A CASE STUDY OF THE DECISION MAKING PROCESS THAT LED TO THE CLOSING OF THE MEDICAL LABORATORY SCIENCE PROGRAM AT BCIT IN 1996 AND ITS REOPENING IN 1999

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ABSTRACT

For years, the supply of health professionals has been characterized by "boom and bust" cycles. At times, planners have perceived an oversupply of healthcare providers and, at other times, a shortage. This case study of the medical laboratory technologist occupation is a prime example. The purpose of this study was to investigate the closure and reopening of the Medical Laboratory Science Program at BCIT and discuss the issues and lessons to be learned from the decision making criteria and process used.

The health reforms of the 1990's had a profound impact on medical laboratory technologists in British Columbia. There was a perceived surplus of technologists, a major shift in practice to highly automated core laboratory -based settings, an increase in the casualization of the workforce; and a workforce that was getting older. Monitoring and investigating the key forces in the demand for and supply of medical laboratory personnel provides useful insights into the future and better information for determining policy actions. However, the data collected by BCIT from employers on their projected hiring needs provided a limited picture. More information was needed. The story of the closure of the medical laboratory science program at BCIT is a cautionary tale with three important lessons. First, we rarely have good research evidence to support health human resources planning. Second, program discontinuance decisions are not easy to make. There are many stakeholders that need to be consulted and a complete environmental scan must be undertaken considering all internal and external factors.

Third, there is still much work to be done in the efforts to improve decision making abilities of administrators to be more thorough in their data gathering and analysis. It is recommended that educational administrators adopt the Force Field Analysis model that encompasses the idea that forces both drive and restrain change. The diagram helps us picture the "tug-of-war" between the forces around any given issue. Because force-

field analysis causes people to think about what works for and against the status quo it can be used to study existing problems, or to anticipate and plan more effectively for implementing change.

DEDICATION

This dissertation is dedicated to my wife, Pauline, and my children, Cassandra and Christina. As anyone who has ever made the decision to pursue a doctoral degree and write a dissertation knows, the process is long and, at times, all-consuming of time and energy.

Throughout this process, they have been supportive and understanding. They also have been my inspiration and my motivation. The time spent writing this document was time they had to sacrifice by not having me around. Pauline has been the glue that has kept us all together and moving forward as a family. I love each of you dearly.

I also would like to dedicate this dissertation to those who have sacrificed for me and my family, and loved and supported us, in order for this to be possible today. My parents, Dharam Singh Basi and Sarbjit Kaur; my wife's parents, Nacchhatter Singh Gill and Gurdial Kaur. They are the family structure that put the pieces in place and I will always remember them for their love, support, and sacrifices that had direct and indirect influence on the culmination of attaining this degree.

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First, there was my committee consisting of Dr. Man (Cindy) Xin , Dr. John Snyder chaired by Dr. Geoff Madoc-Jones all of whom had a significant impact on ensuring the product I was producing was the very best it could be and were key resources for this study and supporters of my research.

Dr. Geoff Madoc-Jones, my dissertation supervisor, has been instrumental in helping me navigate through this process, and he has shared his expertise of good research practices, and of managing the dissertation process, which were invaluable for completing this study.

Members of my committee provided the necessary oversight for my dissertation: All phases of my research were subject to their scrutiny and review. They were my consultants and advisors, and I was quite fortunate that they also played the role of mentors, providing counsel and guidance along the way.

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The managerial professional development committee at BCIT has been supportive of me throughout, and a source of encouragement. They have also assisted me financially to complete this degree, and for that I am thankful.

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GLOSSARY

BCAHC	BC Academic Health Council
BCCH	British Columbia's Children's Hospital
BCIT	British Columbia Institute of Technology
BCSMT	British Columbia Society of Medical Technologists
CIHI	Canadian Institute for Health Information
CLS	Clinical Laboratory Science
CMA	Canadian Medical Association
CSMLS	Canadian Society for Medical Laboratory Science
CSLT	Canadian Society of Laboratory Technologists
ESLA	Employment Security and Labour Force Adjustment Agreement
HHR	Health Human Resources
HLAA	Health Labour Adjustment Agency
MLS	Medical Laboratory Science
MLT	Medical Laboratory Technologist
MLTDB	Medical Laboratory Technologist Database
MT	Medical Technologist
NACCLS	National Accrediting Agency for Clinical Laboratory Sciences
NCA	National Credentialing Agency
PAC	Program Advisory Committee
PLCO	Provincial Laboratory Coordinating Office
SOHS	School of Health Sciences
VALM	Vancouver Area Laboratory Managers
VGH	Vancouver General Hospital

CHAPTER 1: INTRODUCTION & BACKGROUND

> *"Let us be Men*
> *For God's sake, let us be men*
> *not monkeys minding machines…"*
> D H Lawrence

For many universities, colleges and institutions today's environment is marked by increased competition, globalization, decreased public funding, and greater calls for accountability. The future of many institutions will be marked by the challenge of having to make hard decisions regarding priorities, what to support, and what not to. These demands will call on institutional leaders to implement different types of changes that have the potential to significantly affect the relatively insulated academic areas of the institution. These choices reflect the "re" words so prevalent in organizational life throughout the last decade –reducing, reallocating, refocusing, and restructuring. These trends do not apply only to the business functions of the institution; their results increasingly will be felt in academic programs and departments.

> There are never enough resources and tensions over priorities always exist. Institutions are open to outside influence, and external forces may push for change as well as demand continuity. Furthermore, while leaders strive for rationality and transparency, campus decisions often are shaped by political forces including powerful and constantly changing coalitions, negotiations, and horse- trading.
>
> Closing academic programs is often a difficult, disruptive, contentious process. It deeply touches the institution and can be personally threatening to individuals who have committed their life's work to a particular field or discipline (Eckel, 2003).

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The issue of healthcare restructuring and its ripple effects throughout the system are well known across Canada. Several provinces have already undertaken redesign of their medical laboratory systems, in varying degrees, over the past few years. As the hospital system struggles with the challenges of change, the students and the educational systems are always impacted.(Amhurst HealthCare Consultants, 2007)

Medical Laboratory Science technology is the third largest healthcare practice in Canada, following nurses and physicians and one that has witnessed the greatest increase in the use of technology (Davis, 2002). The British Columbia (BC) provincial government undertook a review of laboratory services in 2003 (Bayne, 2003). The review's purpose was to find ways to restructure and improve laboratory services in BC to achieve a more coordinated, collaborative and cost-effective system of laboratories that will result in better patient care and better use of health dollars. Technological advancements continue to significantly change the job functions and medical laboratory service delivery needs (Assessment Strategies for Health Canada, 2001) in British Columbia.

The provincial review by Bayne (2003) also identified major future challenges that need to be addressed. These challenges included: - impending shortages of trained medical laboratory technologists. This is a national problem related to an aging workforce combined with the reduced size of training programs for new entrants to the field.

My dissertation will highlight the significant impact laboratory redesign in BC had on the post secondary education and training sector.

1.1   STATEMENT OF THE RESEARCH PROBLEM

The purpose of my qualitative study will be to explore, discover, understand and describe the closure and reopening of the Medical Laboratory Science Program at BCIT and discuss the issues and lessons to be learned from the decision making criteria and process used by the leadership of the day. I propose to also examine other factors such as, significant manpower shortages and technological advances in Medical Laboratory Science with the development of new instrumentation, automation and robotics which could have exacerbated and led to the situation.

My study will outline how technological advancements continue to significantly change the job functions and laboratory service delivery needs in British Columbia, and how this has a real impact on the labour and future student demand.

The underlying premise of my research is that any changes in the laboratory system and particularly at the workforce level, must take into account both the education/training and clinical needs in order to ensure seamless, efficient, quality, educational, service and training delivery.

In order to investigate the processes through which BCIT discontinued its medical laboratory science program, this study asked the following question:

What caused the discontinuance in 1996 of the BCIT Medical Laboratory Science program and its subsequent revival in 1999?

This question was the central research question; it investigated the processes through which the program was discontinued. The primary focus of the study was to capture the reasons why the program was terminated and then reopened three years later

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with specific attention to leadership and external forces. I explored this question by looking at

How did the process unfold? Who were the people involved? What events occurred? What was the outcome?

This research is intended as a small first step in exploring the complex issue of program closure. Can we learn from the past, and if so, what lessons are to be learned from this case study? Hopefully my case study will illustrate what happened, how it happened, how critical decisions were made, review the outcomes and point towards what potential lessons we can learn from such a program closure. At the heart of this study is the desire to draw insights that might help inform others about closing programs.

1.2 CONTEXT (BCIT AND MEDICAL LABORATORY SCIENCE PROGRAM)

When the British Columbia Institute of Technology (BCIT) first opened its doors to students in the spring of 1964, its philosophy was to prepare job-ready graduates who could step into key technical and commercial positions and make an immediate contribution. After 45 years as one of the leading schools of technology in Western Canada, BCIT has seen many changes, but its basic philosophy has remained the same.

According to BCIT Institutional Research and Planning(IRP) the Institute has a total enrolment (full-time and part-time combined) of 47,754 in 2007/08 (IRP, 2008). The Institute's new mission is " To build pathways for career success in the global marketplace through teaching excellence and applied education and research" and a message from the President states that:

Since its inception, BCIT has offered wide-ranging programs in technologies and trades, credentials (now extending to master's degrees) applied research, international activities, and partnerships with industry. We have, over many decades, focussed on immediately-employable, skilled graduates across diverse industry sectors, and have facilitated lifelong learning for career progression and career change. We have been successful in supporting the economic development of this province for more than forty years. While the economy, technology, and student demographics have always influenced our planning, we must be especially mindful of these factors now. (IRP, 2008) (P.1-5)

The institute's mandate is to prepare dynamic, highly skilled members of the

workforce by delivering full- and part-time courses of study including:

- Certificate, diploma and degree studies in technologies and trades,
- Conduct industry training and upgrading courses.
- Conduct technology transfer activities by providing opportunities for innovation, industrial assistance and contracted applied research.
- Be a province-wide innovative organization, specializing in advances technology training and focusing on those initiatives that increase the level of economic activity, entrepreneurial activity, and employment for the province.

Figure 1 Historical overview of BCIT from 1960 to present day.

Formative Years

1960 BC Vocational School opens in Burnaby
1961 Plans are announced to establish BCIT
1962 The first principal of BCIT is appointed
1964 The first students arrive on the Burnaby campus: 498 of them in Engineering, Health and Business
1966 BCIT celebrates its first graduates
1975 Number of students is now 3,200

Consolidation Years

1977 BCIT establishes Sea Island campus
1979 The BCIT Alumni Association is incorporated
1986 BCIT merges with Pacific Vocational Institute
1989 BCIT's mandate is broadened to include applied research
1989 BCIT's Technology Centre is established as a focus for applied research
1994 The Pacific Marine Training Institute amalgamates with BCIT

BCIT Evolves as a Polytechnic

1996 BCIT offers its first Bachelor of Technology degree in Environmental Engineering Technology
1997 The new Downtown Campus opens
2002 BCIT, UBC, SFU and ECIAD become joint owners of Great Northern Way Campus
2004 Number of students is now more than 48,000
Polytechnic status is enshrined in legislation
2005 Research Services Office opens to support applied research
2007 BCIT opens new 300,000 square-foot Aerospace Technology Campus at gateway to Vancouver International Airport
BCIT's international partnerships span training, education and research initiatives in South America, Central America, Southeast Asia and Eastern Europe
Total BCIT Alumni have grown to more than 120,000
2008 BCIT welcomes its first intake of students into the new accelerated Bachelor of Science in Nursing (BSN) program.
BCIT named "Canada's Greenest Campus"

(BCIT, 2009a)

The Medical Laboratory Science Program at BCIT

The Medical Laboratory Science (MLS) program is a competency-based program. It is designed and based on competencies established by the national certifying body, the Canadian Society of Medical Laboratory Science (CSMLS), and by the BCIT Medical Laboratory industry-based design process. The program provides theoretical, practical and clinical learning experiences. In a competency-based model, students have the opportunity to first practice and then become capable of a variety of competencies. Students prove competence during real-life experiences (clinical practicums). Successful completion of this program requires proof of competence (BCIT, 2006).

HISTORY

As one of the oldest allied health professions, we can trace the very early beginnings of the medical laboratory technology profession to on-the-job-type training "hospital trained technologists" (Delwiche, 2003). As the level of testing increased in complexity, the need for laboratorians with a science background became apparent and so the British Columbia Institute of Technology (BCIT) began its MLT training program in the mid 1960s.

The *Technical and Vocational Training Assistance Act* of 1960 (Lyons, Randhawa, & Paulson, 1991) provided funds for new technical and vocational schools across Canada. In British Columbia the concept was eagerly embraced and even before official passage of the act, a task force began planning a new institute of technology.

Construction was complete by 1964 and on October 6th the British Columbia Institute of Technology was formally opened by Premier W.A.C. Bennett. He promised

to double the institute's size, and that promise would be fulfilled when a new laboratory and classroom building opened in September, 1967. By September, with the institute's first 17 two-year technology programs in place, about 645 more students were enrolled.

On May 19, 1964, several months before the official opening of BCIT, the first class of students began a six-month course in Medical Laboratory Technology. The Medical Laboratory Advisory Committee envisioned the five instructors teaching all subjects (clinical chemistry, hematology, histology, immunohaematology and microbiology) to all students in one huge laboratory at the same time. By the fall of 1965, the Medical Laboratory program was 22 months in length, including nine at BCIT and 13 at an approved laboratory, during which a small monthly stipend was paid to students by the hospitals that served as training sites (Lazare, 2002). Candidates were advised that they "must have a strong interest in the sciences, including mathematics, and must be meticulous in their work, dress and habits"(BCIT, 1965).

The first MLS class at BCIT had 37 medical laboratory technology students. First-year fees were between $150 and $190, and second-year fees were $60 (C. Davis, 2009; Homeroom, 2009).

The Medical Laboratory program was outlined in BCIT's first printed calendar. This contained an introductory section on aims and objectives.

> The British Columbia Institute of Technology is an institution for advanced education, the first of its kind in British Columbia. It is founded on the following resolutions:
>
> Improvement in the art of understanding, controlling, and using the forces of nature for the benefit of humanity is a necessity.

All individuals on the Institute staff, without regard to rank or age, will teach their juniors, cooperate with their equals, and learn from their seniors with full realization of their responsibility to society and full awareness of the need for ethical behaviour.

The programs will demand ability, strong motivation, and serious effort and application on the part of the student.

Education of technicians at the post-secondary school level should develop the ability to apply engineering, scientific, business, or processional concepts to trade, industry, commerce or professional operations in the chosen field. The training must not be so narrow that it prohibits reasonable understanding of professional concepts nor so broad that it precludes ability to deal practically with specific technical matters.

This requires a proper balance between the theoretical and practical aspects of the training and presupposes the length of the course to be completely adequate to provide the required foundation for the chosen career.

It is the aim of the Institute to produce graduate technicians who, with additional experience, will rapidly assume responsible supervisory or managerial positions in business or industry. Their particular interests and abilities should be in the practical and technical aspects of engineering or business rather than in the development of new basic principles. Consequently, it is expected that they will provide liaison between the professional and the craftsman (BCIT, 1965).

In 1997/98, after operating continuously for 34 years, the School of Health Sciences (SOHS) temporarily closed the Medical Laboratory Technology program. This closure likely had a great impact because the Medical Laboratory program had been one of the initial two programs offered at BCIT and was considered a mainstay of the SOHS by staff, students and alumni alike (Lazare, 2002).

This led to subsequent shortages in lab techs in BC. This situation is only now being remedied with newly trained technologists joining the workforce since the program was reopened in 1999 (Bayne, 2003).

The early eighties saw a change in government and hiring freezes beginning in 1981.

As laboratory re-engineering progressed throughout the next two decades, the training program began to ramp down graduating numbers in order to meet industry hiring needs (Table 1).

Table 1 Ramping down of students in order to meet industry needs

	1992	1994	1995	1996	1997	1998
BCIT MLT intake:	60	40	20	0	0	0

BCIT's MLT program officially closed, staff was laid off and budgets eliminated. Several hospitals chose to maintain training, and entered partnership arrangements with the Northern Alberta Institute of Technology (NAIT). However the industry in British Columbia soon began to experience increased rates of retirements and the loss of trained workers superseded rates of new hires. BCIT began their process for a revised program start-up in 1998 seeking and including the input from stakeholders. Because the industry could not be supplied with graduates fast enough, a second program was developed to fast track the graduates from the Bachelor of Medical Laboratory Science program (BMLSc) a two year undergraduate degree offered by the Department of Pathology in the Faculty of Medicine at the University of British Columbia's (UBC) into the laboratory. An excess of 40 graduates from the previous five years showed interest in participating in this one year fast track. However, this group did not follow-through so the fast track program was adapted to include technologists who wanted to return to the field and technologists who had been trained in other countries. Sixteen students in the

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"accelerated program" (a one-time only offering) filled the gap before diploma graduates were available. Forty students were enrolled in the revived diploma program in 1999 (Table 2).

Table 2 MLS Program student Intake numbers

	1999	2000	2001	2002	2003	2004	2005	2006	2007
BCIT MLT intake:	40	40	40	40	40	40	40	60	60
Accelerated program			16			18	16	14	14

BCIT's "accelerated program" is now called the Medical Laboratory Science Professional Qualifying program. This program is designed as a refresher for internationally trained medical laboratory technologists, or Canadian-trained medical laboratory technologists who have been out of the workforce for a lengthy period (BCIT, 2009b).

PROGRAM STRUCTURE

The medical laboratory sciences diploma curriculum is structured so that students study for 45 weeks at BCIT and 41 weeks at an affiliated hospital/clinical practicum site. This program spans two-and-one-half years and is known as the integrated practicum/ theory model. This plan of study allows students to complete the coursework required to challenge the national certification exams and to be employed as a medical technologist.

> Employers are increasingly seeking graduates with a strong base of critical and analytical thinking, communication, and problem-solving skills. In addition to technical skills, employers value technologists with a commitment to learning new skills and techniques that allow them to adjust to new situations. To help students develop the skills required in the healthcare system of the future, the program emphasizes the development

of professionalism, reasoning and reflection, communication, group process skills, and learning and technical skills. (BCIT, 2006)

The first year provides a broadly based background in the sciences and mathematics. Major emphasis is placed on biological sciences and chemistry. The combined classroom and laboratory studies provide experience in clinical chemistry, hematology, microbiology, serology, histology, urinalysis, and instrumentation. BCIT's medical laboratory sciences curriculum meets the requirements set out by the CSMLS for Medical Laboratory Sciences. The program is set up into 5 Levels and all students must complete the requirements of 165 credit hours presented in the medical laboratory sciences plan of study.

Table 3 MLS program details

Program	BCIT (Sept 06 intake)
Number of MLT Students	62
Weeks of Classes at College	45
Weeks of Practicum	41
Total weeks/ Program	86
Total hours/ Program	2980
Terms/ Program	5
Total months	22 (plus 3 months summer break =25)

PRACTICUM PLACEMENTS FOR STUDENTS

BCIT arranges clinical training for the student. Training sites are available in all provincial Health authorities (Fraser Health, Interior Health, Northern Health, Provincial Health Services, Vancouver Coastal, and Vancouver Island), BC Biomedical

Laboratories, and MDS Clinical Laboratories. The following is the schedule that was

developed for the revised program that reopened in 1999.

Sep	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**
1st yr			2wk					5 wk			
2nd yr		6wk		+	10 wk				12		wks
3rd yr: 5 wk											

- Level 1 placement is two weeks of specimen procurement.
- Level 2 placement is five weeks of orientation to laboratory work in 4 departments: (histology cutting, hematology making smears and loading instruments, microbiology specimen set-up and gram stains, chemistry routine instrument maintenance and set-up).
- Level 3/4 is 16 weeks plus Christmas break.
- Level 5 is 17 weeks through the summer – students graduate in October.

Note: With the September 2006 intake, the MLS program moved from this integrated

practicum/ theory model, to one 40 week block practicum in the last two terms of the

program.

OPERATIONAL COSTS

Medical Laboratory Science technology programs are expensive, due to the costs

of personnel, equipment and supplies. Also, the breadth of the profession requires faculty

with expertise in a variety of laboratory areas. The 2008/09 (Diploma + Certificate)

combined cost (Salaries & Non-salary) operating budget for the BCIT Medical

Laboratory Science program was approx $1.67 million. Permanent staff in MLS

included: 10.0 Instructors, 6.8 Assistant Instructors 1.9 Technical Staff and 0.1 Program

Assistant for a total Full time equivalency (FTE) of 18.8 (SOHS Budget Planning,

personal communication, August, 1, 2008).

1.3   SIGNIFICANCE OF STUDY

This case study sought to understand the concept of program discontinuance and the process through which BCIT closed its medical laboratory science program in 1996. The primary intent was to gain a deeper understanding of the paths that were followed and how tough decisions were made and implemented with a specific focus on how elements of external forces and leadership influenced the process. The findings might be helpful to academic leaders who are attempting to discontinue programs. Discontinuing programs on most campuses is a last ditch effort (Breneman, 1993; Massey, 1994) and one which is painful and emotional for those involved (Gumport, 1993). The results should help campus change agents better understand the termination process and possibly help them make tough decisions and undertake program discontinuance more effectively and efficiently.

A second intent of this research was to illuminate some of the issues related to the broader issue of healthcare changes in British Columbia. The literature is rife with statements about the nature of change in healthcare in Canada and the presence (or absence) of leadership in this process. Through this case study, I hoped to say something about how these changes can have a direct effect on allied health training programs which in turn leads to institutional change. Specifically the purpose of this qualitative study was to explore, discover, understand and describe the closure and reopening of the Medical Laboratory Science Program at BCIT in 1996 and discuss the issues and lessons to be learned from the decision making criteria and process used by the leadership of the day. I also examined other environmental external factors such as, significant manpower shortages and technological advances in Medical Laboratory Science such as the

development of new instrumentation, automation and robotics which could have

exacerbated the situation.

