COOPERATIVE EDUCATION IN THE APPRENTICEABLE TRADES

by

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ABSTRACT

This document looks at Trades Cooperative Education programs developed in the British Columbia College system. The focus of the project is to identify the key elements that are present in, and contribute to, the success of a trades cooperative education program.

A number of programs across the province are examined. Issues related to program success are analyzed, including: program development; implementation and operation; factors contributing to student success; the role of industry in program development and operation; and apprenticeship certification issues. The eight pilot programs in operation at the time of writing are looked at statistically. Comparisons are drawn between trades co-op and traditional apprenticeship training programs. The Northern Lights College trades co-op programs, identified as the model for the province, are examined as a case study. The writer concludes that the process that is driving the development process, and the philosophical underpinnings that support that process are crucial to the success of this type of program. Areas for further research in the field of apprenticeship training and cooperative education are identified.

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FOREWORD

During my last 12 years in the college system, my energies have been focused predominantly on the development and delivery of apprenticeship training programs in northern British Columbia. During that time I worked very closely with local employers and in the process of dealing with their training needs and being involved in the day to day activities of many organizations, I was able to develop a sense of the dynamics of the industrial community in the region. Extreme climatic conditions, specialized equipment related to the specific industries in the area, and a frontier oriented culture contributed to make a very difficult working environment. Industry in the north faces a chronic problem securing and retaining skilled qualified trades people. The distance from major centers and the unique needs of the region combined with a relatively small population base present difficulties in the delivery of technical and trades training in the region. Notwithstanding this situation, over time I have observed the decline in the number of people entering the trades and the gradual erosion of the status of trades people in the public eye. I have observed this same scenario across British Columbia. It only compounds the problems facing employers and trainers in the north. In order to address the need for apprenticeship training programs relevant to the needs of local industry, I developed training programs that targeted two of the highest priority areas of need – Commercial Transport and Automotive Technicians. The programs, specially developed to serve the needs of the region, and designed jointly by industry and Northern Lights College staff, emerged as a combination of apprenticeship training and cooperative education. In time, these programs came to be known as trades co-op programs. As this

concept, although not entirely unique, was new to the trades field, we encountered many difficulties in having these programs approved and certified by the provincial apprenticeship organization. In due course, both programs proved to be highly successful as mechanisms to train apprentices. The quality of the graduates was excellent, they were well received by industry and the employment rate for graduates is in the high nineties. In due course, both programs received full approval and accreditation by the Provincial Apprenticeship organization. Further, these programs became accepted as the model to be used for the development of trades co-op programs in the province. Other programs in British Columbia, developed as trades co-op apprenticeship programs, have not fared so well. A number of programs have met with significant resistance from the apprenticeship organization and from the industrial community. A number of programs have also been discontinued. My main goal in completing this project is to identify the key elements that contribute to the success of the trades co-op model. I hope that by examining trades co-op from a provincial perspective, that evidence will emerge that will assist in the future development of co-op or other future models for the delivery of apprenticeship training.

The project is limited to British Columbia and to the apprenticeship system within the province. As my experience and knowledge of the trades training and industry is centered in British Columbia, it was not feasible to expand the study to include other regions of the country. I was motivated to work on this project not only to explore the trades co-op issue, but also by a desire to explore the change process as it manifests itself in the world of the apprenticeable trades. I believe that the trades training system, as we know it, must develop the capacity to change and adapt to the constantly accelerating

demands placed on it by the industries it serves. It must change more effectively or suffer the consequences. In studying the trades co-op model, some insights may be gleaned into how change can be brought about in the system as a whole.

CHAPTER ONE

THE PROBLEM

Introduction

This project examines the cooperative education model as applied in the delivery of apprenticeable trades programs in British Columbia. Traditionally, the apprenticeship system has provided training in a number of apprenticeable trades, most of which support the mainstream industries in the province: construction, mining, logging and other natural resource industries. Throughout most of its history, the British Columbia apprenticeship system has been very effective in meeting the demand for skilled trades people. Traditionally, fluctuations in the natural resource and construction industries have varied the demand for skilled trades people. The apprenticeship system has always been able to deal with these fluctuations and maintain its programs. The Report on Apprenticeship by the Provincial Apprenticeship Board (1984) found that: "The present apprenticeship system is capable of adjustments to suit the future needs of industrial employers and the province as a whole – provided all parties carry out their roles and responsibilities effectively" (p. 14). In the mid-eighties, the apprenticeship system found itself facing a new challenge. The economic recession of the late seventies and early eighties saw a dramatic reduction in the number of active apprentices in the system. In some cases, the numbers dropped low enough to endanger the continuity of some trades training programs. The Report on Apprenticeship by the Provincial Apprenticeship Board (1984) states: "The number of apprentices hovers around 12,000. This would be approximate to the minimum level which must be maintained. However, an intake of 500 per month is

needed to sustain such a level. Recently, the intake has roved between 200 and 400 a month - a significant shortfall" (p. 14). Around this time, the first real impact of computerization and the accelerating pace of technological change that has revolutionized the industrial community was felt. New technology, requiring more sophisticated equipment, higher standards of training, and more training time, emerged and began to evolve more quickly than had ever been experienced before. The combination of low numbers of active apprentices, and the onset of rapid technological change presented a potential crisis situation for the apprenticeship organization. An upturn in the economy, requiring increased numbers of highly trained tradespeople would place the apprenticeship system in a very difficult position. With greatly reduced numbers of active apprentices in the system and the downsizing of training programs that naturally follows low numbers, it would be very difficult for the organization to respond to a rapid increase in demand for trades people. A number of strategies were developed to address this situation. The introduction of the cooperative education model into the apprenticeable trades was one such strategy. It takes several years from the time an apprentice commences training until he or she is at their productive peak. The main rationale for the introduction of the cooperative education model into the trades was that its inherent flexibility had the potential to bring apprentices on line and up to their optimum productive capacity more quickly than the traditional system. The cooperative education model, well tried in the academic field, was a new concept in apprenticeship training, a system that had not changed significantly since its beginnings at the turn of the century. Understandably, trades co-op was met with mixed emotions by the

apprenticeship organization, the college system who were to be the delivery agents, and by the industrial community. Ference Weicker (1996) states:

> The perceived need for the co-op program or programs tended to vary depending upon whether the representative surveyed was from the college, an Industry Steering Committee, the Ministry of Labour, or a Technical Advisory Committee.
>
> All 11 of the college representatives or groups of representatives surveyed believed there is a need for the co-op programs at their institutions.
>
> Representatives from the Industry Steering Committees also generally believe that there is a need for the co-op program. Of the 10 ISC representatives surveyed, only one indicated that there was not a need for the program while one was not sure.
>
> Representatives from the Ministry of Labour generally felt that there was not a need for the co-op programs in their region, with only one of the six respondents or groups of respondents indicating that there was a need, while three thought there was not a need and two were not sure. Those who were not sure felt that the need would be determined by whether local employers were hiring the graduates.
>
> Of the trade advisory committee representatives surveyed, three indicated that there was a need for the co-op program or programs in their respective trade, one felt that there was a limited need, four indicated that there was not a need, and one was not sure. (p. 41)

Trades co-op, since its introduction in the early to mid-eighties, has been, and remains, a controversial issue in the apprenticeship training field. Trades co-op programs in their various forms have experienced both successes and failures. The main focus of this project is to identify the key elements present in successful trades co-op programs, to consider their merits, and to determine in what way they contribute to the success of the program. Within the scope of this document, trades co-op programs are examined from a number of perspectives. The circumstances leading up to the introduction of the first

pilot programs will be examined: the economic conditions present in the early to mid-eighties, the cycles in the British Columbia economy, their impact on the apprenticeship system, the decline in the demand for trades people across the province, and the subsequent dramatic reduction in the number of active apprentices. The potential crisis situation facing the apprenticeship system given the inevitable upturn in economic activity and the impact of technological change and its implications are examined. The rationale for the development of the first trades co-op programs are analyzed. The political and educational motivations for the introduction of the co-op model are explored from the perspective of the college system and the apprenticeship organization.

At the time of writing, eight trades co-op programs were operating in the province. This includes seven pilot programs and the Northern Lights College programs which moved from pilot project to ongoing certification status in 1995. These programs are examined from a number of points of view, including the rationale for the establishment of the program. What factors, internal and external, influenced the decision to develop this type of training program. The program development process and program operation are examined in depth. The main stakeholders in trades co-op are identified and their role examined. The college system, the provincial apprenticeship organization, and particularly industry, both in terms of trades co-op and traditional apprenticeship training are discussed in depth. Programs across the province are analyzed statistically. Student and graduate success rates are evaluated. Work placements and employment rates for graduates are compared. The number of students successfully indentured as apprentices, and the number of graduates who became certified trades

people from various programs are compared. Comparisons are drawn between trades co-op programs and the traditional system. The issues of indenturing apprentices and apprenticeship certification are explored in depth. The certification model developed for trades co-op programs by the Provincial Apprenticeship Board and its impact on program and student success are looked at. The certification model developed at Northern Lights College (NLC), and its impact on the success of the NLC programs and on trades co-op provincially are explored in depth. The Northern Lights College programs, which have been identified as the trades co-op model for the province, are examined as a case study. The history of trades training at NLC is described in order to provide context for the development of the co-op programs. The philosophical approach to the development of the NLC programs are explored. Program development and operational characteristics are examined. In order to place the project in the appropriate context, a review of the relevant literature is conducted. This encompasses material related to apprenticeship training and cooperative education provincially, nationally, and internationally. Finally, the key elements present in successful trades co-op programs and the philosophical underpinnings that support program development and ongoing program operation are discussed.

Purpose of the Study

The purpose of the study is to examine the cooperative education model as it has been applied in the apprenticeable trades programs in British Columbia. The following questions guided the investigation:

1. Who are the main stakeholders in apprenticeship training in British Columbia and what role do they play in the evolution of the apprenticeship system and, in particular, the development of new delivery models for apprenticeship training?

2. What factors drive the development of new delivery models for the apprenticeship programs within British Columbia?

3. What was the rationale for the introduction of the cooperative education model into the apprenticeable trades in British Columbia?

4. To what extent has the cooperative education model been successful in British Columbia?

5. What factors contribute to the success of a trades co-op program and why are some more successful than others?

6. What economic, environmental, or political imperatives impact on the introduction of new delivery models for apprenticeship training in British Columbia?

7. To what extent are the changing needs of the British Columbia apprenticeship system paralleled in other countries?

Significance of the Study

In its 60 years of existence, the British Columbia apprenticeship system has played a significant role in the economic well-being of the province. During the lions share of that time, the apprenticeship system was able to effectively fulfill its mandate of meeting the needs of the industrial community throughout the province. In recent years, the environment has changed and the apprenticeship system now finds itself facing a series of new challenges. The accelerated pace of technological change that has emerged

in recent years has had a significant impact on the delivery of apprenticeship training. The ever increasing volume of material, the increase in the level of technological sophistication, and the increasing complexity of the industrial field has stretched the capacity of the delivery agents to the limit requiring a reassessment of traditional delivery practices. The globalization of the economy has also contributed to the situation. With similar or identical technologies increasingly available around the world, one of the emerging economic advantages is the level of sophistication of the workforce and its ability to adapt to technological change.

As stated above, the British Columbia apprenticeship system has a history of effectively meeting the needs of the industrial community it serves. However, the rapid acceleration of technological change seen in recent years is unprecedented and has considerable stress on the system. The introduction of the cooperative education concept into trades training represents one of the few new delivery models ever to be introduced into the apprenticeship system.

Trades co-op has had a mixed reception in the industrial and apprenticeship communities. Some trades co-op programs have become very successful while others have fallen by the wayside. A study of the development, implementation, and effectiveness of the cooperative education model within the apprenticeable trades will be of value as it will help to identify issues that should be considered when developing new trades co-op programs and other delivery models. The study may also be of value not only in terms of the development of future delivery models, but in understanding the

change process as it applies to the apprenticeship, in particular, and the industrial community in general.

Assumptions

The following assumptions were made for this study:

1. The employers, students, apprentices, college staff and faculty, and Ministry of Skills Training and Labor staff were accurate and sincere with respect to their responses on the questionnaires and interviews.

2. The opinions and findings of employers, students, apprentices, college staff and faculty, and Ministry of Skills Training and Labor staff are valid indicators of issues related to apprenticeship training and trades co-op programs.

3. The questionnaires and interviews adequately and accurately reflect the opinions and feelings of the participants.

Limitations

1. The participants may not have responded accurately because they may regard the questionnaires as divisive or they may have had a vested interest in supporting the trades co-op concept or the traditional delivery model.

2. The participants in this study were employers, students, apprentices, college staff, and Ministry of Skills Training and Labor staff within the province of British Columbia.

3. The study is limited to the specific trades areas where cooperative education models have been introduced and may not provide an accurate indication of how successful the trades co-op would be in other trade areas.

Delimitations

1. This study was delimited to the British Columbia apprenticeship system.
2. The study was conducted during 1996-1997.
3. The study was delimited to eight trades programs operating within the British Columbia apprenticeship system.

Definition of Terms

Apprentice -- An apprentice has been defined in a number of ways. The Concise Oxford Dictionary defines an apprentice as "a person who is learning a trade by being employed in it for an agreed period of time at low wages. A beginner or a novice."

Apprenticeship -- Apprenticeship: Middle English from Old French "aprendre" to learn or to comprehend. Apprenticeship was heard of first as early as the eleventh century, but came to prominence in the middle ages. Although much in apprenticeship has changed over the years, the fundamentals remain. An apprenticeship essentially is an agreement between an employer, who agrees to train an apprentice in a particular trade. The training takes place for a predetermined period of time, usually three to four years, at the end of which time the apprentice is certified as a journeyman. The term "journeyman" refers to a practice related to stone masons in the middle ages. Upon completion of an apprenticeship, a mason would journey around the countryside traveling from job to job gaining experience and broadening his knowledge of the trade. This term is used in the present day to describe an individual who has completed an apprenticeship.

Cooperative Education -- experiential learning. Cooperative education is a term that is used to describe a wide range of experiential learning models. No definitive

description for cooperative education had been put forward. Wilson, Stull, and Visonhaler (1996) suggests that "cooperative education programs may contain: job shadowing, externships, field studies, practicums, independent studies, internships, apprenticeships, and school to work" (p. 160). Thompson and Hobermon (1990) suggest, "Occupational training is the primary focus of apprenticeships while employment experiences are fully blended with educational objectives in cooperative education programs" (p. 7). Ricks, Van Gyn, Branton, Cut, Loken, and Ney (1990) state: ". . . there is no clear or consistent conceptualization of cooperative education" (p. 7). Ricks (1994) states:

> Currently cooperative education is defined through program structure rather than curriculum. What this means is that if a program meets the criteria, then it is a cooperative education program, e.g. certain number of work terms, certain number of academic terms. Terms must have a specific length of time, students are paid for the work term and so on. (p. 18)

Organization of the Thesis

Chapter One provides an introduction to the project and presents the assumptions, limitations, delimitations, and definition of terms to be used in the study. Chapter Two reviews the literature pertinent to the problems that are investigated in this study. Chapter Three presents the setting, a history of the development of trades co-op in the British Columbia system and provides a contextual framework for the study. Chapter Four presents a statistical analysis of the issues related to trades co-op programs and the traditional delivery model. Chapter Five includes a summary of the findings, conclusions and recommendations for further research.

CHAPTER TWO

LITERATURE REVIEW

Often the evaluation of a program begins with an in-depth description of the program. However, it is necessary to consider the larger field of apprenticeship and industrial training and how trades co-op fits within the larger picture. In order to bring perspective to the topic of trades co-op, the review will consider a number of related areas: apprenticeship training, the cooperative education model and its application in the industrial field, and general trends in industrial training. These issues will also be considered from an international perspective. This paper deals specifically with trades cooperative education programs. That is, where the students/apprentices complete an apprenticeship training program and ultimately receive certification as a journeyman in their specific trade. Although an extensive volume of material dealing with cooperative education, apprenticeship training, and industrial education are to be found, an exhaustive search of the literature has uncovered no material dealing specifically with the type of trades cooperative education program dealt with in this paper. Much has been written with regard to what are described as "trades cooperative programs." However, upon closer examination, these documents have invariably described entry level training programs where the student may receive some credit towards the completion of their apprenticeship (time in trade), but are not formally indentured as apprentices and cannot complete their trades training within the training program (co-op program). The majority of these training initiatives could well be described as programs of a cooperative nature where several stakeholders have acted in a cooperative manner in order to establish a

training program. For the purposes of this document, a "cooperative education program" shall be considered to be a program based upon the original model where the program formally integrates academic study and practical experience, and the program leads to a formal credential. As no material specifically dealing with "trades co-op" has been uncovered, background information and comparisons will be drawn from the fields of industrial training and generic cooperative education.

Cooperative Education

Saltmarsh (1992) wrote:

> When justification is needed for the practice of cooperative education, John Dewey's educational philosophy is resurrected to validate experiential learning and cultivate acceptance among skeptics and detractors within what is referred to as higher education's "mainstream", meaning the traditional currents of liberal education....Dewey's honored place in the mythology of the profession remains firmly secure for the simple reason that what he had to say about education and experience supports the beliefs that the workplace, in conjunction with the classroom, serves as an arena in which significant learning takes place. (p. 6)

In discussing Dewey's thoughts on education and social conscience, Saltmarsh (1992) stated:

> Dewey's philosophy emerged during the late 19th and the early 20th century at a time when the root assumptions of Anglo-Saxon social theory challenged the selfish individualism, social dislocation, and cultural fragmentation associated with industrial capitalism. Technological innovation and economic aggregations fueled the discovery of increasing interdependence of individuals and institutions. (p. 6)

Dewey's concepts of social justice and the development of individual potential are intertwined with Dewey's vision of transformative education. As Westbrook (1991) explains it, it was Dewey's belief "that democracy as an ethical ideal calls upon men and women to build communities in which the necessary opportunities and resources are

available for every individual to realize his or her capabilities and power through participation in political, social, and cultural life" (p. 15).

Dewey's vision of educational progression has not materialized. Saltmarsh (1992) states "Dewey's transformational vision – his counterhegemonic paradigm – asserts an educational ideal that would fuel progressive social change. This model, however, bears little resemblance to the practice of cooperative education today" (p. 10). The model from which contemporary cooperative education takes its roots is based in the work of Herman Schneider. Noble (1977) asserts, "... the 'cooperative movement' combining academic and industrial training, was one manifestation of an educational apparatus created to meet the needs of the capitalist production process" (p. 169). Cooperative education, as conceived by Schneider, forged a link between the university and corporations effecting "the transformation of engineering into a unit of the industrial system" (Noble, 1977; cited in Saltmarsh, 1992, p. 10). Noble explains,

> . . . that professional engineers in the new science-based industrial corporations sought to bring both the form and the content of that education in line with what they perceived to be the immediate personnel needs of industry and the long-range requirements of controlled corporate development. (p. 169)

The "Cooperative Education Model" is widely used in the educational field around the world. Cutt and Loken (1995) found that,

> Expansion of cooperative education systems in Canada in recent years demonstrates the interest shared by many countries in cooperative education as an educational strategy. In Canada, from 1978-1991, the number of post-secondary institutions offering programs increased from 21 to 85 and the number of students increased from 13,000 to 43,000. (p. 95)

Cooperative education, originally an academic model, found many of its first successes in the "engineering" field, and is now to be found in one form or another in almost every educational endeavour. In recent years, the "co-op" model has been used more and more extensively in the vocational field, and is proving to be an effective delivery vehicle for vocational education. "Cooperative education" which "formally integrates theoretical study with practical experience" is a natural partner for vocational education, and is being seen more and more as an educational/training option or model that can address the changing needs of vocational or industrial education/training. Grubb (1995) stated that:

> The neglect of co-op education is unfortunate, partly because co-op provides a variety of skills necessary to employers – the usual claim of its advocates. However, an equally powerful advantage is that co-op education is perfectly suited to the requirements of the sub-baccalaureate labor market, the labor market in which the community colleges and technical institutes operate. . . . The sub-baccalaureate labor market – the group with at least a high school diploma but less than a baccalaureate degree – is a large and rapidly growing part of the market force. The group with "some college" represented 13.1% of the labor force in 1967, while those with a high school diploma increased from 36.3% to 39.6%. Thus, the sub-baccalaureate labor market includes about three fifths of all workers. (p. 6)

Baker-Loges and Duckworth (1991) stated that,

> The development of America's human capital for the future is dependant on a better quality education, both academic and technological. . . . Cooperative education is the only collaborative program that has a successful track record of involving business, industry, and education in joint training efforts. (p. 253)

Thompson and Hobermon (1990) stated,

> Occupational training is the primary focus of apprenticeships while employment experiences are carefully blended with educational objectives in cooperative education programs. By updating and blending apprenticeship into existing cooperative education programs, more American youth could move easily from school to work. (p. 7)

Taylor (1995) asserts that:

> Anyone involved in our economy recognizes that America is restructuring the world of work. The 1990-1991 recession forces thousands of employers to "downsize" and "right size" their organizations. These experiences have motivated employers to reinvent the workplace. Work is more high-tech, the workplace is leaner and there seems to be a management shift away from Taylorism and scientific management. Participatory management, teamwork and total quality are some of the buzz words of the brave new workplace. . . . Co-op prepares students for the workplace of tomorrow and bridges the transition from school to work. Co-op should be the school-to-work transition program for all secondary and post-secondary students. (p. 24)

Davis (1971) found that:

> Cooperative education is neither an experiment nor an innovation; it is a program of proven worth which has existed in various forms since the first program was begun at the University of Cincinnati in 1906. . . . As traditional classroom increasingly becomes identified as a key source of student discontent, cooperative education promises to be an attractive option as an alternate learning experience. (p. 145)

Demetriou (1995) found "Cooperative education and other experiential learning programs have proven in the past to be effective methodologies for the development of a trained and educated workforce" (p. 34). Wilson et al. (1996) found that,

