate (1year) | Yes ____ | No ____ | _____ |
| Diploma (2 years) | Yes ____ | No ____ | _____ |
| Degree (four years) | Yes ____ | No ____ | _____ |

6. Did you start but not complete any post secondary courses prior to commencing the Access Ability Program? Yes____ No____

If yes, but did not complete indicate reasons.

| | | | |
|---|---|---|---|
| (a) Financial | ____ | (f) Physical access | ____ |
| (b) Transportation | ____ | (g) Too difficult | ____ |
| (c) Medical reasons | ____ | (h) Insufficient time | ____ |
| (d) Family obligations | ____ | (i) Teaching assistance | ____ |
| (e) No support | ____ | (i) Other Specify | _____ |

7. Prior to entering the Access Ability Program did you have the pre-requisites to qualify to public post-secondary programs in information technology?
Yes ___ No ___

8. Have you completed any formal postsecondary education other than in-house company training since the completion of the Access Ability Program?

| | | |
|---|---|---|
| (a) Course related to information technology | Yes ____ | No ____ |
| (b) Course not related to information technology | Yes ____ | No ____ |

9. If yes to 8 why are you taking additional education/training?

| | |
|---|---|
| (a) Complete OLA Diploma in Information Technolgoy | ____ |
| (b) Required for current occupation | ____ |
| (c) Required for future advancement | ____ |
| (e) Professional development | ____ |
| (f) Required to obtain employment | ____ |

## B. Program Information

1. Please indicate the importance of the following aspects of the Access Ability Program that assisted you in graduating.

| | very important | Important | not important |
|---|---|---|---|
| (a) Computing resources | ____ | ____ | ____ |
| (b) Instructional resources | ____ | ____ | ____ |
| (c) Supportive environment | ____ | ____ | ____ |
| (d) BAC involvement | ____ | ____ | ____ |
| (e) Internship | ____ | ____ | ____ |
| (f) Other- specify _____ | ____ | ____ | ____ |

2. Please indicate the importance of the Business Advisory Council functions.

| | very important | Important | not important |
|---|---|---|---|
| (a) Selection Interviews | ____ | ____ | ____ |
| (b) Curriculum input | ____ | ____ | ____ |
| (c) Oral evaluations | ____ | ____ | ____ |
| (d) Obtaining internships` | ____ | ____ | ____ |
| (e) Guest Lectures | ____ | ____ | ____ |
| (f) Practice interviews | ____ | ____ | ____ |
| (g) Public relations | ____ | ____ | ____ |
| (h) Hardware input | ____ | ____ | ____ |
| (i) Marketing graduates | ____ | ____ | ____ |
| (j) General involvement | ____ | ____ | ____ |
| (k) Funding | ____ | ____ | ____ |
| (g) Other- specify _____ | ____ | ____ | ____ |

3. List functions that are not important and indicate reasons.

(a) _____

(b)_____

(c) _____

4. Did the training from the Access Ability program prepare the foundation for your entry or re-entry into the workforce?

Yes ____ No ____

If no indicate reasons

(a) _____

(b)_____

(c) _____

## C. Internship Employment

1. Internship employer _____ BAC Member Yes ____ No ____

2. Did you obtain full-time employment or a contract with your internship employer?

Yes ____ No ____

3. If yes period of employment

| | | | |
|---|---|---|---|
| (a) 3 - 6 months | ____ | (e) 4 years | ____ |
| (b) 7 - 12 months | ____ | (f) 5 years | ____ |
| (c) 2 years | ____ | (g) more than 5 years | ____ |
| (d) 3 years | ____ | | |

Starting Position __X___ Current position __/__

| | | | |
|---|---|---|---|
| (a) Programmer | ____ | (e) LAN administrator | ____ |
| (b) PC support | ____ | (f) Project Manager | ____ |
| (c) Help desk | ____ | (g) Project Leader | ____ |
| (d) System analyst | ____ | (h) Systems Analyst | ____ |
| (e) Other specify _____ | | (i) Business Analyst | ____ |
| | | (j) Other specify _____ | |

4. What was your starting and current employment or contract salary?

| | Starting X | Current / |
|---|---|---|
| Under 25,000/year | ____ | ____ |
| $26,000 - $35,000 | ____ | ____ |
| $36,000 - $45,000 | ____ | ____ |
| $46,000 - $55,000 | ____ | ____ |
| Over $55,000 | | |

## D. Employment Status If You Did Not Obtain A Position With Your Internship Employer

1. If you did not obtain a contract or employment following your internship employer, how long were you unemployed?

| | | | |
|---|---|---|---|
| (a) 0 - 3 months | ____ | (d) 2 years | |
| (b) 4 - 6 months | ____ | (e) 3 years | |
| (c) 7- 12 months | ____ | (f) 4 years or more | |