My study outlines how technological advancements significantly change the job

functions and laboratory service delivery needs in British Columbia, and how this had a

real impact on the labour and future student demand.

CHAPTER 2: REVIEW OF LITERATURE

My review of literature has three major foci. First, there is a review of articles and reports documenting the turbulence in the healthcare system in Canada and the downsizing of hospitals. Care is taken to identify studies that highlight the problems associated with the health human resources and medical laboratory technology professions. Especially critical are those reports affecting British Columbia. Some of this literature is cited as documentary support in Chapter 5.

A second major focus is a review of documentation of the role and profession of Medical Laboratory Technologists in Canada and British Columbia. Critical to this analysis is a review of specific demographic data from the Canadian Institute for Health Information (CIHI), Statistics Canada and the Canadian Society for Medical Laboratory Science (CSMLS).

A third and final review will focus on journals and documents concerned with the potential influence of leadership of organizational change and external forces that may shape the outcomes of the program discontinuance process at post secondary institutions.

2.0   INTRODUCTION

The disciplines of allied health (which includes medical laboratory science) are positioned at the intersection of two industries with turbulent environments: healthcare

and higher education Layman, and Bamberg, (2006) and Castillo, (2000) describe the healthcare environment as being turbulent.

An uncertain environment also affects healthcare professions. In particular, allied health education has faced waxing and waning workforce needs. One profession that has been affected in this way is that of clinical laboratory science (also known as medical laboratory science)(Castillo, 2000).

Selecting the appropriate strategy to cope with these turbulent environments is the responsibility of leadership in both sectors Layman, and Bamberg, (2006)(Layman & Bamberg, 2006). Survival in a turbulent healthcare environment depends on skills in strategic management. Reflecting this view, more than 90% of leaders of schools of allied health rated strategic planning as an important or very important skill for Deans. This skill becomes more important as business and corporate models are adopted and used in higher education Layman, and Bamberg, (2006).

An important component of strategic planning is environmental scanning. In environmental scanning, leaders assess threats and opportunities in the external environment. This information becomes the basis of future initiatives. Understanding the environment, however, is not a simple task (Layman, & Bamberg, 2005).

Healthcare Environment

In healthcare, multiple and varied terms have been used to describe the environment including turbulent (Hartman & Crow, 2002; Wagar & Rondeau, 2000). In fact, the healthcare environment has been described as unremittingly turbulent (Friedman

& Goes, 2000). It has even been described as hyperturbulent (Rotarius & Liberman, 2000).

"Turbulence exists when changes faced by an organization are nontrivial, rapid, and discontinuous" (Cameron, Kim, & Whetten, 1987) (p.225). According to Achrol, short cycles of technological innovation and obsolescence and the explosion of knowledge drive turbulence (Achrol, 1991).

Allied Health Academic Environment

Schools of allied health face the additional challenges of the environment of higher education. As the healthcare system struggles with the challenges of change, the students and the post secondary education system are going to be impacted (Amhurst HealthCare Consultants, 2007).

Workforce needs affect numbers of students in academic programs and their subsequent job placement rates after graduation. It is also perceived that the factors in the environment of healthcare have restricted the ability of academic programs to place students in sites for clinical education (Lorenzi, Sims, & Slocum, 1981). The complexity of these situations increases the environmental turbulence for schools of allied health (Layman & Bamberg, 2006).

Reflecting this view, more than 69% of CEO leaders of Canadian academic healthcare organizations identified training additional healthcare professionals to be a priority to accelerate health system renewal (Gruenwoldt & Brimacombe, 2006).

Academic leaders in schools of allied health can benefit from an understanding of the concept of environment. Consultants and executives justify various goals and

strategies in terms of environmental factors or changes in the environment. Grasping the underlying body of knowledge will help academic leaders to either successfully refute the consultants' recommendations or to implement the executives' strategic directives (Layman & Bamberg, 2006).

2.1 OVERVIEW OF THE CANADIAN HEALTHCARE SYSTEM

The Canadian healthcare system provides healthcare to more than 30 million citizens, with public funding estimated at $151.3 billion in 2006, and is forecast to have reached $161.6 billion in 2007 and $171.9 billion in 2008. This total spending for 2008 is approximately 10.7% of that year's GDP in Canada (CIHI, 2008). It employs 740,000 workers in more than 1200 hospitals in 10 provinces and three territories. The system is governed by the Canada Health Act, which defines underlying high-level principles and polices. This act embraces the principle of universality supported by 100 percent public funding, thereby guaranteeing care to all Canadian citizens (Canada, 2001).

Canada's national health-insurance program (also called medicare) is designed to ensure that every resident of Canada receives medical care and hospital treatment, the cost of which is paid through general taxes or through compulsory health-insurance premiums. Medicare developed in two stages. The first was the Hospital Insurance and Diagnostic Act of 1957, which gave the Canadian government authority to enter into an agreement with the provinces to establish a comprehensive, universal plan covering acute hospital care and laboratory and radiology diagnostic services. Nine years later, the Medical Care Act of 1966 extended health insurance to cover doctors' services.

While the basic principles of medicare are determined by federal legislation, responsibility for health under the Constitution falls under provincial jurisdiction. Therefore, there are certain variations in the plan from province to province. However, to be eligible for federal cost sharing, the provinces must in their health policies meet criteria of accessibility, universality, comprehensiveness, portability and administration (The Canadian Encyclopedia, 2009).

> The principles of the Canada Health Act began as simple conditions attached to federal funding for medicare. Over time, they became much more than that. Today, they represent both the values underlying the healthcare system and the conditions that governments attach to funding a national system of public healthcare. The principles have stood the test of time and continue to reflect the values of Canadians (Romanow, 2002)(p.60)

In 1984, the *Canada Health Act* (CHA) was enacted which enumerated the five fundamental principles that have, in recent years, come to define the Canadian healthcare system: public administration, universality, accessibility, portability, and comprehensiveness. These principles have also become the conditions that the federal government has placed on its transfer of funds to the provinces (Romanow, 2002).

The Canada Health Act provides a short explanation of each tenet so that provinces can design a health system that will preserve their access to federal funding.

- The rule of public administration states that the administration of the healthcare insurance plan of a province or territory must be carried out on a non-profit basis by a public authority.
- The rule of comprehensiveness states that all medically necessary services provided by hospitals and doctors must be insured.
- The rule of universality states that all insured persons in the province or territory must be entitled to public health insurance coverage on uniform terms and conditions.

- The rule of portability states that coverage for insured services must be maintained when an insured person moves or travels within Canada or travels outside the country.
- The rule of accessibility states that reasonable access by insured persons to medically necessary hospital and physician services must be unimpeded by financial or other barriers.

In addition to these rules, two provisions in the Canada Health Act cover cost sharing. The first stipulates that there cannot be extra billing for medical services by doctors working under the terms of the health insurance plan of the province or territory. The second states that there will be no user charges for insured health services by hospitals or other providers under the provincial or territorial healthcare plan. These rules serve as guidelines for provincial health planners who decide what the healthcare system in each province will provide and how it will be provided (Health Canada, 2009).

2.2   THE 1990's WERE A TURBULENT TIME IN HEALTHCARE

During the 1990's the funding mechanisms and delivery infrastructure were subjected to tremendous fiscal and structural changes (Canada, 2001). As provincial healthcare systems struggled to adapt to decreased federal funding for healthcare, sources of expenditures were placed under scrutiny.

> Controlling healthcare expenditures has for several years been a political objective in Canada. The provincial governments already allocate a considerable portion (approximately one-third) of their budgets to healthcare. The difficult economic situation, combined with the freeze on federal Established Program Financing (EPF) transfer payments, has tightened the financial restraints on provincial governments (Madore, 1993).

Hospital closures, amalgamations, and changes to patient care services ensued. Nine of the ten provinces radically restructured their healthcare systems in the late 1980's and 1990s. What ensued was what has been referred to as "downsizing fever" (Appelbaum, Delage, Labib, & Gault, 1997)(p.279). Downsizing was implemented as a specific restructuring strategy intended to lower overhead, reduce bureaucracy, speed up decision making, smooth communication, and to increase entrepreneurship, productivity, and operating efficiency (Wagar & Rondeau, 2000). Wagar and Rondeau differentiate downsizing from restructuring in this way:

> Downsizing differs from re-engineering and restructuring since downsizing is a reaction strategy aimed at cost reduction, whereas re-engineering and restructuring are proactive strategies that focus on process redesign and reorganization. (p. ii)

(Tully, 1997) analyzed hospital annual reports data from Statistics Canada for the period between fiscal years 1986/87and 1994/95 and reported that there was a reduction in the number of hospitals in Canada and fundamental changes in the way they delivered their services. During this time, the number of public hospitals fell by 14%, and the number of approved beds in these hospitals declined by 11%. These trends allowed hospitals to reduce their operating expenditures.

Labour costs constitute the largest portion of total costs in industry and these workforces were an obvious target for downsizing measures. Efforts to reduce costs inevitably focused on reducing staffing. In fact, the major means by which hospitals achieved their cost efficiencies has been described as "divesting themselves of their human assets" (Chan & Lynn, 1998)(p.12).

Between 1994 and 1996, 85 percent of Canadian hospitals reduced their workforce by more than 10 percent. Although elimination of jobs is the most easily implemented stage of downsizing, it is not the only strategy that organizations can use to cut costs (Wagar & Rondeau, 2000).

Weil (2003) states that "downsizing, manpower reductions, re-engineering, and resizing are used extensively to reduce cost and to evaluate the effectiveness and efficiency of various functions and processes". Weil also suggests that these cost-cutting concepts are expected to be implemented in the health field landscape with increasing frequency because of deteriorating "bottom lines." However, he cautions that often those institutions downsizing may be guilty of the follow-the-leader behaviour, where the organization's decision makers attempt to emulate the latest business fad without a thorough knowledge of all of its implications.

The 1990's were a turbulent time in healthcare with many organizations undergoing restructuring as well as mergers and acquisition. As Wagar and Rondeau (2000) note, few organizations progress much beyond the downsizing stage, apparently assuming that eliminating employees obviates the need to examine other aspects of institutional practices. Hospital laboratories soon became viewed as areas of significant overutilization (Fagg et al., 1999). Accordingly, efforts to realize cost savings were implemented through consolidation of laboratories, creation of core (institutionally or regionally centralized) laboratories, increased use of automation, and establishment of public-private partnerships (Grant, 2004).

It was middle management that suffered the greatest brunt of organizational restructuring, and reducing the ranks of middle managers was an easy tactic to eliminate

costs. In an award winning article for the American College of Healthcare Executives Embertson (2006) looked at the value of the middle manager. He examined the various roles the manager plays such as entrepreneur, communicator, therapist and stabilizer and argued that middle managers are crucial to bringing in innovation and that successful implementation of changes in an organization is made more possible through the use of efficient middle managers. Embertson (2006) states that healthcare organizations need to view middle managers more as assets and should invest in their professional development to maximize their value.

Even today, the healthcare system is still facing considerable internal and external pressures to change, as well as shortages of skilled workers. British Columbia's population is expected to experience continuous growth and with our aging population coupled with the public's desire for more services, the demand on the healthcare services will increase. The combination of service growth and an ageing workforce will certainly have an impact on the post secondary educational system that trains graduates for our healthcare workforce. Post secondary institutions will be asked to help the province meet its health human resources plan, the goal of which is "the right skills, in the right place, at the right time, for the right cost" (BCPSA, 2006).

Competition for talent is increasing across the public and private sectors in the face of the aging workforces, lower unemployment rates, and an increasing demand for more skills, knowledge, experience and education. In the face of this challenge, we must continually assess our ability to recruit and retain highly-skilled people and make the adjustments necessary to better position the public service to compete (BCPSA, 2006).

2.3 EFFECTIVENESS AND EFFICIENCY: CONCEPTS AND DEFINITIONS

Madore (1993) has defined the concepts of effectiveness and efficiency in healthcare and suggested that effectively delivered services make the system more efficient. Effectiveness and efficiency are two concepts that add an economic dimension to healthcare and applying economic theory to healthcare is an effort to address the issues of allocating physical, human and financial resources and setting priorities in the budget decision-making process (Madore, 1993).

> Effectiveness in the healthcare system has two elements: the greatest possible improvement in health at the best possible cost and that healthcare expenditure can be controlled better when we stop funding inappropriate or ineffective services. Whereas the purpose of efficiency is to maximize results effectively, or services delivered, given a particular budget.

> According to this concept, each service must be delivered at the lowest possible cost, have benefits of value equal to or greater than its cost, and make optimum use of the resources invested. Efficiency is distinct from effectiveness in that it considers costs in relation to benefits (Madore, 1993).

It is difficult, if not impossible, to determine the optimum level of expenditures that should be allocated to healthcare; however, Madore (1993) proposes that by using economic analysis, we can ensure that the budget is allocated to the most effective components of the system. Some provinces, including British Columbia, have already begun to meet the challenge of funding their healthcare systems by making them more effective and efficient.

2.4 THE PRACTICE OF MEDICAL LABORATORY SCIENCE

The laboratory medicine workforce plays a vital role in the healthcare system, managing and applying evidence-based, scientific testing techniques to support patient care and protect against public health threats (Chapman, Franks, Lindler, & Ward-Cook, 2005). Delwiche's project, *Mapping the literature of clinical laboratory science,* describes a citation analysis of the literature of clinical laboratory science (medical technology), conducted as part of a project of the Nursing and Allied Health Resources Section of the Medical Library Association (Delwiche, 2003).

> The study's goals are to identify the predominant format of literature used in this field, the currency of the literature most frequently used, the core journals of the field, and the level of indexing coverage of the core journals by the major bibliographic databases. The results will serve as a valuable aid to librarians responsible for collection development in the field and for providing instruction for faculty and students in degree programs. The results will also help practicing members of the profession identify the core literature of their field and the tools through which to access it (Delwiche, 2003) (p.303).

One of the most valuable pieces of information to come out of the study was the identification of the core journals, both for the field of clinical laboratory science overall and for four specialty areas in the United States. Three source journals widely read by those in the field were identified. The source journals were *Clinical Laboratory Science* published by American Society for Clinical Laboratory Science (ASCLS), *Laboratory Medicine* published by American Society for Clinical Pathology (ASCP), and *Medical Laboratory Observer (MLO)* by Nelson Publishing, Nokomis, Florida .

Delwiche (Delwiche, 2003) concluded that attempting to cover a field whose literature spans topics ranging from highly specialized clinical skills to cutting-edge

molecular diagnostic techniques still confined to the research laboratory is bound to be a challenge, because the field is so broad in scope.

The literature on Canadian medical laboratory science is extremely limited. With few exceptions, research papers published in the national professional journal, the *Canadian Journal of Medical Laboratory Science,* are highly technical and quantitative/statistical in nature. The medical laboratory literature in the US is far more plentiful than that of its Canadian counterpart. Medical laboratory science developed in similar ways in the two countries until the 1960s, and so the U.S. literature provides much-needed insight into the development of Canadian medical laboratory work in the nineteenth and early twentieth centuries (Grant, 2004).

Laboratory medicine is a community of practice, one that is integral to the practice of medicine and impacts a large proportion of medical interaction and patient care. Laboratory services may make up 5% - 10% of a hospital's budget but impact 60-70% of all critical decision-making such as admission (or avoidance of a hospital stay), discharge (and lengths of stay), and choice of dosage medication (Forsman, 1996). Davis (2002). Davis (2002) says that Medical laboratory technologists are the third largest healthcare discipline in Canada, following nurses and physicians (p.100) and one that has witnessed the greatest increase in the use of technology (p.103). It is estimated that there are approximately 20,500 Medical Laboratory Technologists (MLT's) working in Canada (CIHI, 2003). They can be found throughout the healthcare delivery system. Those who work in a clinical laboratory may practice in hospitals, independent commercial laboratories, clinics, physician offices, blood transfusion centers, public health departments, industry and other settings.

2.5 HISTORY

Clinical laboratory science (also referred to as medical laboratory technology), takes its practitioners on a fascinating journey to the very centre of life, to the essence of age-old mysteries of disease and good health. Perhaps the first clinical chemistry report ever recorded was published by Sasruta, a Hindu physician writing around 600B.C. He noted the sweet taste of diabetic urine (Karni, 2002).

Although rudimentary examinations of human body fluids date back to the time of the ancient Greek physician Hippocrates around 300 BC (Berger, 1999) (Diamandopoulos & Goudas, 2003) it was not until 1895 clinical science laboratories became established in the United States at the end of the last century. Their birthplace was in Philadelphia. The first laboratory was the William Pepper Laboratory of Clinical Medicine at the University of Pennsylvania, established in 1895; the second, the Ayer Laboratory of the Pennsylvania Hospital, was established in 1898 (Sunderman, 1994).

At that time, most "laboratories" consisted of little more than a corner in physicians' homes, offices, or hospital wards, with physicians performing the procedures themselves. The diagnostic and therapeutic value of laboratory testing was not yet appreciated, and many physicians viewed clinical laboratories simply as an expensive luxury that consumed both valuable space and time. In dispelling the objections that laboratories were too expensive, Camac 1900 advised that "$300 will fully equip" a hospital laboratory and that "the maintenance of the laboratory can be accomplished on $50 a year" (Sunderman, 1994).

> The discovery of the causative agents of devastating epidemics such as tuberculosis, diphtheria, and cholera in the 1880s and the subsequent

development of tests for their detection in the late 1890s prompted a change in attitude, and by the turn of the century, the laboratory occupied a position of much greater importance. Pathologists began to train assistants, primarily young women, to perform some of the simpler laboratory procedures, freeing the pathologists to pursue advanced aspects of their specialty (Delwiche, 2003) (p.303).

In 1982, the American Journal of Medical Technology published three papers predicting conditions in the clinical laboratory through the year 2000 (Ginzberg, 1982; Price, 1982; Ross, 1982). While the authors' conclusions were not always in agreement, there were several areas in which they shared similar views. Economic factors were expected to lead to changes in public policy limiting reimbursement for healthcare services and expanding government oversight and regulation of the healthcare industry. Pressure for cost containment would have multiple effects: settings for the delivery of healthcare would shift out of the hospitals and into ambulatory care centers and laboratory testing was expected to become centralized in larger laboratories with an increased demand for highly skilled technician level personnel to perform routine procedures, and for technologists who were capable of conducting research, serving in a supervisory capacity, or moving into public relations or professional relations. It also appeared that technological advances would create new opportunities in many sub-specialty areas such as cytogenetics, tissue typing and transplantation, DNA technology, and immunology, while point-of-care testing and home testing would also become more common (Ginzberg, 1982). A decade later, these authors' predictions had materialized.

Changes in demographics also emerged as a contributing factor in the evolution of the healthcare system. Ross had predicted, in 1982, that the focus of healthcare would shift toward prevention, diagnosis, and treatment of diseases primarily associated with an

aging population as the `baby boom' generation entered middle age. She also foresaw a greater public awareness of the costs and effectiveness of medical care providers (Ross, 1982).

In today's era of rapidly evolving medical research and technology, one can hardly imagine a healthcare system without the contributions of clinical laboratory scientists.

> The laboratory analysis of blood and other body fluids plays an essential role in the diagnosis and treatment of disease, as well as in routine preventative medicine. (Delwiche, 2003)(p.304).

> Typically, through detailed microscopic, chemical, or visual analysis of specimens taken from body substances, clinical laboratory scientists identify, quantify, verify, and report the presence or absence of chemicals, microorganisms, enzymes, proteins, and other substances, and the composition and functions of cells, tissues, and organs. The ten billion or more tests they perform each years helps physicians screen for illness, diagnose diseases, determine their causes, prescribe correct treatment, prevent unwelcome drug interactions, and perhaps most important, promote good health (Karni, 2002)(p.2).

2.6   PROFESSION OF CLINICAL LABORATORY SCIENCE

Clinical laboratory workers fulfill functions that are crucial in the healthcare system, yet their importance is not well understood by the general public. This is likely because, with the exception of phlebotomists, who draw and label blood samples, clinical laboratory practitioners have little to no direct contact with patients. Instead, the work of clinical laboratory practitioners takes place behind the scenes, in clinical laboratories (Lindler & Chapman, 2003).

Is laboratory medicine just a job, or is it a profession? Burns (2008) believe, that it is a profession, and a distinguished one, with a proud history and an important future mission. He states that some characteristics of a modern profession are: a need for constant learning by its practitioners, an important role in the field for research to improve practice, a tradition of teaching, service to community, and a striving to become unnecessary (e.g., by preventing disease). The Oxford Advanced Learner's Dictionary's definition of the word professional is:

> **professional** - *adj*. **1** connected with a job that needs special training or skill, especially one that needs a high level of education **2** *(of people)* having a job which needs, special training and a high level of education (Hornby, 2005) (p.1204)

A profession is also defined as a vocation or occupation requiring advanced training in some liberal art or science (professional, n.d.).

Grant (Grant, 2007a) in the first of a series of three articles discusses the place of medical laboratory science in Canadian healthcare. The first article explores common theories about medical laboratory science professions and sets the stage for historical contexts and professional implications discussed in subsequent articles (Grant, 2007b, 2007c).

An excellent historical perspective of the professional beginnings and the establishment of the Canadian national society is provided by Grant in her second article (Grant, 2007c).

2.7   PROFESSIONAL BEGINNINGS

Medical laboratory science has somewhat indistinct and diverse origins: it began in the mid- to late nineteenth century in tasks delegated by physicians to volunteers, untrained workers, or employees. Most laboratory workers were women, as they were seen to be competent, skilled, inexpensive, compliant and unambitious.