> The nature of the workplace is undergoing radical change, and consequently the needs of the workplace are changing dramatically. . . . The worker cannot find security in the job; it must be found in his or her own competencies. . . . Employers, when hiring, in order of importance look for: attitude, communication skills, experience, industry based credentials certifying skills, and finally years of schooling completed. . . . Employers are looking for new employees with work experience as opposed to hiring students right out of school. (p. 154)

Traditional vocational training models have in many cases not been able to adapt rapidly enough to deal with the accelerating pace of change in the workplace. Wilson et al. (1996) stated, "that cooperative education and other work based learning strategies offer

an effective remedy for the problems of the changing needs and demands of students, employers, institutions, and ultimately of society itself" (p. 155). Wilson et al. identified many of the advantages of the "co-op model" and articulated some of the challenges facing it in the coming years. Although their work relates predominantly to university education, it is interesting to observe that many trends found in the academic field, resistance to change, and unwillingness to accept new ideas, are directly paralleled in the vocational world. Wilson et al. found that, "Co-op continues, despite contrary efforts, to be perceived mostly as an add-on service only peripherally related to the educational mission of colleges and universities" (p. 157). Similar perceptions are held regarding "trades co-op" by the administrative bodies and main stakeholders in the apprenticeship field. Wilson et al. found, "that Cooperative Education employers must be viewed as partners in the educative process" (p. 159). Employers are very often found only on the periphery of the "co-op" development process. The level of actual involvement in program or curriculum development is very low. This situation is paralleled in the apprenticeship training system. In theory, the apprenticeship training system is industry driven. However, although mechanisms are in place to provide for employer input, real input by mainstream employers tends to be minimal. Schaafsma (1996) provides further insight into this dilemma. He states that, "many persons that I spoke with noted that the strength of a co-op program appears to be directly associated with the quality of the communication links established between the student, the workplace supervisor/mentor and the university-based administrator of faculty facilitator" (p. 87). Schaafsma further states that, "I am still left with the dominant view of co-op programs being constructed

around university programs, timetables and systems of placement" (p. 89). Many of Schaafsma's observations of the Australian system "Down Under" and Canadian institutions illustrate clearly that educational problems, and in this case cooperative education problems are more or less constant around the world. Clearly, the present educational system, as it struggles to adapt to our rapidly changing world, is coming under increasing pressure to be more responsive to the needs of industry to produce graduates who are more immediately productive and have more highly developed, specifically targeted skills. Educational institutions are being required to produce graduates who possess sophisticated technical skills, well developed problem solving capabilities, and who are environmentally responsible and have a well developed sense of social conscience. Colleges and universities are required to be sensitive and responsive to the needs and demands of a growing range of minority and special interest groups and end users, to be more fiscally efficient, productive, and to offer programs that are relevant to the needs of the community they serve. One of the challenges facing educators in the coming years is the need to blend traditional academic education with vocational or technological training. Saltmarsh (1992) states, "Educators now face the compounded problem of how to enhance a liberal education while reducing the divergence between schools and the workplace and what to do about an educational system that is increasingly unsuccessful in preparing youth for work" (p. 13). It could be argued that future educational models, cooperative education or not, in the long run may ultimately resemble Dewey's vision of transformational educational progression than Schneider's more focused approach. The truth no doubt will lie somewhere between. Cooperative

education, however, may be one of the cornerstones around which a true marriage of academic and vocational/ technological disciplines can be brokered. Saltmarsh states, ". . . If cooperative education were seen as the crossroads of all disciplines as they relate to the workplace, then the deep abyss between academic learning and co-op practice would quickly vanish" (p. 14).

Apprenticeship

"Apprenticeship" or formal vocational training had its origins in Europe and there is some evidence that formal vocational training was taking place as early as the eleventh or twelfth centuries. It is generally accepted that apprenticeship in the form of a contractual training agreement between apprentice and journeyman really came into its own in the fifteenth century. In its original form, the apprentice would work and learn under the supervision and direction of a qualified tradesman. The period of apprenticeship would vary between trades and from place to place, but would normally be about seven years. Typically, the apprentice would live with his teacher, and would work as an unpaid servant for the period of his apprenticeship. It was often the case that the "master" or tradesman would be paid to provide the training by the apprentice's family. Apprentices no longer live with their masters and are paid for their work. However, it could be argued, that in some respects apprenticeship training has not changed significantly in the last five hundred years. The training time has been reduced to an average of four years. Although, by and large, this has only really been the case since the second world war. Apprenticeship is still essentially an industry training program where the majority of the training is done "on the job." The main changes that have taken place

since the turn of the century have been the introduction of standardized curriculum, and trade specific technical training. "Apprenticeship" remains predominantly an industry training program. A re-evaluation of vocational education and apprenticeship training in particular is underway across the country. Driven by the accelerating pace of technological change and the constant demand for more highly skilled people, apprenticeship is being viewed in a more positive light. Much emphasis has been placed on alternate delivery methods, strategies to make the traditional system more responsive to the needs of the end user, and to changing technology. Cantor (1995) stated that:

> Apprenticeships have proven to be more than a tool. They are a mechanism for potentially bringing together, in a planned and cohesive manner, those human and capital resources within a community to solve human resource education and business needs. They are a cost-effective mechanism for employers and government, sometimes in cooperation with organized labor, to provide worker training cooperatively with community colleges. (p. 66)

A wide range of programs and delivery models have grown up around the apprenticeship model. In Apprenticeships Link Community-Technical Colleges, Cantor documents a number of case studies of "cooperative apprenticeship" programs, states the advantages of this type of training, and highlights some of the common elements present in successful programs. Cantor (1995) states, "The concept of apprenticeship program design stresses flexibility. Employers and union locals and community colleges can develop programs to meet their needs, based on their particular manufacturers' or union national's models" (p. 66). Cantor describes cooperative apprenticeship programs operating in a variety of industrial situations throughout the United States. These range from most of the domestic and off shore automotive manufacturers through high tech

manufacturing organizations to dry dock companies. In every case, the key elements are present. Cantor states,

> . . . we identified collaboration as the single most important ingredient for successful apprenticeship development. Collaboration on this type of program produces benefits for all the stakeholders. The obvious benefits to the employer are access to a pool of skilled employees or potential employees whose training has been targeted specifically to meet company needs. Added benefits such as training taking place at times that are most convenient or suitable to the company may also be part of the package. (p. 60)

Cantor found that colleges benefitted from these partnerships in the "... recruitment of highly skilled people to teach in the programs" and in the "ability to access corporate training for their educational staff" (p. 60).

For many years vocational education and apprenticeship training in particular were seen and promoted by schools, colleges, and society at large as a less desirable option than a university education. Policies such as "Access for All" contributed significantly to the expansion of college and university placements to accommodate the predicted increase in demand for university placements, and to the perception in the eyes of the public that this route was the most appropriate and most likely to provide them with a sound education and realistic employment opportunities. Evidence of this type of thinking in education can be found in Canada, in the United States, and in other countries around the globe. Bailey (1993) stated, "There is a growing consensus that the secondary school systems in the United States is too oriented towards college, thereby neglecting the majority of students who will never receive a baccalaureate degree" (p. 5). The "A Nation at Risk" document in the United States had a similar impact as did the "Access for All" policy in Canada. Bailey states:

> In order to restore educational excellence and economic competitiveness, in 1993 "A Nation at Risk" called for a return to secondary education based squarely on the traditional academic pre-college model. Reformers sought to recapture what they saw as a lost golden age, as the title of William Bennett's book To Reclaim a Legacy made clear. Perhaps it would also bring back the post-World War Two international United States economic predominance. (p. 5)

A re-evaluation of vocational education and particularly apprenticeship training has been under way across the country and around the world for some years. According to Packert (1996), when he first came to office "President Bill Clinton made apprenticeship programs his first educational priority" (p. 683). Packert further states:

> The private sector offered its own 1990 report from the commission on Skills of the American Workforce, calling for a "new national system of preparing young people with certifiable, transferable and broadly flexible skills which they could acquire in work-based settings as well as in more conventional schools and colleges. (p. 683)

Many of the myths and misconceptions held by individuals, institutions, or society in general, are being re-examined. Packert states:

> In Charles Dickens' classic tale *Oliver Twist*, the eponymous hero is sold as an apprentice to escape the squalor of the orphans' home in which he has spent his short and miserable life. To advertise the labor of the young boy, a sign is hung around his neck, "To let" and five pounds will be paid to anyone who will take possession of him. Unfortunately, this Dickensian image of apprenticeships persists today. Many in society view apprenticeships as a last resort for young people who have no other alternatives. (p. 682)

Industry, in casting about for a solution to their problems securing skilled labor, are turning more and more to apprenticeship as an option. Packert (1996) found:

> Schools and industries together are only beginning to realize the potential bonanza of using apprenticeships to fill the labor void that is not metaphorically around the corner, but already here in the 1990s. Technology has all but eliminated unskilled labor positions, while the need for semiskilled and highly skilled grows.

> Unfortunately, schools and training programs have fallen short of providing the technically trained workers who are now in demand. As the present labor force ages, trained new employees to take those workers' places are increasingly in short supply. Where will the trained workers come from? (p. 682)

The easily accessible pool of highly skilled labor that was once at the finger tips of industry is gone, probably forever, and that the only realistic solution is to train their own. Packert (1996) stated:

> Once society finally discards its snobbish notion that "kids who don't go to college are dumb," they will realize that the 62% of high school graduates who won't continue their education in a university this year are precisely the untapped resources the American economy needs. Apprenticeships offer a long-term solution to putting the economy back to work. (p. 684)

Bailey (1993) found that,

> By the early 1990s, youth apprenticeship had become one of the hottest topics in educational reform. Many policymakers and scholars made the pilgrimage to Europe to study apprenticeship systems there, returning with reports of serious youth hard at work learning to be skilled workers and responsible adults. (p. 4)

This represents a significant change in thinking and direction by educators and politicians indicating the beginning of a change of direction in the minds of some of the main stakeholders in education. Bailey states:

> In contrast, less than 10 years ago, apprenticeship was simply not on the social agenda. Most reformers, if they thought about apprenticeships at all, probably considered it an anachronistic educational modality associated with discriminatory construction unions. Youth apprenticeship is now advanced not only as a solution to many social problems in this country but also as a strategy to restore U.S. productivity growth. (p. 5)

Employers are reconsidering their position on training and re-training of their staff. Bailey states,

> . . . The mass production system that supported much of the American post World War Two economic success was based on simplifying work and reducing the skills needed by workers. The general approach was to adjust work to the presumed low skills of the work force rather than to upgrade the work force so that it would be effective in a production system that required high skills. (p. 7)

It is well accepted that the mechanization of industry, particularly in production type occupations, has resulted in the loss of many jobs in recent years. To some extent the loss of jobs has been overestimated, particularly in the highly skilled areas. Companies are aware of this miscalculation, but may be slow to take action because of historical precedence. Bailey states,

> Some U.S. employers realize that they must move away from this traditional approach, and some progress has been made, but the legacy of past successes with the mass production strategy continues to exert a powerful influence. Thus, many employers still use traditional approaches to production in which learning and training are not significant components of the activities of the employee. (p. 7)

There is evidence that the demand for highly skilled workers in North America has reached crisis proportions. According to Wright, Belcourt, and Young (1996),

> Industry, too, generally has been unwilling to invest in apprenticeships, as skilled labor shortages could be made up though immigration. As our standard of living fell relative to other countries throughout the 1980s and 1990s, however, fewer trained individuals migrated to this country. The result is that in both Canada and the United States there is a critical shortage of skilled labor. In addition, only 30 percent of our high school graduates are expected to earn college diplomas or university degrees. (p. 17)

Importing skilled labor is becoming a less and less appealing or viable option for many companies and employers. As the market changes, the needs of each organization

becomes more specific and cannot be effectively dealt with by importing generic skilled labor from overseas. Wright et al. found that,

> Until recently, it was cheaper for companies to hire skilled immigrants from Europe than to train apprentices. Current trends in our labor market, however, are creating new demands. All sectors of North American industry will need to focus attention on training skilled workers; apprenticeship training is one of the most viable options. (p. 19)

This of course begs the question, are the mechanisms and training culture that are in place now capable of addressing this problem? Wright et al. were not convinced; they found that,

> Despite a resurgence of interest by governments, much of North America's apprenticeship system remains antiquated. Outmoded legislation, outdated curricula, poor pay for teachers, or archaic entry and completion regulations and low prestige entry modes still combine to discourage many young people from considering careers in the skilled trades. (p. 20)

Wright et al. further state,

> . . . new thinking may be required to realign vocational education into a more culturally-acceptable format. (p. 20)

In some sectors of the economy, particularly in the service sector where after sales service plays a significant role in economic success, new initiatives are emerging. One of the most progressive areas is the automotive industry. Cantor (1991) found:

> The U.S. automotive industry, domestic and import vehicle manufacturers, retail car dealerships, dealer trade associations, labor unions and after market suppliers have successfully adopted cooperative apprenticeship as a training process. The concept links community colleges and some secondary vocational technical schools with local auto dealers, their trades associations, vehicle manufacturers and independent repair garages. (p. 26)

This represents another variation on the apprenticeship model. Cantor (1991) commented, "The cooperative apprenticeship idea is a new twist on cooperative education

and work-based learning programs. At the same time it bears a strong resemblance to traditional apprenticeship" (p. 28). Vocational or trades credentials historically have not been eligible for college credit effectively dead ending formal professional progress. It has been suggested that this has had a significant influence on individuals evaluating a trade as a potential career path. The cooperative apprenticeship programs described by Cantor present a possible solution to the dilemma. Cantor states,

> Not all of these programs are called cooperative apprenticeship; yet all in some respects bear all the attributes of an apprenticeship. The car companies believe that by attaining an associate degree, a technician will have a desirable general and technical education and will have mastered vital communications, business management and diagnostic problem-solving skills that are requisites for dealing successfully with customers. (p. 26)

Denby (1991) found:

> College credit is not always part of an apprenticeship program. But apprentices want it; they feel what they are learning is just as valuable as college experience. Several programs, such as those at Newport News Shipbuilding and General Dynamics, work with local community colleges to make this happen. (p. 68)

British Columbia Apprenticeship

The apprenticeship system in British Columbia has been wrestling with the issues such as rapid growth, technological change, and decentralization for many years. A number of studies have been carried out on the system on behalf of the provincial government. A review of two studies carried out a number of years apart will provide some historical perspective on the factors that influenced the evolution of apprenticeship in British Columbia over the last 20 years, and will provide some insight into the issues dealt with in this paper related to apprenticeship training in the northeast. The

"Commission on Vocational, Technical, and Trades Training in British Columbia" presented its report in 1977. The Commission dealt with the status and future needs of the apprenticeship training system in British Columbia. The report was based on the results of hearings held around the province, briefs received from interested parties, and interviews with knowledgeable individuals. The Commission also visited several European countries to study their apprenticeship training systems. A number of the issues identified by the Commission are relevant to this document.

The concentration of technical training in the lower mainland was identified as a major issue in almost every community outside the lower mainland.

> At every center visited in the north and in the interior, the demand for decentralized training was reiterated. Students, colleges staff, employers, and organized labor argue that the government should provide training facilities in as many regions as is economically possible. They contend that too much vocational training is concentrated in the lower mainland, and that it should be offered near both the home and the place of work. Apprentices stressed family concerns over the parent being away for extended periods, and the cost and availability of suitable housing in the metropolitan area. (p. 23)

The Commission recognized that there was a shortage of skilled trades people in the northeast part of the province and identified some of the contributing factors.

> There are shortages of journeymen in the skilled trades, particularly in the northern and eastern parts of the province. Vacancies for millwrights, heavy-duty mechanics, electricians, plumbers, and pipefitters also exist at a time of high unemployment. At the same time, the Commission is aware of long waiting lists of applicants to enter pre-apprentice trades. It is obvious that the system is deficient. The commission recognizes that not all regional problems are caused by a lack of training and that the problems of high turnover or a lack of tradesmen may be attributable to local conditions. [Further] Journeymen practicing their trades have followed a typical program: a pre-apprenticeship program of five months or direct entry into the trade, followed by four years of on-the-job training

> that includes a yearly four-to-eight weeks in-school training period. This programing works well provided that industry indentures enough apprentices. Unfortunately, this has not been the case in British Columbia. (p. 26)

As early as 1977, the Commission identified the demand for more technical training within the apprenticeship system, and drew some comparisons with European countries.

> In British Columbia, most trades apprentices spend four to eight weeks a year in the classroom, which may have been preceded by a 20-week pre-apprenticeship program. This is contrasted with 28 weeks in the first year for apprentices in the United Kingdom, and 12 weeks in succeeding years. Apprenticeships still run three and four years. In West Germany, the apprentice spends 20 weeks in vocational school, 20 weeks studying academic subjects (language, mathematics, physics), and 12 weeks on the job in the first year; 13 weeks in the classroom in the second year, and four weeks in the last nine months of the 33 month apprenticeship. Increased classroom training has resulted in reduced time to achieve journeyman status. It is significant that there were several requests to increase the period of school contact. There were no presentations calling for a reduction of classroom time. (p. 27)

The Commission recognized the difficulty of predicting demand for skilled tradespeople and recognized the need for a regional approach to the problem.

> Forecasting labor-force demands for skilled and semi-skilled workers is a difficult exercise. Long-term economic cycles and long-term population shifts require long-term forecasting. Regional demands for skilled labor require regional solutions based on regional and local forecasts; for example, a surplus of tradesmen in Vancouver does not prevent a shortage in Cranbrook or Kitimat. Short-term forecasts are also needed to improve the ability of the system to correctively respond to short-term training needs. (p. 27)

The Commission clearly understood the need for a long-term strategy to carry the apprenticeship system through the economic cycles and the fluctuating demand for skilled tradespeople.

> A system designed to produce skilled tradesmen through a combination of school training and on-the-job training over four years cannot be shut off and turned on. The demand for skilled workers in the labor force is a variable quantity dependent on the level of economic activity at a given time. The supply of youth seeking enrollment in training programs will decrease if present population trends continue. It is of particular importance that labor and management work together with government to obviate any suspicion that either party is deliberately attempting to upset the planned-for equilibrium and thereby gain an unfair bargaining position. Moreover, it must be appreciated that these efforts have to be continuous and of a long-term nature to ensure continuing benefit and attainment of a high level of sophistication. (p. 30)

In the early eighties, a number of factors including a slow down in the economy raised questions about the continuing relevancy of the apprenticeship system in British Columbia as a vehicle for the delivery of skills training. It was during this period that the first real impact of accelerating technological change was felt on the apprenticeship system. A report was commissioned by the Provincial Apprenticeship Board who at that time were the governing body for apprenticeship training in the province. The focus of the report was to identify the present status and effectiveness of the apprenticeship system and to determine its future needs and its relevancy as a vehicle to deliver skills training in the province. The report was delivered to the Minister of Labor in 1984. This document addresses many of the issues that the apprenticeship system has been wrestling with in recent years and highlights a number of issues directly related to trades co-op. In its rationale for commissioning this study, the Board states:

> British Columbia requires skilled trades people to help build, maintain and operate the businesses and industries which drive its economy. Everyone agrees on that, whether times are good or bad. (p. 4)

Historically, the strength of the apprenticeship system has been directly related to the economic health of the province. Traditionally, the condition of the apprenticeship system has been measured in terms of the numbers of apprentices in the system.

> Five years ago, when British Columbia's economy was strong, the apprenticeship system's ability to meet a rising trade skills demand was tested. The principal challenge was to attract more candidates to apprenticeships, particularly in trades critical to industrial growth. By and large, the system met the challenge. The number of apprentices indentured in the province grew to a peak—in January 1992—of 18,925, representing 1.8% of the work force. (p. 4)

The report recognized that the economic recession of the early eighties triggered a fundamental re-evaluation of the apprenticeship system and its relevance to changing times.

> Things have changed. During the last two years, the economic recession superimposed upon technological change and new methods of training has resulted in a whole new series of questions about the methods used to provide British Columbia with the trade skills it needs. The relevancy of the apprenticeship system was among the questions. (p. 4)

At this time, the impact of technological change on the trades was recognized as a significant factor in training. Not only was the efficiency of the apprenticeship system (the ability to train sufficient numbers of apprentices) being questioned, but the relevancy of the apprenticeship system as a vehicle to deliver technical training effectively in the new economy was being questioned.

> As the number of apprentices being laid off grew, the Board began to hear people ask whether apprenticeship remained a cost-effective method of skills training. Others asked whether it continues to be an appropriate method to meet trade skill demands when, by its work-related nature, the number of people in apprenticeships is so closely tied to the ups and downs of economic activity. Some questioned whether apprenticeship

> remained valid at all in the face of the impact of technology on the workplace and on the tools used in training. (p. 4)

Many of the findings of the report supported the validity of the apprenticeship system. However, significance is placed on the fact that the success of the system depends on the cooperation and active participation of all the stakeholders.

> The present apprenticeship system is capable of adjustment to meet the future requirements of individuals, employers and the province as a whole—provided all parties carry out their roles and responsibilities effectively. (p. 5)

The report, in the eyes of the Board, validated the effectiveness of the apprenticeship system.

> The Board's conclusion that the present Apprenticeship Training System can evolve, and in fact is evolving, on a progressive and continuing basis to successfully meet those needs in British Columbia is widely shared. The apprenticeship system in the province is fundamentally sound and, while change is necessary, the Board accepts the admonition of some task force study participants that, "if it ain't broke, don't fix it." (p. 9)

Although some reference was made to changing technology, and some recommendations were made regarding new training methods and flexibility, the main focus of the recommendations was directed towards ensuring that the system could train enough apprentices.

> One fundamental question continues to loom large with the Board and with many of the study participants: Will the system train enough people to meet the trade skills needs of the province? The present system trains well. It <u>can train</u> enough. And the Board's recommendations, proposals and actions are aimed at ensuring that it does. (p. 9)

Findings

The reduction in the number of apprentices due to the downturn in the economy and the changes in future trades requirements illustrated the fact that the recruitment and training of apprentices for the future was a major concern for the Board.