2. Employer on return to work _____ BAC Member Yes ____No ____

3. Period of employment

| | | | |
|---|---|---|---|
| (a) 3 - 6 months | ____ | (e) 4 years | ____ |
| (b) 7 - 12 months | ____ | (f) 5 years | ____ |
| (c) 2 years | ____ | (g) more than 5 years | ____ |
| (d) 3 years | ____ | | |

Starting Position __X___ Current position __/__

| | | | |
|---|---|---|---|
| (a) Programmer | ____ | (e) LAN administrator | ____ |
| (b) PC support | ____ | (f) Project Manager | ____ |
| (c) Help desk | ____ | (g) Project Leader | ____ |
| (d) System analyst | ____ | (h) Systems Analyst | ____ |
| (e) Other specify _____ | | (i) Business Analyst | ____ |
| | | (j) Other Specify _____ | |

4. What was your starting and current employment or contract salary?

| | Starting X | Current / |
|---|---|---|
| Under 25,000/year | ____ | ____ |
| $26,000 - $35,000 | ____ | ____ |
| $36,000 - $45,000 | ____ | ____ |
| $46,000 - $55,000 | ____ | ____ |
| Over $55,000 | ____ | ____ |

5. What was your employment status one year after graduation?

(a) Employed full time ____
(b) Employed part time ____
(c) Unemployed ____
(d) On Disability Benefits ____

6. If unemployed one year after graduation, indicate reasons.

(Indicate more than one if applicable)

(a) Computer skills do not match market demand ____
(b) Employment opportunities not available ____
(c) Internship did not result in employment ____
(d) Limited work experience ____
(e) Limited business skills ____
(f) Discrimination in the workplace ____
(g) Poor job performance ____
(h) On disability benefits ____
(i) Other specify _____ ____

7. What further skills training do you require?

(Please indicate more than one if appropriate)

| | | | |
|---|---|---|---|
| (a) Project Management | ____ | (g) Database management | ____ |
| (b) Business witing | ____ | (h) Interpersonal skills | ____ |
| (c) C++ | ____ | (i) Net working | ____ |
| (d) Unix | ____ | (j) Business presentations | ____ |
| (e) Team building | ____ | (k) Spreadsheets | ____ |
| (f) Change management | ____ | (l) Other specify _____ | |

8. If currently unemployed indicate reasons.

(a) Computer skills do not match market demand ____
(b) Employment opportunities not available ____
(c) Internship did not result in employment ____
(d) Limited work experience ____
(e) Limited business skills ____
(f) Discrimination in the workplace ____
(g) Poor job performance ____
(h) On disability benefits ____
(i) Other specify _____ ____

9. What is your current employment status?

(a) Employed full time ____
(b) Employed part time ____
(c) Unemployed ____
(d) On Disability Benefits ____

10. Have you had any periods of being off work because of a disability since graduating from the Access Ability program?

Yes ____ No ____

If yes, indicate period of disability.

(a) 3 - 6 months ____
(b) 7 - 12 months ____
(c) 2 years ____
(d) 3 years ____
(e) 4 years ____
(f) 5 years ____
(g) more than 5 years ____

11. In retrospect, what was the most important feature of the Access Ability Program?

(rank in order of importance 1 highest)

(a) Selection criteria ____
(b) Mentoring ____
(c) Oral evaluations ____
(d) Curriculum ____
(e) Pysical Access ____
(f) Personal assistance ____
(g) Internships ____
(h) Business involvement ____
(i) Class size ____
(j) Computing resources ____
(k) Instructional resources ____
(l) Other specify _____

Appendix Three
Agency Survey

# Research Survey

## Agency Referrals

Name _____ Date _____

1.Agency

| | | | |
|---|---|---|---|
| (a) WCB | ___ | (d) BC Rehab | ___ |
| (b) VRS | ___ | (e) CNIB | ___ |
| (c) BCPA | ___ | (f) Neil Squire | ___ |
| | | (g) Other (Specify) | ___ |

2. Have you referred a client to the Access Ability Program?
Yes ____ No ____

3. **If yes to 2**, rank order your reason for referring. (1 being the most important)

| | | | |
|---|---|---|---|
| (a) 12 month program | ___ | (e) Clients education level | ___ |
| (b) Placement rate | ___ | (f) Selection process | ___ |
| (c) Business involvement | ___ | (g) Other (specify)_____ | |
| (d) Completion rates | ___ | | |

4. **If no to 2,** rank order your reason for not referring. (1 being the most important)

| | | | |
|---|---|---|---|
| (a) Too expensive | ___ | (f) Quality of education | ___ |
| (b) Prefer mainstream institutions | ___ | (g) Placement rate | ___ |
| (c) Prefer private institutions | ___ | (h) Aptitude requirements | ___ |
| (d) One intake per year | ___ | (i) Other (Specify)_____ | ___ |
| (e) Client did not have the academic pre-requisits for a public post-secondary institution | ___ | | |