> Most training occurred at the bench and was structured according to the supervising pathologists' priorities and preferences. The establishment of standardized training programs was resisted for a number of reasons: physicians feared that formal training might prompt laboratory workers to usurp the functions of pathologists and might increase the cost of laboratory workers' services. Moreover, education was felt to be superfluous since laboratory work was seen to require little thought and most technicians (as they were then known) changed careers or left the laboratory to become homemakers. (Grant, 2007c)(p.94)

2.8   CHANGE AND CONFLICT

> In the 1920s, concerns began to surface among pathologists and laboratory workers in Canada about standards and qualifications of laboratory personnel.

> A core group of laboratory professionals sought incorporation of a new Canadian society, but they encountered resistance from the medical profession to the proposed name, The Canadian Society of Medical Technologists. Use of the term 'medical' was seen as trespassing on the turf of the medical profession.

> Following a decision that was forced upon the new society, the organization was incorporated in 1937 as The Canadian Society of Laboratory Technologists (CSLT).

> Shortly thereafter, the CSLT issued its first syllabus of studies and established criteria for approval of training programs. The society published its first list of nine approved programs in 1942. However, recognition for the CSLT's professional mandate was a hard-fought battle:

at one point, the CSLT was dismissed by outsiders to the profession as "a bunch of girls" and it was some time before laboratory employers recognized or preferentially hired CSLT-registered practitioners.

The power of the medical profession is evident in its control over the activities of the CSLT and the medical laboratory profession. In 1939, after a review of the issue of training and registration of Canadian laboratory 'technicians,' as they were known then, the Canadian Medical Association (CMA) sought to serve as the approval body for schools for these workers. The CMA established physician control over entry to and registration in the laboratory profession through its regulation of examinations, scheduling, and accreditation criteria. For many of its early years, the CSLT had no way to determine whether schools were teaching the recommended curriculum as the CMA would not permit the society access to that information. The medical profession even played a gatekeeper role in technologists' entrance into their own professional association: two physicians were required as references for application for membership in the CSLT.

Approximately half of those applying for CSLT registration in the society's first decades held university degrees. The CSLT invited degree holders to seek membership and encouraged its existing members to obtain degrees. According to the CSLT, there was a definite need for greater educational and career opportunities for laboratory workers. Nonetheless, an emphasis on the practical perspective led to a CSLT rejection of entry-level university programs for laboratory workers, a decision that was inconsistent with the society's support for its members to obtain degrees and with its stated commitment to balancing theoretical and practical aspects of laboratory education. The focus on training rather than on university education was one of several influences that acted to limit the power of laboratory professionals and to undermine their wage claims.

Complicating matters were the shortages of laboratory workers during the 1940s and 1950s, which prompted considerations of lowering entry criteria to the profession; this, in turn, contributed to repeated rejection by the CMA, hospitals and the CSLT of the longer university programs as preparation for the profession. The CMA issued a stern reminder to the CSLT that only graduates of CMA-approved programs (which, at the time, did not include any university-based programs) would be eligible to write certification exams. The reminder was accompanied by a rather threatening ultimatum that the CMA would conduct its own registration of

laboratory workers if the CSLT did not honour the CMA's program restrictions. This effectively shut out universities that were proposing to offer medical laboratory programs, both degree and non-degree.

The CSLT encountered difficulties through the 1940s with establishing consistent training programs and acceptable examination performance standards for MLS examinations across the country. These were evidenced by gross deficiencies of examination candidates and resulted in a great deal of dissatisfaction on the part of the CSLT with the quality of training programs. Despite these concerns, the CMA continued to grant unqualified approval to these institutions. In addition, it refused to permit CSLT representation on the CMA program approval committee on the grounds that CMA bylaws required all individuals sitting on committees to be medically qualified. It was only after the American Medical Association approved a Canadian program upon determining that the CMA had no evaluation mechanism that the CMA began to take its accreditation process seriously.

After World War II there was still a strong apprenticeship culture at the bench and many physicians continued to express a preference for employees whom they had trained themselves. Even into the 1950s, the category of laboratory workers continued to be a diffuse concept as there were still many paths into the profession. However, the requirements of the expanding post-war healthcare system created the need for formalized training programs. A new model emerged in which a didactic college-based phase was following by practical training at an approved hospital laboratory. This model enabled the standardization and refining of expectations for training programs and clinical training that paved the way for the CSLT-endorsed shift of medical laboratory programs into colleges and technical institutions in later decades. By the early 1960s, 120 laboratories had been approved for training programs and expectations for the didactic and clinical processes had become more clearly articulated.

The strained relationship between the CSLT and the CMA persisted. Attempts by the CSLT to maintain its standards for admission to the profession and to provide input on approval of training programs prompted the CMA to express concerns in 1959 that the CSLT certification process would usurp the functions of the CMA approval committee. However, in 1961 the CSLT was invited to participate on a regular basis in the CMA approval committee. Soon afterward, the CMA proposed on-site inspections of training programs as a part of its approvals process. In light of continuing dissatisfaction with the process, including

problems with lack of scheduling and weak administration of on-site surveys, the CSLT decided in 1969 to assume administrative control of approval of training programs. In response, the CMA approvals committee was reconstituted as a joint committee administered by a CMA secretariat with equal representation from CSLT and with representation from laboratory, health and education organizations. This conjoint committee continues to carry out medical laboratory program accreditation.

CSLT membership over the years reflects an actively growing profession: there were 4004 members by 1961; 6498 by 1965, and 10,000 by 1969.

Attrition of CSLT members was an ongoing problem for the profession as new graduates had a very short working life expectancy. Approximately 60 per cent of technologists (presumably female) in the 1950s and 1960s left the profession each year to get married. Accordingly, the CSLT strengthened its recruiting efforts and expressed renewed concern about training program standards and graduate numbers. During the 1960s and 1970s, possibly as a result of laboratory personnel shortages, the CSLT recognized the roles of laboratory assistants; it created a short-lived certification program for laboratory assistants and elucidated a path by which these individuals could be recommended for technologist-level training programs. At approximately the same time, the CSLT also facilitated the entry of master's and PhD-qualified individuals into the profession.

After an expansionary period in healthcare that lasted into the mid-1980's, the medical laboratory profession found itself facing conflict from a new source in the 1990s: a corporatized and changing healthcare system that turned to business and industrial models of efficiency and cost-cutting. As individual technologists struggled with the ravages of healthcare restructuring, the CSLT contended with declining membership and the disregard of health policy-makers for its professional advocacy efforts.

2.9   IMPLICATION FOR PROFESSIONAL IDENTITY

The place of medical laboratory science in the shadow of the medical profession continues to shape our professional identity, although history has evidenced several points at which the CSMLS has successfully negotiated for the interests of the profession. Corporatized and cost-driven

interests in healthcare appear to constitute medical laboratory science's next challenge in negotiating boundaries of practice.

With its history of subordination to medicine and its weak evidence base due to a lack of professional research traditions, the medical laboratory profession faces numerous hurdles in seeking recognition and involvement in consultative policy-making. The diffuse and often inequitable practices in education, professional roles and standard-setting evidenced in the history of laboratory work have complicated matters, and the debate about appropriate credentialing continues.

The CSLT's quest to re-title itself in the late 1990s met with fewer external objections than did several previous attempts, suggesting, perhaps, a shift in power among health professions. The new name, the Canadian Society for Medical Laboratory Science (CSMLS), was part of a vision to serve as the organization that represents all practitioners of medical laboratory science in Canada. But the new name also alludes to the long tradition of upward resistance of medical laboratory technologists against the medical profession, a tradition that culminated in their claiming the magic words 'medical' and 'science' for their own work. What remains is the task of claiming entitlement of medical laboratory professionals to status as scientists and expert contributors to patient care, a task that beckons as the CSMLS marks its 70th anniversary this year.(Grant, 2007c)

As a member of the healthcare team, Medical Laboratory Technologist (MLT) professionals perform sophisticated laboratory investigations on the human body or on specimens taken from the human body. They also evaluate the technical sufficiency of the investigations and their results. The results of these tests provide important information that doctors or other healthcare professionals need to make decisions about their patients' health. MLT professionals most often work in licensed laboratories, such as hospital labs, private labs, and government labs but may also work in areas such as medical research, forensics, education, community health, and industry (Ontario Ministry of Citizenship and Immigration, 2008).

2.10 SPECIALTY AREAS

There are many specialty areas in which MLT's work using their knowledge, skills, and judgment:

- **Biochemistry (Clinical Chemistry)**: The measurement of chemical constituents in blood and body fluids to detect chemicals, hormones, and/or drugs.

- **Microbiology**: The study of microorganisms, including bacteria, fungi, viruses, and parasites.

- **Hematology**: The science dealing with the measurement and morphology of blood cells and blood forming tissues and with their physiology and pathology.

- **Transfusion Science**: The detection of blood types and cross matching for transfusion (also called Immunohematology or Blood Banking).

- **Histology**: The preparation and study of tissue specimens for the detection of disease.

- **Cytology**: The study of cells, their origin, structure, function, and pathology.

- **Genetics**: The study of human chromosomes, DNA, and RNA from cells of body fluids and tissues to diagnose genetic diseases. This includes Cytogenetics and Molecular Genetics.

- **Electron Microscopy**: The preparation and study of tissues using highly magnified images that capture details light microscopes cannot detect.

No matter what specialty of lab services, or where the service is provided, the same basic steps are involved .

Figure 2 An effective laboratory system modified (from Bayne 2003)

A patient is seen
by the doctor

A problem is identified for
which laboratory-based
information is required

A clinical decision is made by the
managing physician, often in consultation
with the pathology specialist

A decision is made as to what
information is required and what test
would provide the best information

The test results are
communicated to the patient
and/or others who need to know

A test is
ordered

The test results are stored and
reported to the ordering physician

A Specimen
is acquired

The specimen is tested and
analyzed by a medical laboratory technologist

The specimen
is transported
and stored

2.11 EDUCATION AND CERTIFICATION

The Canadian Society for Medical Laboratory Science (CSMLS) web site,

www.csmls.org declares it is the national certifying body for medical laboratory

technologists and medical laboratory assistants, and the national professional society for

Canada's medical laboratory professionals. Incorporated in 1937 as the Canadian Society

of Laboratory Technologists, the society has over 14,000 members in Canada and in

countries around the world.

Its purpose is:

- To promote and maintain a nationally accepted standard of medical laboratory technology by which other health professionals and the public are assured of effective and economical laboratory services.

This assurance requires, producing accurate test results, correlating and

interpreting test data, assessing and improving existing laboratory test methods, and

evaluating, and implementing new methods.

> In Canada most medical laboratory technologists possess a diploma-level certificate from a college or institute of technology. Programs may be 2 or 3 years in duration, depending on the type of high school diploma and include a clinical practice component. Following satisfactory completion of the educational program, graduates are eligible to write the examination offered by the Canadian Society for Medical Laboratory Science (CSMLS) to obtain national certification, which is recognized throughout Canada (Assessment Strategies for Health Canada, 2001)(p.10).

CSMLS competencies expected of an Entry Level Medical Laboratory Technologist can

be found at www.**csmls**.org/english/profiles.htm

2.12 REGULATORY ENVIRONMENT

Certification is a designation of professional status used in many health

professions. It verifies that a person has the necessary expertise to perform the functions

of their profession, and is granted to individuals who have passed an exam in a particular

specialization, after satisfying certain educational and training prerequisites for

examination in that field. Licensure is a designation of legal status, which permits

licensees to practice their profession in a given state. Some states require certification as

a prerequisite for licensure (Lindler & Chapman, 2003).

Medical laboratory technologists are a regulated health profession in Alberta, Saskatchewan, Ontario, Quebec, New Brunswick and Nova Scotia. Manitoba has passed legislation to establish a regulatory college. British Columbia, Prince Edward Island, Newfoundland and the Territories are unregulated at this time. Employers in the unregulated provinces usually require CSMLS certification as a condition of employment for MLT's (Assessment Strategies for Health Canada, 2001).

2.13 MLT WORKFORCE DATA

Figure 3 shows the number of CSMLS members from 1990 to 2000. During that time, there was a 44% decline in membership. Some of this decrease is attributable to changes in the regulatory requirements in Ontario, Alberta and Saskatchewan. However, the decline can be explained mainly by layoffs due to health reform and laboratory restructuring during the last few years (e. g. Alberta reportedly saw the greatest proportion of layoffs with a loss of almost 50% of its laboratory technologist positions). An equal reduction in the number of new medical laboratory technologist graduates has kept the number low(Assessment Strategies for Health Canada, 2001) (p.10).

Figure 3 Certified CSMLS Members Practising in Canada (1990-2000)

(Assessment Strategies for Health Canada, 2001)

Certified CSMLS Members Practising in Canada (1990-2000)
(Source: Canadian Society of Medical Laboratory Science)
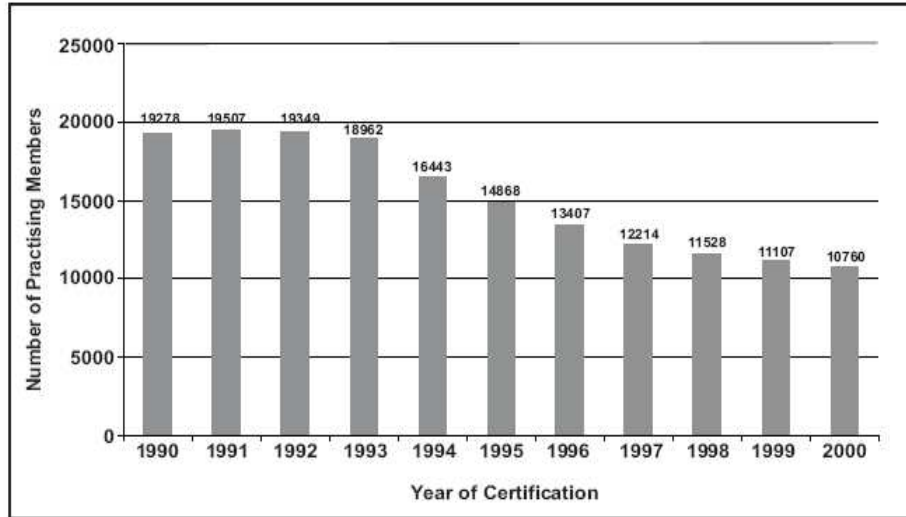
Figure 4 Number of Medical Laboratory Technologists in Canada, 1995 to 2004

(CIHI, 2006)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
HPDB	19,190	18,847	17,945	17,534	17,468	17,789	17,935	18,259	19,051	19,401
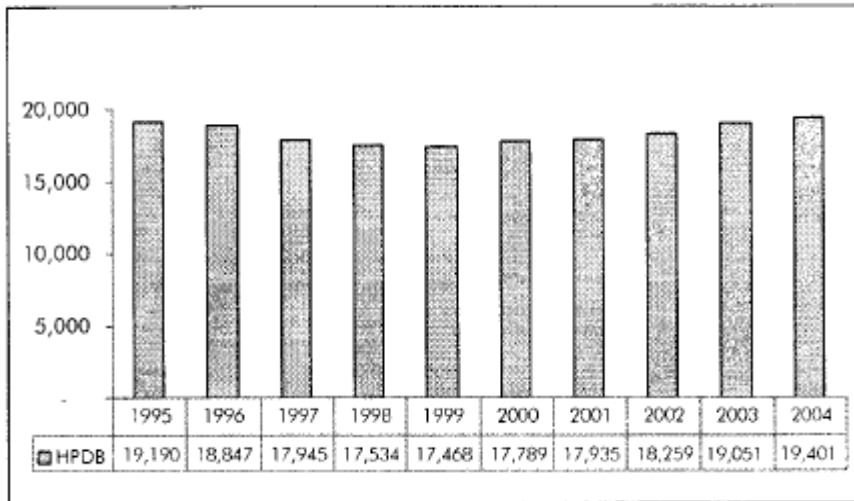
Source: HPDB/CIHI

As shown in Figure 4, the number of medical laboratory technologists, as

indicated in the Health Personnel Database (HPDB), has fluctuated from 1995 to 2004.

There numbers decreased from 1995 to 1999, before increasing gradually up to 2004.

2.14 ENROLMENT IN CANADIAN MLT TRAINING PROGRAMS

In 1993, 752 students (excluding Quebec) enrolled in 21 programs in Canada. With the healthcare reform initiatives, budgets were cut back and laboratories were consolidated. This, in turn, resulted in a significant reduction in employment opportunities for graduates. To respond to a diminishing demand for technologists and the simultaneous increase in the use of technicians, a large number of educational programs were closed and/ or enrolment reduced across the country.

The 2001 update indicates that a number of programs have been reinstated and in other programs, the number of seats was increased. However, some of the newly created seats are remaining vacant due to problems in the recruitment and retention of students.

Figure 5 shows the enrolment in the various programs from 1993 to 2001. It illustrates the dramatic shift in training programs offered in medical laboratory technology. The current enrolment level defines the supply of new medical laboratory technologists that will be available to meet future demand (Assessment Strategies for Health Canada, 2001)(p.11).

Figure 5 Canadian MLT Training Program Enrollment in 1993 and 2001

Canadian Medical Laboratory Technologist
Training Program Enrolment in 1993 and 2001
(Source: Canadian Society of Medical Laboratory Science)
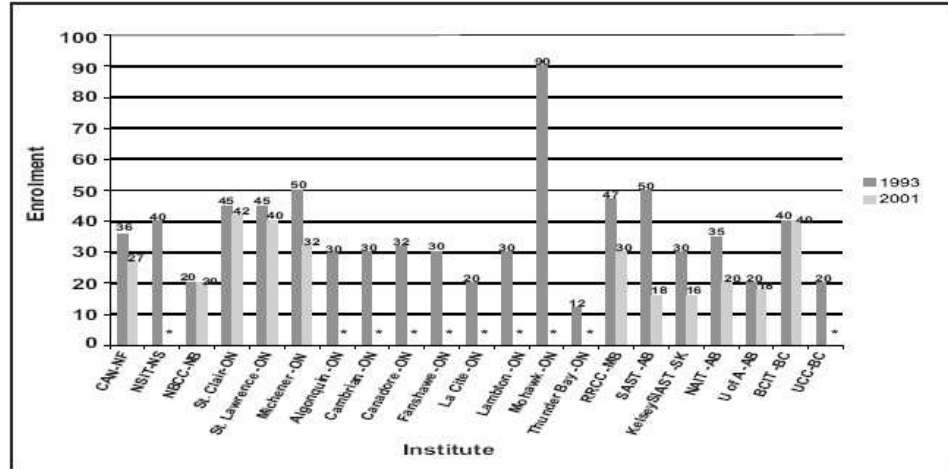
* Indicates program closure.

2.15 NEW GRADUATE SURVEYS

The Canadian Society for Medical Laboratory Science (CSMLS) has been

tracking employment trends in the medical laboratory workforce since 1987. One of the

tools that CSMLS uses to gauge the health of the job market is the Graduate Employment

Survey. Each year, CSMLS surveys graduates of accredited medical laboratory training

programs across Canada to ascertain their employment status one year after graduation.

The results of the survey provide a 'snap shot' of the job market for medical laboratory

technologists, and serve to identify trends in the medical laboratory workforce and in the

larger healthcare environment.

Figure 6 shows that the uptake of new graduates into the medical
laboratory workforce in Canada declined significantly during the 1990s
due to healthcare restructuring. The downward trend continued for eight
years and was a key factor in provincial governments' decisions to cut
back medical laboratory training programs. The results of the 1998 survey

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were a harbinger of an impending human resource crisis in medical laboratory technology. The survey found that 91.9% of the respondents were employed as medical laboratory technologists one year after graduation–an increase of 17.8% over the previous year. While this was good news for graduates, it was a clear indication that the shortage of MLT's was approaching faster than anticipated (Davis, 2004).

Figure 6 New MLT Graduate Survey 1987 -2006

(K Davis, 2008)
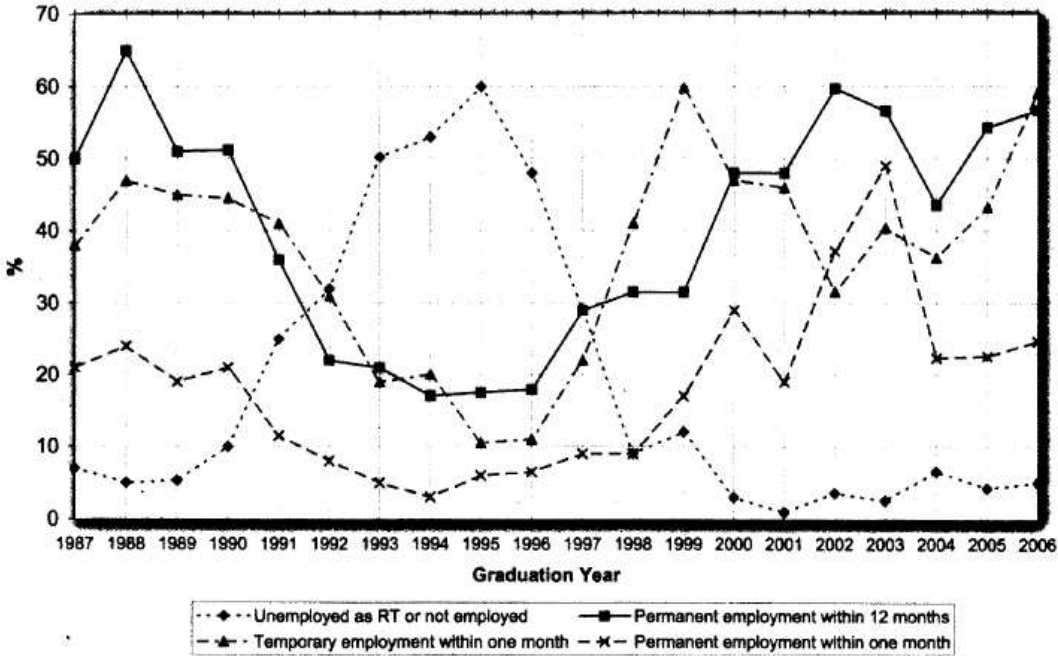
2.16 OVERVIEW OF LABORATORY TRAINING IN BRITISH COLUMBIA

During this time frame, the British Columbia Institute of Technology (BCIT) was the sole provider of education and training for medical laboratory technologists in BC (graduating a potential total of 60 students every year in its diploma program and 20 students in its upgrade certificate for foreign trained graduates each year).