> In the meantime, there is enough evidence of a need in the shorter term to make the Board and many employers share a concern that, without deliberate steps now to increase apprenticeship enrolment, the system may not meet the trade skills requirements of the British Columbia economy in the late 1980s. (p. 9)

The traditional approach to dealing with the demands for skilled labor was to bring skilled people in from overseas. Under the economic conditions at the time, and in the light of high unemployment figures, this approach was shown to be both politically unacceptable and logistically unfeasible.

> In the past, immigration has been viewed as a method of responding to the shortage of skilled personnel in Canada. With unemployment currently at unacceptably high levels and with the acceptance by industry that it has a responsibility to train, the Board strongly recommends that immigration not be used by the government as a policy tool to respond to future needs for skilled workers. Immigration also should not be treated by employers as a manpower recruitment vehicle, or as a substitute for training. (p. 14)

Historically, apprenticeship had never been in real danger of dying out as an institution. Concerns were now being raised regarding the minimal critical mass required to maintain the system.

> The fact is, though, that the apprenticeship system in British Columbia is not enrolling enough new trainees at the present time to meet the needs created by attrition. As this report is written, the number of apprentices hovers near 12,000. This would appear to be the minimum level which must be maintained. However, an intake averaging 500 per month is needed to sustain such a level of training. Recently, the intake has ranged between 200 and 400 a month—a significant shortfall. Heavier intakes at

> the beginning of the 1980s have resulted in today's enrolment bubble, with 65 percent of all indentured apprentices clustered in third and fourth year training. (p. 14)

A number of recommendations were made in the report with regard to ensuring that sufficient numbers of apprentices were trained in the future. At this time, the issue of co-operative apprenticeship training is raised for the first time.

> The Board recommends that the Ministry of Labor take the initiative in developing a mechanism to facilitate co-operative apprenticeship training programs among compatible groups of smaller employers. If such groups of employers are to provide training in co-operative programs, the government will have to take the leadership role and facilitate and fund the development. This will have to include a central mechanism (i.e., an employer association, joint employer-union entity or a government agency) to which the apprentices would be indentured and a means to co-ordinate and schedule a rotation of the apprentices in each pool among the participating employers. (p. 15)

Co-operative apprenticeship training as it is described in the report implies a co-operative approach to training apprentices within the traditional program, and makes no reference to cooperative education, that is the adoption of an alternate training model. The delivery of technical training was the subject of a number of recommendations in the report. The bulk of these recommendations were related to the location of training and scheduling of classes. All of these recommendations are relevant to the subject of this paper, but were made a number of years prior to the development of the Northern Lights College programs.

> The Board believes it is timely to take steps which will provide an increasingly local base to the technical training that is part of an apprenticeship. In the discussion of this matter, employers and apprentices often cited factors of cost and convenience in expressing their desire for technical training that is more locally based. The Board believes that moving in this direction will make the training system more flexible,

> more responsive, more socially desirable and more cost-effective. A significant step, which would bring technical training to the local level on an increasing scale is recommended below. In terms of flexibility, the Board believes this step will accommodate industry which may want to schedule apprentice absences for technical training on a day-release or night-school basis rather than by the "block release" for periods of up to eight weeks at a time that is typical now. It will create a challenge for the educational institutions, bringing a number of benefits without sacrificing quality. One result will be flexibility in class size. The recommended change will make the system more responsive by accommodating closer communication between the workplace and those who deliver technical training and by permitting the addition of, or deletion of training classes more readily to reflect economic change. The change also will reduce the need for an apprentice to leave home and family for several weeks at a time to attend classes in another community where, in spite of training allowances, the cost of maintaining a second residence for the period of technical training is a drain on the apprentice's resources. The Board is convinced that such results will mean more efficient delivery of technical training at lower cost to both the Ministry of Labor and to the participants (employers and apprentices). (p. 19)

The main substance of the report indicated that, by and large the apprenticeship system functioned well and fulfilled its role in providing skills training for the province. However, the report also supported the notion that change, not only in terms of how the system dealt with the changing demand, but in the type of delivery system may also be appropriate.

> The Board also recognizes that the present apprenticeship system, while fundamentally sound, may have to be augmented in the future to meet the province's skills training needs. It believes it is timely now to look at alternatives to and variations from the structured, supervised and regulated learning process of formal apprenticeship. . . . The report recognized that the ability to change was one of the key factors affecting the future success of apprenticeship. The Board supports the view and will encourage all of those involved in the apprenticeship training system to retain a flexibility which will permit the changing of content and methods to meet the province's needs. (p. 14)

The apprenticeship system in British Columbia had traditionally taken a conservative approach to delivery of training, scheduling of classes and flexibility of curriculum. The recession in the early eighties, in combination with the onset of rapid technological change and the need to deal with its effects, triggered the beginning of an irreversible change in the way that apprenticeship training will be delivered in British Columbia. The references to flexibility and alternate methods of delivery in the report may have been the first steps towards a paradigm shift in thinking about apprenticeship training. Indications at the time of writing suggest that the process is well under way, but not yet complete.

Situations similar to the problems faced by the British Columbia apprenticeship system can be found in countries around the world, particularly countries whose apprentice training system is based on the British or European model. The impact of the global recession in the early eighties and the simultaneous rapid acceleration of technological change triggered an educational re-evaluation similar to the process set in motion in British Columbia. New Zealand, which operates an apprenticeship system that is based on the British model, experienced similar problems to those seen in British Columbia in the late seventies and early eighties. Burleigh (1988) wrote:

> . . . skills have been acquired through training and education programs based on the British model that evolved through the craft guilds and was modified during the industrial revolution. Jointly controlled by unions and employers, this traditional system has served us well in the past, but it is not sufficiently responsive to the fast-changing needs of industry caught up in the information age. "Competency" rather than "time served" is likely to be the training watchword as we prepare for the next century. (p. 36)

The economic downturn produced similar outcomes to those in North America: rising unemployment, less companies willing to use apprentices and less apprentices in the system. Burleigh (1988) states, "By the late seventies this system was out of step with national needs" (p. 36). Typically, as in the British Columbia system, non-academic bound students provided the majority of the apprentices in the system. Driven by declining job opportunities, this tradition was also being challenged. Burleigh further states:

> Furthermore, apprenticeship tended to attract the less able students who left school at an early age. As apprenticeship opportunities declined with the shrinking job market in the late seventies, this group was being shut out by more highly educated young people who chose employment over further education. (p. 36)

A re-evaluation of the apprenticeship system in 1982 produced a number of strategies to address the problem. The approach adopted was in many ways similar to the recommendations made by the British Columbia "Future of Apprenticeship" report. Burleigh (1988) writes:

> Following recommendations by the vocational training council, legislation introduced in 1982 broadened the whole basis of apprenticeship. It provided for young people to be apprenticed to groups of firms or to industry as a whole as well as to individual employers. (p. 36)

Reticence to embrace change similar to that experienced in British Columbia was demonstrated by traditional elements. Burleigh (1988) writes:

> There were many who were determined not to support change to their own portion of the system but to see change effected in other areas. This resistance has resulted in very uneven progress in a number of areas, with the majority of resisters fighting to stay within traditional comfort zones and power bases. (p. 37)

New Zealand, in its drive to revitalize apprenticeship, took the process a step further and implemented legislation providing financial reward for training apprentices. Burleigh (1988) found:

> . . . the government, which had invested a great deal of money in the change process, provided both carrots and sticks. The carrots were increased block course subsidies that gave greater reimbursement to employers for loss of wages for those apprentices who were involved in off-job institution based formal training. (p. 37)

Britain, in many ways the cradle of apprenticeship, has also found itself wrestling with the problems of revitalization and the school to work transition. According to Cappelli (1996):

> Britain has also been faced with the school-to-work transition, young people who do not go to college have difficulty finding jobs, and employers complain about low skills among school leavers. Moreover, Britain's labor markets look increasingly like those in the U.S., especially with regard to the growing practice among employers of "poaching" skilled workers away from one another. (p. 680)

The importance of employer participation is also highlighted in the British experience. Cappelli (1996) found:

> Perhaps the most important lessons that the U.S. can learn from the British experience concern the need for incentives to prevent employers' interests from conflicting with the goal of improving skills. A number of training initiatives developed under the British revitalization model initiative suffered from a high dropout rate similar to that seen in many of the British Columbia trades co-op programs. (p. 680)

According to Cappelli:

> Unfortunately, the goal of securing jobs conflicted with the goal of developing skills. When labor markets were tight, as many as 80% of the YTS participants dropped out of the program before completing it, most to take full-time jobs with the employer who was providing their work experience. Employers already knew by observation what their trainees were capable of and were not interested in having them secure credentials. (p. 680)

This harks back to Cantor's findings regarding collaboration as the key component to success in cooperative trades training programs. It raises questions regarding the role of the employers in the initial development process, and the level of importance accorded their input. The German Dual system had been hailed as a leader in the world in the field of school to work transitions and apprenticeship training. The system is highly organized and deals with a large part of the population's educational needs. Pritchard (1992) stated:

> In 1990, there were 1.8 million young persons (40% female, 60% male) in training under the Dual System—that is, 70% of the age cohort. The fact that in the early 1970s only 50% of the age cohort was involved gives an indication of the developmental impetus of this education/training process. (p. 131)

While the British and North American apprenticeships focus on what are known as the hard trades: construction, welding and metal work, mechanics, etc., the German system encompasses a much larger pool of occupations. Pritchard (1992) found:

> Jobs for which an apprentice trains under the Dual System have clear specifications and precise designations. There are now about 430 of these 'officially-defined jobs' extending across industry, crafts, commerce, agriculture, and public and private service sectors. (p. 131)

Hurrelmann (1994) found :

> Many enrol in universities after completing an apprenticeship and, upon graduation, become highly desirable employees because of their combination of academic and practical preparation. Although this group constitutes a small and privileged minority, they demonstrate that the old barriers between vocational "training" and academic "education" are no longer insurmountable. (p. 335)

CHAPTER THREE

HISTORY OF TRADES COOPERATIVE EDUCATION AT NORTHERN LIGHTS COLLEGE

Cooperative Education in British Columbia

Cooperative education has traditionally been considered an academic model. It was first developed in the university system and can be found in one form or another in almost every type of university or college program offered in British Columbia. Cooperative education has been proven to be a very powerful model for the delivery of a variety of educational programs. There are presently over 43,000 students enrolled in cooperative education programs in British Columbia.

Accrediting Bodies

The two organizations that deal with issues of accreditation for cooperative education programs are the Canadian Association for Cooperative Education (CAFCE) which is a federal organization, and the Association for Cooperative Education (ACE) which is a provincial organization. Both organizations deal with standards for co-op programs and accreditation issues that have a direct impact on the credibility of the programs, and also have implications for program funding by both federal and provincial bodies.

Cooperative Education in the Trades

Identifying all the factors that influenced the introduction of cooperative education into the trades in British Columbia is a very complex task. However, it is clear that two of the main influences were the rapid increase in technological change starting in the

early eighties and the fluctuations in provincial economy. The Report on Apprenticeship by the Provincial Apprenticeship Board (1984) stated:

> . . . during the last two years the economic recession superimposed on technological change and new methods of training has resulted in a whole new series of questions about the methods used to provide British Columbia with the trade skills it needs. (p. 4)

Impact of Economic Fluctuations on the Apprenticeship System

Many of the trades programs in the province are directly related to the resource and construction sectors of the economy. The cycles of high and low activity have, to a great extent, driven the demand for qualified trades people. Traditionally, when there was high economic activity, typically in the areas of natural resource exploration and construction, the demand for trades people has increased, and has again dropped with a decline in activity. Historically, this phenomenon has always been problematic for the apprenticeship system. Striving to maintain a critical mass of apprentices during the down phase of the cycle, in order to be able to respond to the increasing demand of the up cycle, has always placed them in a reactive position. Throughout its 60 odd years of operation, as growth was relatively slow and steady, the situation had always been manageable. In the late seventies and early eighties, the economy in British Columbia entered what has been described as the province's first real period of recession. The economy slowed dramatically, and many of the organizations and companies who traditionally hired and trained apprentices either ceased hiring or closed their doors for good. The number of apprentices in training during this period dropped dramatically. A

large number of companies went out of business, and many of those who survived cut back on staff dramatically. During this period, it became very difficult to find an apprenticeship. Employers who were facing difficult economic times were reluctant to hire and train apprentices when there was an excess of experiences qualified trades people looking for work. This condition persisted into the mid-eighties, with the numbers of apprentices falling low enough to endanger the continuation of some long standing trades training programs. For example, the number of apprentices registered in the millwright trade fell below the level required to justify the continuation of technical training in the college system. Around this time the first real impact of rapid technological change was felt by the system. Dealing with technological change has always been an ongoing task of the apprenticeship training system and is addressed in a number of ways by the Provincial Apprenticeship Organization, the Apprenticeship Board, the Provincial Trades Advisory Committees, and the training deliverers or the colleges. The Provincial Apprenticeship Board is the policy setting entity for the apprenticeship system. Their function is to develop policy with respect to apprenticeship issues that will ensure that the system continues to meet the training needs of the industries it serves in the province. By the very nature of its mandate, to ensure the apprenticeship system meets the needs of industry, the Board is required to ensure that change, if needed, takes place. The Board is charged with developing and implementing policy that will ensure this happens. The Board deals specifically with policy and is advised on technical detail, curriculum content, etc., by the Trades Advisory Committees. PAB members are selected from a cross section of the industrial and college communities. The Trades Advisory

Committees, which are made up of industry content experts, are charged with the responsibility of making recommendations to the PAB regarding curriculum content and other technical issues related to their specific trade area. The Provincial Apprenticeship Organization administers the system throughout the province and acts as a liaison between the Board, the TACs, and the Colleges. By the mid-eighties, it had become clear, given the shortage of available apprenticeships and the low number of active apprentices in the system, that any kind of upturn in the economy would leave the apprenticeship system far behind. A dramatic shortage of trades people of the kind that existed in the mid-eighties had the potential to have a significant negative impact on the economy. Manpower Canada studies at that time indicated that within the next 10 years a dramatic shortage of skilled trades people would develop. Manpower figures suggested that the average age of a trades person in British Columbia at that time was over 50 years of age. Their studies indicated that in the coming 10 years approximately 50 percent of the trades people in the workforce would retire, leave the trade, or move on to some other occupation.

Crisis in the Apprenticeship System

In the mid-eighties, a number of factors combined to illustrate the fact that there was a crisis in the apprenticeship system. The steady decline in active apprenticeships in almost every trade right across the province over a number of years clearly indicated that employers were not willing or able to hire and train apprentices. The Report on Apprenticeship by the Provincial Apprenticeship Board (1984) stated, "Recently, the intake (of apprentices) has ranged between 200 and 400 a month, a significant shortfall"

(p. 14). The shortage of new people entering the trades was compounded by the alarming rate at which skilled people were leaving their various industries. The government's Access for All policy, whose goal was to provide access to university education to every British Columbian, also had something of an effect on the situation. The general trend in the school system was to counsel kids from an early age that the best route to success in life was to pursue a university education. In many cases, this translated into a university education as the only option. Throughout the mid-eighties and early nineties, the trades, as a career option, were treated as an appropriate choice only for those who could not make it to university.

The rapid pace of technological change that began to emerge in the mid to late eighties presented some very significant challenges for the system. Industry and the apprenticeship system have a long history of dealing with technological change. However, the introduction of the first generations of sophisticated computerization into many of the trades represented an unprecedented acceleration in the rate of technological change. In my opinion, after 12 years in trades training, the level of technological sophistication that was emerging triggered a re-evaluation of the traditional approach to the delivery of technical training. No indications that the rate of change would level out surfaced; indeed, it seemed clear that this was only the beginning of a trend that would continue indefinitely. A secondary problem that emerged at this time was the sheer volume of new material that had to be dealt with in the apprenticeship training sessions. Apprentices normally attend one six to eight week session of technical training in a college or training institute per year. Typically, an apprenticeship is four years in length

and may contain a pre-apprenticeship training program and four levels of technical training. Apprenticeships may range from three to five years in length, but the majority are four. Given the time spent in technical training (six to eight weeks) and given that there are only so many six to eight week cycles in a year, significantly increasing the volume of material that has to be delivered in that time frame presents some serious logistical problems in scheduling alone. Extending the training time for apprentices was not a straightforward process. Employers were not willing to have their employees away from productive work for more time than was necessary. Extended time away from home was also a hardship for the apprentices, and funding to extend the training time was not available. This situation was compounded by the fact that funding for apprenticeship training was normally reduced during economic downturns.

Traditionally, when there was a shortage of skilled labour the most commonly used strategy was to import trades people, particularly from Europe. In the mid-eighties, the opportunities to exercise this option were diminishing rapidly. The extensive economic difficulties many European countries had experienced in the seventies and eighties had left their apprenticeship systems in a more or less similar, if not worse, condition than British Columbia's, and had similarly depleted their training systems leaving very few people to import. High unemployment in British Columbia also contributed to a political disinclination to encourage further immigration. This combination of circumstances finally forced the Ministry of Skills Training and Labour and the Provincial Apprenticeship Organization to conclude that there was a crisis in the apprenticeship system. The Report on Apprenticeship by the Provincial Apprenticeship

Board (1984) stated: ". . . without deliberate steps now to increase apprenticeship enrollments the system may not meet the trade skills requirements of the British Columbia economy in the late 1980s" (p. 9).

Rationale for the First Trades Co-op Pilot Program

The rationale for developing pilot trades programs that were based on a cooperative education model was centred around the objective of fast tracking the development of apprentices. It was felt by the PAB and the Apprenticeship Organization that although the crisis the apprenticeship system was facing contained many elements, the most immediate was the need to deal with the shortage of skilled trades people. The first trades co-op programs, formally identified as having pilot program status only, were intended to explore the potential to more quickly develop skilled trades people. The first programs were developed and run by the College of New Caledonia in Prince George. The disciplines selected were Heavy Duty Mechanics and Automotive Mechanics. These trades were selected because these are two of the areas that are in most demand in an expanding economic environment in British Columbia. Both trades are also taught in most of the major centres in the province. The traditional apprenticeship model typically provided pre-apprenticeship training, and four levels of technical training spread over four years. The co-op model would compress the total time during which technical training took place into a twenty-four month period, while the actual in school time available for theoretical and practical training was significantly increased. The rationale for the increased in school time was in response to the demands of changing technology and the increased volume of material that needed to be dealt with in order to equip the

apprentices with the necessary knowledge and skills to be effective in industry. Significantly more technical training would be delivered in the initial stages of training than in the traditional system. Front end loading, as it was called, developed into a contentious issue in due course. One group held the view that providing the apprentices with more theoretical and practical training initially gave them a distinct advantage in terms of readiness to enter the field. Another group held that it provided too much theoretical material initially, and that without the practical experience to support the learning, much of it was lost to the apprentices. These pilot projects were intended to determine if it was feasible to effectively deliver quality apprenticeship training in this modified form. Would the apprentices graduating from these programs be of similar quality and equally capable as individuals who were trained in the traditional system? Would the graduates be acceptable to industry, and would they find employment and be able to compete with graduates of the traditional system? One of the main concerns was whether compressing the time over which training was normally delivered would be effective.

Problems Related to the Pilot Program

The Prince George programs ran up until 1994, at which time they were discontinued. The College of New Caledonia still offers entry level training programs in the Heavy Duty and Automotive trades, but they are no longer identified as trades co-op programs. As the first pilot programs in the province, they were very closely scrutinized by the Apprenticeship Organization and industry. In many ways, the first programs set the trend for how trades co-op would be viewed throughout the province. An

examination of the Prince George programs is of value in developing an understanding of the issues that impact on trades co-op programs in general, and sheds some light on the factors that contribute to their success or failure. Many of the problems encountered by the Prince George programs proved to be common to other programs around the province.

Prince George Pilot Programs

The Heavy Duty and Automotive pilot programs in the College of New Caledonia were started in the early 80s, and ran until 1994. Both programs used a very similar model. Each program was 24 months in length with a total of 16 weeks of school time in each program. Both programs accepted a new intake of 20 students each year. The traditional apprenticeship system continued to function during this time initiating new apprenticeships and processing existing apprentices through the system, including pre-apprenticeship programs for both trades. These programs were also offered at the College of New Caledonia. Both sets of students, in the same institution, were in competition for the same limited number of apprenticeships. Inevitably, the market for apprentices in both trade areas quickly became saturated. This situation, which amounts to a sort of built-in redundancy, suggests that during the development stage market capacity and/or potential saturation were either not considered or were miscalculated. Disregard or miscalculation of market capacity has emerged as a common trait in the development of trades co-op programs in British Columbia. Both of these programs marketed their students outside of their college region and placed students in communities throughout the province. This is consistent with the traditional approach taken by most academic

programs, and as placements were handled by the co-op department it seems natural that this approach would be adopted. However, placing trades students was a new field and can be somewhat more difficult to accomplish than traditional academic placements. Traditionally, co-op placements for university students are arranged by the co-op placement officer. Students bid on positions and may never be in direct contact with the host employer until the placement starts. This is often the case if the placement is a considerable distance from the college home base. Employers of trades people tend to have a different perspective on how they hire apprentices. This type of employer is usually looking for a long-term commitment from the employee. In the university system, most of the educating/training is done in school prior to the student's arrival at the work place. In the trade arena, 80 percent of the training is done on the job by the employer, and at the employer's expense. Employers who train apprentices expect to have to invest a considerable amount of money in the development of their skills, and in specialized training specific to the needs of their industry or particular situation. Consequently, this type of employer, by nature, is more discriminating when it comes to hiring staff and tends to be less willing to hire apprentices for a short term. This is particularly difficult if the employer is remote from the home base of the student. This conflict supports the suggestion that when the model for these programs was developed, that it was cloned directly from the academic world. This process turned out to be not as straightforward as it initially appeared. Securing work placements for the graduates from these programs was further complicated by several other factors. Although the Prince George programs were the official pilot programs for the province, other programs began

to spring up in other colleges in the late eighties. Programs in similar disciplines were developed in a number of colleges in the province that were in direct competition with the Prince George programs. Under these circumstances, it is inevitable that territorial conflicts began to emerge between colleges. The trend in all of the programs developed during this period was to follow the example of the College of New Caledonia and to transfer the co-op model directly from the academic world into the trades. This created a situation where a number of programs from different colleges were competing in each other's operating area for a limited number of work placements. The Provincial Apprenticeship Board was also involved. The Board had originally provided pilot status to the Prince George programs. The intention had been to run them for a period of time and evaluate the results. At one point, trades co-op programs were springing up in different parts of the province on a regular basis. No clear guidelines for these types of programs had been developed at that time. The Apprenticeship Organization was under pressure from the Ministry and from the colleges to support these new programs, but they had developed concerns regarding the quality of the training and the ability of the graduates to be effective in the workplace. The lack of clear guidelines for trades co-op, and the proliferation of new programs without the clear sanction of the PAB resulted in trades co-op becoming a political issue in British Columbia. The PAB found itself under steady pressure to recognize new programs, yet they had reason to doubt the viability of the co-op model in the trades. In either case, within a short period time the market was saturated in the Prince George area, and the impact in terms of limited work placements was felt by the programs.