5. Have you had a client accepted into the Access Ability Program?
Yes ____ No ____

6. Did your client become successfully employed?
Yes ____ No ____

7. **If no to 6,** why not? (Rank order with 1 being the most important)

| | |
|---|---|
| (a) Client's computer skills do not match market demand | ___ |
| (b) Employment opportunities not available for client | ___ |
| (c) Client's limited work experience | ___ |
| (d) Client's limited business skills | ___ |
| (e) Client's poor job performance | ___ |
| (f) Client on disability benefits | ___ |
| (g) Client's poor attitude towards employment | ___ |
| (h) Client did not graduate | ___ |
| (i) Other specify _____ | ___ |

8. How would you rate your overall satisfaction with the Access Ability Program?
Very Satisfied ___ Satisfied ___ Dissatisfied ____

9. If dissatisfied, why hasn't the Access Ability Program met your expectations?
(rank in order of importance with 1 highest)

(a) Client not working ___
(b) Client dropped out ___
(c) Instruction quality ___
(d) Inappropriate internship for client ___
(e) Curriculum does not meet market demands ___
(f) Program staff did not assist client find work ___
(g) Other specify _____ ___

10. What makes the Access Ability Program successful?
(rank in order of importance 1 highest)

(a) Selection criteria ____ (g) Internships ____
(b) Mentoring ____ (h) Business involvement ____
(c) Oral evaluations ____ (i) Class size ____
(d) Curriculum ____ (j) Computing resources ____
(e) Physical Access ____ (k) Instructional resources ____
(f) Personal assistance ____ (l) Other specify _____

**Thank you for completing the survey**

**Please Fax back the survey to Werner Schulz 660-2251**

Appendix Four
Student Information

# Access Ability Student Information Data Base

Class_____ Year_____

1. **Name:** _____

2. **Age:** 20 or under____ 21-25____ 26-30____ 31-35____ 36-40____ 41-45____
   45-50____ 51-55____ 55-60____ over 61____

3. **Sex:** M____ F_____

4. **Region:** Greater Vancouver____ Vancouver Island____ Other____

5. **Referral Source:** WCB____ VRS____ GF Strong____ Other____

6. **Funder:** WCB____ VRS____ Private Insurance____ HRDC____ Other____

7. **Education:** K-12: Grade 8____ 9____ 10____ 11____
   graduation: dogwood_____ GED_____
   Would have qualified for PS? Yes____ No____
   Post Secondary schooling: None____ Afew courses____
   Under 1 year____ 1 year____ Certificate____ Diploma____ Degree____

8. **Prior Occupation:** No prior work experience_____
   NOC Code Primary_____ # of years _____
   NOC Code Secondary_____ # of years _____

9. **Disability:**

| | | Age of onset: |
|---|---|---|
| Quadriplegia | _____ | _____ |
| Paraplegia | _____ | _____ |
| Visual Impairment | _____ | _____ |
| Hearing Impairment | _____ | _____ |
| Cerebral Palsy | _____ | _____ |
| Head Injury | _____ | _____ |
| Back Injury | _____ | _____ |
| Amputation | _____ | _____ |
| Arithritis | _____ | _____ |
| Knee Injury | _____ | _____ |
| Shoulder Injury | _____ | _____ |
| Birth Disorders | _____ | _____ |
| Other | _____ | |

10. **Specific Limitations:** mobility impairment_____ standing_____
    can not write_____ repetive tasks_____

labor/lifting_____ Other_____

11. **Interest and experience in information technology:**
    Interest: none____ a little____ a lot____
    Experience: None____ Past jobs/daily life____ Afew courses____
    1 year____ Certificate____

12. **Why Access Ability:** For employment_____
    Offers a career_____
    My rehab sent me_____
    I don't know_____

13. **Prior Vocational Testing:** Yes_____ No_____

14. **How has your disability made it difficult to find and keep a job?**
    physical limitations_____
    no skill_____

15. **Testing:**

| | *Raw* | *Percentile* |
|---|---|---|
| Raven | _____ | _____ |
| SRA | | |
| Verbal | _____ | _____ |
| Reasoning | _____ | _____ |
| Letter Series | _____ | _____ |
| Number Ability | _____ | _____ |
| Diagramming | _____ | _____ |
| | --- | --- |
| *Total* | _____ | _____ |

16. **Transportation:** Able to drive_____ Other_____

17. **Internship Company:** WCB_____
    ICBC_____
    BcTel_____
    Other_____

18. **Internship resulted in:** Contract position: Yes_____ No_____
    Full Time employment: Yes_____ No_____
    Where_____
    Starting wage_____

19. **Other relevant information:**

_____

_____

_____