The BCIT Medical Laboratory program is a competency based model, designed and based on competencies established by the national certifying body, the Canadian Society for Medical Laboratory Science (CSMLS) and by the BCIT Medical Laboratory industry-based design process. Each level of the program provides theoretical, practical and clinical learning experiences. In a competency-based model, students have the opportunity to first practice, and then become capable of a variety of competencies. Students prove competence during real-life experiences (clinical practicum), which BCIT arranges through formal affiliation agreements. Successful completion of this program requires proof of competence. Students must successfully pass the CSMLS certification examination in order to practice in the field (BCIT, 2006).

2.17 DECLINE IN NUMBER OF EDUCATIONAL PROGRAMS IN THE USA

A similar picture was seen throughout America, as enrolments in clinical laboratory science (CLS) programs (American terminology used for the equivalent of the MLS – medical laboratory science programs in Canada) declined during the mid 80's to late 90's. Educational programs in clinical laboratory science programs have been declining since 1975 (Chapman, Franks, Lindler et al., 2005) (p.6)

Figure 7 displays the number of the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) approved educational programs from 1975 through 2003 (28 years) for medical technologist (MT), medical laboratory technician (MLT), histotechnology (HT), and phlebotomy (PBT) programs.

Figure 7 NAACLS-Accredited Educational Programs in Clinical Laboratory Science

(Chapman, Franks, Lindler et al., 2005)
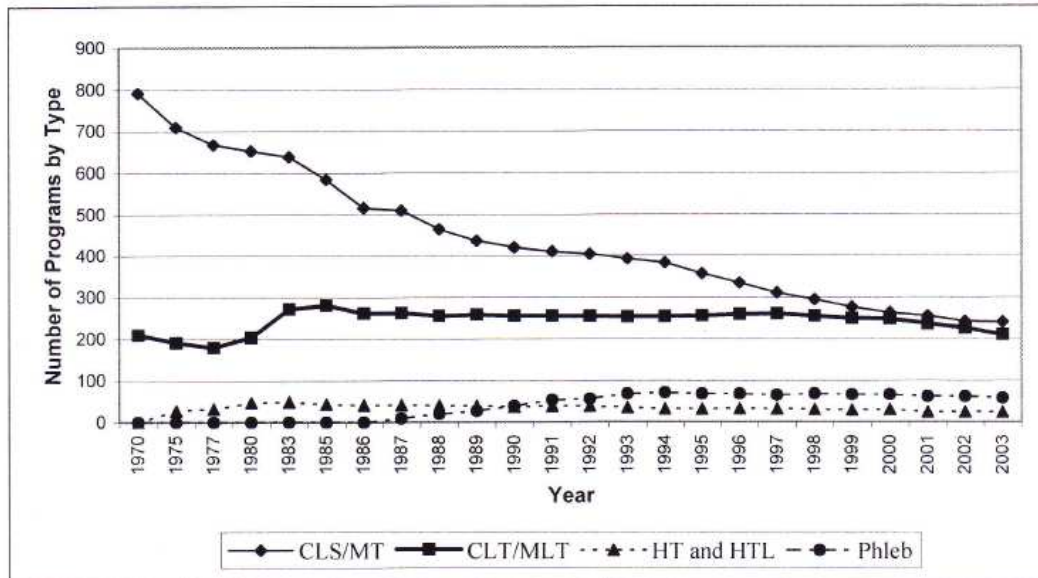
Source: Data supplied by NAACLS

In 1970 there were 791 MT programs. By 2003 about 70 percent of these programs had closed, leaving only 240 programs in the country. The number of MLT programs (associate degree or less) increased from 210 in 1970 to a peak of 281 in 1985; and subsequently declined to 210 in 2003. Program closures are due to many factors including decreased attractiveness of MT as a career choice, the advent of prospective payment systems, and managed care and budget cuts, coupled with an increase in the expense of running a clinical laboratory training program (Chapman, Franks, Lindler et al., 2005) (p.32)

Castillo (2000) examined the environmental changes that occurred since the early 1980's and their impact on CLS programs and enrolment. (See Figure 8) It was concluded that enrolment in clinical laboratory science programs declined over 50% since 1980 and that this led to the closure of many CLS programs while putting others at risk.

Figure 8 Numbers of clinical laboratory science education programs

(Castillo, 2000)
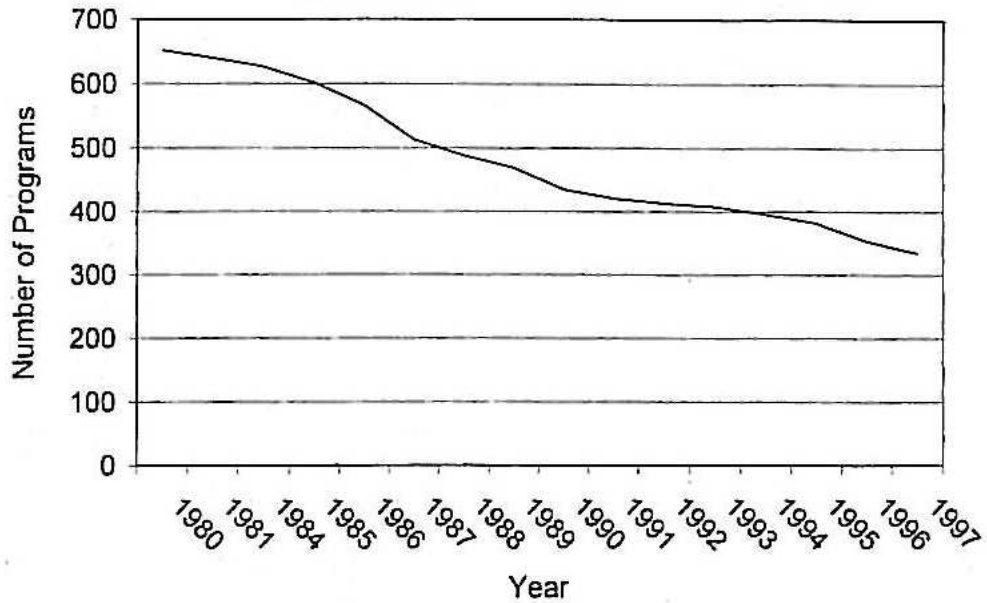
Figure 9 shows that the number of ASCP certified MLT's in the workforce in the United States of America also declined significantly during the 1990's.

> There were 2,453 MTs newly-certified in 1960 by the American Society for Clinical Pathology (ASCP), and the number certified each year grew steadily throughout the 1960s likely due in part to the advent of Medicare in 1965, and increases in other third party payments for laboratory testing (see Figure 9). Growth in the profession led to the development of other professional and certifying agencies such as the National Credentialing Agency (NCA), which was founded in 1978. The NCA certifies laboratory professionals including clinical laboratory scientists and technicians, and phlebotomists. In terms of overall employment in the field, in 2001, there were approximately 150,000 MTs and 147,000 MLT's employed in the United States (Chapman, Franks, & Lindler, 2005) (p.18).

Figure 9 ASCP Certified MLT's, 1996 -2003

(Chapman, Franks, Lindler et al., 2005)
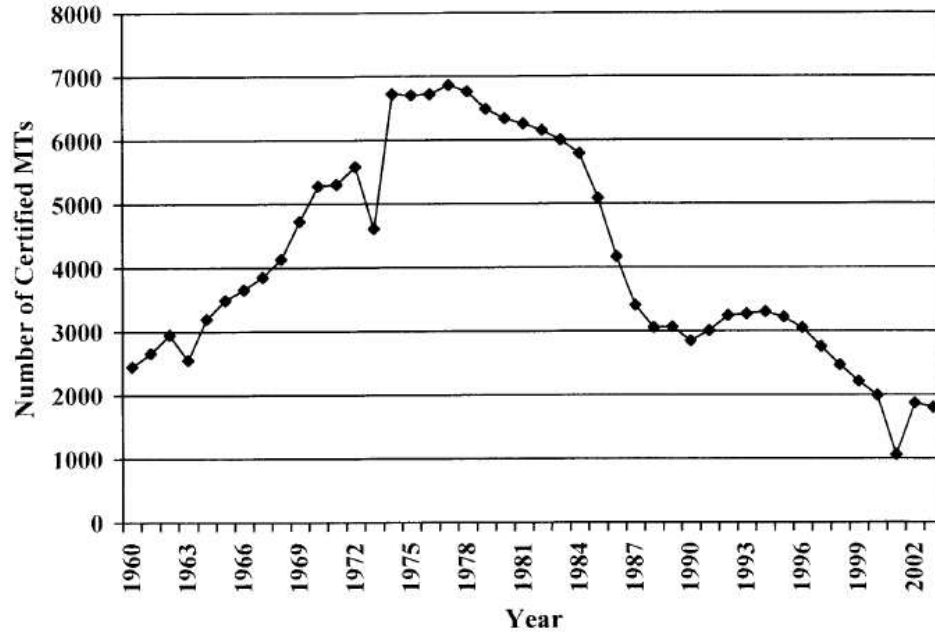
Source: American Society for Clinical Pathology

2.18 LEADERSHIP

Leadership is the most studied and least understood topic; there are more than 350 definitions (Bennis, 1995). Social scientists have tried to identify what abilities, traits, behaviours, sources of power or aspects of the situation determine how effective a leader will be able to influence others. Bennis suggests that "nothing serves an organization better… than leadership that knows what it wants, communicates those intentions accurately, empowers others and knows how to stay on course and when to change" (Bennis, 1995) (p.378). However, (Rost, 1993) argues that modern day contemporary leadership definitions often reject the idea that leadership revolves around the leader's

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ability, behaviours, styles or charisma. Today, scholars discuss the basic nature of leadership in terms of the "interaction" among the people involved in the process: both leaders and followers. Thus, leadership is not the work of a single person; rather it can be explained and defined as a "collaborative endeavor" among group members. Therefore, the essence of leadership is not the leader, but the relationship (Rost, 1993).

Leaders and the notion of leadership receive a significant amount of attention in the organizational change literature (Eckel, 2003). Some writers discuss the roles leaders need to fulfil to make change happen (Heifetz, 1994; Schein, 1992). Schein maintains that the analysis of organizational culture is a prerequisite to implement successful organizational interventions. "Organizational learning, development, and planned change cannot be understood without considering culture as the primary source of resistance to change."(Schein, 1992)(p.xiv). Heifetz and Laurie report, "Changes in societies, markets, customers, competition, and technology around the globe are forcing organizations to clarify their values, develop new strategies, and learn new ways of operating. Often the toughest task for leaders in effecting change is mobilizing people throughout the organization to do adaptive work. Adaptive work is required when our deeply held beliefs are challenged, when the values that made us successful become less relevant, and when legitimate yet competing perspectives emerge" (Heifetz & Laurie, 1997)(p. 124).

Other writers mention the need for leaders to adopt new mindsets and perceptions as essential to organizational change (Nystorm & Starbuck, 1984; O'Toole, 1995; Senge, 1987) , and still others suggest actions for leaders to take (Kotter, 2007) to bring about change (Kotter, 2007). The ability to manage change is a key characteristic of a transformational leader. Transformational leadership is particularly relevant for complex

and complicated environments such as healthcare where change is essentially the norm (Plsek & Greenhalgh, 2001). Transformational leaders must be visionary, proactive, creative, innovative and supportive of alternate viewpoints (Empey, Peskett, & Lees, 2002).

One of the most important and difficult leadership responsibilities is leading change; it is the essence of leadership. Organizations today need everyone thinking about new directions and innovations to pursue. "Organizational success – perhaps, ultimately, organizational survival – depends upon increasing productivity and legitimacy, empowering members, and coping with and adjusting to the external environment" (Levin, 1996) (p.115). Leaders must notice changes in external conditions, reflect on them and respond appropriately. If an organization does not adapt to its changing environment it will die (Yukl, 2002).

"Today's leaders must cope with a great deal of ambiguity as they make important choices about the future. They face uncertainty with regard to politics, economic growth and stability, technology and changing consumer tastes" (Roberto, 2002) (p.149). Roberto describes seven strategies that leaders can employ to cope with ambiguity and complexity as they make critical decisions.

> These strategies often prove very effective because they enable leaders to make accurate judgments under stressful conditions. Unfortunately, each of these strategies has serious drawbacks as well. When employing these techniques, many leaders draw the wrong conclusions, make biased estimates, pursue flawed policies, or impede the development of commitment within their management teams. Thus, leaders must use these strategies with great care"(Roberto, 2002).

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"Even with all the differing opinions, one thing is clear – intended change involves leadership in some way, at some point, at some level" (Eckel, 2003) (p.9).

To narrow the concept of leadership for this case study, I will focus on the actions of academic decision makers.

> Leadership in program discontinuance processes was anticipated to come from senior administrators and success with implanting change and have reached administrative positions in which they must make these difficult decisions (Eckel, 2003) (p.11).

> Program discontinuance is seldom initiated by faculty groups; rather, in examples to date program cutbacks have been the result of strong leadership from institutional administrators. These people are usually high-level administrators who are willing to make the hard decisions and convince others that the institution will be better off, in the long run, without the program under question(Dougherty, 2002)(p.55).

"Leadership regarding program closure may be as much of an art as a science" (Eckel, 2003)(p.11).

2.19 PROGRAM CLOSURES

To assist current and future allied health administrators and faculty, there is a need to discuss program closures in an effort to understand why they occurred and what strategies can be used to ensure success. The temporary closure of the BCIT Medical laboratory Science program is a case study that reflects the dissonance between employer needs, the mission of the British Columbia Institute of Technology and organizational politics.

There is a paucity of literature concerning the closure of medical laboratory programs. Only two articles were identified in the literature that discussed program

closings, a short description of a multisite case study of CLT/MLT program closures (N. Johnson, 1996), and an article on the decline of clinical laboratory science programs in colleges and universities (Castillo, 2000).

Between 1992 and 1996, 19 (or eight percent of) National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) accredited CLT/MLT programs closed. Johnson's research was conducted to determine the reasons for the closures. Possible factors responsible for these closures included: (1) federal regulation of clinical laboratories; (2) technological advances in diagnostic testing leading to exportation of testing from the laboratory, and (3) a changing manpower demand in managed care for multi skilled versus specialized healthcare workers. The study drew upon the techniques of exploratory research in the form of multisite case studies of the 19 programs. The results of this research suggest that healthcare reform requires community colleges to evaluate their allied health programs so that they reflect a redefinement of the duties and skills of current fields. In addition, college administrators need to be flexible in addressing these changes.

Although the literature on medical laboratory program closures is sparse, there is more extensive literature describing the reasons, methods and results of closure of academic units in higher education institutions. Babbitt compiled a series of articles to assist administrators of institutions of higher education to deal with the legal, social, and workforce issues with closing an academic program (Babbitt, 2002).

Eckel (2002) in his seminal work on program closures set out to identify and understand the criteria used by leaders to make decisions when they consider closing academic programs. Program discontinuance is a "necessary adaptive mechanism" in

organizations that are constrained in the range of ways they can increase or reallocate their fiscal resources, such as universities, hospitals and government agencies. Program closures send "shock waves through the community"(Eckel, 2002) (p.238).

Eckel noted that even though institutions had stated criteria for closure, these criteria were not used for actual decisions about closures (Eckel, 2002). "Program closures decisions rules have little to do with external demand for graduates, anticipated enrollments, or internal demand for courses."(p.256) Rather Eckel's study identified four decision rules that the institutions he studied used in making decisions about termination. These rules included: (1) programs had weak or novice leaders; (2) programs had low numbers of students; (3) programs had a small contingent of faculty; and (4) programs were not central to the mission of the college that housed them.

In Gumport's 1993 study, faculty and deans of schools targeted for elimination used appeals for legitimacy as reasons for survival and continuance. Academic programs targeted for reduction tend to be "in transition, located in schools without visible leadership in the dean's office, and yielded immediate cost-savings by eliminating non-tenured faculty positions" (Gumport, 1993).

2.20 THE STRATEGY OF PROGRAM TERMINATION

Colleges and universities are not islands isolated from the mainland of society (Eckel, 2003; Eckel.P.D, 2003). Instead, changes externally lead institutions to exploit opportunities in the transformed environments and defend against newly created threats (Hardy, 1995; Keller, 1983; Marginson & Considine, 2000) . Institutions continually make internal modifications, adjustments and even go through transformations(Eckel &

Kezar, 2002). The pressures institutions are facing have led many to raise difficult and fundamental decisions about how they will allocate and reallocate their increasingly scarce resources (both human and fiscal) and, more broadly, what they will do as an institution and how they will do it (Eckel, 2003). To cope with the challenges of shrinking resources, heightened market demands, and increased public scrutiny, colleges and universities have two realistic options: (1) they try to expand their pool of fiscal resources by identifying new resources of income such as raising tuition or increasing enrollments and /or (2) they go through a retrenchment process, typically attempting to cut waste and overlap, reorganize administratively, and cut back (Breneman, 1993; El-Khawas, 1994; Massey, 1994; Slaughter & Leslie, 1997).

2.21 EXTERNAL FORCES

Post secondary educational organizations such as universities, colleges and institutions are not isolated entities, but rather they are affected by forces, people, and politics external to themselves. They receive revenues from provincial or state ministries of advanced education, conduct research for federal, provincial and local government and corporations, and provide services to local communities. They provide knowledge, new ideas, and educated graduates to the community (Eckel, 2003).The boundaries between a university and its environment are becoming even more permeable (Gumport & Sporn, 1999; Slaughter & Leslie, 1997) allowing institutions to be influenced by outside forces (Aldrich, 1979; Pfeffer & Salancik, 1978; Scott, 1987).

Rothbatt (1995) writes about "disappearing boundaries" (p30) between universities and their environments as an increasing phenomenon that is creating a host of new problems for institutions.

Changes in the external environment are one of the important factors related to initiating program termination on campuses (Falk & Miller, 1993; Gumport, 1993; Volkwein, 1984) as institutions respond to reduced external funds, competition and the market, and new societal demands. However, external influences not only press institutions to change, but they also influence the directions in which they change and the criteria by which they make their decisions (Slaughter, 1993) .

Castillo (2000) describes the environmental changes that occurred since the early 1980's and their impact on medical laboratory technology programs and enrolment as well as recommendations for schools of allied health for adaptation to these changes.

This case study is concerned with the potential influence of external forces that may shape the outcomes of the discontinuance process. Leadership may be considered as an internal factor that shapes program termination. The impact of the environment on internal organizational behaviour can be explained through a resource dependency model that views organizations as "inexplicably bound up in the conditions of their environments" (Pfeffer & Salancik, 1978)(p 1).

An organization's environment creates a dynamic process of action and reaction through which organizations attempt to achieve a state of stability through a series of exchanges with their environment. This dynamic process leads to variations in an organization's control, direction, and position dictated by shifts in the environment. Changed environments demand responses if institutions are to survive (Cameron, 1983).

Research shows that when institutions become aware of salient changes in the environment that influence the products or services institutions receive or produce, they respond accordingly (Slaughter & Leslie, 1997).

Paying attention to factors outside of the organization and acknowledging a wider sphere of influence may lead to a more thorough understanding of how programs are discontinued. Simply focusing on internal dynamics may only tell part of a story (Eckel, 2003).

In answer to the question, why do faculty and administrators find it so hard to discontinue an academic program? Dougherty (2002) suggests that they often recognize the need to close programs in order to maintain or improve the quality of remaining programs and increase the flexibility of the institution to respond to new demands, but they find it very difficult to make the cuts. He writes that policy makers also fear that discontinuing an academic program will do serious damage to the prestige and morale of an institution.

> These costs must be weighed against the long-term benefit that can come to an institution through enhancing the quality of remaining programs and increasing institutional flexibility to respond to new demands (Dougherty, 2002)(p.44).

Reasons for the dearth of literature concerning school closures are not difficult to surmise. Most people do not like to deal with death, and the closure of a medical laboratory science program is kind of the death of an organization.

> A school closure can be regarded as failure by the individuals who were members of the faculty and leaders of the organization. Success is celebrated in our society, not failure. Institutions may choose not to publish information about a school's closing because of adverse

community reactions and negative public relations for the university"
(Hart, 1999) (p.187).

2.22 UNDERSTANDING PROGRAM TERMINATION

Changing the ways any organization conducts its business and modifying the

business it conducts are not simple, easily accomplished tasks; it is something for which

few models exist in any sector (Drucker, 1994). This is especially true when the

organization is complicated by an expression of shared decision making and the changes

are as potentially controversial as program elimination. Academic program termination

processes are not well documented in the research literature, nor are they well understood

by those charged with making and carrying out the discontinuance decisions (Eckel,

2003).

The literature does not elaborate on the concept of program discontinuance nor

does it explain how program discontinuance decisions were made or what steps were

followed, being of little use to those academic leaders seeking advice. Most of the

literature that discussed program discontinuance subsumes the concept within the larger

topic of retrenchment. Program discontinuance is frequently identified as one of many

ways that institutions engage in retrenchment or cutback management. Thus, little

research exists that specifically investigates the process of academic program

discontinuance apart from the broader concept of retrenchment. Even within the

retrenchment literature, little is known about the processes of how institutions

successfully cut back (Eckel, 2003). The relevant writings tend to fall into one of two

categories. The first group is comprised of opinions and normative essays –"how things

should be done" (Dickeson, 1999; Massey, 1994), and the second group includes research

that documents the range of institutional retrenchment responses- what was done – such as managing enrolments, reducing administrative overhead, or eliminating departments (El-Khawas, 1994). Thus, little empirical research documents how retrenchment was undertaken, let alone the subset of the ways in which programs were discontinued and the consequences (Eckel, 2003).