Another factor contributing to market saturation may have been the structuring of federal funding for cooperative education programs. Up to $200,000 spread over four years was available at that time for each cooperative education program funded under federal guidelines. Federal funding guidelines contained many specific criteria related to length of program, content, etc. One of the most important was the stipulation that, in order to receive federal support, a program was required to start a new intake of students every year for four years. The federal government required accurate reporting of program progress, student numbers, and information on each new intake. This provided a strong incentive to colleges wishing to secure federal funding for their programs to develop a model that accommodated a new intake of students every year. Given this scenario, the need to secure funding could well have influenced the program development process in terms of de-emphasizing the importance of in depth market analysis.

Scheduling of School and Work Placements

The scheduling of school terms and work placements for both programs was based on the academic year as defined by the college. Technical training sessions and work terms scheduled to accommodate the academic year did not take into consideration the needs of the end users, the employers. Employers have traditionally had very little input into the scheduling of training in the traditional apprenticeship system. This has been an ongoing problem, as employers are not able to schedule their staff for training at the most opportune times for them. The college academic schedule traditionally has not taken into consideration the needs of employers and the seasonal fluctuations in their business. Removing valuable staff during peak times can have a significant economic

impact on an employer's business. This is especially the case for small businesses that do not have a large enough pool of staff to maintain full productivity when one or more staff members are away.

Quality of Graduates

Other programs that came into operation in the late eighties and early nineties faced many of the problems that the Prince George programs encountered. Feedback from industry indicated a lack of satisfaction with the quality of the graduates from these programs. The areas in which many of the graduates were found lacking were very similar: poor technical skills, lack of knowledge of industry they were entering, and poor attitude towards work were all areas that were identified by employers as problems.

Screening of applicants to these programs was very limited. There is no indication in the program literature that indicates that there was any participation by local employers or industry representatives in the selection process. It is most likely that the limited screening that was done was carried out by faculty or staff from the college co-op department. According to Ference Weicker (1996), "One of the key indicators of success in trades co-op programs is employer involvement in student/apprentice selection" (p. 62). Success in an apprenticeable trade requires a different approach than entrance into a university program. Entrance into a university program requires the student to have the appropriate academic prerequisites and the required grade point average. Success in the program is then based on academic performance. To be successful in an apprenticeable trade, the individual must be academically capable and able to deal with the theoretical and technical aspects of the trade. He or she must also be capable of developing skills

that will enable them to attain and maintain an acceptable level of productivity early in their apprenticeship. For the majority of their training time, eighty percent of their apprenticeship, they will be paid by the employer and they will be expected to be productive during that time. As the dropout rate for apprentices in the traditional training program is extremely high, employers must be discriminating in their selection of apprentices. Personal suitability and attitude play a major role in the success or failure of new apprentices entering the trades. During the first year of an apprenticeship, a significant investment is made in training the new apprentice by the employer. Lower production rates, mistakes and breakages are also a considerable cost to the employer. Consequently, fit or appropriateness for the trade are important factors to be considered in the selection of candidates for these types of programs. Employers are the most valuable source of information and experience in the selection of individuals who are most appropriate for and most likely to be successful. To exclude this group from the selection process, particularly at the pilot stage, would no doubt have had a negative impact on the success of the graduates in several ways:

1. A significant number of applicants to trades programs/trades co-op programs do not have a clear idea, or have a misinformed conception of what they are attempting to get involved in.

2. A significant number of applicants are motivated by their friends or family, and some are pressured to apply by the same or other groups. These individuals may to a greater or lesser extent believe that they will be successful in and satisfied by the trades.

Experience has shown that the dropout or failure rate amongst individuals who have no previous experience or knowledge of the trades prior to entering is extremely high. Failure on the part of the college or the cooperative education department to recognize this circumstance could have impacted negatively on the success of the students and the program in two ways:

1. The percentage of students entering these programs who have the skills and attitude needed to be successful would be significantly reduced.

2. Employers who have not been involved in the selection of the students would be less willing to take the risk of hiring students who are to a large part an unknown entity to them.

Volume

The volume of students processed through both programs also has implications for the quality of the graduates. The federal government funding requirement to start a new stream of students every year for the first four years of the program may also have had an impact on the selection of appropriate students for these programs. The need to recruit 20 new students every year for each program would quickly have depleted the pool of qualified/appropriate applicants. The need to maintain full classes in each new intake would have had the effect of watering down or easing any selection process that was in place. Even in a community the size of Prince George finding suitable candidates for these programs in the numbers required would have been a challenging undertaking.

Certification

The certification of trades co-op programs is the most controversial subject in the whole spectrum of issues that relates to the success or failure of trades co-op programs. The apprenticeship certification model adopted by the PAB for these early pilot programs had a negative effect on the potential success of the programs. The model used was the result of an evolutionary process rather than a pro-active development process. For some time, it appeared as if the PAB were in a reactive position to the first programs in terms of credit for training. Completion of an apprenticeship training program requires the apprentice to be certified in two areas. The apprentice must complete and document the required number of on-the-job hours of work, employed solely in the practice of his or her trade. Length of apprenticeships range from three to five years. However, on-the-job training time is normally counted in training hours. The average time required to complete an apprenticeship is 10,000 hours of on-the-job training. This period is normally spread over three to five years depending on the particular discipline. The average completion time for an apprentice is four years. This is based on a 40 hour work week. The required hours may be accumulated in a compressed time frame if overtime hours are included in the equation. However, the norm remains four years to complete. The apprentice must be approved to move through each year of apprenticeship training by the employer. The employer has the authority to accelerate the apprentice's progress, or to delay it, depending on performance. At the completion of the apprenticeship period, the employer must sign off the apprenticeship contract indicating that in his or her opinion the apprentice's skills and experience are consistent with journeyman status. The

final decision regarding the completion of apprenticeship lies with the employer. The apprentice must also complete the required levels of technical training for his or her particular trade. Each trade is unique in its requirements, however, most trades have a level of technical training required for each year of apprenticeship. As most trades are four years in duration, the majority of trades have four levels of technical training. A number of trades, Heavy Duty as an example, have a pre-requisite level, or job entry level, as a requirement to entering the trade. Technical training is delivered through the British Columbia college system and by a number of private training organizations. The college system is by far the largest body responsible for apprenticeship training. The college system provides over 95 percent of technical training and job entry training and entry level training for the apprenticeship system. Each institution is accredited by the Provincial Apprenticeship Organization, and is approved to provide apprenticeship training in a single or a group of trades. The institution may provide complete or partial training for a single trade, or complete or partial training for a number of trades depending on their location and demand. Credit for completion of any level of technical training may only be granted to an individual who is an indentured apprentice in a recognized trade. The only exception to this rule is for job entry programs. Students who complete a job entry program at an accredited institution may be granted credit for completion of the first level of technical training only. In most cases this is synonymous with level one training. Some trades do have a distinct pre-apprentice module specifically designed for entry level training.

Students who entered one of the pilot trades co-op programs were not apprentices and were therefore eligible for level one or entry level technical training credit only. This constituted a significant problem for the program and for the students. The students were receiving training in all four levels of technical training, but were only eligible to receive credit for level one. This situation left the students with a dilemma. To stay in the program and hope that the extra training they received would increase their chances of finding employment was their end goal, and to risk having to repeat some levels of training at a later date. Or, to leave the program and seek a traditional apprenticeship.

Both the Heavy Duty and Automotive programs by the nature of their apprenticeship certification credit tended to be perceived as, and to function as, job entry programs. The dropout rate for students who went on their first work experience and did not return for their second school term was very high. Many students dropped out of the pilot programs and entered the traditional apprenticeship system. From the student's point of view, as apprenticeship credit was limited, there would be very little advantage in returning to complete the second school term in the co-op program. Many of the students were offered traditional apprenticeships and completed their training in the traditional program.

The program as it stood provided no incentive for students who found a secure work placement to return and complete the second school term. They would receive no technical credit beyond level one. From the employer's point of view, if the student could not complete their technical training within the co-op model, there was little advantage in having the student return to the program. The main goal of the employer, having

identified an individual that fitted well in their organization, was to have him or her complete the apprenticeship program and become certified in the trade. Students who were successful in securing a first work placement often did not return to the second school term as described earlier in the document. Many of the students who were not successful in securing a first work term did return to the programs. However, upon completion of their second school term they then found themselves in competition for work placements with students from the next intake seeking their first work placement. The tendency then was to treat these programs as entry level programs. This defeated the original intent which was to provide a fast track method of developing skilled trades people. So, the design or developmental limitations of these programs in some ways have contributed to their demise.

Northern Lights College Trades Cooperative Education Programs

Trades Training at Northern Lights College, Fort St. John Campus

Trades training at Northern Lights College was concentrated in the Dawson Creek campus until the early eighties. At that time, a number of trades programs and job entry programs were offered by NLC. The introduction of the aircraft maintenance program displaced the automotive job entry program which was then housed in the aircraft hanger building. Dawson Creek campus was originally a Canadian Forces base. At about the same time, plans were under way to construct the Fort St. John campus. It was decided that the automotive program would be moved to the Fort St. John campus at that time.

For a number of years, an automotive program following the traditional pre-apprenticeship format was offered on the Fort St. John campus. In the mid-eighties, the

TRAC program was introduced. Training Access, as it was known, was a self-paced competency based delivery program. Training offerings were gradually expanded to include heavy duty and small engine mechanics. In later years, the Commercial Transport competency was also included. In the late eighties, an autobody repair and refinishing program was also established at the job entry level. The TRAC program with its self-paced competency based format did not prove to be an appropriate delivery model for trades job entry programs. The system had some inherent flaws that made high quality training very difficult.

The TRAC program was a modularized self-paced program. The program was broken down into three main components: a common core which contained all the generic safety and basic concept type information; an occupational core which contained more advanced concepts and theories; and the speciality core which was dedicated to the particular trade area chosen by the student. To complete the program, students were required to study each module and pass a module exam before progressing to the next module. In parallel with this process, the student was required to complete a list of practical competencies that corresponded with each module. Both the theoretical examination and the practical shop competency had to be completed successfully before the student could progress to the next module.

The TRAC system at NLC Fort St. John was in operation from the mid-eighties until the early nineties when the trades co-op programs were introduced. The TRAC system was not successful and was gradually fazed out right across the province.

Problems: self-paced programs require a very high degree of motivation on the part of the student. Most self-paced programs such as traditional correspondence programs see an extremely high dropout rate, often in the mid 90 percent range. The TRAC program proved to be no different. The average student entering the TRAC program was not highly motivated and did not have the kind of organizational skills needed to be successful in this type of training. Many students dropped out or fell so far behind that they found it impossible to complete in a reasonable period of time. For the individual who was highly motivated, the program worked well. Such an individual could complete the program in a very short period of time and be out in the workforce ahead of his fellow students. This situation was a rarity, and very few students completed the program ahead of schedule.

Instructors in this program were seen as resource people. Their role was to be available to help the students if they had a problem, to provide support and guidance related to materials in the modules, and to deal with issues related to tests results. Instructors were also responsible for organizing and scheduling practical work for the students. The instructor was responsible for guiding the student through the practical, ensuring safe working procedures were followed, and evaluating the students' performance. The instructor would sign off each practical as the student completed it. Instructors were not allowed to teach classes or deliver organized instruction of any kind in the TRAC system.

Problems. The success rate for students in these job entry programs was very low. The dropout rate was high, and it was difficult to determine what level of skill the

graduates did have at the end of the program. Instructor burnout was very high in this system. Almost every student progressed at a different rate. This meant that for a class of 15 students, the instructor was often required to deal with the same problem 15 times. Shop practical work also had to be repeated on the same ratio.

The program had no entrance requirement. Even though entrance requirements for the trades involved were grade 10, at that time, these standards were not enforced. Many students had literacy levels well below what was required to function in industry. These problems often did not become apparent for some time. As there was no mechanism in place to counsel students to deal with their basic educational problems prior to entering the program, these problems had to be addressed in an ad hoc way during the program. This further slowed down student progress. The system was attractive to the Ministry as in theory one instructor could deal with the needs of more students than in the traditional system, thereby increasing efficiency. The students were not well received by industry and the program developed a very poor reputation amongst local employers. Local employers expressed concern that the program did not meet their needs, did not provide the kind of training that they required, and that the TRAC concept was not appropriate for trades training.

NLC had been aware of the fact that the TRAC program was not well received by local employers, and that the success rate for the graduates had been very low for some time. The opportunity to bring about change in this situation as is often the case came when the program was in jeopardy of being closed down. In the early nineties, the autobody job entry program was closed down. This program had been initially

established with very little market research. The market in the northeast is clearly not large enough to justify the operation of this type of program. The program ran for two years and, due to lack of enrolment, was closed down. This event triggered a re-evaluation of the trades programs and presented an opportunity to bring about change.

Proposal. At this time, a proposal for a new direction for trades training at the Fort St. John campus was presented to NLC. The proposal suggested that Northern Lights College, Fort St. John Campus, should adopt a different approach to the development and operation of its trades programs. The college should focus on the development of training programs that not only meets the needs of the local employers, but in a fundamental way are driven by the needs of industry. The industry, as a group, should be given authority to make the most important decisions regarding program development, implementation, curriculum content, program length, start date, and duration of training. This was not to say that the college would abdicate its responsibilities, but that a governance model be developed for the trades programs that allowed industry real participation in the decision making process.

The idea of shared decision making on college program issues was a new concept for administration. There was no precedent for this type of arrangement in the British Columbia system. The need for partnerships with industry was a common topic in the Ministry and in college circles, but there was very little evidence of real partnerships to be found. The proposal submitted by the writer suggested that a new direction for the trades programs was needed. This direction would ensure that the trades programs were fulfilling their mandate to meet the needs of industry.

Clearly, the trades programs needed to look not only for a new direction, but for the right direction. Simply establishing another training model based upon ministry guidelines or instructor ideas was not appropriate. It was imperative that any new programs developed be successful, not only in the eyes of the college, but from the perspective of the end user or employers. No specific model was suggested in the proposal. The intention was that a partnership with industry should be established, and that industry, as represented by a program steering committee in partnership with college staff, would develop a model that was appropriate for the needs of the region. The key to the success of this proposal was that any agreement developed with an industry group had to be a real partnership. Shared authority and responsibility had to be built into the structure of the agreement. For this kind of partnership to be viable, some form of accountability had to be built into the model. Employers would only invest time and effort in the development of training programs if they were able to benefit from it, and if it was clear that their wishes would not be circumvented by the college.

Program Development Process

Goals of process. The main goal of the program development process that was initiated in 1989 was to develop trades training programs that would truly meet the needs of the industries they served in the northeast. The concept of having the programs driven by the needs of the industries they served was identified prior to the start of the process as the key to ensuring that the programs that were developed as a result of this process would be in tune with the real life needs of industry. It was felt that industry involvement in these programs was not only necessary during the development and implementation

stages, but as an ongoing integral part of the program. It was determined that to ensure that a realistic outcome resulted from the development process, that no preconceived ideas should be considered and that nothing should be taken for granted as to the needs or wishes of the industries involved. The process should start by determining if there was a need for training in the identified areas and if there was industry support for local training in these areas.

The two trades areas that were targeted for the first development project were the commercial transport and automotive trades. These disciplines were identified for several reasons. Both of these programs were offered as part of the TRAC program. Although they were not successful in that format, these programs were the ones that appeared to be in demand the most in the area. The shop facility at Fort St. John was already set up for automotive work and could also be adapted to the needs of a commercial transport program relatively easily. The other area that was also identified as a possible target area was heavy duty mechanics. The construction industry in the northeast is large and very powerful, employing large numbers of trades people. However, the construction industry in the early 1990s had demonstrated a history of fluctuating demand. This cycle was mostly driven by the demand in the natural resource industries in the region. The automotive and commercial transport industries, although also subject to seasonal and economic fluctuations, were much more stable. The program development process from the start of the initial survey until the first day of classes covered almost two and a half years.

Survey. The first step in the development process was to complete a survey of the northeastern region of the province. The two areas selected – Automotive and Commercial Transport – were targeted simultaneously. A data base of all the companies in the region who employed or would have need of automotive and commercial transport trades people was established (see Appendix). The survey targeted the whole college region. This is an area covering one third of the province of British Columbia.

The results of the phone survey were positive, clearly indicating a demand for training in both areas and a willingness on the part of industry in the region to participate in the development process. In the second stage of the survey, every employer was visited in person by the writer. Employers who had not been interested in or willing to participate in the program development process were contacted. The results of the survey clearly identified a chronic shortage of qualified trades people in the automotive and commercial transport areas. The survey also identified a strong desire on the part of employers throughout the northeastern part of the province to develop local based training programs for both of these trades. Further, the survey identified a strong desire on the part of local employers to participate in the development and ongoing operation of these programs.

Steering committees. As a result of the surveys, a steering committee for each program area – automotive and commercial transport – was established.

The mandates of both steering committees were identical:

1. To develop programs that would provide complete local apprenticeship training in each trade.

2. To ensure that the training model design enabled the program to change with the needs of the industry.

3. To ensure the school/work time frames match the seasonal fluctuations in each industry in a positive way.

4. To provide a steady supply of skilled, qualified trades people that would match the needs of the region without flooding the market. To allow for training in the specialized equipment found in the resource sector of the economy, and to provide training relevant to the extreme climatic conditions encountered in the region.

5. To maintain ongoing involvement with these programs ensuring they continue to evolve and change in response to the changing needs of the industries they served.

The steering committees met regularly every six to eight weeks through the first year until the plan for both programs was complete. Each steering committee worked independently, however the members on both committees cooperated on common issues that affected both programs. The commercial transport program started its first class in September, 1991. The automotive program started in January the following year.

Programs

The following is a description list of each of the eight trades co-op pilot programs currently recognized by the Provincial Apprenticeship Board.

Description of pilot programs. In August 1994, eight co-operative apprenticeship programs were accredited to operate in British Columbia as pilot programs. Since then, another eight pilot programs have been proposed for accreditation under the co-op apprenticeship guidelines. All co-op apprenticeship programs meet

provincial and/or national standards and use the appropriate provincial, competency based, modularized curriculum where applicable. Supplementary topics considered important by local industry steering committees and training institutes are added if desired. A brief description of the eight co-op programs included in the evaluation is provided in the following paragraphs. A summary of the entire program is found in Table 6. Summaries of the intakes in each program are shown below each college description.

1. Camousun College (Victoria)

In response to consultations with members of the Automotive Retailers Association and the Automotive Collision Repair Association of Southern Vancouver Island and to the increasingly technical character of modern automobiles, cooperative education programs in Automotive Collision Repair and Automotive Refinishing were developed by Camousun College. These two programs were designed in consultation with, and continue to be overseen by regional steering committees in order to ensure industry involvement in the programs. The proposal was considered and approved by the Trade Advisory Committee and delivery began in October, 1994, with 14 students. The second intake of students, in the fall of 1995, enrolled 21 apprentices out of the 33 potential students interviewed.

Camousun College's programs differ from the other programs examined in that apprentices in both programs study together for their first school term. The first term includes training in the following skills:

- Tools and equipment
- Sheet metal repair
- Spray gun and equipment
- Surface preparation
- Welding
- Plastics
- Handling of vehicle components
- Undercoating

- Vehicle construction
- Detailing
- Fire and safety, including WHMIS
- Mechanical components
- Pre-employment skills

After this initial term, apprentices are separated according to their specialty (auto collision repair or auto refinishing). During the first six months, apprentices may switch from one program to another. After each school term, students must pass a practical and theoretical exam with results of 70 percent or higher.

a) Automotive Collision Repair

The auto collision repair specialty is a 14 month program with terms alternating between school sessions and work placements, ending and starting with classroom terms. In the two specialized training terms, the topics covered are:

Technical Term 2

- Tools and equipment
- Sheet metal repair
- Plastic repairs
- R and R of glass
- MIG welding
- Mechanical components
- Upholstery
- Measuring and pulling of collision damage

Technical Term 3

- Structural repairs
- Insurance industry liaison
- Brake systems
- Suspension and steering
- Collision related mechanical components
- Electrical components

Once a student has completed the training program, he or she can become indentured to a specific employer before sitting the trade qualification exam.

b) Automotive Refinishing

The auto refinishing specialty is a 12 month program which begins with a school term, followed with two work weeks, and ending with a final classroom term. The second classroom training session covers the following topics:

- Review of the first term
- Theory of color
- Finessing
- Plastics refinishing
- Future trends
- Understanding top coat materials
- Paint problems and repairs
- Pre-delivery
- Spray guns and equipment

Once the required apprenticeship period is completed, apprentices may challenge the Trades Qualifications and Interprovincial exams. Passing of these exams makes them eligible for certification as a journeyperson. (See Table 1)

Table 1

Camosun College

CAMOSUN COLLEGE

Order and Length of Program Components in Weeks

School	Work	School	Work	School	Work	School	Total School	Total Work
Auto Collision Repair								
13	13	8	17	8	-	-	29	30
Auto Refinishing								
13	13	17	8	-	-	-	21	30

2. Okanagan University College (Kelowna)

Okanagan University College has had co-operative trades programs available for several years. Two of these programs were accredited for the pilot co-op apprenticeship program in 1994. Since being accredited by the Provincial Apprenticeship Board in 1994, these two programs have each accepted two intakes of students.

a) Collision Repair Technician

This program was developed by Okanagan University College to provide advanced collision repair training. The students receive all the technical training required for the four year apprenticeship program plus up-to-date repair techniques. The first academic term of 22 weeks covers basic shop practices, fundamental skills, and work ethics. This first term is followed by a work placement of 27 weeks. The second academic session expands on skills learned in the first term and focuses on structural repairs. The subsequent co-op work term is again 17 weeks long. To complete the apprenticeship program, the students must then complete two and a half years of work experience followed by a school term of five weeks before challenging the appropriate provincial and/or interprovincial examinations.

b) Automotive Technician

Okanagan University College developed this co-op program to provide advanced automotive technical training. It was designed with the co-operation of the automotive industry to cover all the technical training required for the four year apprenticeship program, plus advanced specialty repair and diagnostic techniques. The program consists of alternating academic and co-op work terms. The first academic term provides an introduction to the automotive mechanical repair trade and focuses on repair techniques. The academic term is followed by a 17 week work term. The second academic session builds upon the student's skill and knowledge in service and repair. After completing another work placement term, students become indentured to employers. A final school

term completes the program in preparation for sitting of the Trades Qualification exam and/or interprovincial exam.

The Okanagan University College programs are advertised in their calendar as a one year program; a work term that occurs, in essence, after the student completes the one year program has been tacked on to meet the PAB guideline that the work experience comprises no less than 50 percent of the program. (See Table 2)

Table 2

Okanagan University College

OKANAGAN UNIVERSITY COLLEGE

Order and Length of Program Components in Weeks

School	Work	School	Work	School	Work	School	Total School	Total Work
Auto Collision Repair								
22	17	12	17	-	-	5 week review	34	39
Auto Technician								
25	12	14	28	-	-	-	39	40

3. British Columbia Institute of Technology (BCIT) (Vancouver)

BCIT began offering co-operative education programs in the technologies in 1984, following with co-op programs in the trades in 1987. One of the programs accredited under the pilot co-operative apprenticeship program, Auto Service Technician,

has been training students in this trade since 1987. The other program, Heating, Ventilation, Air-conditioning, and Refrigeration Technician, is a more recent addition to BCIT's co-operative training offerings.

a) Automotive Service Technician

BCIT designed this technician training program to meet the auto industry's need for skilled technicians, able to diagnose and repair today's sophisticated automotive systems. BCIT also wants graduates to have basic business skills in addition to technical training. The two year program integrates classroom study, practical shop work, and periods of work placement with industry employers. There are four 13 week academic sessions which alternate with three 13 week co-op work terms – beginning and ending with academic sessions. The program covers or exceeds all of the requirements of the provincial apprenticeship curriculum and includes enhancements such as computer applications, accounting essentials, customer relations, and troubleshooting.

b) Heating, Ventilation, Air-conditioning, and Refrigeration Technician

This two year co-op program offered through BCIT provides a foundation in basic refrigeration system design, installation, and service. The first year of the course is devoted to Direct Refrigeration Systems, while the second year includes a broad range of topics focused on HVAC & R systems design, operations, and controls. By the end of the program, students should understand refrigeration systems and components as well as electrical devices. They should also be capable of constructing, maintaining, and repairing HVAC & R systems and components, as well as applying principles of energy management and systems of design.

The academic terms and co-op work placements alternate in-class and work terms as shown below, beginning and ending with school terms. Graduates of this program are prepared to enter and complete the existing Refrigeration Apprenticeship Program with employers.

The heating, ventilation, air-conditioning program (HVAC) was introduced in the spring of 1994. Its third class began in April of 1996, bringing the total number of students enrolled in the program to 39. (See Table 3)

Table 3

BCIT

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

Order and Length of Program Components in Weeks

School	Work	School	Work	School	Work	School	Total School	Total Work
Auto Service Technician								
13	13	13	13	13	13	13	52	39
Heating, Ventilation, Air-conditioning								
20	20	10	20	10	-	-	40	40

4. Northern Lights College (Fort St. John Campus)

Northern Lights College first introduced the co-operative programs in 1991. These two programs were developed in response to regional industry demands which were not being met. Industry and college co-operation have been integral to these

programs from their inception. The Northern Lights College programs were used as models by the Provincial Apprenticeship Board when it developed guidelines for the pilot co-operative apprenticeship programs accredited in 1994.

a) Automotive Services Technician (Mechanic)

This Northern Lights College program responds to a severe shortage of mechanics/technicians in the Fort St. John area, and to specific problems faced by local employers due to high rates of turnover among qualified mechanics/technicians in the north. The program covers all technical training required for the four year automotive service technician apprenticeship program. During the program, students are taught technical skills such as use of power tools and welding equipment, as well as the key automotive systems and components such as brakes, frames, suspensions, cooling systems, exhausts, and electrical systems.

The automotive service program accepts up to 16 students/apprentices every second year who also participate in two six month work terms with employers. The program is overseen by a steering committee which includes local employers. The first program intake was in January, 1992, with 17 students. The next two intakes were somewhat smaller, with 11 students enrolling in 1994, and nine joining the program in 1996.

b) Commercial Transport Technician (Mechanic)

Local employers from the commercial transport industry initiated this program to deal with a persistent and severe shortage of mechanics in the area. A survey found that the local trucking industry would be highly supportive of the establishment of a new

training program to be based in Fort St. John, and that local employers would support the program provided they had input into program development and implementation. The Commercial Transport Technician program began in September of 1992, and accepts a new class of students every second year. The program lasts 24 months, during which all four levels of commercial transport technician training are completed. Some of the main topics covered include:

- Hydraulic systems
- Steering systems
- Frames, suspensions, and attachments
- Hydraulic brakes systems
- Air brake systems
- Air operated controls and accessories
- Electrical systems
- Drive train components
- Clutches
- Standard and automatic transmissions
- Drive axles, carriers, and differentials
- Engine support systems
- Arc welding

To date, the Commercial Transport program has had three intakes of students. (See Table 4)

Table 4

Northern Lights College

Northern Lights College								
Order and Length of Program Components in Weeks								
School	Work	School	Work	School	Work	School	Total School	Total Work
Commercial Transport Technician								
26 Sep-Feb	26 Mar-Aug	17 Sep-Dec	17 Jan-Jun	8 Jul-Aug	8	Review 4 weeks	51	51
Auto Service Technician								
26 Jan-Jun	26 Jul-Dec	17 Jan-Apr	26 May-Aug	8 Sep-Oct	-	Review 4 weeks	51	52

Rationale for commercial transport time frames.

1. **First period September - February (school)**

The fall is traditionally a quiet time in the commercial transport industry and is the logical time for the students to enter the program. During the first period in school, the students will gain the basic skills needed to make them productive in the work place.

2. **Second period March - August (work)**

It is advantageous for the industry to have the students enter the work force at this time for several reasons. As winter break-up starts at this time of year and most of the oil and gas field equipment will come in for servicing, all the repair shops in the area are

going flat out and there is never enough skilled help. During the summer the students will be available to act as holiday relief.

3. **Third period September - December (school)**

The students will return to school again during the traditionally slow period in the fall. In the second school period the students will begin to address the more advanced parts of the program. The objective will be to prepare the students to deal with more advanced work during their next period in the work force.

4. **Fourth period January - June (work)**

The students will enter the work force at the busiest time of the year in the oil and gas field. At this point, the students will be capable of performing advanced work and will be a valuable asset to the industry.

5. **Fifth period (school)**

In the third period in school, the students will complete the last section of their technical training.

6. **Sixth period (work)**

During this time, the students will be employed full time with a local employer.

These time frames were set up by the Steering Committee.

Rationale for automotive technician time frame.

1. **First period January - June (school)**

January is traditionally a slow period in the automotive industry in the north and has been identified by the steering committee as the best time for the students to enter the

program. During the first period in school, the students will gain the basic skills needed to function productively in the work place.

2. **Second period July - December (work)**

This is the best time for the students to enter the work force as summer is a very busy time of the year for the automotive industry in the north as tourist season is at its height.

3. **Third period January - April (school)**

The students will again be entering school at the slowest time of the year in the industry, and will be available again for work when the work load picks up in the spring. During their second period in school, the students will start to deal with the more advanced levels of technical training.

4. **Fourth period May - August (Work)**

The students will go back to work again at the start of the tourist season, and will be available right through the summer. The students will be able to function at a fairly advanced level by this time and will be a valuable asset to the industry.

5. **Fifth period September - October (school)**

The students will return to school to complete the last part of their technical training in the fall which is traditionally a slow period in the industry.

6. **Sixth period (work)**

During this time, the students will be employed full time by a local employer. These time frames were set up by the steering committee. (See Table 5)

Table 5

Northern Lights College

(Version Two - Modified in 1995)

NORTHERN LIGHTS COLLEGE

Order and Length of Program Components in Weeks

School Jul-Dec	Work Jan-Jun	School Jul-Sep	Work Oct-Mar	School Apr-Jun	Work 2 years	School Mar of 2nd year	Total School	Total Work
Commercial Transport Technician								
26	26	13	26	13	2 years	Review 4 weeks	56	52

Table 6 summarizes the program schedules for British Columbia trades co-op programs.

Table 6

Schedule of the Pilot Co-operative Apprenticeship Programs

Program	Order and Length of Program Components in Weeks							Weeks of Total School	Weeks of Total Work
	School	Work	School	Work	School	Work	School		
BCIT Automotive Service Technician	13	13	13	13	13	13	13	52	39
BCIT Heating, Ventilation, Air-conditioning	20	20	10	20	10			40	40
Okanagan University College Auto Collision Repair	22	17	12	17			Review 5 weeks	34	39
Okanagan University College Auto Technician	25	12	14	28				39	40
Northern Lights College Commercial Transport Technician	26	26	17	17	8	8	Review 4 weeks	51	51
Northern Lights College Auto Service Technician	26	26	17	26	8		Review 4 weeks	51	52
Camosun College Auto Collision Repair	13	13	8	17	8			29	30
Camosun College Auto Refinishing	13	13	17	8				21	30

CHAPTER FOUR

STATISTICAL ANALYSIS

This chapter provides specific statistical information related to the issues dealt with in this document, plus general background information on Trades Cooperative Education programs, and the Apprenticeship System in British Columbia. The statistical information in this chapter was derived principally from four sources: The British Columbia Apprenticeship Organization data base, the Ference Weicker report on Trades Co-op in British Columbia, information provided by the British Columbia College System, and research conducted by the writer. Much of the information is presented in its original survey format.

Description of Respondents

In total, 111 companies were contacted for this evaluation. The 111 people surveyed were selected from four different sample groups as follows:

1. List of co-op apprenticeship placement hosts provided by the four schools involved in the evaluation;

2. Employers of co-op apprenticeship students as identified from the Provincial Apprenticeship Branch's AIMS database;

3. Members of Industry Steering Committees or Program Advisory Boards for the eight programs being looked at; and

4. Employers of registered apprentices who have not participated in the co-op programs, as identified from a report generated by the AIMS system.

Of the survey group, 72 respondents would be expected to be fairly knowledgeable of the co-op programs, having been selected from lists of placement hosts and industry steering committee members. Nineteen respondents are known to have hired students from the co-op programs. The 20 respondents sampled from the list of employers of non-co-op apprentices would be expected to be less familiar with the co-op model. Generally, the owner/manager of small shops and the service manager of large shops or dealerships were interviewed. Since most of the programs involved in the evaluation are in the automotive trades, most companies contacted were also automotive shops, whether dealerships, mechanics, autobody shops, or related enterprises. Companies involved in the heating, ventilation, air-conditioning, refrigeration, and commercial transport trades were also contacted.

Over 80 percent of those surveyed have either served as placement hosts to co-op students or have hired graduates from the eight programs involved in the evaluation.

As indicated in Table 7, 23 of those surveyed have had no involvement in the co-op apprenticeship programs. In total, 51 companies surveyed (45.9%) hired program graduates and 73 companies (65.7%) acted as placement hosts for co-op apprenticeship students.

Table 7

Hiring of Co-op Students/Graduates

	Responses	Percent (%)
Placement Host for Co-op Students	37	33.3
Hired Graduates of Co-op Programs	15	13.5
Both Placement Host and Hired Graduates	36	32.4
Neither - Not Involved in Co-ops	23	20.7
Total	**111**	**100.0**

Respondents were asked the number of employees they have in order to judge the size of the organizations participating in the programs. The average size reported by the respondents was 15 employees, however, very few respondents with large organizations influence the average business size. As indicated in Table 8, over 60 percent of those surveyed have less than 10 employees. The range reported was from 1 to 150 employees for the businesses surveyed.

Table 8

Size of Business Surveyed

	Responses	Percent (%)
Less than 10 employees	69	62.2
10 - 24 employees	24	21.6
25 - 49 employees	9	8.1
50 or more employees	9	8.1
Total	**111**	**100.0**

Demand for Tradespeople

In addition to asking those surveyed about the overall size of their business, each respondent was asked to identify the number of certified trades people and the number of registered apprentices employed by their firm. For large firms which have different types of tradespeople in different sectors of the business, responses were limited to tradespeople and apprentices in the trade related to the relevant co-op apprenticeship program.

Current Employment Levels

The businesses surveyed employ a small number of certified tradespeople, few which have been hired recently.

The average number of certified trades people employed by the businesses surveyed is five. The most journey people employed, reported by two firms, is 20 and the least number of journey people employed is none, reported by four firms. Eighty of the 111 firms surveyed indicated that they employ five or fewer certified tradespeople. Sixty percent of the firms also reported that none of these journeypersons have been hired in the past year, indicating that turnover of employees is quite low. For those that have hired on some certified tradespeople during the past year, 26 companies (23.4% of the survey group) have hired one trades person, 13 firms (11.7%) hired two people, and 3 firms (2.7%) hired four or five new tradespeople in the past year.

As indicated in Table 9, three-quarters of those surveyed indicated that they have at least one registered apprentice in their employ.

Table 9

Number of Registered Apprentices Employed

	Responses	Percent (%)
None	27	25.5
1 - 2	68	64.2
3 or more	11	10.4
Total	**106**	**100.0**

One-half of the firms reported having hired their apprentices during the past year, while the remaining firms which employ apprentices had brought these people on board more than one year ago. It is worth mentioning that 60 percent of those surveyed have acted as placement hosts for co-op students, but these students would not be reported as current employees unless they were in the middle of a work term when the interview was conducted. Therefore, the companies' activities as employers of apprentices may be under-reported to some extent.

Difficulty Hiring Tradespeople

The survey respondents were asked to indicate the level of difficulty they have in hiring qualified staff, and the factors which contribute to these difficulties.

Employers surveyed indicated that it is generally quite difficult to find good tradespeople, assigning an average rating of 3.7 out of 5, where 5 is very difficult.

As indicated in Table 10, although some employers find it not at all difficult to find good staff for their businesses, over 60 percent of respondents indicated that hiring good people is difficult.

Table 10

Difficulty in Finding Good Staff

Question: On a scale of 1 to 5, where 1 is not at all, 3 is somewhat, and 5 is very difficult, how difficult has it been for you to find good staff?

		Responses	Percent (%)
1	Not at all	8	7.2
2		10	9.0
3	Somewhat	15	13.5
4		23	20.7
5	Very Difficult	32	28.8
	No Response	23	20.7
	Average Response	3.7	

The main factor contributing to a difficulty in hiring is the lack of sufficiently skilled or experienced tradespeople. The attitudes and general employability of potential employees was also criticized.

Those survey respondents who indicated that it is difficult to hire good staff (chose a rating of 3 or more out of 5) were asked what factors make hiring difficult. By far the most common response, with 54 mentions, was the unavailability of sufficiently skilled or experienced tradespeople. Several respondents from this group also indicated that they belong to a specialized part of their trade, such as tire shops in the automotive trades and refrigeration specialists in the HVAC&R trade group; therefore, finding people qualified in their specialization was particularly difficult.

Nineteen respondents mentioned the poor attitudes, reliability, lack of commitment to the trade or to employers, and similar factors as being characteristic of the available labour pool. Other factors contributing to hiring difficulties were a local shortage of tradespeople due to the size and location of the community (six responses), and low wage rates in the industry (five responses) which make the trade unattractive to potential employees.

Awareness of Co-op Apprenticeship Programs

Most of the survey respondents were familiar with the co-operative apprenticeship programs. Ninety-five of the respondents (85.6%) indicated that they were aware of one of the co-op programs involved in this evaluation.

The main source of awareness for the co-op apprenticeship programs are the schools delivering the programs. One-third of respondents indicated that they learned of the program from the training institute, as indicated in Table 11.

Table 11

Source of Awareness of Co-op Programs

Question: How did you first find out about the co-op apprenticeship program?

	Responses	Percent (%)
From the school	41	36.9
From a student	13	11.7
From an industry group (i.e., TAC or Industry Association)	12	10.8
Word of mouth	9	8.1
From another employer	5	4.5
From an advertisement or brochure	3	2.7
Involved in developing the program	3	2.7
From the union	1	0.9
No response	**24**	**21.6**

Involvement in Co-op Apprenticeship Programs

As presented above, almost 80 percent of the businesses surveyed indicated that they had hired co-op apprentices, either for work terms during their program or graduates of the programs. More companies were involved as placement hosts than as employers of graduates; 60 percent of the firms surveyed had acted as placement hosts and 46 percent had hired graduates. There was, of course, some overlap between these groups, and 28 percent of those surveyed had both hired graduates and placed students for work terms.

Levels of Employment of Co-op Students

Companies which indicated that they had served as a placement host or hired graduates of the co-op apprenticeship programs were asked a series of questions regarding their experiences with these students.

The average company has served as a placement host for 2.5 students or has hired 1.6 graduates of the co-op apprenticeship program.

Employers for the most part have experience with just one or two co-op students. A few companies have been very involved as placement hosts, placing as many as 10 students since the co-op program was established in their region. On the other hand, companies have hired far fewer program graduates, which is to be expected as hiring a graduate of the program is a far greater commitment than is placing a student for three to six months. Table 12 presents the number of students and graduates hired by the companies surveyed.

Table 12

Number of Students Hired/Placed

	Number of Students Placed		Number of Graduated Hired	
	Responses	**Percent (%)**	**Responses**	**Percent (%)**
1 Student	29	26.1	29	26.1
2	16	14.4	11	9.9
3	14	12.6	6	5.4
4	6	5.4	1	0.9
5	3	2.7	1	0.9
6 or more	5	4.5	-	-
No response	38	34.2	63	56.8
Average Response	2.5		1.6	

The colleges initiated most requests for companies to become placement hosts. While students also approached many employers to find their own work placements, few employers took the initiative to become a placement host.

Respondents indicated that the most common reason for becoming a placement host was to respond to a request from a co-op program. Thirty-six respondents were approached by the school to become a placement host. Some of these companies already had an association with a school and were familiar with the co-op program instructors or administrators, thus were aware of the opportunity to hire students during their work terms. Another 19 respondents indicated that the students had approached them to take

them on for a work term. Other reasons given for becoming involved in the programs as a placement host included:

- Involved in the program on the industry steering committee (10 responses);
- Took initiative by contacting the school when looking for an apprentice to hire (5 responses); and
- Acted as placement host for a relative (2 responses).

The main reasons given for not hiring students or graduates was not needing apprentices or the lack of space or facilities for additional workers. Several companies indicated that they would be willing to hire either students or graduates, but that no one had applied to them for work.

Table 13 lists the main reasons given for not hiring program participants either during their work placements or after completing the program.

Table 13

Reasons for Not Hiring Co-op Students

Question: Is there any particular reason why you have not served as a placement host/hired any graduates from the co-op program?

Reasons	Serving as Placement Host	Hiring Graduates
No need for apprentices/new hires	5	15
No one has applied	4	11
Lack of facilities/space/time to train	8	-
Have not found anyone suitable/trained in specialty	2	5
Not aware of program	4	-
New business - no opportunity to hire yet	4	5
Regional issue - school not locate close by	3	3
Graduates lack skills needed/basic ability	-	4
Only hire experienced journeypeople	-	4

In addition to the above reasons for not hiring graduates, two companies stated that they hire only through their trade's union and its training program, and one company noted that it had not hired any graduates due to disappointment with the student placed with them for a work term. Companies which had not participated by placing students for work terms indicated that they prefer the traditional apprenticeship system (2 responses), that affordability was a concern (2 responses), and that timing of the work terms was not suitable for their business (2 responses).

Most respondents indicated that nothing could be done to increase their participation in the programs; either they have no need for more apprentices, or they are hiring and placing as many as they can now.

Evaluation of Apprentices

Companies which had placed co-op apprenticeship students or had hired graduates of the co-op apprenticeship programs were asked to evaluate the performance and skill development of the students they had interacted with.

Employers indicated a higher level of satisfaction with graduates of the program than with students hired for work terms, although both student groups were rated as satisfactory by the average respondent.

The average rating for the performance of co-op graduates was 4.1 out of a maximum of 5, compared to the average rating of 3.7 assigned to students placed for work terms. As indicated in Table 14, approximately 70 percent of the co-op students and 80 percent of the graduates were rated as very satisfactory (4 or 5).

Table 14

Satisfaction with Performance of Students

Question: On a scale of 1 to 5, where 1 is not at all, 3 is somewhat, and 5 is very satisfied, how satisfied have you been with the performance of these students/graduates?