> Typically, colleges and universities do not deal with retrenchment until the situation is critical. There are several factors militating against earlier action: 1) the tendency of administrators and faculty groups to avoid difficult decisions and to doubt that sharp action is needed until the situation becomes critical; 2) the fear that discussion of retrenchment or severe financial difficulty will destroy the morale of both students and faculty; and finally, 3) concern about the legal consequences attached to declaring a financial emergency prematurely. While the psychological factors are real enough and deserving of note, they are certainly to be balanced against the need of faculty and students to know as early as possible if their careers or studies are likely to be interrupted because of the institution's difficulties (Johnson, 1981) (p.273). (A. B. Johnson, 1981)

Most academic leaders understand challenges of program termination, but few have the know-how or the experience to discontinue academic programs (Cole, 1994; Kennedy, 1994). A void in the management literature added to the inexperience of managers cutting back makes for additional challenges during tough financial times (Behn, 1988; Boulding, 1975; Levine, 1978).

> Discontinuance is not a panacea for every difficulty. Although some may view it as an easy way out of difficulty, it is never easy and will consume the time and energy of many faculty and administrators, but the long-run gains can produce greater quality and flexibility for the institution (Dougherty, 2002) (p.87).

The question political scientist Levine asked over 20 years ago remains unanswered by most university administrators; "Put squarely, without growth, how do we manage public organizations?" (Eckel, 2003; Levine, 1978).

Models of leadership from the (less complex) private sector are not always helpful in the context of healthcare. An examination of conflicts and tensions—such as the individual professional versus the team; professional accountability versus organizational corporate performance; quality versus efficiency; clinical versus non-clinical imperatives—reveals some of the difficulties (Moss & Garside, 2001). Educational institutions have begun to operate more and more under a business model, and the need for academic programs and schools of allied health to conduct environmental scanning and strategic planning has become more critical for survival of programs (Layman & Bamberg, 2006). Lack of attention to gathering environmental data from the employers of a school's graduates and translating the outcomes of this environmental scanning to selection of viable strategic approaches can lead to a program or school closure. Educational leaders and administrative staff who have strong backgrounds in environmental assessment, organizational leadership and strategic planning may increase the chances for survival of allied health education programs or schools serving employers in a regional, turbulent healthcare environment , (Layman & Bamberg, 2006) such as British Columbia.

Leadership is about communicating a direction and inspiring a vision of the future. Leadership is also about trust and teamwork, having and following a core set of values, understanding what you believe about yourself and more importantly others, and defining a direction that inspires people and gives them a common sense of purpose (Roberto, 2002). There is no magic bullet when it comes to making complex, decisions in a turbulent environment. Leaders must develop a repertoire of strategies that they can

employ under these conditions. Moreover, they need to develop their leadership team's capability to utilize these practices and techniques (Roberto, 2002).

A metaphor that may help vividly describe the role of leadership and change management is "the university, like a very large tanker, requires a good look-out in order to change course and to have time to complete the maneuver, above all…when the ship of learning has to plot its course within narrow financial straits" (Vidovic & Bjelis, 2006) (p.180).

CHAPTER 3: METHODOLOGY

3.0   INTRODUCTION

The main strength of qualitative research is that it yields data that provide depth and detail to create understanding of phenomena and lived experiences (Bowen, 2005).

My case study seeks to provide insight into the closing and reopening of the Medical Laboratory Science Program at BCIT, 1996 -1999. In order to do so, the study utilizes an Interpretivist Qualitative Research Methodology, to analyze and seek insight into the process that (BCIT) used in suspending and subsequently reopening, three years later its medical laboratory sciences program.

Qualitative Research

When embarking on my research project, the methodology I decided to work with was fundamentally important in determining both the form that the research took as well as the success of the final product. In order to determine the most effective methodology to use, there are two variables to consider (Creswell, 2008).

The first is to match your approach to your research problem. Problems that are best suited for quantitative research are those for which trends or explanations need to be made. For qualitative research, the problems need to be explored to obtain a deep understanding. You need to also consider the current state of research in the proposed area of study. For example, in an established field, where widely accepted theories

already exist, experimental or other quantitative methods might augment or enhance those existing theories.

However, *qualitative research* is best suited for research problems in which you do not know the variables and need to explore. The literature might yield little information about the phenomenon, so plays a minor role is suggesting a specific research question to ask. But the literature does justify the importance of studying the research problem (Creswell, 2008).

The second factor that goes into your decision involves the audience for whom you are writing the research report. I am writing for several audiences in addition to my dissertation committee. I am also writing for policy makers, faculty, deans, and evaluators of programs or educational institutes who will read and possibly use the findings of this study.

The term *qualitative research* implies an emphasis on examination of the processes and meanings. The researcher relies on the views of participants; asks broad, general questions; collects a lot of detailed data about a case consisting largely of words (or text) from participants; provides a depth of detail through direct quotation, precise description of situations and close observation; describes and analyzes these words for themes; and conducts the inquiry in a subjective, unbiased manner (Creswell, 2008).

Qualitative research involves:

- *Comprehending* the phenomenon under study;
- *Synthesizing* a representation of the phenomenon, which accounts for linkages and relationships within its pieces
- *Theorizing* the how and why these relationships appear the way they do; and

- *Recontextualizing* the new knowledge.

Qualitative research then, is most appropriate for those projects where phenomena remain unexplained, where the nature of the research is uncommon or broad, where previous theories do not exist or are incomplete (Patton, 1990). More generally, qualitative researchers tend to gravitate to the study of phenomena that are undertheorized or outside the scope of existing theory. This attraction derives in part from a concern for the inadequacy of existing theory, but also from a desire to advance new theories and an interest in critically evaluating the tenets or assumptions of widely held explanations (Ragin, Nagel, & White, 2004) (p11).

3.1 METHODOLOGICAL FRAMEWORK

Case studies can be particularly useful for studying a process, program or individual in an in-depth, holistic way that allows for deep understanding.

As Merriam points out,

A case study design is employed to gain an in-depth understanding of the situation and meaning for those involved. The interest is in process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation (Merriam, 1998)(p. 19).

Qualitative researchers are concerned with how participants experience reality as well as with the complexities involved in a given phenomenon that cannot be understood through quantitative methodologies, especially when the phenomenon is context dependent. Moreover, if little is known about a phenomenon, qualitative methodologies provide the means for in-depth exploration and for discovering relevant variables that can be used in future quantitative studies. Case studies are qualitative methodologies designed to gather information about a particular setting or person. The scientific benefit of case studies lies in their ability to open the way for

discoveries, insights, or hypotheses. Other benefits include their ability to test or contribute to theoretical propositions and to provide in-depth descriptions. Because of their revelatory nature, case studies that represent critical or unique cases are particularly useful to extend or challenge theories (Mendoza, 2007) (p.76).

Case Study –Definition

The past three decades of scholarship on case study research have produced more than 25 different definitions of case study, each with its own particular emphasis and direction for research (VanWynsberghe & Khan, 2007).

There are some differences in how researchers define case study. Some researchers think of case study as a process of investigation (Creswell, 2008). Creswell defines case study as "an in-depth exploration of a bounded system (e.g., an activity, event, process, or individuals) based on extensive data collection" (p. 476). Creswell recommends case study as a methodology if the problem to be studied "relates to developing an in-depth understanding of a 'case' or bounded system" (p. 496) and if the purpose is to understand "an event, activity, process, or one or more individuals" (p. 496). Creswell's definition, calls for the researcher to start with a quandary that will invoke layers of understanding about the system in which the problem resides. The system becomes the case, and the researcher chooses an event, activity, or process within this system to illuminate it (VanWynsberghe & Khan, 2007). Van Wynsberghe and Khan proposed a new definition of case study - case study is a transparadigmatic and transdisciplinary heuristic that involves the careful delineation of the phenomena for which evidence is being collected (event, concept, program, process etc).

By transparadigmatic, we mean that case study is relevant regardless of one's research paradigm (i.e., postpositivism, critical theory, constructivism). By transdisciplinary, we are suggesting that case study has no particular disciplinary orientation; that is, it can be used in social science, science, applied science, business, fine arts, and humanities research, for example. We regard heuristic at its most general level as an approach that focuses one's attention during learning, construction, discovery, or problem solving (VanWynsberghe & Khan, 2007) (p.2).

According to this proposed definition, case study promotes learning through the study of the particularities and complexities of a bounded system (Patton, 1990). Patton suggests that case studies are valuable in creating deep understanding of particular people, problems or situations in comprehensive ways.

Merriam (1998) (Merriam, 1998) defines a case study as an intensive, holistic description and analysis of a bounded phenomenon such as a program, an institution, a person, a process, or a social unit" (p. xiii). Merriam goes on to say the case study offers a means of investigating complex social units consisting of multiple variables of potential importance in understanding the phenomenon .

I chose this methodology because I am "interested in insight, discovery, and interpretation rather than hypothesis testing" (Merriam, 1998)(p. 28). A qualitative case study method was also considered appropriate for an analysis of the closing and reopening of the Medical Laboratory Science program at BCIT because it is a case about which relatively little was known and about which in-depth understanding was desired.

3.2. METHOD

This study is particularly suitable for a case study design because it is a bounded system, it is contextual, and it is a study of process (Merriam, 1998). Like Creswell, Merriam (1998) defines case study as the study of a "bounded system". According to Creswell (2008),"'bounded' means that the case is separated out for research in terms of time, place, or some physical boundaries" (p. 476). In other words, it is possible to create limits around the object to be studied (Merriam, 1998).

"Bounding the study" refers to consideration about the setting and data collection, so that the study will be manageable and the types of information collected will maximize the investigator's time (Merriam, 1998). Attending to place and time brings context to the structures and relationships that are of interest.

The bounded systems in my case study are dates and timeframe, geographic location, institution program and actors involved.

Stake (2000) delineates three types of case studies: intrinsic, instrumental, and collective. Intrinsic case studies focus on a case that is unusual and is of particular interest to the researcher (Creswell, 1998; Stake, 2000). The intent is not to build theory (Stake, 2000). An instrumental case study is pursued in order to provide insight about a particular issue that may be generalizable (Creswell, 2008). The primary purpose of an instrumental case study is to help advance understanding (Stake, 2000). In a collective case study, an issue or concern is selected, but the inquirer selects multiple case studies to illustrate the issue (Creswell, 1998).

My case study is an intrinsic case study; this is because my case presents an unusual, almost unique situation. I selected the case study method, in part, because I intend to investigate, comprehensively and simultaneously, several factors that may have been related to the medial laboratory science program suspension at BCIT; and the case study method involves "collecting multiple forms of data" (Creswell, 2008) (p. 477). Context is a key factor. In particular I am interested in the decision making process used and the medical laboratory science program evaluation. The case study method, because of its holistic, comprehensive, multifaceted nature, will hopefully provide a means for investigating such events. According to Merriam (1998)(Merriam, 1998), in focusing on a particular phenomenon in a case study, it is impossible to separate the phenomenon from its context.

Research Question

My central research question is:

What caused the discontinuance in 1996 of the BCIT Medical Laboratory Science program and its subsequent revival in 1999?

Thus my case analysis consists of both description and thematic development (Creswell, 2008).

I focused my analysis to address the four sub-questions of the study:

How did the process unfold?

Who were the people involved?

What events occurred?

What was the outcome?

I used data from my case study to address these questions. I explored the

categories that emerged to determine "naturalistic generalizations" (Creswell, 1998).

Creswell defines naturalistic generalizations as "generalizations that people can learn

from the case either for themselves or for applying it to a population of cases" (p.154).

These naturalistic generalizations hopefully will help address the final question of the

study: Can we learn from the past, if so, so what lessons are to be learned for this case

study?

3.2.1. PROGRAM AND SETTING

BCIT has one of the largest Medical Laboratory Technologist training programs

in Western Canada, potentially graduating up to 80 students per year. The BCIT Medical

Laboratory program is a competency based model, designed and based on competencies

established by the national certifying body, the Canadian Society for Medical Laboratory

Science (CSMLS) and by the BCIT Medical Laboratory industry-based design process.

Each level of the program provides theoretical, practical and clinical learning

experiences. Students prove competence during real-life experiences (clinical practicum),

which BCIT arranges through formal affiliation agreements. Training sites are available

in all provincial health authorities and private clinical laboratories. Successful completion

of this program requires proof of competence. Students must successfully pass the

CSMLS certification examination in order to practice in the field.

The BCIT-Medical Laboratory Technologist (MLT) training program closure in

1996 meant there were no trainees in the system. In 1999 the BCIT-MLT training

program was reinstated. In having to rebuild programs, institutions must re-establish

their standing in the educational sphere and re-develop goodwill within the training sector. Changes of this nature impact the recruitment of faculty, the recruitment of high quality students and the overall education and training programs.

My primary source of data collection for this case was firstly the interviews with key BCIT Medical Laboratory Science administrative and program actors of the day, and secondly the archival original documents and raw data found relating to the program e.g. letters, emails, manuscripts, accounts of events and original questionnaire data.

3.2.2 DATA COLLECTION

Data collection according to Creswell (1998) is a series of interrelated activities aimed at gathering the most accurate information to answer emerging research questions. The multiple phases in collecting data include:

a. Locating a site/individual   b. Gaining access and making rapport

c. Purposefully sampling   d. Collecting data

e. Recording information   f. Resolving field issues

g. Storing data

Data collection should be comprehensive to ensure that important conditions, consequences and reasons are not omitted; flexible to allow for broader perspectives to be analyzed; and it should include multiple data sources that afford the researcher the opportunity to gain a full picture and to minimize bias. A case study investigator must have the following skills: the ability to ask good questions; be a good listener; be

adaptable and flexible regarding any new situations or opportunities; must have a firm

grasp of the issues being evaluated; and be unbiased (Yin, 2003)(p.59).

Since the purpose of case study research is to provide an in-depth exploration of

the person, program, or process under study, it requires intensive data collection

(Merriam, 1998; Yin, 2003) using "multiple forms of data" (Creswell, 2008)(p. 477).

Data collection for case studies usually focuses on three sources of data: observations,

interviews, and documents (Merriam, 1998).

> In quantitative research, data collection typically occurs well in advance of
> data analysis. In much qualitative research, by contrast, data collection and
> data analysis are not sharply differentiated. Researchers analyze data as
> they collect them and often decide what data to collect next based on what
> they have learned. Thus, in qualitative research it is often a challenge to
> specify a structured data collection and analysis plan in advance. In this
> respect, qualitative research is a lot like prospecting for precious stones or
> minerals. Where to look next often depends on what was just uncovered.
> The researcher-prospector learns the lay of the land by exploring it, one
> site at a time. Because much qualitative research has this sequential
> character, it can have the appearance of being haphazard, just as the
> explorations of an expert prospector might appear to be aimless to a naive
> observer (Ragin et al., 2004) (p.12).

Three traditional methods of data gathering were utilized in this case study.

Qualitative, face-to-face, semi-structured interviews with actors of the day

combined with an archival research of public documents and available internal

documents (minutes and reports of meetings, letters, and similar documents) both

electronic (i.e., Internet-based) and hard-copy were the methods employed.

Purposive Sampling

The phrase that quantitative research is a "mile wide and an inch deep," and qualitative research is "an inch wide and a mile deep" holds a grain of truth when it comes to sampling (Padgett, 2008) (p.56) .

Qualitative research such as mine, which stressed in-depth investigation in a small number of interviewees, uses purposive sampling as opposed to random sampling. Because the emphasis is on quality rather than quantity, the objective was not to maximize numbers but to become "saturated" with information on the topic (Padgett, 2008).

1.   BCIT Faculty and Staff

The participation of the past BCIT participants was a key to the study because they all previously had held senior positions at BCIT in the School of Health Sciences and had been actively involved in the discontinuation of the Medical Laboratory Science program, its subsequent reopening or both. Each of these interviewees held a position of leadership and influence within or upon the Medical laboratory Science program at BCIT.

The BCIT interviewees were as follows:

- Medical Laboratory Science (MLS) Program Head and faculty member

- Dean School of Health Sciences

- Associate Dean School of Health Sciences

- Vice President at BCIT

2. **Employer Representatives and members of the MLS Program Advisory Committee**

Canada's vocational colleges and institutes of technology are integrally aligned with the needs of employers through Program Advisory Committees (PAC's) to solicit business and industry input continuously into curriculum development. BCIT Policy 5004 (BCIT, 2003) describes the purpose and operations of PAC's as follows:

> PACs are constituted to provide strategic advice and assistance to a BCIT program or group of programs. They provide guidance on overall trends that may affect the curriculum and employability of graduates. This could include an understanding of the skills and abilities employers are likely to require in the future, the potential effects of technological change, changes to methodologies used by employers, etc. In addition, PACs are expected to review any proposal for major curriculum change or for new programs and to formally recommend by motion the adoption of such proposals.

> A Program Advisory Committee is comprised of an appropriate cross-section of representation from employers, alumni, the professions and other industry representatives. No BCIT employee can be a member of a Program Advisory Committee. Each Program Advisory Committee is encouraged to include one current student in its membership (BCIT, 2003) (p.30)

PAC Interviewees were as follows:

- Administrative Laboratory Director of a local Health Authority
- Two Laboratory Managers and members of the BCIT MLS Program Advisory Committee.
- Director on the Board of BCIT and member of the MLS Program Advisory Committee.

3. **Independent Consultant**

I also interviewed a

- Consultant to the ministry of health on laboratory services.

Interviews

Interviews were important data sources because in studying organizational change qualitatively "researchers are in the perspective business"(Pettigrew, 1995) (p.107). They must seek out and listen to different stories that help create a picture of what occurred, how it occurred, why, and with what impact. Interviews are important sources of direct quotations, the building blocks of qualitative research. As Patton (1990) noted:

> Direct quotations are a basic source of raw data in qualitative inquiry, revealing respondents' depth of emotion, the ways they have organized their world, their thoughts about what is happening, their experiences and their basic perspectives. The task for the qualitative researcher is to provide a framework within which people can respond in a way that represents accurately and thoroughly their points of view about the world, or that part of the world about which they are talking (p.24).

The purpose of the interviews was to extract a story of the key events describing how BCIT's School of Health Sciences discontinued its Medical Laboratory Science program in 1996. Stories are central to draw out what occurred for the following reasons:

> First, stories aid comprehension because they integrate that which is known about an event with that which is conjectural. Second, stories suggest a casual order of events that originally are perceived as unrelated and akin to a list. Third, stories enable people to talk about things and to connect them with present things in the interest of meaning. Four stories are mnemonics that enable people to reconstruct earlier complex events (Weick, 1995).

> Skillful interviewing involves more than just asking questions, and content analysis requires considerably more than just reading a text to see what's there. Generating useful and credible qualitative findings from a qualitative project requires careful planning, discipline, practice, time and hard work (Patton, 1990)(p.5).

Yin (2003) agrees that one of the most important sources of case study information is the interview. They are essential because most well informed interviewees can provide important insights into a situation. They can also provide shortcuts to the prior history of the situation, helping identify other relevant sources of evidence. In qualitative research, you ask open-ended questions so that the participants can best voice their experiences unconstrained by any perspectives of the researcher (Creswell, 2008).

In this case study the informants were the primary source of information as the "researcher's account of the studied scene should be built on the information provided by the most knowledgeable (and candid) members of the scene" (Van Maanen, 1979) (p.545).

I conducted nine personal interviews to collect opinions and perspectives from past faculty members in the medical laboratory science program and with administrators at the program, school, and institute levels during the spring of 2009. I believe this was the best technique to gather data from this group as it provided the opportunity for participants to describe their situation and roles in a personal manner.

The one-on-one (personal) interviews ranged from 45 minutes to 1.5 hours in time and were conducted at a location and date of the participant's choice. Interviews took place in Vancouver and Burnaby, British Columbia. I began the individual interviews with a tentative set of questions and allowed the participants' responses to guide subsequent questions (see Appendix 1). I made sure the session was relatively informal and open-ended, thus enabling the respondents to describe and interpret experiences in their own terms and from their unique perspectives. It seemed most appropriate to allow participants to influence, at least to some degree, the direction of the interview somewhat

as they were the main actors and experts in the situation that I am wishing to learn more about. This "loose" inductive method is appropriate for this descriptive study and allowed me to construct interview questions partially as a function of data derived from earlier interviews.

In order to capture the stories of the participants with precision, I used a digital recorder to record each interview. I used a Panasonic RR US490 Digital Recorder. This I found to be an excellent tool. The specifications for the US490 Digital Recorder state that it has the capability to record up to 271 hours and 30 minutes in SP Mode without sacrificing sound quality. It has a convenient USB Terminal, allowing you to connect to your personal computer to save files. Also, it included Voice Editing Version 2.0 Premium Edition software that I found most useful and this allowed me to manage my transcription files very effectively.

Attempting to manually transcribe respondents' comments would have been tedious and could have interrupted the flow of the interview. The opportunity to record the responses freed my time as the interviewer and allowed me to concentrate on the flow of discussions, to formulate further questions for probing, and thus ensured better quality of data. I stored all digital records on my personal computer and transcribed them as soon as possible after the interviews. The transcribed documents were also stored electronically. I verified the accuracy of the textual transcriptions with case participants before analyzing the data.

Ethics

The purpose, benefits, research design, data gathering methods, participant selection and rights, the initial letter of support and responses, covering letter, consent form, interview guide and thesis outline were reviewed by the Simon Fraser University Office of Research Ethics (ORE). The application for approval to proceed was granted March 11, 2009 with no concerns expressed or revisions recommended (see Appendix 2).

The commitment to ethics was consistently reflected in written documents provided to volunteer participants and in the data gathering process. Initially, following the approval to proceed with the study I gave each participant a formal Letter of Invitation and Letter of Consent. These letters explained the purpose of the study, the process that the research will follow, and a brief explanation of the data collection instrument, along with Simon Fraser University (SFU) and my contact information to validate authenticity or to contact me with questions (see Appendix 3).

The letter of introduction, consent form and interview guide were reviewed prior to the commencement of the interview with the digital audio recorder not operating. The interview process was explained and participants were given the opportunity to discuss relevant issues, concerns or information before taping began.