		Co-op Students		Co-op Graduates	
		Responses	**Percent (%)**	**Responses**	**Percent (%)**
1	Not at all	4	3.6	1	0.9
2		7	6.3	2	1.8
3	Somewhat	11	9.9	7	6.3
4		31	27.9	17	15.3
5	Very satisfied	17	15.3	21	18.9
	No Response	41	36.9	63	56.8
	Average Response	3.7		4.1	

Employers indicated that approximately 40 percent of the students they hired for placement terms were likely to become indentured to the company as apprentices. The main factor limiting students' opportunities to indenture with a placement host is the availability of work.

In total, employers reported acting as placement hosts for 184 students. Of these, 76 students either have become indentured to the same employers or are likely to become so after completing their program. Thirty-one of the 59 respondents who replied to this question (52.5%) indicated that the level of work and demand for tradespeople is the main factor affecting a student's chances of indenturing with the company. An additional

four respondents indicated that additional employees can not be accommodated due to shop size, thus preventing students from being hired on permanently.

Other factors limiting a student's opportunity to indenture with the placement hosts are:

- Not sufficiently skilled (10 responses);
- Poor attitude, lack of enthusiasm (9 responses);
- Conflict between the trade union and training institute (1 response); and
- Seven respondents indicated that there are no factors limiting a student's opportunities; they expect to indenture all students placed.

Several employers noted that they saw the work placement as an opportunity to screen out poor recruits and to identify individuals with a poor work attitude or lack of aptitude in the trade. A few more commented that their tradespeople needed specialized trades training (for instance, on a certain model of automobile) which co-op students may not have.

The companies surveyed have hired 78 graduates of co-op apprenticeship programs, of which 83 percent are still with these employers.

Forty-eight employers reported having hired co-op graduates, hiring a total of 78 students. Thirteen of these graduates are no longer with the employers surveyed. Approximately half of the co-op graduates left on amicable terms, while the other half were let go for various reasons. The reasons given by their employers are:

- The employee quit, either unknown reason or to go to another job (5 responses);

- Not the right person; immature, bad attitude, possible disability, personality conflict (5 responses);
- Laid off due to a downturn in business (2 responses); and
- Lacked sufficient knowledge and skills (1 response).

Generally, employers indicated that they were satisfied with the co-op students' performances with respect to technical and general employability skills. Students were rated most highly for their enthusiasm (their attitude and willingness to learn) and were somewhat considered less proficient in terms of the productivity and practical work skills.

Table 15 presents the employers' ratings of the co-op students. Employers were asked to rate their satisfaction with the performance of the co-op students and graduates for each of the eight factors. This exercise was difficult for some employers who had several students who varied greatly in terms of their skill development and performance. Other employers noted that the one or two students which they had encountered were having to represent the whole program, although their performance may have been poorer than their fellow classmates. Despite these cautionary comments made by employers, for the most part the students and graduates were rated quite positively by their employers with the lowest average rating being 3.3 or somewhat satisfactory.

Table 15

Employer Satisfaction with Performance of Co-op Students or Graduates

Question: On a scale of 1 to 5 where 1 is not at all, 3 is somewhat, and 5 is very satisfied, how satisfied have you been with performance of the co-op students/graduates in terms of their:

	1 Not at All		2		3 Somewhat		4		5 Greatly		No Response		Average
Willingness and ability to learn?	2	1.8	4	3.6	8	7.2	31	27.9	41	36.9	25	22.5	4.2
Attitude towards work?	3	2.7	4	3.6	13	11.7	37	33.3	31	27.9	23	20.7	4.0
Technical knowledge?	3	2.7	6	5.4	26	23.4	32	28.8	19	17.1	25	22.5	3.7
Skills in using equipment and tools?	2	1.8	9	8.1	26	23.4	33	29.7	16	14.4	25	22.5	3.6
Communication skills?	2	1.8	7	6.3	26	23.4	41	36.9	11	9.9	24	21.6	3.6
Confidence to do the job?	3	2.7	9	8.1	22	19.8	41	36.9	11	9.9	25	22.5	3.6
Practical work skills?	4	3.6	12	10.8	24	21.6	36	32.4	12	10.8	23	20.7	3.5
Productivity?	6	5.4	16	14.4	25	22.5	32	28.8	9	8.1	23	20.7	3.3

Table 16 shows recommendations made to improve the co-op model.

Table 16

Recommendations to Improve Co-op Training

	Responses	Percent (%)
More practical/shop time	23	33.3
Update curriculum	8	11.6
Focus on business skills (productivity and profit orientation)	5	7.2
Lengthen the program	5	7.2
Better selection of students	5	7.2
Emphasize attitude/work skills	4	5.8
Customize program (new model/exotic cars)	4	5.8
Improve timing of terms to suit industry	3	4.3
More diagnostic and technical knowledge	3	4.3

Percentages are based on the 69 respondents who offered suggestions or comments on the training. Additional ideas put forward by a few respondents included:

- Students in the Commercial Transport Mechanic program should become qualified for their air brake and Class 1 driving license as part of their program;
- School terms should begin with a short refresher of the material covered in previous terms;
- BCIT's HVAC program should be amalgamated with other training programs (the union's JARTS program);

- Colleges should keep records of the time worked and ensure employers give students credit for their work time; and
- The schools should work more closely with industry representatives.

Seventy percent of those surveyed would recommend the co-op program to others.

All companies which either acted as placement hosts for co-op students or employed graduates of a co-op program were asked if they would recommend the program to people looking to get into their industry or to other employers looking for staff. Of these, 78 respondents (70.3%) stated that they would recommend the program. Only 10 respondents (9.0%) stated that they would definitely not recommend the program, and another 12 respondents were not sure or would give a limited recommendation.

Perceived Need for Co-op Program

All of those interviewed were asked if there is a need for a co-op program in their community. Their responses are presented in this section.

Three-quarters of the companies surveyed indicated that there is a need for a co-op program in their community.

Table 17 presents the responses to the question, "In your opinion, is there a need for a co-op program in your community?"

Table 17

Is There a Need for a Co-op Program?

	Responses	Percent (%)
Yes	84	75.7
No	9	8.1
Not Sure/No Response	18	16.2
Total	**111**	**100.0**

The need for the co-op program is largely based on the perception that students need pre-training to get a foot in the door to the trade. Another group indicated that the co-op programs help to meet the industry's demand for qualified tradespeople.

Table 18 presents the main reasons given to support the belief that a co-op program is needed in the respondent's community.

Table 18

Reasons for Needing a Co-op Program

	Responses
Difficulty entering the trade without some pre-training (gives students a foot in the door)	27
Meets demand for qualified tradespeople	19
Provides superior training to traditional apprenticeships	14
Based in region - have to go out of town for other training	9
Is advantageous for employer	7

The last item in Table 18, that the co-op program is advantageous for employers, encompasses comments regarding the wage subsidies available through the co-op that students fund their own schooling, and that the co-op program screens out unsuitable tradespeople.

Evaluation of Apprenticeship Model

The survey group was asked to compare the co-op apprenticeship model with the traditional model for training apprentices. In order to ensure the respondents were aware of the key differences between the two models, a description of the co-op models was presented to those surveyed.

The training is considered to be the main strength associated with the co-op model. Advantages were noted for both apprentices and employers under this model.

Table 19 presents the main advantages of the co-op model as identified by the companies surveyed. In addition, 11 respondents commented that there are no strengths associated with the co-op apprenticeship model as the traditional model is superior.

Some of the advantages cited in Table 19 are interrelated, for example, several respondents stated that they like the structure of the co-op program, while others stated that co-op apprentices are more productive since they have already had several months of training before going to an employer to work. Other advantages noted are that the co-op model screens potential apprentices for employers, and that apprentices are less costly to the employer under the co-op model.

Table 19

Major Strengths of the Co-op Apprenticeship Model

	Responses
Obtain broader knowledge base - better amount and content of technical training	29
Apprentices are more productive - come to the shop with skills	11
Student can investigate trade/employer can test out student before making commitment	11
Structure: front-loaded school, alternating school and work terms	9
Updated curriculum/teaching materials	7
More communication between school and employers/industry	7
Time frame better suited to industry	5
Locally based	4

Those surveyed see the amount of practical training as the main advantage of the traditional apprenticeship model. Another important strength of this model is the structure which ensures the apprentice is available to the employer most of the time.

Advantages associated with the traditional apprenticeship model centred around the increased involvement of the apprentice's employer in providing training and guiding the development of the apprentice, as indicated in Table 20. Thirteen respondents indicated their training preference for the co-op model by stating that there are no advantages to the traditional model, the co-op model is superior. Other advantages of the traditional apprenticeship model are that it can be adapted to specialized areas of the trade, and that apprentices can start at any time (employers and apprentices do not have to adapt to the school's schedule).

Table 20

Major Strengths of the Traditional Apprenticeship Model

	Responses
Provides more practical/on-the-job training	39
Structure: less time away from employer, apprentice paid year round	14
Employer can shape apprentices	7
More current knowledge base - learn and apply at the same time	5
Better selection of apprentices - pick those with natural ability	3
Better instructor for traditional program	3

Approximately one-third of the survey respondents believe the co-op model will produce better workers. About 20 percent prefer the traditional apprenticeship model.

Thirty-nine respondents (35.2%) believe the co-op apprenticeship model will produce better workers while 24 respondents (221.6%) chose the traditional apprenticeship model. Eleven respondents (9.9%) believe the training model is not important or that there is no difference, and 15 percent of the respondents stated that it depends on the individual apprentice.

With respects to their own hiring preferences, a larger group of respondents indicated a preference for hiring apprentices from a co-op program to hiring apprentices who had trained with another employer. One-quarter of the respondents indicated that the training model would not be an important decision factor, but that other factors such as personality and the type of training received (specialized training) are more important. (See Table 21)

Table 21

Hiring Preference

Question: All other things being equal, if you had a choice between hiring an apprentice who had completed two years of apprenticeship training with another employer or an apprentice who had completed a two year co-op program, who would you hire?

Percent of Sub-Group	Placement Host	Hired Graduates	Hired Students & Graduates	Hired No Co-op Students
Co-op apprentice	32.4	13.3	50.0	13.0
Traditional apprentice	24.3	26.7	13.9	30.4
It depends	27.0	26.7	13.9	34.8
Not sure/No response	16.2	33.4	22.2	21.7
Total Responses	**37**	**15**	**36**	**23**

Companies which have not hired co-op students or graduates were split on which model will produce better workers. One-quarter of this group said the co-op model will produce better workers and one-quarter chose the traditional model.

The majority of all the groups surveyed indicated a need for a co-op program in their community. The main reason for this is to assist potential trades people to enter the trade, which implies that companies view the co-op apprenticeship programs as a type of entry level program into the trade.

Table 22 presents the responses of the four sub-groups to the question of whether a co-op program is needed in their community. As indicated in this table, the four sub-groups gave similar responses despite their differing involvement in or reliance on the programs for supplying apprentices.

Table 22

Need for Co-op Program?

Percent of Sub-Group	Placement Host	Hired Graduates	Hired Students & Graduates	Hired No Co-op Students
Yes	75.7	66.7	83.3	69.6
No	5.4	6.7	8.3	13.0
Not sure/No response	18.9	26.7	8.4	17.3
Total Responses	**37**	**15**	**36**	**23**

Co-operative Apprenticeship Students Survey Results

Eighty-one surveys were conducted with students involved in the eight co-operative apprenticeship programs included in the evaluation. The students were grouped as "current" or "former" students based on their class intake date; students from those intakes which have completed were grouped as former students, while students from those intakes which are still in process were considered current regardless of the specific student's status with respect to the program. An additional 34 former co-op students were contacted and a mini-survey was conducted in order to determine their present activities and if they have remained involved in their trade. Table 23 presents the number of students to have participated in each program and the number which were contacted as part of this evaluation.

Student Survey

Table 23

Number of Co-op Students Surveyed

College & Program	Student Population	Full Survey	Mini Survey	Total Surveyed	Students Registered
BCIT HVAC and R	Current	9	-	9	29
	Former	4	1	5	8
BCIT Auto Service Tech	Current	5	-	5	45
	Former	5	8	13	51
Camosun Auto Collision	Current	5	-	5	11
	Former	3	-	3	10
Camosun Auto Refinishing	Current	5	-	5	10
	Former	1	-	1	2
Okanagan (OUC) Auto Collision	Current	2	-	2	10
	Former	4	2	6	27
Okanagan Auto Service Tech	Current	5	-	5	19
	Former	10	18	28	107
Northern Lights College Auto Service Tech	Current	5	-	5	9
	Former	5	1	6	28
Northern Lights College Commercial Transport	Current	5	-	5	10
	Former	8	4	12	30
Sub-Total	Current	41	-	41	139
	Former	40	34	74	257
Total	**Both**	**81**	**34**	**115**	**406**

The characteristics of the participants surveyed are contained in the following paragraphs:

1. According to survey results, participation by equity groups such as women, First Nations members, and visible minorities is very low.

Of the 41 students currently enrolled in one of the co-op apprenticeship programs, 2 students (5%) identified themselves as belonging to a visible minority, 2 as women, and 2 as First Nations members. The remaining 35 did not identify themselves as belonging to any equity group. Of the 40 former students surveyed, 1 student identified himself as an aboriginal, another as a person with a disability, and another as a member of a visible minority. Thirty-seven, including one woman, did not identify themselves as a member of an equity group. Of the 115 people contacted for the full and the mini-surveys, there were 3 First Nations members, 1 disabled person, 3 members of a visible minority, 3 were women, and 112 were men.

2. Former students who are members of equity groups reported facing no barriers to entering their trade. Current equity group students were split, with three reporting employment barriers and three not noting any employment barriers related to their equity group.

Of the three current students who reported having faced employment barriers in entering their trades, one noted that it can be difficult to become a journeyperson as firms prefer not to hire members of equity groups—one stated that "my employer is tougher on me" than on male co-workers, and one reported experiencing networking difficulties

since he had not grown up in the region (making it more difficult to establish himself in the trade).

3. Most people surveyed are between 19 and 24 years of age. Table 24 presents the age groupings for the three groups surveyed. Naturally, the former students are slightly older than the current students as they may have first participated in their program as many as seven years ago.

Table 24

Age Groupings of Co-op Students Surveyed

Age Grouping	Current Students		Former Students		Former (Mini-Survey)	
	Responses	Percent	Responses	Percent	Responses	Percent
18 years or less	4	9.8	-	-	-	-
19 - 24 years	23	56.1	20	50.0	17	50.0
25 - 34 years	7	17.1	11	27.5	15	44.1
35 - 44 years	5	12.2	8	20.0	-	-
45 - 54 years	2	4.9	1	2.5	2	5.9

4. For the majority of those surveyed, the highest level of education attained prior to joining their co-operative apprenticeship program is high school graduation.

Of the 40 former students surveyed in depth, 25 (62.5%) reported having completed high school prior to joining the co-operative apprenticeship programs. Twenty-two respondents (53.7%) reported that they had completed high school, and 10 more (25.0%) indicated that they had not completed a high school education. Only 1

person had attended a trade or vocational school, 6 had attended college, and 2 had attended university, with 1 of these individuals having completed a degree program.

Program Activities and Impacts

This section presents the co-op apprentices' perceptions and evaluations of the training provided, the work placements, and the skills developed through participation in the co-operative apprenticeship programs.

In-school Training

Survey respondents were asked to rate their overall satisfaction with the training received through the program and then were asked for their opinions on the course content, instructors, and equipment.

Overall, the co-op participants surveyed indicated that they are quite satisfied with the training received through the co-op apprenticeship program.

Table 25 presents the ratings given.

Table 25

Satisfaction with Training Received

Question: On a scale of 1 to 5, where 1 is not at all, 3 is somewhat, and 5 is very satisfied, how satisfied are you with the training you received through the program?

		Current Students		Former Students	
		Responses	**Percent (%)**	**Responses**	**Percent (%)**
1	Not at all	1	2.4	1	2.5
2		1	2.4	2	5.0
3	Somewhat	7	17.1	5	12.5
4		14	34.1	18	45.0
5	Very satisfied	18	43.9	14	35.0
	Total	41	100.0	40	100.0
	Average Response	**4.15**		**4.05**	

Only 5 of the 81 current and former students rated the training as not very satisfactory, and approximately 80 percent rated the training as quite or very satisfactory.

Work Placements

Overall, co-op students consider themselves satisfied with their work placements. As indicated in Table 26, the majority of co-op students consider themselves to be satisfied with their work placements.

Table 26

Satisfaction with Work Placements

Question: On a scale of 1 to 5, where 1 is not at all, 3 is somewhat, and 5 is very satisfied, how satisfied were you with the co-op work placements? (Current students were asked about each work placement, former students were asked to generalize about all placements.)

		Current Students		Former Students	
		Host 1	**Host 2**	**Responses**	**Percent (%)**
1	Not at all	2	-	1	2.5
2		3	1	3	7.5
3	Somewhat	3	2	4	10.0
4		6	3	16	40.0
5	Very satisfied	5	3	14	35.0
	No Response	22	32	2	5.0
	Average Response	**3.47**	**3.89**	**4.03**	

Although the majority of students rated their work placement experiences as quite satisfactory (choosing 4 or 5 on the 5 point scale), a significant portion of the current students did rate their most recent work placement as not very satisfactory. Five of the 19 current students (26.3%) who rated their most recent work placement indicated that it was not very satisfactory (1 or 2 out of 5), and a further 3 students indicated the experience as just "somewhat satisfactory." In contrast, only 10 percent of the former students rated their work placements as not very satisfactory.

Students from current intakes are finding it more difficult to find work placements than did students from previous intakes. Table 27 presents the ratings assigned by the survey groups to the difficulty in finding placement hosts for their work terms.

The 10 current students who did not respond includes 9 people who have not yet had work terms scheduled for their program. It is interesting to note that none of the former students gave the rating of very difficult (5 out of 5) as compared to 16 percent of the current students. This may indicate that students face more difficulties in finding placement hosts early in their programs, or that economic and competitive situations have changed in some regions or for some trades resulting in fewer available opportunities.

Current students see the availability of jobs and lack of work experience as the main barriers to finding work placements. Former students agree that the main barrier to finding placement hosts are economic factors, particularly the availability of jobs.

Sixteen students from the current intake group (those that chose 3 or higher as indicated in the table above) were presented with a number of factors which may act as barriers to finding work placements. The factors which a majority of respondents agreed with were that there are few jobs available and that they do not have enough practical work experience. As indicated in Table 28, the most disagreed with statement is that they do not know how to find potential employers.

Eleven of the former students surveyed (again, those that chose 3 or higher as indicated in Table 27) were asked to name the factors making it difficult to find a work placement. Ten of these 11 indicated that the economy and availability of jobs is the main factor.

Table 27

Barriers to Finding Work Placements

It has been difficult for me to find a placement host because:	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Number of Respondents	Average Response
There are few jobs available in my area	1	1	5	4	5	16	3.7
I don't have enough actual work experience	4	1	2	4	5	16	3.3
The College provided little help to me in looking for work	3	2	5	5	1	16	2.9
Most potential employers do not support the co-op program	3	5	5	1	1	15	2.5
Most potential employers are not aware of the co-op program	4	7	2	1	2	16	2.4
I don't know how to look for a potential employer	8	7	1	-	-	16	1.6

Table 28

Difficulty in Finding Work Placements

Question: On a scale of 1 to 5, where 1 is not at all, 3 is somewhat, and 5 is very difficult, how difficult was it for you to find a placement host/employer?

		Current Students		Former Students	
		Responses	**Percent**	**Responses**	**Percent**
1	Not at All	9	29.0	19	48.7
2		7	22.6	9	23.1
3	Somewhat	1	3.2	8	20.5
4		9	29.0	3	7.7
5	Very difficult	5	16.1	-	-
	No Response	10	-	1	-
Average Response		**2.8**		**1.9**	

Three current and one former student mentioned that the timing of classes made it difficult to find placement hosts since work terms are scheduled for what is typically a slow time and school terms are during the industry's busy time. Another three current students indicated that "too many co-op students flooding the market," all looking for work at the same time is a factor making it difficult to obtain work placements. Other factors mentioned by at least one current student are:

- The school workload is too heavy to allow for a thorough job search;
- Regional scarcity of work, being located in a region where work is not available;

- Age discrimination by employers (mentioned by an older student); and
- Language barriers (mentioned by a new immigrant unfamiliar with shop or trade jargon).

Life After the Co-op

As indicated in Table 29, most of those surveyed intend to continue in their apprenticeship and to become a journeyperson.

Table 29

Current Students: Likelihood of Completing Apprenticeship

Likelihood	Responses	Percent (%)
No chance	1	2.4
25 percent	2	4.9
50 percent	3	7.3
75 - 99 percent	9	22.0
100 percent	22	53.7
No Response	4	9.8
Total	**41**	**100**

The main obstacle seen to becoming a journeyperson is getting the necessary work experience. Eleven of this group indicated that unavailability of jobs could prevent them from completing their apprenticeship requirements, and, therefore, prevent them from becoming journeypersons. Other potential obstacles mentioned by one or two respondents were injuries, relocating to another community, or finding a job which did not require the trade qualifications.

Satisfaction with the Program

The two student groups surveyed (from current and former program intakes) were not asked directly about overall satisfaction with their co-op apprenticeship programs. Instead, they were asked about specific aspects of the programs, such as the training and the work placements, as discussed above. It would appear that the majority of those surveyed are satisfied with the co-op apprenticeship programs as the average rating given to the training and the work placements were over 4 on a 5 point scale where 5 is very satisfied. Another indication that most students are satisfied with the co-op programs is that when asked for the most and least useful aspects of the programs, 32.5 percent of the former students and 46.3 percent of the other group stated that all aspects of the programs are useful.

In addition, as indicated in Table 30, 85 percent of both survey groups would recommend the co-op program to their friends. Only 10 percent of one group and 5 percent of the other would definitely not recommend the co-op program to others.

Table 30

Would you Recommend the Co-op Program to Others?

Question: Would you recommend the co-op apprenticeship program to your friends?