Protecting Data

It is strongly recommend to make back-up copies of all data, putting one master copy away someplace secure for safekeeping. I made backup copies of the data/interview

recordings as they were collected, being certain to put one copy in a safe place where it will not be disturbed and cannot be lost. This point cannot be over emphasized and I was not comfortable until my backup was done. The data I collected was unique and precious. The exact observations I had made, the exact words people have spoken in interviews – these can never be recaptured in precisely the same way, even if new observations were to be undertaken and new interviews conducted. Moreover, I have made promises about protecting confidentiality, so I have an obligation to take care of the data. My field notes and interviews were therefore treated as the valuable material they are and I protected them the best I could. One copy of my transcripts and paper was put away for safekeeping on an external hard drive. I had one hard copy handy throughout the analysis for writing on. A great deal of my qualitative analysis work involved the cutting and pasting of the transcript data. My advice is that under no circumstances should one yield to the temptation to begin cutting and pasting from the master copy. The master copy or computer file remains a key resource for locating materials and maintaining the context for your raw data.

Document Analysis

A valuable source of information in qualitative research can be documents (Creswell, 2008). Documentary analysis consisted of a review of the transcripts of my interviews; I also obtained public and private records which included archival reports, memos, minutes of meetings and newspapers. These sources provide me valuable information in understanding the central phenomena and context of my study. Many of

the documents and literature reviewed were incorporated into the chapters on context and discussion.

My primary sources included original documents and raw data e.g. letters, emails, manuscripts, accounts of events and original questionnaire data. Examples of my secondary sources that interpreted, synthesized or summarized primary sources were published summaries in journal articles or books, government reports, documentaries or conference proceedings.

I used an iterative method of analysis by identifying common themes in the responses of multiple interviewees. I conducted this analysis after each interview had been completed.

> To uncover the constructs, we use an iterative procedure--a succession of question-and-answer cycles--that entails examining a given set of cases and then refining or modifying those cases on the basis of subsequent ones (Huberman & Miles, 1994) (p.431).

Throughout my case study, I tried to engage in a reflective stance toward my role as a participant researcher. In order to aid my reflection, I maintained a journal in which I transcribed my thinking in relation to my experiences. Merriam (1998) expresses some concern about using personal documents such as journals as data. Merriam says that personal documents are a reliable source of data concerning a person's attitudes, beliefs, and view of the world. But because they are personal documents, the material is highly subjective in that the writer is the only one to select what he or she considers important to record. Obviously these documents are not representative or necessarily reliable accounts of what actually may have occurred .

However, Merriam (1998) does point out that one of the goals of qualitative research is to "reflect the participant's perspective" (p.116). Since this is a process study, the perceptions of all participants are a key consideration (Patton, 1990). As I am a participant in this study, my perceptions of my experience of the process are important.

3.3   DATA ANALYSIS

Data analysis is at the heart of qualitative case studies. It is the process through which the data collected begins to take shape, form a story, outline patterns and trends, and make sense (Merriam, 1998). In this case study research, the final product begins to unfold and emerge from the patterns found in the case under study with limited advance knowledge about what the important dimensions will be (Patton, 1990). Case studies attempt to go beyond the cataloguing of the facts to find the meanings attached to those facts by the organizational participants, as Pettigrew (1995) noted:

> What is critical is not just events, but the underlying logics that give events meaning and significance. Understanding these underlying logics in the process of change is the goal, and this requires data on events, interpretations of patterns in those events, when they occur in socially meaningful time cycles, and the logics that may explain how and why these patterns occur in particular chronological sequences. (p.100)

Data analysis is ongoing during the research process and allows researchers to condense an exorbitant amount of information into a more user friendly format (Merriam, 1998).

> Data analysis in qualitative inquiry is an ongoing process from the beginning of the study until it is completed. This is congruent with the concept of emergent design and with the goal of understanding the social world of the study participants. As the researcher gathers initial data and

makes beginning interpretations, these serve as a guide for further data gathering and analysis, and as new data are gathered, they are compared with existing data and interpretations, which then undergo revision in light of the new information. This process may be termed iterative or recursive interpretation (A. K. Cobb & Forbes, 2002).

Two sets of materials were analyzed for this study – interview transcriptions and written materials. The analysis of interview transcripts and notes was based on an inductive approach geared to identifying patterns in the data by means of thematic codes. "Inductive analysis involves discovering patterns, themes, and categories in one's data. Findings emerge out of the data, through the analyst's interactions with the data" (Patton, 1990) (p.453).

I analyzed my observations, interviews, and documents to develop a description of the case. This description outlines and describes the setting and participants as well as a general chronology of events and provides the reader with an understanding of the particulars of the case (Creswell, 2008). This allows the reader to develop an understanding of the case within the larger context (Creswell, 2008).

(Lacey & Luff, 2001) inform us that analysis of qualitative data usually goes through some or all of the following stages (though the order may vary):

- Familiarization with the data through review, reading, listening etc.
- Transcription of tape recorded material.
- Organization and indexing of data for easy retrieval and identification.
- Anonymising of sensitive data.
- Coding.
- Identification of themes.
- Re-coding.
- Development of provisional categories.
- Exploration of relationships between categories.

- Refinement of themes and categories.
- Development of theory and incorporation of pre-existing knowledge.
- Testing of theory against the data.
- Report writing, including excerpts from original data if appropriate (e.g. quotes from interviews).

For this study I organized the data into what Yin (2003) calls a case study data base. The taped interview recording and transcripts comprised the database. This is a distinct pool of data separate from the final report. This database was the source from which I drew my analysis. The purpose of creating such a separate data repository is that it allows other investigators the ability to review the evidence directly and not be limited to the final analysis of the researcher (Yin, 2003).

I organized my case study data base in a chronological order so that I could move through the data from the beginning to the end of the process. This allowed me to perceive the progression of the process. As the study progressed, I looked for events with common elements within the data that had "issue-relevant meaning" (Creswell, 1998) (p.154) or significance for the study.

As I recognized these common elements, I focused on determining whether they continued to be supported throughout the data collection process. Creswell calls this process categorical aggregation. As categories within the data began to emerge, I looked for patterns or themes that connect these categories.

The step by step analysis included the following: 1) a holistic reading of the interview transcripts, 2) each conversation segment from the interviews viewed individually, and 3) I looked for patterns and themes to emerge from interviews, and used words and phrases to develop coding categories (see Appendix 4). The use of multiple

data sources (interviews and archival documentation) helped ensure that the codes developed created a rich, thick description of the results (Merriam, 1998).

Each interview was coded using manual and computer-aided strategies using the *Ethnograph* Version 6.0 software. Often, there appeared to be multiple codes within a conversation segment. This led to creating subcategories for initial categories that were too broad. The electronic database served to file and maintain the documents. As an additional step, all conversation segments from each interview with the same themes were grouped together for quick retrieval when it was time to discuss the findings. My own experience as a medical laboratory technologist facilitated an appreciation of the issues and terminologies discussed by the participants.

In summary, data were reduced and analyzed by means of thematic codes and concepts in a three-level process. Themes gradually emerged as a result of the combined process of becoming intimate with the data, making logical associations with the interview questions, and considering what was learned during the initial review of the literature. At successive stages, themes moved from a low level of abstraction to become major, overarching themes rooted in the concrete evidence provided by the data (Bowen, 2005).

I chose to use a force field analysis diagram (Snyder, 1984) to visually display the themes that emerged from the data as an aid in developing my interpretations and conclusions. (For a more complete description of this methodology see page 182).

3.3.1 RESEARCH RELIABILITY & VALIDITY

Reliability and validity are important issues in all research including qualitative research. Demonstrating that your qualitative data analysis is rigorous is especially important given a common criticism (from those less favourable to qualitative research) that qualitative results are anecdotal (Lacey & Luff, 2001).

In terms of assessing qualitative research the emphasis is on the reliability of the methods employed. You need to demonstrate to the reader that the methods you have used are reproducible and consistent. However, unlike in quantitative research, external replication may not be the most appropriate measure. Instead, in demonstrating the reliability of your analysis you would need to consider the following:

- Describing the approach to and procedures for data analysis.
- Justifying why these are appropriate within the context of your study.
- Clearly documenting the process of generating themes, concepts or theories from the data audit trail.
- Referring to external evidence, including previous qualitative *and* quantitative studies, to test the conclusions from your analysis as appropriate (Lacey & Luff, 2001).

In many forms of qualitative research the raw data is collected in a relatively

unstructured form such as tape recordings or transcripts of conversations. The main ways

in which qualitative researchers ensure the retest reliability of their analyses is in

maintaining meticulous records of interviews and observations and by documenting the

process of analysis in detail. While it is possible to analyze such data singlehandedly and

use ways of classifying and categorizing the data which emerge from the analysis and

remain implicit, more explicit approaches, for example, using computer software can be

used to facilitate the analysis of the content of interview transcripts (Seidel & Clark,

1984). A coding frame can be developed to characterize each interview, and transcripts

can then be coded by more than one researcher. One of the advantages of audio taping or

videotaping is the opportunity the tapes offer for subsequent analysis by independent observers (Mays & Pope, 1995).

Computer Programs Supporting Qualitative Content Analysis

Qualitative data analysis is a complex and multifaceted process. In the last few years, there's been a proliferation of Computer Assisted Qualitative Data Analysis Systems (CAQDAS).

> Computers and software are tools that assist analysis. Software doesn't really analyze qualitative data. Qualitative software programs facilitate data storage, coding, retrieval, comparing, and linking - but human beings do the analysis. Software has eased significantly the old drudgery of manually locating a particular coded paragraph. Analysis programs speed up the processes of locating coded themes, grouping data together in categories, and comparing passages in transcripts or incidents from field notes. But the qualitative analyst doing content analysis must still decide what things go together to form a pattern, what constitutes a theme, what to name it, and what meanings to extract from case studies. The human being, not the software, must decide how to frame a case study, how much and what to include, and how to tell the story (Patton, 1990)(p.442).

The qualitative data analysis (QDA) program I used in my dissertation research for data organization and management was the *Ethnograph* Version 6.0.

This is a powerful computer program and it has the capabilities to deal with the qualitative analysis of large bodies of textual and audio data media and offers a variety of tools for accomplishing the tasks associated with my systematic approach to data analysis. I found the *Ethnograph* to be a versatile computer program specifically designed to make the analysis of data collected during qualitative research easier, more efficient, and more effective. You can import your text-based qualitative data, (in the form of interview transcript, field notes, or other text based documents) typed in any

word processor (I used Microsoft Word), straight into the program. The *Ethnograph*

helps you search and note segments of interest within your data, mark them with code

words and run analyses which can be retrieved for inclusion in reports or further analysis.

It is produced and available from Qualis Research, 610 Popes Valley Drive, Colorado

Springs, CO 80919 (http://www.qualisresearch.com).

The following overview of the *Ethnograph's* basic functions illustrates the general

capabilities of this genre of software.

1. Receiving (that is, "reading") and storing textual data (e.g., field notes, interview transcripts, researcher memoranda, audit logs, documents, observers' comments) which have been previously entered (keyboarded) into the computer via any word processing program capable of producing ASCII text files.

2. Numbering lines of text sequentially and automatically, so as to facilitate conceptual delimiting (coding) of the data.

3. Coding (indexing) of numbered lines, paragraphs, or other segments of data. With the *Ethnograph* one marks these "interesting things" by creating and attaching 10-character-long identification labels or tags ("codewords") to any chunk ("segment") of text. In essence, codewords reflect the interpretative thinking and emergent classification schemes of the researcher. Segments may range in length from l-9,999 lines of text. The researcher delimits each segment's boundaries by the line-numbers which begin and end the identified segment.

4. Modifying (changing/adding/deleting) individual codewords or the entire coding system, so as to enable re-sorting as new or different categorization frameworks and conceptual typologies emerge. These editing capabilities may be applied to the codewords themselves or to the boundaries of the text-segments identified previously.

5. Searching for and retrieving coded segments' including appropriate indicators of the context from which the segment is drawn. Such "context clues" may include file names, line numbers, site name, speaker identification, interview question, concurrently occurring codewords or other context indicators supplied by the researcher and embedded into the textual data base. The *Ethnograph* allows the user to search up to 80 different files at a time.

6. Sorting data segments, by single or multiple combinations of Codewords. The technical features which enable such recombinations are called "Boolean

operators." Essentially, they allow the user to search for segments with more than one codeword attached to them. ("Sorting" may be thought of as a subsidiary function of "searching.")

7. Counting and providing summary information regarding the frequencies of particular speakers and frequencies of codewords according to pre-specified socio-demographic variables such as age, sex, ethnicity, and the like.

The principles underlying these seven features parallel "the basic tasks of qualitative research [whether or not it is computer-assisted]"
{Brent (1984) summarizes those tasks as (a) recording of data b) data storage, (c) concept formation and typology construction, (d) classification, (e) query/retrieval, and (f) summarization of findings (Tallerico, 1991).

The analysis of qualitative data involves creativity, intellectual discipline, analytical rigor, and a great deal of hard work. Computer programs can facilitate the work of analysis, but they can't provide the creativity and intelligence that make each qualitative analysis unique (Patton, 1990) (p.442).

The *Ethnograph* thus helped me to explore the complex phenomena "hidden" in my raw data by providing tools to manage, extract, explore, and re-contextualize meaningful pieces of data in flexible, creative and systematic ways.

VALIDITY

As in all research, a critical question in qualitative inquiry is, "How do we know this is a good study?" Specific to this approach is whether the interpretations accurately depict the phenomena of interest. The most widely used set of criteria for evaluating qualitative studies is one developed by Lincoln and Guba (1985) although there is currently a proliferation of articles on this topic (Bailey, 1996; Beck, 1993; A. K. Cobb,

& Hagemaster, J. N., 1987; Cutcliffe, McKenna, & Cutclife, 1999; Giacomini & Cook, 2000) .

Lincoln and Guba (1985) suggested five strategies: connect the study to the theoretical framework (credibility); transfer results to other contexts without generalizing (transferability); make sure the data and the findings are consistent (dependability); attempt to have as little bias as possible (confirmability); and have the researcher acknowledge his/her active participation in the study (reflexitivity).

Giacomini and Cook (2000) reduce evaluative criteria to two critical questions: (i) Was the data collection comprehensive enough to support rich and robust descriptions of the observed events; and (ii) Were the data appropriately analyzed and the findings adequately corroborated?

My strategy to guarantee the trustworthiness of this study took place in three ways. The first important validity procedure I employed, which is integral to case study design, was triangulation (Creswell, 2008), (see Figure 10). Merriam (1998) (Merriam, 1998)defines triangulation as "using multiple investigators, multiple sources of data, or multiple methods to confirm the emerging findings" (p.204).

> Triangulation compares the results from either two or more different methods of data collection (for example, interviews and observation) or, more simply, two or more data sources (for example, interviews with members of different interest groups). The researcher looks for patterns of convergence to develop or corroborate an overall interpretation (Mays & Pope, 2000) (p.51).

Mays and Pope suggest that instead of using triangulation as a stringent test of validity, it is also considered to be an appropriate method for ensuring comprehensive data collection – getting all sides of "the story" (Mays & Pope, 2000).

Figure 10 Triangulation

(Bowen, 2005)

```
┌──────────────┐                      ┌──────────────┐
│  Interviews  │ ◄──────────────────► │ Observation  │
└──────────────┘                      └──────────────┘
         │                                    │
         │           ┌──────────────┐         │
         └─────────► │  Documents   │ ◄───────┘
                     └──────────────┘
```
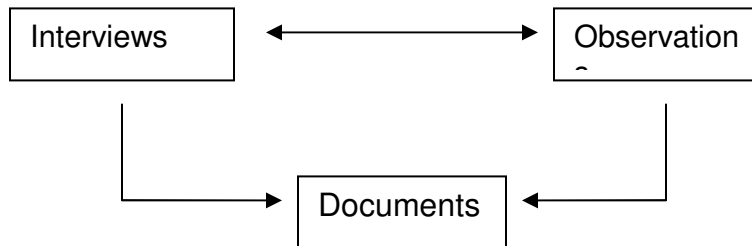
I triangulated the data by interviewing participants, conducting observations while

taking field notes, and engaging in constant comparison of the information to be certain

that it was parallel. I had multiple sources of raw data since interviews were conducted

with nine participants. I used the process of triangulation to seek convergence in the data

and to confirm emerging categories and themes (Creswell & Miller, 2000). Triangulation

allowed me to check for consistency in answers and attitudes.

I also conducted electronic and physical searches of the BCIT campus library, the

internet and local newspapers to find articles dealing with the BCIT Medical Laboratory

Science program's termination and reopening. Where possible, I have also included

internal memos about the program termination or reopening. These memos have provided

both the content and the context for the communication processes that accompanied the

program changes. These memos and reports also provide triangulations that help me

assess the validity of the interview findings (Morphew, 2000). Validity was upheld by the

use of these methods.

Another strategy I used for increasing validity of my case study was to provide

copies of the interview transcripts and analysis of the data to participants to cross check

data and interpretation of data at various stages in the research process (Creswell, 1998; Merriam, 1998)

I conferred with the participants for reassurance that I portrayed them factually, careful not to let my personal biases influence the data incorrectly. In order to ensure that I documented their statements accurately, I emailed my transcript to my participants; I also reiterated the questions and the transcription of their responses was shared. I asked if I had interpreted their statements correctly and then asked if they wanted to share anything additional. This allowed an opportunity for the participants to reflect on their prior statements and make provide clarity for me if they believed they were not accurately presented. Crosschecking helped me maintain reflexivity by encouraging self-awareness and self-correction.

Yin (2003) identified the following three principles as central for establishing an ample level of methodological rigor in case study research: (1) the use of multiple sources of evidence; (2) the construction of a data base of information or case report specifically for the case study; and (3) the development of a logical chain of evidence describing the rationale and the processes used that connects the findings to the collected data. This case study adhered to those three principles.

Subjectivity

Another method of creditability I used throughout the research process was researcher reflexivity (Creswell & Miller, 2000). I tried to maintain an awareness of the biases that I bring to this study and maintained this awareness when adding background data to my field notes, observations transcriptions, and interview transcriptions.

Since my perceptions of the research process play a major part in the findings of this study, it was important that I attend to the idea of subjectivity. Peshkin (1988)(Peshkin, 1988), defines subjectivity as "the quality of the investigator that affects the results of observational investigation" (p.17). Peshkin points out that an individual's subjectivity is not something that can be removed, and it is therefore something researchers need to be aware of throughout the research process. Though Peshkin does not view subjectivity as necessarily negative, he does feel it is something that researchers need to realize and acknowledge (Tinkler, 2004).

Open and Honest Reporting

Open and honest reporting of procedures used for collecting and conducting a study are important in qualitative research, just as they are in quantitative traditions. As Huberman and Miles (1994) put it:

> The conventions of quantitative research require clear, explicit reporting of data and procedures. That is expected so that (a) the reader will be confident of , and can verify, reported conclusions; (b) secondary analysis of the data is possible; (c) the study could in principle be replicated; and (d) fraud or misconduct, if it exists, will be more trackable. There is an added internal need: keeping analytic strategies coherent, manageable, and repeatable as the study proceeds. That is, the reporting requirement encourages running documentation from the beginning. In our view, the same needs are present for qualitative studies, even if one takes a more interpretive stance (p.439).

3.3.2 PRELIMINARY BIASES

Geer (1964) stated that "field workers are not free of prejudice, stereotypes, or other impediments (p.149)" to the understanding of people or groups. Therefore, the

researcher should identify personal biases and their sources in order to better understand the role they play in one's research (Agar, 1980). Berg and Smith (1988) noted that self-scrutiny provides information about "the intellectual and emotional factors that inevitably influence the researchers' involvement and activity   (p. 31)." To become aware of personal reactions and related values and emotions is crucial when engaging in research (Heshusius, 1994). Jansen and Peshkin (1992) summarized that qualitative researchers are "so palpably, inescapably present that they cannot delude themselves that who they are will not make a difference in the outcomes of their study (p.720)."

Ginsberg and Matthews (n.d.) noted that researchers need to explore their own feelings toward people to distinguish between real observation and interpretation and personal bias. Le Compte, (1987) used the term "disciplined subjectivity" (p. 43) to describe the practice of determining conscious and unconscious sources of bias.

Understanding different perspectives from inside and outside a phenomenon goes to the core of qualitative inquiry. Experience affects perspective. Perspective shapes experience (Patton, 1990).

> The cornerstone of good qualitative research is in-depth knowledge of cases. Qualitative researchers who already have background knowledge are more likely to identify promising leads than those who are starting from scratch. The downside of "knowing a lot" at the start is that researchers may enter the field or archive with preconceptions that interfere with the development of new insights (Ragin.C, 2004) (p12).

> In much qualitative research, the investigator is the primary data collection instrument and can shape findings in a very direct way. Recognition of the impact of the researcher on data collection has lead qualitative researchers to be increasingly self-conscious about their role in the research process. Every researcher has a biography that becomes an element in and an aspect of the collection and analysis of data. The researcher as an active agent in the research process can be both an aid and a hindrance to data

collection and analysis. The researcher's positionality is an aspect of all social research, especially in research settings where the researcher is visible and active and in projects that seek in-depth knowledge (Ragin.C, 2004) (p14).

Le Compte(1987) claimed that bias is located in the researcher's personal history and professional training. Robson (2002) describes " a practitioner – researcher as someone who holds down a job in some particular area and is, at the same time, involved in carrying out systematic enquiry which is of relevance to the job." (p.534). They are thought to be at a considerable disadvantage *vis-à-vis* outside professional researchers, but they also have complementing advantages. Robson outlines these disadvantages which includes the "Insider" problem (p.535) "The insider may have preconceptions about issues and /or solutions" (p.535). This is counterbalanced by the advantage of the practitioner – researcher role which is said to be the "Insider" opportunity. "You will have a pre-existing knowledge and experience base about the situation and the people involved (p.535).