	Current Students		Former Students	
	Responses	**Percent**	**Responses**	**Percent**
Yes	35	85.4	34	85.0
No	2	4.9	4	5.0
Don't know	4	9.8	2	10.0
Total	**41**	**100.0**	**40**	**100.0**

Several respondents were quite positive in their endorsement of the program, indicating that they had already recommended it to others and, occasionally, that friends or relatives had already enrolled in the program based on their recommendation. Others were less enthusiastic, indicating that they would give a conditional recommendation to the program. For instance, some students said they would recommend the program as long as it appeared that sufficient jobs were available either for work terms or for program graduates. A woman student indicated that she would recommend the program to male friends, but not to other women. Two other respondents stated that their recommendation would be dependent on funding being available for students.

Tables 31, 32, 33, 34 and 35 show a comparison of completion rates for apprentices indentured in trades where apprentices are also trained utilizing the trades co-op model.

AIMS Apprenticeship Information System

Table 31

AIMS Completion Rates - Automotive Collision Repair Technician

Automotive Collision Repair Technician							
First Registered in	Total Registered	Total Certified	% Certified	Terminated	% Terminated	Active	% Active
1985	111	44	39.6	67	60.4	0	0.0
1986	149	63	42.3	86	57.7	0	0.0
1987	137	57	41.6	80	58.4	0	0.0
1988	128	51	39.8	77	60.2	0	0.0
1989	135	62	45.9	73	54.1	0	0.0
1990	136	58	42.6	77	56.6	1	0.7
1991	98	31	31.6	65	66.3	2	2.0
1992	94	36	38.4	47	50.0	11	11.7
Total 1985-92	**988**	**402**	**40.7**	**572**	**57.9**	**14**	**1.4**
1993	83	13	15.7	44	53.0	26	31.3
1994	85	7	8.2	27	31.8	51	60.0
1995	113	3	2.7	22	19.5	88	77.9
Total 1985-95	**1269**	**425**	**33.5**	**665**	**52.4**	**179**	**14.1**

Source: From AIMS Apprenticeship Information System Completion Rates for Apprentices

Table 32

AIMS Completion Rates - Automotive Service Technician

Automotive Service Technician							
First Registered in	Total Registered	Total Certified	% Certified	Terminated	% Terminated	Active	% Active
1985	434	250	57.6	184	42.4	0	0.0
1986	534	294	55.1	240	44.9	0	0.0
1987	548	319	58.2	229	41.8	0	0.0
1988	493	298	60.4	195	39.6	0	0.0
1989	589	347	58.9	237	40.2	5	0.8
1990	579	336	58.0	233	40.2	10	1.7
1991	447	235	52.6	197	44.1	15	3.4
1992	409	179	43.8	179	43.8	51	12.5
Total 1985-92	**4033**	**2258**	**56.0**	**1694**	**42.0**	**81**	**2.0**
1993	453	83	18.3	195	43.0	175	38.6
1994	460	25	5.4	131	28.5	304	66.1
1995	447	9	2.0	81	18.1	357	79.9
Total 1985-95	**5393**	**2375**	**44.0**	**2101**	**39.0**	**917**	**17.0**

Table 33

AIMS Completion Rates - Automotive Paint & Refinishing

Automotive Paint & Refinishing							
First Registered in	Total Registered	Total Certified	% Certified	Terminated	% Terminated	Active	% Active
1985	54	33	61.1	21	38.9	0	0.0
1986	46	22	47.8	24	52.2	0	0.0
1987	92	65	70.7	27	29.3	0	0.0
1988	74	44	59.5	30	40.5	0	0.0
1989	81	52	64.2	29	35.8	0	0.0
1990	96	51	53.1	45	46.9	0	0.0
1991	60	42	70.0	18	30.0	0	0.0
1992	43	27	62.8	14	32.6	2	4.7
Total 1985-92	**546**	**336**	**61.5**	**208**	**38.1**	**2**	**0.4**
1993	68	45	66.2	22	32.4	1	1.5
1994	46	32	69.6	10	21.7	4	8.7
1995	76	11	14.5	12	15.8	53	69.7
Total 1985-95	**736**	**424**	**57.6**	**252**	**34.2**	**60**	**8.2**

Table 34

AIMS Completion Rates - Refrigeration Mechanic

Refrigeration Mechanic							
First Registered in	Total Registered	Total Certified	% Certified	Terminated	% Terminated	Active	% Active
1985	33	19	57.6	14	42.4	0	0.0
1986	44	29	65.9	14	31.8	1	2.3
1987	32	19	59.4	12	37.5	1	3.1
1988	43	31	72.1	12	27.9	0	0.0
1989	63	36	57.1	26	41.3	1	1.6
1990	44	30	68.2	13	29.5	1	2.3
1991	46	19	41.3	21	45.7	6	13.0
1992	52	21	40.4	22	42.3	9	17.3
Total 1985-92	**357**	**204**	**57.1**	**134**	**37.5**	**19**	**5.3**
1993	75	8	10.7	21	28.0	46	61.3
1994	70	4	5.7	13	18.6	53	75.7
1995	82	2	2.4	13	15.9	67	81.7
Total 1985-95	**584**	**218**	**37.3**	**181**	**31.0**	**185**	**31.7**

Table 35

AIMS Completion Rates - Commercial Transport Mechanic

Commercial Transport Mechanic							
First Registered in	Total Registered	Total Certified	% Certified	Terminated	% Terminated	Active	Active
1985	62	35	56.5	27	43.5	0	0.0
1986	68	42	61.8	26	38.2	0	0.0
1987	81	43	53.1	38	46.9	0	0.0
1988	92	54	58.7	38	41.3	0	0.0
1989	134	86	64.2	48	35.8	0	0.0
1990	123	63	51.2	55	44.7	5	4.1
1991	78	51	65.4	24	30.8	3	3.8
1992	75	35	46.7	27	36.0	13	17.3
Total 1985-92	**713**	**409**	**57.4**	**283**	**39.7**	**21**	**2.9**
1993	109	24	22.0	23	21.1	62	56.9
1994	114	3	2.6	32	28.1	79	69.3
1995	119	0	0.0	18	15.1	101	84.9
Total 1985-95	**1055**	**436**	**41.3**	**356**	**33.7**	**263**	**24.9**

Evaluation Findings

In the first phase of the study, evaluation issues were developed in the following six subject areas:

- Employability performance;
- Level of industry involvement and support for the program;
- Equity group recruitment and placement;
- In-school training;
- Student satisfaction and participation; and
- Best practices.

Employability Performance

A number of indicators were used in assessing the employability performance of students who have been enrolled in co-op programs in the apprenticeship trades. The indicators included:

- The proportion of students who graduated from the programs;
- The proportion of students who became indentured with employers;
- The current status of students who became indentured with employers;
- The number of students who have become certified to date or still expect to become certified;
- The extent to which the employers of graduates are satisfied with their performance and have paid them at a rate commensurate with their training and work experience; and
- Whether employers prefer co-op graduates to regular apprentices.

The proportion of students who became indentured and are certified or still active tends to be higher among students at Northern Lights College than at other colleges. Although the figures for the BCIT HVAC-R program are high, it should be noted that there are only eight former students and two of the five apprentices were already employed by their current employer prior to enrolling in the program.

There is a strong correlation between whether a student graduated and whether they became indentured with an employer. As indicated below in Table 36, about 51 percent of graduates either are active apprentices or have already become certified.

Table 36

Percent of Students From Previous Intakes Who Became Indentured

College Program	Percent Who Became Indentured (%)	Percent Active or Certified (%)
BCIT AST	49.0	43.3
BCIT HVAC-R	75.0	62.5
Camosun Auto Refinishing and Auto Collision	58.3	50.0
Northern Lights College AST	82.1	57.1
Northern Lights College Commercial Transport	83.3	70.0
Okanagan Auto Technician	45.8	30.8
Okanagan Auto Collision	29.6	25.9
All Programs	54.4	41.8

The proportion of students who have become certified varies by program. Of the eight programs, four had intakes prior to 1993. The percentage of these students from those intakes who become certified ranges from less than 10 percent for the BCIT AST program to over 40 percent for the Northern Lights AST program as indicated in Table 37.

Table 37

Percentage of Graduates and Non-Graduates From Past Intakes Who Became Indentured With an Employer

Status	% Graduates	% Non-Graduates	% Both
Active	37.4	14.5	30.8
Certified	13.9	3.9	11.0
Terminated from AIMS	6.4	15.8	9.1
Indentured in another field	1.6	11.8	3.4
Never indentured with an employer	40.6	53.9	45.6
Total	**100**	**100**	**100**

There is a strong correlation between whether a student graduated and whether they became indentured with an employer. As indicated in Table 38, about 51 percent of graduates either are active apprentices or have already become certified.

Table 38

Percentage of Students from Intakes in 1992 or Earlier Who Have Become Certified to Date

Program	Certified Students	Enrolment	Percent (%)
BCIT AST	1	11	9.1
Northern Lights College AST	7	17	41.2
Northern Lights College Commercial Transport	6	18	33.3
Okanagan Auto Technician	14	51	27.5
Total	**28**	**97**	**28.9**

In addition to the 28 students who have been certified, another 12 students are still active as apprentices. The percentage of these students who have become certified to date or are still active as apprentices ranges from about 27 percent for the BCIT AST program to about 60 percent for the Northern Lights College programs as indicated in Table 39.

Table 39

Percentage of Students From Intakes in 1992 or Earlier Who Have Become Certified or Are Still Active Apprentices

Program	Certified or Active Apprentices	Enrolment	Percent (%)
BCIT AST	3	11	27.3
Northern Lights College AST	10	17	58.8
Northern Lights College Commercial Transport	11	18	61.1
Okanagan Auto Technician	16	51	31.4
Total	**40**	**97**	**41.2**

Most of the students interviewed who were enrolled in previous intakes of the co-op programs still expect to become certified tradespeople. Of the 74 people surveyed, 15 (20.3%) have become registered journeypersons to date. Of the remainder, two-thirds are still planning to become certified. Only 14 people definitely do not plan to become journeypersons. Of those who have changed their career plans, the main reason given was that they have found a job which does not require trade certification. According to the students, the main factor which may prevent people from completing their apprenticeship is limited availability of work in the trade.

Comparison to Traditional Apprenticeship System

To obtain at least some basis for comparison, the Ministry of Labour was asked to provide a summary that indicated the number of people who were indentured each year in

the collision repair, auto service technician, auto refinishing, refrigeration mechanic, and commercial transport mechanic. The results are summarized in Tables 31 to 35.

Although the results provide some basis for comparison, the co-op results cannot be compared from the early intakes to the traditional system on an "apples to apples" basis. There are two options, neither of which is a particularly fair comparison:

1. The percentage of registered co-op apprentices can be compared to the percentage of registered apprentices who are still active or have already become certified. However, for these early intakes, students were not indentured to the Industry Steering Committee. As a result, we are comparing the registration of traditional apprentices (who have little work experience and likely no in-school training) to the performance of co-op apprentices who may have completed one or two years of in-school and work placement training.

2. Alternatively, the percentage of co-op students who are still active or already certified can be compared to the percentage of traditional apprentices who are still active or already certified. However, this approach does not take into consideration the fact that employers usually employ pre-apprentices for a while before deciding to register them. As such it would likely be fairer to compare the number of students enrolled to the number of employees who could have been registered. However, of course, this data is not available.

As indicated in Table 40, 58 percent of individuals who registered as auto service technicians between 1985 and 1992 are either certified or still active. Not surprisingly, this figure is higher than the percentage of students from the early intakes who are certified or still active (which was 41 percent as indicated in Table 40) and is lower than the percentage of co-op students registered as apprentices who are either certified or still active (which ranges from about 70 percent to about 92 percent as indicated in Table 40).

Table 40

Indentureship and Certification Rates -- All Apprentices Compared to Co-op Apprentices

All Apprentices Registered in AIMS for the Trade:	For the Period	Number of New Employees	Number Indentured	Percent (%) Indentured	Number Certified	Percent (%) Certified	Number Active	Percent (%) Active or Certified
Automotive Collision Repair	1985-1992	n/a	988	n/a	402	40.7	14	42.1
Automotive Service Technician	1985-1992	n/a	4033	n/a	2258	56.0	81	58.0
Automotive Refinishing	1985-1992	n/a	546	n/a	336	61.5	2	61.9
Refrigeration Mechanic	1985-1992	n/a	357	n/a	204	57.1	19	62.5
Commercial Transport Mechanic	1985-1992	n/a	713	n/a	409	57.4	21	60.3
Co-op Apprentices Registered in the Program		**Number of Students**						
BCIT - Auto Service Technician	1992	11	4	36.4	1	25.0	2	75.0
Northern Lights College - AST	1992	17	12	70.6	7	58.3	3	83.3
Northern Lights College - Commercial Transport	1991	18	12	66.7	6	50.0	5	91.7
Okanagan College - AST	1990-1992	51	23	45.1	14	60.9	2	69.6

Level of Employer Satisfaction

During field research, 51 employers were interviewed who have employed graduates of the co-op programs. These employers were asked to rate their satisfaction with the performance of these graduates. The results in Table 41 show that employers were very satisfied with the performance of graduates.

Table 41

Satisfaction With Performance of Students

Question: On a scale of 1 to 5, where 1 is not at all, 3 is somewhat, and 5 is very difficult, how satisfied have you been with the performance of these students/graduates?

		Responses	Percent (%)
1	Not at all	1	2.0
2		2	3.9
3	Somewhat	7	13.7
4		17	33.3
5	Very satisfied	21	41.2
	No Response	3	5.9
	Average Response	4.1	

As indicated above, employers of graduates from all eight programs indicated high levels of satisfaction with the performance of the co-op employees trained. The least satisfied employers were associated with Okanagan University College's Auto Collision Program.

The 51 companies surveyed have employed 78 graduates of co-op apprenticeship programs. Of the 78 graduates, 65 (83%) are still employed with these companies. The other 13 graduates left for a number of reasons including:

- The employee quit, either for an unknown reason or to go to another job (5 responses);
- Not the right person: immature, bad attitude, possible disability, personality conflict (5 responses);
- Laid off due to a downturn in business (2 responses); and
- Lacking sufficient knowledge and skills (1 response).

Preference for Co-op Versus Regular Apprentices

In the survey of employers, they were asked which model (the co-op model or the traditional model) would produce better workers. Of the 111 employers surveyed:

- 39 respondents (35.2%) believe the co-op apprenticeship model will produce better workers;
- 24 respondents (21.6%) chose the traditional apprenticeship model;
- 11 respondents (9.9%) believe the training model is not important or that there is no difference;
- 17 respondents (15%) stated that it depends on the individual apprentice; and
- 20 respondents (18%) were not sure or had no opinion.

When asked about their own hiring preferences, about 32 percent of the respondents expressed a preference for students trained through the co-op model while 23

percent expressed a preference for students trained under the traditional model. (See Table 42)

Table 42

Hiring Preferences

Question: All other things being equal, if you had a choice between hiring an apprentice who had completed two years of apprenticeship training with another employer or an apprentice who had completed a two year co-op program, who would you hire?

	Responses	Percent (%)
Co-op apprentice	35	31.5
Traditional apprentice	35	22.5
It depends	27	24.3
Not sure/No response	24	21.6

Approximately one-quarter of respondents indicated that the training model would not be an important decision factor, but that other factors such as personality and the type of training received (specialized training) are more important.

Nineteen of the 25 who indicated a preference for an apprentice coming from another employer stated that this apprentice would have more practical experience. Three others indicated that the apprentice coming from the traditional model would be more productive and better trained than the apprentice from the co-op model.

Reasons given by the employers who preferred apprentices from the co-op model included:

- Co-op students are better prepared than those from another employer (14 responses);
- Apprentices coming from another employer would need to be retrained (8 responses); and
- Apprentices from the co-op model will have both practical experience and technical knowledge.

Level of Industry Development and Support

Fulfilment of Work Placement Terms

One of the key components of the co-op apprenticeship programs is the work placement. Students alternate school terms with work placements during which they are employed in their trade for a period of three to six months at a time. According to PAB guidelines for co-op apprenticeship programs, work placements should account for a minimum of 50 percent of a program's scheduled time.

An important factor in the success of co-op programs, therefore, is the ability of students to obtain work placements. The surveys indicate that, during past intakes of the co-op programs, most students did not face major difficulties in obtaining job placements. However, in our survey of 41 students who enrolled in programs that are currently underway, it was found that work placements had been found for only 35 of the 52 work terms (67%) scheduled in their programs to date. In other words, students enrolled in a current program intake found work placements for two-thirds of the work terms scheduled and did not have work placements for one-third of the terms scheduled. In some cases, the work terms were underway at the time of the interview; as a result, it is

possible that the student found work before the work term concluded and, therefore, the ultimate actual percentage would be higher than 67 percent.

In general, students at the Camosun College programs were having more difficulty in obtaining placements than were students enrolled in the other programs. The two factors identified most often by students and program representatives, when asked which factors made it difficult to obtain a work placement, were:

- There are few jobs available in the area; and
- The students don't have enough actual work experience.

Other barriers mentioned for finding work placements are the timing of work terms and competition from other co-op students (including those in separate programs such as ELT or high school programs). Several students noted that the timing of classes made it difficult to find placement hosts since work terms are scheduled for what is typically a slow time while school terms may be during the industry's busy time.

In some regions, there simply is a limited demand for apprentices in these trades. For example, in July, 1996, students indentured in the Auto Refinishing Program at Camosun College accounted for 35 percent of all the apprentices in that trade on Vancouver Island as indicated in Table 43.

Table 43

Total Student Indentured Versus Total Apprentices in Region

College	Program	Students Indentured	Active Apprentices in the Region	Percent (%)
BCIT	AST	0	363	0.0
BCIT	HVAC-R	0	91	0.0
Camosun	Collision	7	43	16.3
Camosun	Refinishing	6	17	35.3
Northern Lights	AST	8	187	4.3
Northern Lights	Commercial Transport	10	104	9.6
Okanagan	Auto Tech	14	190	7.4
Okanagan	Auto Collision	8	44	18.2

One potential advantage of co-op programs, versus the traditional training model, is that the co-op model may enable the student to be trained in a variety of work environments. The interviews with students from previous intakes suggest that this is happening to some degree. Of the 39 students surveyed who participated in work terms (i.e., they did not leave the program prior to the first work term):

- 20 respondents (51%) indicated having worked for just one company during their co-op program;
- 13 respondents (33%) worked for two companies; and
- 6 respondents (16%) reported working for three or four employers.

Employers for the most part reported having hosted just one or two co-op students. A few companies have been very involved as placement hosts, placing as many as 10 students since the co-op program was established in their region. On average, the companies interviewed had served as a placement host for 2.5 students.

Recommendations

The employers, students, and program representatives were all asked whether they had any recommendations as to how the co-op program could be improved. The results are summarized in the following paragraphs.

a) Employers

Fewer than one-half of the employers surveyed provided recommendations as to how the co-op model could be made more responsive and relevant to local industry's needs. The main suggestions given, as indicated in Table 44, were to establish closer links with local industry and to provide more practical training.

Table 44

Recommendations From Employers

	Responses	Percent (%)
Strengthen links with industry	22	31.9
Provide more practical training	12	17.4
Provide more training in new technologies	8	11.6
Emphasize different aspects of the trade	5	7.2
Schools should follow up more with employers regarding work terms	2	2.9
More government involvement, subsidize students	2	2.9
No suggestions - doing a good job now	16	23.2

Several of those who suggested improving links with industry mentioned discussing training needs, in particular, to ensure that the training provided in the co-op programs is tailored to the needs of the local industry. Under the category of emphasizing different aspects of the trade, respondents suggested including training in certain specializations within a trade, such as emphasizing heavy equipment repair within the commercial transport program.

b) Students

We asked 41 current students and 40 former students for their recommendations as to how the co-op program could be improved. The most common suggestion given by program participants is to provide more practical training or shop time (seven responses by the current survey group and five by the former group). Current co-op students tended

to focus their suggestions on issues related to the work placements and job market demand. For instance, respondents from this group recommended:

- Providing more work placement assistance;
- Working one to two days in the field throughout the program rather than having distinct school and work terms;
- Smaller intakes of students to avoid oversupplying the market with program graduates;
- Subsidizing employers for the work terms to make more work placements available;
- Timing work terms to coincide with market demands for apprentices; and
- Strengthening links with industry by talking to more employers.

Former co-op students also made suggestions related to the work terms and job market, but more recommendations from this group related to the content of the programs. Some of these suggestions are:

- Update the training (newer models of engines, greater variety of auto models, etc.);
- Ensure the instructors are well qualified and helpful;
- Provide updated and more appropriate teaching materials and textbooks;
- Provide more tools and equipment to work with; and
- Lengthen the program, allowing for more time to learn.

Other issues mentioned by those surveyed were to improve relations with the Provincial Apprenticeship Branch so that co-op students are registered as apprentices, to

alter the length of work terms (making them longer in some programs, and breaking the long work term up in Camosun College's Auto Refinishing Program), and amalgamating the HVAC & R program at BCIT with the union's training program.

c) Program Representatives

Of the 36 representatives interviewed from the colleges, Industry Steering Committees, Ministry of Labour field staff, and Technical Advisory Committees, 18 respondents provided recommendations regarding how the co-op programs could be improved. These recommendations are summarized in Table 45.

Table 45

Recommendations Made by the Program Representatives to Improve the Co-op Programs

	Responses
Build stronger industry support for the program(s)	5
Increase the involvement of apprenticeship coordinators and counsellors in the process/increase funding for coordinators and counsellors to enable them to spend more time on co-op programs	3
Improve relations and better coordinate activities between the BCIT HVAC-R and the union	3
Cancel the co-op programs	2
Improve graduation and indenture rates, in particular, to avoid following the market with semi-trained workers	2
Improve the needs assessment process to ensure that there is sufficient employer demand to support the program	2
Indenture students to the Trade Advisory Committees rather than to Industry Steering Committee	1
Improve the selection and screening of students	1
Establish provincial standard for the training, particularly with respect to the length of courses	1
Use on-line technologies to enable programs to reach out further to students in the region	1
Improve promotion of the program in order to attract a higher standard of students	1
Provide more specialized training within the programs	1

Summary

The information presented in this chapter provides evidence of the effectiveness of the co-op model in the apprenticeable trades. The following is a summary of the most pertinent issues addressed in this chapter.