I am a certified non practicing medical laboratory technologist and have been a member of the CSMLS since 1981 and therefore have the technical educational background and qualifications to view the world through a lens that focuses my attention on the training and work of medical laboratory technologists. Because of this perspective, I have a bias towards having a positive outlook on the contributions and benefits that MLT's bring to the healthcare system.

Therefore, I was very diligent about not letting my personal lens cloud the picture of the phenomena I researched. In order to avoid perceived bias, I paid particular

attention to how I analyzed and interpreted the information I gathered, to ensure the identified conclusions were based on the facts that are presented.

A second bias results from my background in medical laboratory management. I am particularly knowledgeable about the challenges faced by the field of medical laboratory sciences having had 22 years of healthcare leadership and management experience that includes 12 in laboratory medicine. I am a Certified Health Executive (CHE) with the Canadian College of Health Service Executive and the American College of Healthcare Executives. For four years (2004-2008) I was Associate Dean, School of Health Sciences at the British Columbia Institute of Technology (BCIT), Vancouver, Canada. The Medical Laboratory Science program was one of the programs in my portfolio. The job description summary of this position's responsibilities is as follows:

The Associate Dean is part of the Educational Leadership Team of the Institute. Reporting to the Dean, the Associate Dean is accountable for providing administrative and educational leadership to designated full-time, part-time and Industry training programs and courses, in accordance with BCIT and industry standards and congruent with the overall Institute mission. As first-line educational manager, the Associate Dean functions as a member of academic departments, as faculty and staff personnel supervisor, and as the individual responsible for the implementation of corporate and school level educational strategies and objectives.

Because I have been trained as a medical laboratory technologist and have worked as a laboratory manager in British Columbia prior to my work in post secondary education at BCIT, I have knowledge and understanding of the medical laboratory work

environment that, if unchecked, would have allowed me to read into situations more than what is presented by the facts.

In order to account for my personal biases so that they are identified, addressed, and corrected for in the research, the following measures were taken:

- Field notes were kept for all work that was performed, including review of historical documents and personal interviews.
- After information was gathered, transcribed, documented, and analyzed, the informants were re-contacted to review my written discussion and conclusions of the event to corroborate the information as consistent with the informant's thoughts and intentions.
- Multiple data sources were used to ensure it was accurate, consistent, and corroborated. This was accomplished by using the following different sources of data: interview notes, recordings of interviews, and historical documents.
- A conceptual framework was developed throughout the process of the research in order to generalize the framework of this study. The framework was fluid and changed as more evidence and information was gathered and analyzed. All information was accounted for during the production of the framework, and modifications were made accordingly.
- My committee supervisor/chair was consulted throughout the research process to identify any biases/problems in my data collection, field notes, and journal, and to provide outside perspectives on my analyses, discussion, and conclusions.

3.3.3 LIMITATIONS OF THIS STUDY

The findings from this case study and analysis of the closing and reopening process are not meant to be generalizable. Nonetheless, the factors I have identified may be useful to other universities, colleges and institutes considering a program termination or suspension. The most significant limitation of a retrospective study is the difficulty of crafting an explanation from reconstructed events as the data is based upon informant recall that is highly subjective (Pettigrew, 1995; Weick, 1995). This difficulty is caused by participant biases and misperceptions (Eckel, 2003). For instance, participants may have said what they think I wanted to hear and painted positive pictures of situations that are not altogether positive. To reduce such bias and its effects on the collecting and analyzing of empirical evidence I used triangulation. I am confident that the information collected reveals significant and salient information concerning the processes of how BCIT discontinued its medical laboratory science program in 1996 and then reopened it in 1999. Another limitation of this study is the lack of representation of faculty members and students on the list of participants interviewed and the absence of their perspectives. Therefore the findings should be interpreted in consideration of study limitations.

3.3.4 SUMMARY

Qualitative research seeks to understand, as completely as possible, the phenomena under study. Ethnographic research has qualitative goals of complete understanding, but interacts with research subjects, in their own setting, to come to that understanding. There is a variety of methods qualitative researchers' use: they collect

data through observation, interviews, and data analysis. However, while many in the hard sciences view qualitative research as "easy," or not rigorous enough, qualitative researchers do in fact strive for reliability and validity in their findings (Megan, 2005).

In this paper, I have tried to provide a brief review of the elements that a well designed qualitative research study must possess. I have detailed a rationale for choosing this method, then described data collection, analysis, and procedures in relation to reliability and validity.

CHAPTER 4: RESULTS

4.0 OVERVIEW OF THE INVESTIGATION

In this chapter, an overview of the case study is presented in the light of the research question set out in chapter 1. This study was undertaken by means of a literature review and an empirical investigation.

4.1 THE LITERATURE REVIEW

The purpose of the literature review was to provide the background for the study by reviewing current literature on academic program closures, leadership and decision making, the medical laboratory technologist profession and changes in healthcare in Canada focusing particularly on the changes in medical laboratories in British Columbia.

Searches of the internet, my personal files and the BCIT library were used to obtain relevant archival documents from the BCIT School of Health Sciences and the Medical Laboratory Science program. Key primary sources were found in documentation from various reports, past surveys and minutes of Program Advisory Meetings, minutes of the Lower Mainland Laboratory Managers Group, emails and memos. The literature review informed the empirical inquiry.

4.2   THE EMPIRICAL INVESTIGATION

The period of study commenced September 1 2008 and ended on October 30 2009.

Semi-structured interviews were used to gather data for this study. The participation of the nine participants was a key to the study because they all previously had held senior positions at BCIT in the School of Health Sciences and had been actively involved in the closing of the Medical Laboratory Science program, its subsequent reopening or both. The participation of the interviewees was as follows:

- Medical Laboratory Science (MLS) Program Head and faculty member
- Dean School of Health Sciences
- Associate Dean School of Health Sciences
- Vice President at BCIT
- Administrative Laboratory Director of a local Health Authority
- Two Laboratory Managers and members of the BCIT MLS Program Advisory Committee.
- Director on the Board of BCIT and member of the MLS Program Advisory Committee.
- Consultant to the ministry of health on laboratory services.

Individual interviews were 45 to 90 minutes in length. All interviews were recorded, transcribed, coded, and stored electronically for analysis. The interviews were coded and later sorted into the analytic categories using *Ethnograph* Version 6.0 computer software, designed to assist the qualitative researcher with some of the mechanical aspects of data analysis (Seidel & Clark, 1984). The data was first organized into broad areas of interest and then subsequently into 79 categories. Inevitably, there was some overlap in the content of the categories. All relevant primary archival

documentation that was found was also coded for emergent themes. Microsoft Office –

Word software was used throughout the course of the study to store and manage the data.

4.3   ANALYSIS OF FINDINGS

Documentary analysis consisted of a review of the transcripts of my participant interviews; I also obtained public and private records which included archival reports, memos, minutes of meetings and newspapers. These sources provide me valuable information in understanding the central phenomena and context of my study.

During analysis of the interview transcripts, it became possible to group the 79 codes/categories of search into a limited number of main themes which concerned the closing and reopening of the Medical Laboratory Science program. In the discussion of the findings which follows, the quotations from the participants interviews have intentionally not been altered; words enclosed by brackets have been added by the author only where necessary for clarity.

My primary sources included original documents and raw data e.g. letters, emails, manuscripts, accounts of events and original questionnaire data. The primary documents reviewed are listed in Table 4.

Table 4 Primary Documents Reviewed

Primary Documents	Date	# of Pages
Phase V- Transcripts from my participants interviews	April 6 - May 8, 2009	71
Phase IV - Post MLS Program Reopening		
High level Briefing Document MLS Program - Recommendations coming out of the BCIT/MLT Task Force by Associate Dean SOHS	March 11, 2008	4
Complete Briefing Document MLS Program - Recommendations coming out of the BCIT/MLT Task Force by Associate Dean SOHS	March 7, 2008	24
Information report - Submitted to: CMA- Med Lab Accreditation review team Prepared by: Associate Dean SOHS includes Minutes from November 15th 2005 MLT Program Advisory Committee	September 26, 2007	6
BC Laboratory Redesign and the Provision of Education and Training in BC: Impact and Opportunities –White Paper by Dean and Associate Dean SOHS	January 21, 2005	19
Phase III - After MLS Program suspension/closure and Pre-reopening		
Medical Laboratory Technology Visioning –Report by BCIT SOHS	February , 1999	22
Power point presentation with handwritten notes from the Associate dean SOSH Re; Medical Laboratory Technology Human Resource Issue		7
Memo from President BCIT to SOHS Dean Re: Medical Laboratory Report and proposed reopening or MLT program	December 15, 1998	2
Report on Medical Laboratory Technology Human Resource Issue in British Columbia prepared by Associate Dean SOHS	October 1998	82

Primary Documents	Date	# of Pages
Phase II - Prior to and immediately up to the Suspension /Closure		
Memo from Associate Dean SOHS to president BCIT Re: Related correspondence and notes re: MLT Program closure	May 6, 1998	1
MLT Program Advisory Committee Minutes	April 30, 1996	9
Memo from Program Redesign Leader to Dean SOHS Re: Update on the redesign of the MLT program and Proposal for New medical Laboratory Science Program - Reopening in 1999	April 9, 1998	57
Letter of Concerns to Dean SOHS from Vancouver Area Hospital Laboratory Managers	February 22, 1996	6
Memo to February 16th meeting of Vancouver Area Hospital Laboratory Managers from Associate Dean SOHS		1
Minutes of the Vancouver Area Hospital Laboratory Managers (VAHLM) Meeting	February 16, 1996	4
Letter to Dean SOHS from Chair of MLT program summarizing concerns from the Feb 6th PAC meeting prior to the Deans meeting with the BCIT Board on February 13, 1996	Feb 12, 1996	3
Special Meeting of the MLT Advisory Committee Re; Shaping BCIT's recommendations for the MLT program	February 6,1996	9
Letter to Associate SOHS from Medical Director of Laboratory Services Greater Victoria Hospital Society, Re: Suggestions and concerns with BCIT MLT survey	January 18, 1996	3
Letter to Dean SOHS from Chair of MLT Program Advisory Committee Re: Suggestions and concerns with BCIT MLT survey	January 17, 1996	2
MLT Questionnaire, Survey Summary and with all respondents raw data	**January 16,1996**	11
MLT Program Advisory Committee Minutes	October 31, 1995	11

Primary Documents	Date	# of Pages
MLT Program Advisory Committee Minutes	April 25, 1995	15
Phase I - Historical Laboratory Reform in BC information and context setting		
Minutes of the Vancouver Area Hospital Laboratory Managers (VAHLM) Meeting Minutes	January 20, 1995	12
Minutes VAHLM Meeting	Dec 16, 1994	6
Minutes VAHLM Meeting	November 18,1994	4
Draft - Proposal for Essential and Innovative Steps toward value added laboratory Medicine in Quality healthcare for British Columbians By the University Affiliated Pathology Laboratories (UAPL)	September 26 ,1994	13
Minutes VAHLM Meeting	September 16,1994	3
Minutes VAHLM Meeting	June 17,1994	7
Minutes VAHLM Meeting	March 18,1994	4
Minutes VAHLM Meeting	October 15,1993	4
Minutes VAHLM Meeting	September 17, 1993	8
Minutes VAHLM Meeting	April 16, 1993	8
Minutes VAHLM Meeting	March 19, 1993	3
Minutes VAHLM Meeting	November 13,1992	3
Primary Documents # of pages reviewed	**Total**	**444**

Iterative Interpretation

Cobb and Forbes state that

"data analysis in qualitative inquiry is an ongoing process from the beginning of the study until it is completed. This is congruent with the concept of emergent design and with the goal of understanding the social world of the study participants. As the researcher gathers initial data and makes beginning interpretations, these serve as a guide for further data gathering and analysis, and as new data are gathered, they are compared with existing data and interpretations, which then undergo revision in light of the new information. This process may be termed iterative or recursive interpretation"(A. K. Cobb & Forbes, 2002) (p.200).

The dynamic steps I took to research and complete this case study are illustrated below.

Step 1
Literature Survey

Step 2
Interviews
April 6-May 8, 2009

Step 3
Archival search for
primary Documents
May 10 2009

Step 4
Coding using
Ethnograph
software

Step 5
Triangulation
- Program Closure
  literature
- My own raw data
- Archival Documents

Step 6
Development of Theory
- Using Force Field
  Analysis (FFA)
- Health Human Resource
  & Skills Shortages

Step 7
Categorizing and weighting for
FFA work based on my
triangulation and empirical
research.

Step 8
Discussion, conclusions, and
implications

CHAPTER 5:   DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

5.0   INTRODUCTION

The purpose of this case study was to investigate how the decisions were made to close and subsequently reopen the Medical Laboratory Science program at BCIT. The data for the study were gathered from three different methods of data collection that included individual interviews, archival document research and a literature review. The variety of forms of data collection provided valuable information that enabled the different voices and perceptions of the participants of the case study to be heard from multiple sources. Additionally, the various collection methods provided for triangulation of the data necessary to ensure the validity of the study. After the data was gathered, it was sorted, coded, and examined for the broad, overriding categories and themes.

Yin (2003) describes three specific analytic techniques for a compelling case study. First, pattern matching logic compares the research results with empirically-based pattern from theory or literature that strengthens the study's internal validity. Secondly explanation building is a form of pattern building that seeks to refine a set of ideas, the researcher searches for plausible or rival explanations or causal links that explain the case. A third analytic technique frequently used in case studies is to conduct a chronology, which is a form of time-series analysis, (Yin, 2003). This is useful in the

absence of hypotheses, "chronologies become chronicles – valuable descriptive renditions of events, but having no focus on causal inferences" (p.127).

Utilizing this process, I identified several reoccurring themes that emerged which characterized the views and opinions of the participants of factors that led to the suspension/closing of the medical laboratory science program at BCIT. The emergent themes supported and added to the understanding of the changes that occurred in post secondary educational environments in the early to mid 1900's as a result of the reforms in healthcare.

There are 11 major reoccurring themes that surfaced and were identified from the data as effecting the decisions to suspend/close the program. These themes include: (a) Surplus of Technologists, (b) Impact of new Automation & Technology, (c) Political & Fiscal Pressures, (d) Restructuring of Healthcare & Laboratories, (e) Demands (current & future) for graduates, (f) Aging workforce and baby boomers retiring, (g) Lab Managers preferred a reduction in seats, (h) Faculty, (i) Incomplete Data Collection & Analysis, (j) Centrality of program to Mission of BCIT, and (k) Lay off of Staff.

These themes provide us with the context in which the changes occurred. In the discussion of the findings, each of the themes will be addressed as forces that drive the demand for Medical Laboratory Technologists. Each theme is presented and includes detailed illustrative quotes that highlight the interviews that were conducted.

There is no significance in the order in which the themes are presented; each theme is weaved into the discussion with an equal level of significance.

Before delving into the findings of this research project, a brief discussion of Health Human Resources (HHR) planning, skills shortages and the role of the vocational education and training system as they apply to this qualitative case study will be presented.

This case study is an illustration of an organizational change that appeared to address a short term crisis for the MLS program, however there was heavy criticism from some of individuals at several of the formal meetings.

In writing this case study I have attempted to alert readers to the significant trends in factors influencing supply—most often, the number of graduates from educational programs. Yet labour force behaviour is equally important. Unfortunately, there was only crude data collected in the BCIT 1996 questionnaire and thus, the decision makers could make only very rough estimates of future supply. What is known is that even small changes in tenure in the work force can have a substantial effect on the future supply of MLT personnel.

5.1   HEALTH HUMAN RESOURCES (HHR) PLANNING

Canada is currently experiencing shortages of many types of healthcare providers in many locations. Health Human Resources (HHR) planning has a long and checkered history in Canada. People are the lynchpin of any healthcare system, yet HHR planning has traditionally been performed independently of other aspects of system planning. It has tended to be supply-driven, with a focus on current utilization. Perceptions of adequacy of supply can swing rapidly from apparent surpluses, to dire shortages, in periods of less than a decade, without there being much understanding of how or why (Tomblin-Murphy, 2003).

The dramatic shift in perceptions of adequacy of medical laboratory technologist (MLT) in this country is but the most recent example of this. In the early- to mid-1990s, virtually every 'expert' one might have asked would have told us that there was a surplus of MLT's. Today, one cannot find an 'expert' who would tell us anything other than that there is a shortage of MLT's, and that it is going to get worse before it gets better.

> In the face of growing expectations and technological innovations in healthcare, and an aging population with varying and different needs than previous generations, decision makers are increasingly challenged to improve efficiency in the use of healthcare resources. Part of this is done by changing the level and mix of healthcare staff delivering services and by ensuring there is an adequate number of staff to meet the needs of the population. Decisions about the level and deployment of health human resources are often made in response to short-term financial pressures as opposed to evidence of the effect healthcare staff have on health outcomes
>
> There are three general approaches to determining staff levels and mix: *use-based* (how many laboratory technologists are required to maintain current service levels?); *needs-based* projections usually define the number of personnel required to provide a given set of services to a defined population (how many laboratory technologists are required to meet the health needs of the population?); and, *effective demand-based* (how many laboratory technologists are required to meet society's commitment to healthcare?).While there is no unambiguous "right" way to model human resources, there is growing consensus that in order to be effective, morally justifiable, and politically defensible, health human resource planning must be matched as closely as possible with population health needs. And, unless we understand the needs of the population, it is difficult to plan for a workforce and system to meet those needs.
>
> However, the recurrent cycles of over- and undersupply of health professionals that continue to plague Canada and other countries can in part be traced to the fact that while the stated goal of health human resources planning is to match human resources to *need* for services, decisions on how to allocate healthcare staff are primarily based on *demand* for services. It is being increasingly acknowledged that the factors which affect the matching of supply to need are many and varied (Tomblin-Murphy, 2003) (p.1)

A number of frameworks or models have been developed to assist in the analysis of health human resources. These frameworks are useful for identifying the necessary data needed for an effective analysis of the complex factors that affect the supply and demand of health human resources.

Example of a Conceptual Model for Health System and Health Human Resources Planning

Figure 11 illustrates a conceptual model for population needs-based, system design driven HHR planning. It was developed by O'Brien-Pallas, Tomblin Murphy, Birch, and Baumann (2001) and has been constructed from Anderson's (1995) service utilization model, Donabedian's (1996) quality of care framework and Leatt and Schneck's conceptualization of technology in human services organizations.

It is designed to include the essential elements of health human resource planning in a way that captures the dynamic interplay among a number of factors that have previously been conceptualized in isolation of one another (O'Brien-Pallas, Tomblin Murphy, Baumann, & Birch, 2001). It provides policy makers and planners with a guide to decision-making which takes account of current circumstances (e.g., supply of workers) as well as those factors which need to be accounted for in HHR planning (e.g., fiscal resources, changes in worker education and training). This conceptual model considers factors that, though important in the HHR planning process, may not have been considered in planning to date. These factors include social, political, geographic, economic, and technological factors. At the core is the recognition that health human resources must be matched as closely as possible to the healthcare needs of the

population   (Advisory Committee on Health Delivery and Human Resources, 2007;

O'Brien-Pallas et al., 2001).

Figure 11 Framework for Analyzing Health Human Resources, adapted from (O'Brien-Pallas et al., 2001)
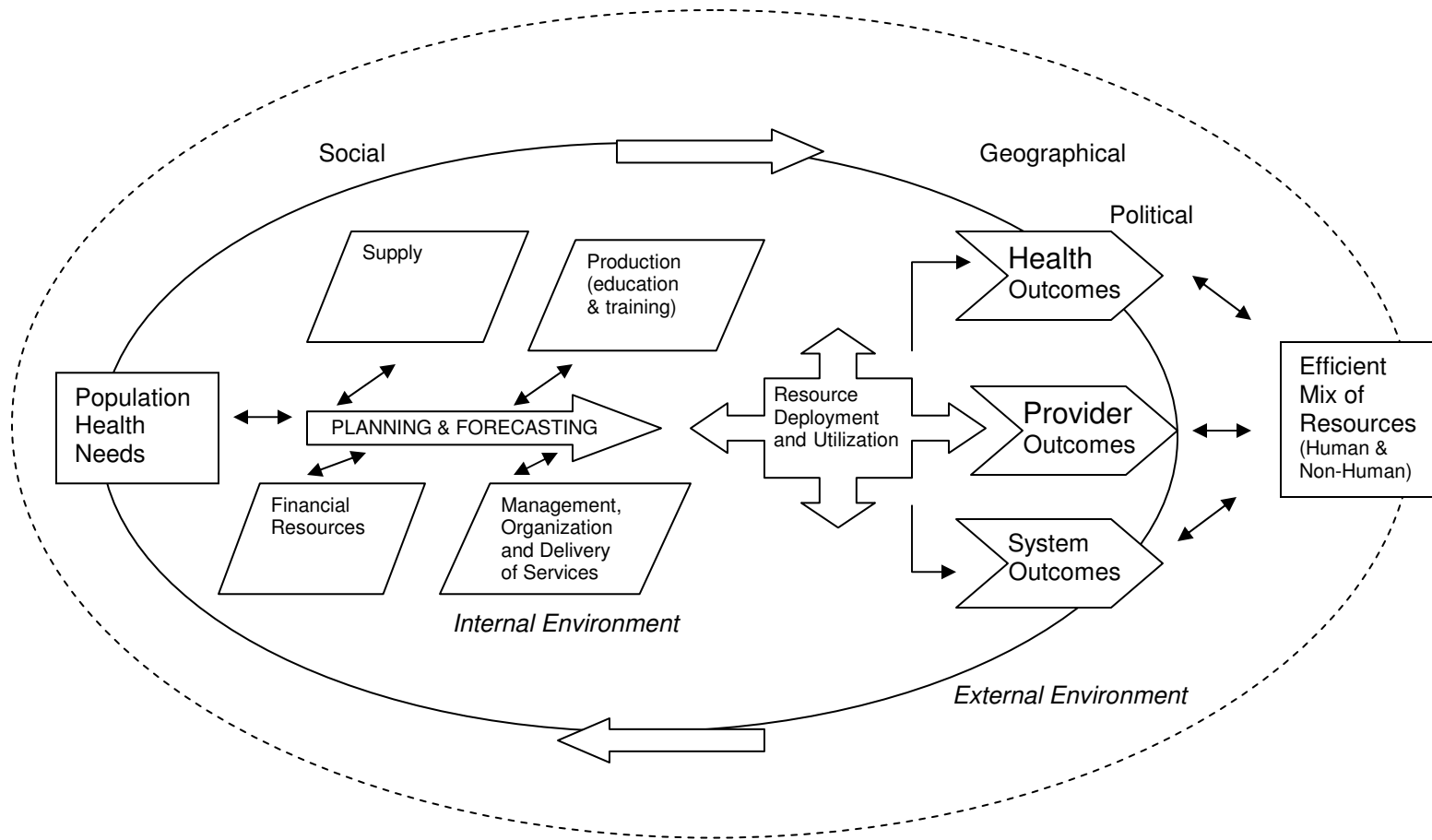
When used to guide planning, a conceptual model like the one above can help policy makers and planners take into account the impact a range of dynamic variables on:

- Current circumstances (e.g. supply of workers)
- The number and skills required which need to be accounted for in HHR planning (e.g. Fiscal resources, changes in worker education and training)
- Other factors important to the HHR planning process that may not have been considered in the past, such as social, political, geographic, economic and technological factors.