Table 7, page 82: 32 percent of the companies contacted hired graduates or acted as placement hosts for co-op students. This indicates a significant level of success for the program graduates.

Table 8, page 82: Of all the companies contacted who hired students/graduates, the majority (62 percent) had less than 10 employees. This figure supports the suggestion that the co-op model is more flexible and can more readily adapt to the needs of small companies. Statistically, the majority of apprentices in the province are employed by small companies of whether their training was via the co-op or the traditional model. Further research may be needed to clarify this relationship.

Table 10, page 85: The shortage of skilled qualified trades people predicted over the last years is supported by this finding.

Table 12, page 89: This finding supports the suggestion that most apprentices are hired by small companies who employ only one or two apprentices. A drop of nine percent occurs between students placed and graduates hired. This drop occurs exclusively in companies who hire more than one or two apprentices. The difference between students placed and graduates hired increases with the size of the company. Further research would be needed to determine the exact cause of this change. It would

also be of value to look at the situation demographically, from north to south, or from large centre to small centre.

Table 14, page 93: Students and graduates of co-op programs were rated satisfactorily by employers.

Table 17, page 99: Employers clearly indicated that there is a need for co-op type training in the trades. The main reason put forward by industry is that it is necessary to prepare people to enter the trades. This finding also supports the screening process put in place by some programs is effective in selecting candidates who are well suited to the trade and are likely to be successful.

Table 21, page 103: Employees who have had experience of co-op students during work placements of who have hired graduates indicate a clear preference for co-op grads over individuals trained in the traditional system.

Table 24, page 107: The majority of co-op students are between the ages of 20 and 24 years. This represents a significant departure from the provincial norm of 30 years of age plus. A major goal of the apprenticeship system in recent years has been to attract younger people to the trades.

Table 25, page 109: Most of the students enrolled in co-op programs indicated that they were satisfied with the training they received.

Table 26, page 110: Although many co-op students did encounter difficulty in securing a work placement. In the end, a very high percentage of students were successful in securing placements. Further research in this area may provide evidence of

how effective program market research was in each region and what effect it had on the ability of students to find work placements.

Table 29, page 114: A very high performance of co-op students felt confident that they would successfully complete their apprenticeship.

Table 31, page 117: In the trades shown here (these are the trade areas in which co-op programs have been developed) the total number of apprentices has not changed significantly since 1985. This finding supports the proposition that although the economy is growing and changing, and the demand for trades people has grown, the number of trades people being developed has not increased in proportion. These figures support the view that the trades in British Columbia are facing a crisis.

Table 37, page 124: The percentage of students from co-op programs who became indentured as apprentices is significantly higher in the Northern Lights College programs than in other programs in the province.

Table 39, page 126 and Table 40, page 129: The percentage of students who have become indentured as apprentices or certified as journeyman is significantly higher in the Northern Lights College programs than in other co-op programs in the province.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

Clearly, the Northern Lights College trades co-op programs have accomplished their original task of providing training programs that meet the needs of the industries they serve in northeastern British Columbia. Not only have these programs effectively fulfilled their original mandate, but have proven to be very successful when compared to other programs in the province as shown in Chapter Two. Table 36, page 123 shows the percentage of co-op students who have become indentured as apprentices to be significantly higher in the Northern Lights College programs than in other programs in the province. Table 38, page 125 shows the percentage of students who have become certified trades people to be higher in the Northern Lights College programs than other trades co-op programs. Table 39, page 126 shows the percentage of students who have become certified tradesmen or who are active apprentices to be significantly higher than other programs. Table 40, page 129 shows the percentage of students who became indentured as apprentices to be higher at NLC when compared to the traditional system. This chapter will look at the key areas that contributed to the success of the students as individuals and the programs as a whole. Extensive industry involvement in the development, implementation, and ongoing evaluation and updating of these programs is one of the most significant factors in the success of these programs. Industry involvement strongly influenced the success of the individual students and the programs themselves. The program development process which was driven primarily by the needs of the industries, as articulated by the industry steering committees, established the

parameters and operating characteristics that resulted in the success of both programs. Griffin (1984) asserts that a key success factor for a two year college apprenticeship program is the establishment of an industry steering committee for each program. He states:

> . . . Committees should consist of employers, employees (journeymen), and educators, preferably college representatives serving ex officio. Convene the advisory committees as frequently as needed to discuss such aspects of the instruction programs as relevance of instruction to on-the-job experience, adequacy of equipment and facilities, suitability of schedules, and qualifications of instructors. The major purpose of these committees should be to provide advice for meeting objectives of apprentices and industry . . . . (p. 110)

Ference Weicker (1996) found that industry involvement in trades co-op programs varied from program to program. They found that the level of industry involvement in the Northern Lights College programs was by far the highest or most complete of all the programs surveyed. Ference Weicker also found that a true partnership existed between Northern Lights College and the industry groups involved in the programs. Ference Weicker stated that industry involvement in program development and operation was one of the key indicators of success for trades co-op programs.

The modification of the provincial apprenticeship curriculum to accommodate the needs of the local industries contributed to the success of the programs as a whole and to the success of the individual students. The curriculum modifications or enhancements ensured that the training provided the students/apprentices with skills and knowledge that enhance their employability in the local market. Ference Weicker recommended that "A key objective of the model should be to develop programs that specifically meet local

industry needs" (p. 60). Employers benefitted by having access to a pool of employees who were well prepared to enter the industry and who were knowledgeable with regard to the type of equipment found in the region and were conversant with working conditions in the area. The curriculum was enhanced based on the recommendations of the industry steering committees. Material was added to the curriculum to accommodate the specific needs of the area. No material was deleted from the curriculum. The general sequence of delivery was also adhered to. Griffin (1984) listed relevant curriculum content based on the needs of the apprentices and industry as one of the critical success factors in linking two year college programs with apprenticeships. He states,

> Another element many authorities believed to be critical to successful linkage of two-year colleges with apprenticeship training was relevant curriculum . . . for curriculum to be relevant it has to reflect the needs of the apprentice and the industry and be limited to skills needed for job performance. (p. 24)

This approach was significant in terms of securing apprenticeship certification for the programs. In order to secure apprenticeship certification, the whole curriculum must be covered, and the sequence of delivery as established by the Provincial Trades Advisory Committee must be followed. A review of early trades co-op programs showed significant deviation from the provincial curriculum in many cases. Not only did this negate the possibility of securing certification, but it also proved to be a point of contention with the provincial bodies responsible for developing curriculum. The NLC curriculum contained all of the standard provincial material. That the enhancements were supported by the employer groups was also significant.

The school and work time frames that were developed by the NLC groups had an impact on the success of the programs. Every trades co-op program in the province used a different schedule. There would appear to be no one schedule that is more appropriate than another, and it is logical that different regions would have different needs. What is significant is the process used to establish the schedule. The schedule for the NLC program was developed by the industry steering committees. The intent was to accommodate the seasonal fluctuations of the industries involved. This approach proved to be a significant advantage to industry. It enabled the companies to plan their manpower needs more effectively, ensuring that productive staff were available during the busiest periods of the year. It also ensured that the student/apprentices would be able to attend school during the most appropriate time period from the employer's perspective. Griffin (1994) states:

> . . . another factor critical to linking two-year college services with apprenticeship training is scheduling the necessary courses at the right time. The best scheduling is believed to be that which takes into consideration the time most convenient to the apprentice, even when this time is outside the normal day of the college. This applies equally when alternative instructional delivery is used in the apprenticeship program. (p. 28)

This provided an economic advantage to the companies involved. Both program schedules, even though they were developed by industry, are a compromise. It is not feasible or possible to develop a schedule that would exactly meet the needs of every company involved. The real strength of this approach is in the ongoing contact with the end users. This was demonstrated by the modification made to the Commercial Transport Program schedule in 1977. The original schedule, established when the

program was first developed, was to be maintained until the program had evolved from pilot program status to full accreditation, at which time it would be reviewed. Ference Weicker (1996) recommended:

> A key objective of the model should be to develop programs that specifically meet local industry needs. As such, it should be industry (not the colleges and the PAB) that determines the most appropriate structure for a given program. The current guidelines, in effect, predetermine what a co-op program will look like; this structure may not be consistent with what industry in a specific region and a specific trade wants. At this stage, there is no evidence to suggest that only programs of a certain duration or a certain balance will be successful. In our opinion, the benefits of regional autonomy outweigh the benefits of standardized systems. (p. 60)

This process is also an indication of the commitment by industry to these programs over an extended period of time.

Limiting the program operation to the NLC region, and tying the number of students/graduates to the number of available positions in the region had a significant influence on the success of the program and the student/apprentices. A number of trades co-op programs have encountered problems related to finding work placements and employment for both students and graduates. As demonstrated in chapter three, NLC graduates were significantly more successful in securing work placements than those in other co-op programs. Many programs as shown in Chapter One started a new intake of students in a two year program every year. This resulted, in many cases, from students of different years in the same program competing for the same employment opportunities. The NLC programs, both two years in length, start every second year. This provides approximately 15 students from each program every two years. This approach ensured that the local market needs were addressed, but the market was not flooded. The match

between supply and demand in the NLC programs is not perfect as there is still some fluctuation in demand from year to year. The number of students graduated is slightly below the real market demand. This shortfall is intentional. In times of high demand all of the graduates are employed. In years where there is less demand, only a few students/apprentices encounter difficulties securing work placements. Ference Weicker (1996) recommended:

> **Co-op programs must continue to evolve and develop in response to industry needs.** Simply because a program has been successful to date does not mean that a given structure or approach will continue to be successful. It is important that colleges maintain close with industry and periodically step back to ensure that the program model is appropriate. Of particular concern is the variation in demand for students. It is important to obtain regular input from industry on changes in the need for workers and to carefully track the employment outcomes of graduates. As demand changes over time, it is entirely possible that programs may, from time to time, need to reduce class sizes or run courses less frequently (for example, every second or third year). (p. 60)

This approach provides stability to the program in a number of ways: The success rate for grads is consistently high, ensuring the success of the students in industry, providing a predictable market for future students, and developing an excellent track record that enhances the reputation of the program. The industry groups are comfortable with this approach as it provides them with a reliable pool of high quality employees. As the numbers are limited, it enables the industry groups to support the program by providing work placements for students when demand is down.

The selection process used to screen students into the program has been an important component in the success of both programs and of the individual students. The screening process takes a structured approach to identifying candidates for both programs

who are most likely to be successful. Although the process assesses academic ability, the main component is the interview process which includes representatives from the relevant industry steering committee and staff members from the program. The focus of the process is to identify candidates who are aware of the challenges facing students in the programs and who are committed to working in the industries the programs serve. This process has been very successful in identifying appropriate candidates for both programs, and has also been effective in counseling those who are not appropriate in directions that are more appropriate for them. The involvement of industry representatives in this process is key to its success. Employers bring many years of experience in hiring and training apprentices and dealing with trades people. This has had a positive impact on the drop out rate in both programs, which has been consistently below other programs in the province (see Chapter Two).

Ference Weicker (1996) recommended:

> **The involvement of industry in the selection of students should be considered a critical element of the model.** The quality of the students is a key determinant of the effectiveness of a program. The ability of a program to enroll a high quality of students is primarily a function of two factors:
>
> - The ability of the program to attract a good pool of applicants; and
> - The ability of the program to select, from this pool, students who are capable of meeting industry expectations.
>
> We believe that it is very important that there be a formal selection process for students, and that industry be involved in this process, for three reasons:
>
> - The involvement of industry in the process ensures that non-academic issues, which are important to employers, are given a high priority in the selection process.

- The fact that students are selected, rather than simply enrolled on a first come, first serve basis, fosters greater commitment to the program.
- Perhaps more than any other aspect, the involvement of industry in the selection process encourages them to take ownership in the program and of the students. (p. 62)

Apprenticeship certification is one the most critical components in the success of the NLC programs. The certification model developed for the NLC programs provides some clear advantages for the students, the employers, and the college. Complete apprenticeship certification, the ability to complete an apprenticeship program and become certified as a technician set a precedent in the trades co-op field. Students are indentured as apprentices with the steering committee acting as the employer on the apprenticeship contract. This not only enables the students to complete their apprenticeship through the program, but as they are indentured during the first week of school, it enables them to start accumulating time towards completion of their apprenticeship immediately. This arrangement set a precedent in apprenticeship training. Prior to the NLC system, in order to become indentured as an apprentice an individual had to be employed in the industry and be on the payroll of a company. This model provides the student with the opportunity to become an apprentice and to start apprenticeship without being employed by any particular company. The employers benefitted from this arrangement by having their staff complete their training and become certified without leaving home. Certification provides credibility to the program and enhances its reputation. Securing complete apprenticeship certification is one of the main factors contributing to the success of the programs. These programs were adopted by the

apprenticeship organization as the model that would apply to trades co-op programs across the province. This represented a distinct advantage over other programs in the province. The industry steering committees were primarily responsible for resolving the certification issue at NLC. They lobbied the Apprenticeship Organization, the Ministry of Education, and the Minister of Education on behalf of the programs and negotiated the certification model with the Provincial Apprenticeship Board. The importance of industry involvement in this process cannot be understated. Without their involvement and support of the industry groups, the certification issue would not have been resolved in favour of the NLC programs. This has represented a distinct advantage to the NLC programs. Other trades co-op programs were required to work under the original certification model which effectively limits them to job entry status.

The willingness of NLC to share power with the industry groups and to enable them to influence the development and operation of the programs is key to their success. It has enabled the employers to fully participate in program development and operation in a meaningful way, and has resulted in their taking full ownership of the programs. The kind of power-sharing arrangement developed here is a concept that is not easily accepted by an educational institution and required courage on the part of NLC. This partnership between NLC and the industry groups has been the foundation on which the success of the trades co-op programs has been built. There are advantages on both sides. The industry groups are able to have input into training initiatives that will directly benefit their organizations. From the college's perspective, the programs developed as a result of this partnership are relevant to the needs of the community they serve. The college also

benefits from the support and lobbying power inherent in this type of group. Ference Weicker (1996) found that the level of college/industry interaction was much higher with the NLC programs than other institutions offering trades co-op programs. They further recommended:

> **The colleges must be willing to share power if they truly expect to build industry support.** Apart from the need for workers, by far the most important factor determining the success of a given program is the level of industry support. If the colleges want industry support, they must provide industry with the opportunity to provide meaningful input. As has been seen with a number of the programs, especially the traditional Program Advisory Committees, industry representatives simply stop showing up for meetings if they feel that there role is not important and their recommendations are not taken seriously. The programs that have been most successful are those that have been willing to give industry an equal voice in determining the structure of the program and the selection of students. When industry representatives are given and equal voice, they take ownership of the program and, therefore, are much more likely to host students, hire students, and strongly encourage other employers to do the same. (p. 59)

Clearly, the success of the NLC programs can be attributed to a number of specific issues or sets of circumstances: apprenticeship certification, appropriate school/work scheduling, and industry involvement. However, these are individual issues that, taken on their own, would not produce the kind of success enjoyed by the NLC programs. Collectively, they add up to a very effective training model. However, if these programs were transported to another location intact, there is no guarantee that they would be equally as successful. To some extent this has happened. As the NLC programs have been identified as the model for the province, there has been a tendency to copy the model exactly as it is used in the northeast. This approach has proved to be

ineffective. The conditions that brought about the NLC model are unique to the northeast and are not directly transferable to other regions. Ference Weicker (1996) recommended:

> **Primary responsibility for the design of programs and applying to the PAB for accreditation must lie with the Industry Steering Committees rather than the colleges.** Concern has been expressed by some that colleges will take a cookie cutter approach and simply apply the co-op structure to other trades. Such an approach would negate a primary advantage of the co-op model; namely, that it allows industry an opportunity to play a key role in the design of the program. For industry to have meaningful input, it is vital that the colleges not pre-determine the structure of the programs; rather they must be open to a variety of options including versions of a co-op program which vary in length, and structure, and ELT program, or even no program at all. (p. 59)

There is no doubt that the NLC trades co-op programs are very successful and effectively fulfill their mandate to serve the needs of the particular industries they were designed for. They have become successful in the face of many obstacles and challenges and have excelled where other programs have had less success. However, there is no particular set of circumstances, factors, or other elements that differentiate the NLC programs substantially from any other region in the province. The true catalyst that brought about the combination of circumstances responsible for the NLC programs lies in the philosophy that inspired the original concept to develop training programs that would address the specific needs of the industrial community in the northeast and that would be driven by the industries themselves. It is adherence to this concept, regardless of traditional considerations on the part of the college, and a willingness to enter into a real partnership with industry that brought about the success of the NLC trades co-op programs.

Areas For Further Research

1. Alternative apprenticeship training models developed in other regions of Canada. An investigation of apprenticeship systems across Canada and how they have addressed the need for more flexible delivery models/systems for apprenticeship training. How alternate models have been developed and their success rates.

2. The structure of apprenticeship organizations in other regions of Canada. A study of apprenticeship organizations in other regions of Canada and how their organizational structure has impacted on their ability to change. How do other systems compare to British Columbia.

3. The interaction between employers and the apprenticeship organization. An investigation of how industry/employers interact with the provincial apprenticeship organization and the deliverers of training. An evaluation of their communication mechanisms and their effectiveness.

4. The political structure of apprenticeship in British Columbia and how it impacts on the apprenticeship training system.

5. Industry involvement in trades training. The perspective of industrial organizations regarding the apprenticeship system, how they perceive apprenticeship, and how well it serves them.

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IMAGE EVALUATION
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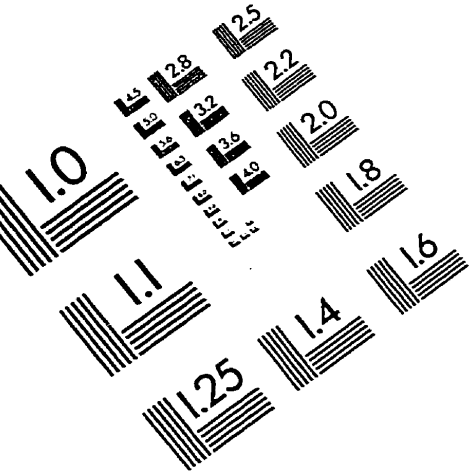

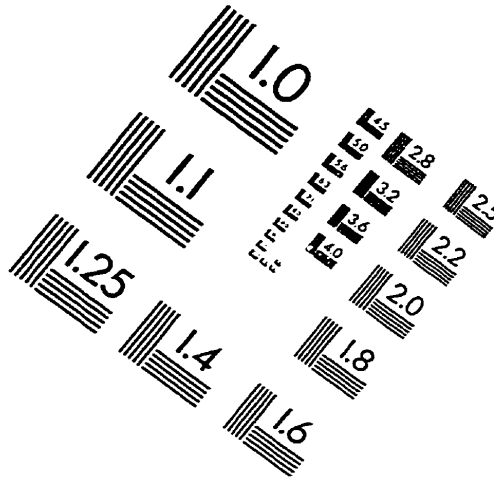

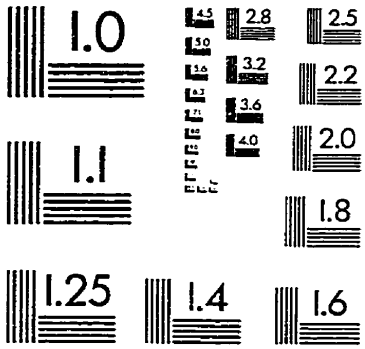

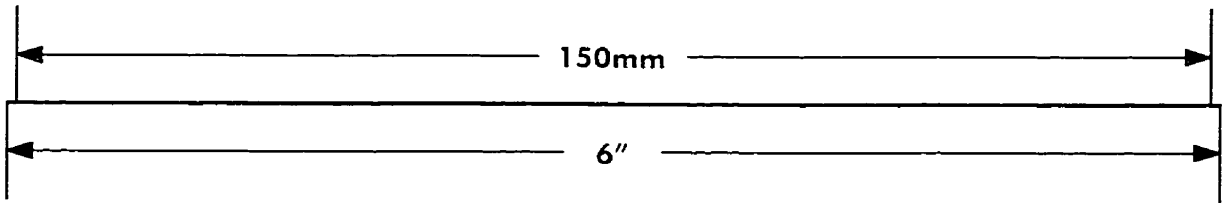

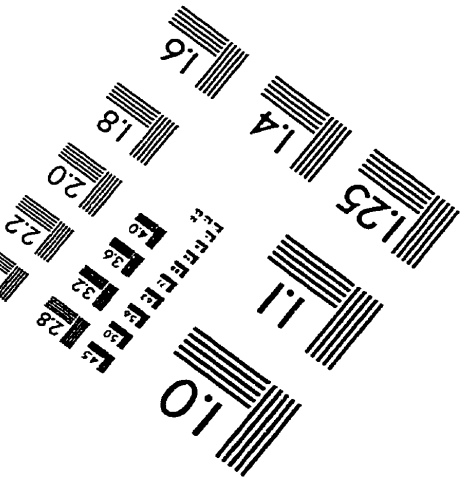

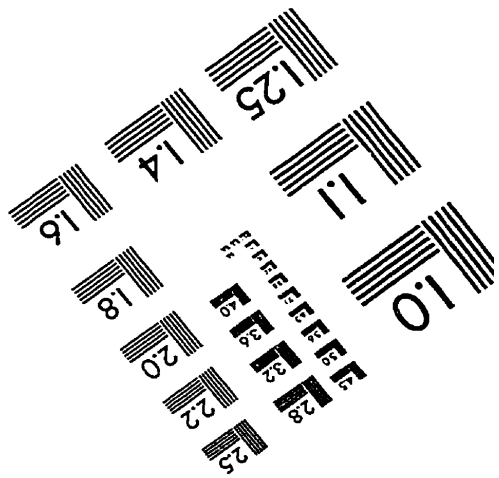

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