Planners can use this type of model as the basis for simulations which in turn, can provide needs-based estimates of the health human resources required to achieve health, provider and system outcomes (Advisory Committee on Health Delivery and Human Resources, 2007).

Elements of the Conceptual Model

> ***Planning and Forecasting*** reflects the varieties of available HHR planning practices and models, their assumptions, methods, data requirements, and limitations. It relates to the *actual* methods used to predict human and other resource requirements. Predictions of healthcare provider requirements will vary according to the methods used to make those predictions. The choice of method will be determined by a number of factors including: traditional practices, data availability, political pressure and, most importantly, the question that is being asked. It is important that forecasting and planning activities be conducted continuously with regular data analysis and outcomes assessment.

> ***Supply*** reflects the actual number, type, and geographic distribution of providers; it also recognizes that supply is fluid and is related to production as well as to factors such as recruitment and retention, licensing, regulation, and scope of practice. Supply is subject to alteration according to a number of labour market indicators such as: participation rates, provider-to-population ratios, demographic and educational characteristics of providers, employment status. Death, retirement, and

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emigration or immigration also affect the supply of providers. The geographic distribution of providers may vary according to general economic trends, work incentives, and life-style choices.

Production (education and training) involves the education and training of future health providers. The number of formal positions offered in any educational institution is influenced by financial resources and designated number of funded seats. The link between population healthcare needs and future capacity to meet those needs ought to be considered in setting production targets for seats in any health discipline (O'Brien-Pallas et al., 2001). This relationship has not been well explored to date.

Management, Organization and Delivery of Health Services contribute indirectly to outcomes (O'Brien-Pallas et al., 2001). They are key variables that influence how care is delivered (i.e. changing healthcare delivery models) across all sectors. Management and organizational characteristics (such as structural arrangements, the degree of formalization and centralization, environmental complexity, and culture) each influence the way work gets done, the amount and quality of care provided, provider health and satisfaction, costs associated with delivery of services, and outcomes (O'Brien-Pallas, 2001; O'Brien-Pallas et al., 2001).

Efficient Mix of Resources (Human and Non-human) is simply the number and type of resources that are required to achieve the best health, provider and system outcomes (O'Brien-Pallas et al., 2001). The conceptual model provides the basis for health system simulations which, in turn, provide needs-based estimates of HHR requirements aimed at optimizing the range of outcomes of interest. The model is informed by research at the micro, meso, and macro level. This is necessary in order to capture the complexity of the relationship among elements of the health human resource process (Advisory Committee on Health Delivery and Human Resources, 2007; O'Brien-Pallas et al., 2001).

5.2   EMPIRICAL STUDY: THE INTERVIEWS

The empirical study comprised of semi-structured interviews with nine

participants who had been past employees in the School of Health Sciences at BCIT. The

interviews were conducted to help the researcher in the investigation and clarifying of the decisions made to close and then reopen the Medical Laboratory Science program.

Semi-structured interviews were conducted face-to-face with the participants. When they were questioned about the program, they openly shared their experiences.

Question: Tell me about BCIT's approach to the MLS program closure. How was the decision to go ahead made? Why was it done?

5.2.1 MAJOR REOCCURRING THEMES & FORCES

a) **Centrality of program to Mission of BCIT affected by the Restructuring of the Healthcare System leading to a Surplus of Technologists.**

As mentioned in Chapter 1, the mandate and mission statement of BCIT clearly identify BCIT's responsibility to be a province-wide, innovative organization, specializing in advanced technology training and focusing on those initiatives that increase the level of economic activity, entrepreneurial activity and employment in the province (IRP, 2008).

BCIT's mission statement distils this responsibility even further *to provide British Columbians with world-class, job-ready skills for career success* (Centre for Curriculum Transfer and Technology, 2009).What does this mean? Job-ready skills are self explanatory. But defining *career success* is more difficult. The definition is subjective; still, it commonly includes reference to several key factors, including acquisition of appropriate skills, employability and progression in the workplace hierarchy.

Political & Fiscal Pressures *-Macroeconomic influences.*

> As health expenditures grow, public and private sector forces will attempt more innovative approaches to cost containment. Integrated delivery systems and regional care networks are developing to face the current market need. This development will be spurred by legislation and regulation related to federal and state budget pressure (Killingsworth, 1996) (p.92).

Throughout the 1990s massive budget cuts and restraint in government spending occurred across Canada, primarily affecting healthcare. Workplaces downsized their personnel as budgets were slashed (Davis, 2002). Canada had a massive surplus of qualified medical laboratory technologists by the mid 1990's, and many sought employment in the United States, where ongoing shortages existed in the supply of medical laboratory personnel. Many workers who chose not to move were forced into part-time positions or accepted positions at a lower classification and salary scale. Unions were helpless in the rampage of health reform. New graduates faced an almost impossible task of finding their first job, and many never were accepted by the system (Davis, 2002).

By the beginning of 1996, there were clear indications that the MLT program was contributing only partly to the mission statement of BCIT. MLT program graduates were acquiring the right job-ready skills for the current medical laboratory environment. However, all participants interviewed expressed concerns that the combined factors of rapid technological advances, healthcare restructuring, financial constraints on the British Columbia healthcare system, hospital downsizing and closures had a significant impact on the employment prospects of the MLT program graduates. Graduates were not finding employment stability in the form of permanent, full-time positions. There was said to be a surplus of medical laboratory technologist and if work was available it was only casual

employment. In fact, students interviewed for admission in 1994 and 1995 had been advised that their employment status upon graduation likely would be casual, rather than permanent (School of Health Sciences, 1999).

The structure and organization of healthcare services are constantly evolving in response to such forces as the availability of money and human resources, regulation, consumer demand, financial incentives, and technology. All participants viewed restructuring of the healthcare system in British Columbia (BC) and in particular the impacts of laboratory reform as a very significant factor that contributed to the decision to close of the MLT program. The first of two of the participants who summed this up succinctly was the past director on the Board of BCIT and a member of the MLS Program Advisory committee who said:

> "There was a lot of pressures on the lab group; the feeling was automation was coming and there will be less numbers of technologists needed and there will be extra supply. So it was felt the program was not viable and should be closed."

The second was laboratory manager #1 who informed me:

> "From my perspective, at that time we were very busy downsizing the labs… everybody was… we actually had (prior to 1996, and for those few years before that) and everybody (employers) found they had too many techs… not enough jobs and there was heavy pressure on the lab directors to cut budgets. When you talk about budgets human resources being 60-70% of the cost, so therefore the number of techs particularly was the first one you look at for budget cuts."

Other participants expressed similar concerns and identified the 1990's to be a time of tremendous upheaval and turmoil in the BC healthcare industry.

> "There were a number of things that were happening in the industry at that time…one of the issues was that all facilities were facing budgetary

restrictions.… some of hospitals that were able to previously provide practicum sites were withdrawing from the program. Lions Gate is one that comes to mind. And there were others that were, in order to reduce their staffing levels… because they were having pressures, didn't eliminate their training spots, but were under a lot of pressure to so because of their own budgetary restrictions." (Laboratory Manager #2)

"(Another) thing was happening… they were phasing out many of the Subject RT areas (technical competence and CSMLS qualification in a single specialized area of pathology, e.g. Chemistry, hematology, microbiology etc). They (employers) wanted people (laboratory technologists) to be more flexible and to be able to rotate. So, a number of people (laboratory technologists) lost their jobs or were displaced by the fact they had got Subject RT's within med lab at one point, and now couldn't be versatile enough to being able to respond to the new way of doing things.

A lot of people (laboratory technologists) left the workforce at that point. There were no new jobs .The consolidation; privatization and automation all affected this. Suddenly people were being laid off or they weren't being replaced as they retired. This whole thing and notion that they (laboratory technologists) couldn't function, because if their specialty (e.g. hematology) was moved to another place (as a result of laboratory restructuring e.g. moved to a core lab, where laboratory technologists were expected to work in multiple areas e.g. hematology and chemistry), and now that specialty rotated, they couldn't do that job …and they were laid off.

Core labs were being developed and this was a problem for hundreds of people… They were (for example Subject certified in) microbi (ology) or they were cytology or whatever… the core lab was something that was foreign to them and so literally hundreds of people just suddenly decided they didn't want to do this.

Nobody would have predicted that such a major cornerstone (the Medical Laboratory Science program) of the institution (BCIT) would have suddenly not been viable." (Associate Dean)

One participant suggested with the closure of Shaughnessy Hospital, experienced medical laboratory technologists would be re-entering the job market, further reducing the number of permanent positions available to new BCIT - MLS graduates.

"When Shaughnessy Hospital closed there was an effort to place staff. Any staff that didn't find permanent or part time placements were assigned to facilities, and put into what was called the labour adjustment pool (administered by the Healthcare Labour Adjustment Agency)… there was a guarantee. I think it was for at least two years that they would continue to have these positions, all be it that they were additional positions. The idea being that over the two year period any positions that became available (vacant) would be filled first of all from the pool.

So it was budgetary pressures that the facilities were having in terms of training, and combined with that there was a relatively large pool as a result of the Shaughnessy closure. I can't remember the exact number, it certainly was fairly large… it was certainly greater that 60 technologists were in this pool. And they were all situated in the lower mainland.

So during the (MLS program) advisory committee … lab managers and lab directors basically said to BCIT …for BCIT to continue to function and to have the number of students (in the MLS program) they had… they (the employers) just weren't able to accommodate.

They (employers) were having difficulties in both terms of providing the (practicum) training, and then in terms of having employment opportunities… they were very limited." (Laboratory Manager #2)

A further indication of impact of the surplus of technologists can be seen in the Dean's response to the question regarding the reasons for the MLS program closure.

"Well, it started with the (MLS program) graduates who only found casual positions in the laboratories; all they got was casual positions for a long time. We had an active (BCIT-MLS) program advisory committee then and questions were raised more and more frequently… Why are we running this program if there were only casual positions?

BCIT was in the position of training people for jobs … All these questions we took all that to the advisory committee. There were those lab managers

who didn't mind, whereas others did….and I asked them… Would you send your daughter to our program? That was very key question to our advisory committee… From a selfish point of view they didn't mind having all these graduates for casual work."

These comments were supported by the comments of a past vice president of BCIT who said:

"Unbelievable as it is from our current context; in the time that we were reviewing the Med lab program employment was not plentiful for our grads. And we became aware; all of us at BCIT, from the faculty, through the Associate Dean, to the Dean and up to the Presidents office that our students were not enjoying full time employment right on graduation which was something we had prided ourselves on…We were increasingly hearing back from the communities, specifically the (MLS program) Advisory Committee that while there may be part- time roles that were coming up that would evolve into full time and that our student's knowledge base needed changing… That the world of med lab was dramatically changing because of technology and the way that labs were being structured and they were looking for something a bit different (in the competencies of the graduates).

I must say there were other colleges across Canada who were also hearing these things and agilely trying to addresses curriculum issues, and delivery methodology and so on."

About this same time there was a threat to lay off 100 laboratory workers in the Greater Vancouver area. The MLS program head described the predicted downsizing at Vancouver General Hospital which would have far reaching effects on the employability of new graduates from the MLS program with the following remark:

"It's hard to think how the decision (to close) really came about. The specific things I do remember is… the Dean at the time was on a Board (of Directors)at VGH (Vancouver General Hospital), and he heard the story …that the lab at VGH was going to be laying off a horrendous number… a third or so, it was a significant number."

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Because new graduates would have difficulty competing with experienced technologists for the few jobs that were available, the BCIT program was eliminated (Appold, 2001).

The views and comments of these participants are supported by archival documents uncovered and the literature reviewed in this study. In the 1990s, Canada had a surplus of MLT's. There were so many that some could not find jobs. Many were laid off after their institutions were downsized because of healthcare and laboratory reform.

I will now present some of literature and supporting archival documentation.

Leaning Healthcare: The Neoliberal Prescription in British Columbia

> The restructuring of healthcare in BC is no isolated development, and needs to be understood as an integral part of processes unfolding on a global scale. As a former chief economist of Ontario has written, "broad-based changes in the financing, administration and management of public service delivery" are underway at all levels of the state, not only in Canada but across the advanced capitalist countries and beyond. It is commonly observed that the central thrust of this reorganization of the broader public sector is a shift from the welfare state to a new kind of public administration whose "primary objective [is] the fostering of a globally competitive economy." The most influential perspective on issues of contemporary public sector "reform" understand this transition as absolutely necessary because of the "fundamental economic constraint" on governments today. The necessity to reorganize the public sector is often linked with economic globalization. For the proponents of the New Public Management, this kind of restructuring is both a necessary and positive response to economic and political realities (Camfield, 2006).

Camfield's analysis allows us to see how the restructuring of healthcare in BC since the early 1990's has systemic causes and is part of a much broader project for reshaping the province and society. Policy choices by the Canadian federal and provincial governments should be seen in this light.

British Columbia – Healthcare in the 1990s

Over the last two decades there have been repeated calls to reform and modernize how services are delivered within the Canadian public health system. In BC the key document was the 1991 *Royal Commission on Healthcare and Cost Containment,* prepared for the Social Credit government of the day, lead by Justice Seaton which continues to be widely referenced today (Seaton, 1991).

Emerging from this report was a recommendation for rationalization. This was thought to be the best remedy to address the financial and organizational challenges of the province.

In response to the Commission's findings, the newly elected New Democratic government's Ministry of Health announced they would adopt this policy in June 1992. In so doing, the province ushered in a tumultuous decade of policy change for healthcare in British Columbia. Davidson (1999) suggests that regionalization not only reorganizes the structure but also decentralizes the management and planning of provincial healthcare in an effort to improve how the system works.

> *New Directions for a Healthy British Columbia* (1993) became the health reform policy direction. Vince Ready, an industrial relations commissioner, explained the public policy direction in the 1990's as focusing reforms on cost containment and improved healthcare delivery through initiatives such as regionalization, amalgamations, mergers, restructuring and closures (Gillespie, 2007).

A Summary of "New Directions" (Higgins, 1999)

APPENDIX I
A Summary of "New Directions"

British Columbia's now abandoned health reform policy, "New Directions," evolved from a 1990 Royal Commission on Health Care and Costs. The Commission's 1991 report Closer to Home suggested that the centralized structure for decision-making and resource allocation resulted in poorly planned, poorly managed and uncoordinated health care at the local level. "New Directions for a Healthy British Columbia" was the response to the Commission's report, and outlined five 'new directions' to guide the implementation of health reform:

1. All determinants of health were to be addressed in order to achieve "better health" for British Columbians in a holistic sense.
2. "Greater public participation and responsibility" was thought to be necessary to ensure the delivery of appropriate services to meet health needs, and to assist individuals to make informed decisions about their health care. In order to achieve this second direction, opportunities for citizens to participate in local decision-making were to be made available.
3. Local communities and regions were to assume control over planning, resource allocation, management and delivery of health care services in order to "bring health closer to home."
4. "Respecting the care provider" by strengthening the support for volunteers and family caregivers, involving paid and volunteer care providers in planning services, providing respite options and appropriate training and safe working environments were to be critical to health reform.
5. Finally, "effective management of the new health system" was deemed necessary to ensure ethical and financial accountability at every level of the new decentralized system, including professional organizations.

N.B. In 1996 "New Directions" was replaced by "Better Teamwork, Better Care" which was designed to streamline the approach to regionalization in British Columbia. Members of regional health boards and community health councils are still responsible for local decision-making and governance of health care, however, members are appointed by the Minister of Health rather than elected from their constituency.

The perspective of *New Directions* was very clear. The intent was to devolve substantial power over health services to citizens at the community level, not only to counter the power of the health professional elites, but also to foster a community orientation to wellness. The explicit intent was to build a constituency of support behind a broader concept of health, thereby engaging the local authorities in reforming not only healthcare services but also the social and economic conditions that prevailed in their communities (Davidson, 1999).

The New Democratic Party (NDP) initiated reform with healthcare administration by creating 102 Regional Health Boards (RHBs) and Community Health Councils (CHCs) between 1993 and 1996. The announcement of the closing of Shaughnessy Hospital in Vancouver in 1992 was the first attempt at shifting acute care resources (350 acute care beds), 1700 staff and associated funds to other types of facilities and the community.

In May, 1993 due to an estimated 10 per cent workforce reduction in B.C hospitals, the three healthcare unions, Health Sciences Association (HSA), Health Employees Union (HEU) and British Columbia Nurses Union (BCNU) with mediator Vince Ready, brokered an agreement with the government known as the Health Labour Accord. In the forefront of

healthcare restructuring, this agreement secured funds for job security, extended periods of severance, created provincial seniority for bumping purposes, retraining initiatives, provincial job matching services and top up monies for those displaced employees close to early retirement age. These job security provisions would be managed by the newly formed, Health Labour Adjustment Agency (Gillespie, 2007)(p.18).

The Honourable Elisabeth Cull, Minister of Health explained the rational for creating this health labour accord in the BC Legislature (Cull, 1993).

A significant downsizing, in the order of 10 percent, is taking place in this (Medical laboratories) industry, and if you're suggesting that we shouldn't accept some responsibility for helping those employees move from where they are -- hopefully they'll stay in the healthcare system, but if not, be retrained or somehow reabsorbed back into the workforce in appropriate places -- then we have a philosophical difference. We can agree that this philosophical difference is a difference between your party and mine. In the past, governments have just axed budgets and said: "Workers, you're on your own. Good luck. There's the UIC office. If you don't qualify for UI, head down to social assistance. If you don't like it here, move somewhere else."

We're taking a different approach because we value the people who work in our healthcare system. We're saying that there has to be a better way of making these changes, and recognizing that you can't do it all on the backs of the workers. We have allowed for retraining, relocation and early retirement. We're trying to facilitate preferential hiring; a hospital that is hiring people because it's got 25 new beds coming on stream can hire people from a hospital that may be closing beds. The whole system can work better and more humanely, and I think it has to be done that way.

We recognize that not all hospitals will have the same amount of flexibility to deal with the requirements of the accord. In this morning's debate we discussed the fact that the vast majority of layoffs will be in the large urban centres, because that's where the vast majority of institutions and workers are. Fortunately, it also happens to be where the vast majority of the new jobs are, because all of these things tend to flow with the population; so in the larger centres, where we have the biggest problem, we also have the most capacity to deal with it (Cull, 1993).

The Health Accord expired in March 1996 and job security provisions known as

The Employment Security and Labour Force Adjustment Agreement (ESLA) were

renegotiated with the government.

> The deal came at a cost to workers only receiving 1.5% wage increase, and a three-year term collective agreement in exchange for job security. This job security language between government and unions was described as being one of the most progressive provisions available to healthcare workers throughout Canada and the United States. Collective agreement language stemming out of the Health Accord and ESLA also included barriers to privatization. An example of this language included, "the employer will not contract out bargaining unit work that will result in the lay-off of employees". Legislation was enacted to prevent contracting out. Bill 45-1993, the *Health Authorities Act* of 1993, Section 3.3 page 3 stated, "…that health services in British Columbia continued to be provided on a predominately not for profit basis".

> By 1996, B.C was facing significant and continued funding cuts for healthcare from the Federal Liberals amounting to an additional loss of $797 million for 1997 and 1998 (Gillespie, 2007) (p.19).

See Appendix 5 for a BC Healthcare Regionalization Timeline.

Diagnostic Services Reform in British Columbia

In 1992, the British Columbia Ministry of Health formed a committee with a

mandate to review BC's diagnostic services. The committee's final report, completed in

January of 1993, the *Review of Diagnostic Services* (Kilshaw, 1993) contained a broad

view of eh scope and significance of the diagnostic laboratories in British Columbia at

that time and a number of recommendations to strengthen accountability, quality control

and utilization management of diagnostic services in the province.

Scope and Significance of Laboratory Services in British Columbia

In British Columbia there are 129 public laboratories and 16 publicly owned and operated off-site specimen collection centers associated with those laboratories. The total number of private laboratories in the Province, not including Category I is 134.

The majority of these laboratories are owned and operated by three companies, namely

Metro-McNair Clinical Laboratories, B.C. Bio Medical laboratories Ltd ., and Island Medical Laboratories. In addition to the 134 licensed private laboratories, there are 78 specimen collection centers owned by the private laboratories. These private laboratories are frequently described as community laboratories, thus giving an impression of public ownership.

Diagnostic laboratories are laboratories set up to conduct testing on human tissues, body fluids, and body products, to assist physicians in detecting, excluding, diagnosing and monitoring disease. In addition to their testing function, diagnostic laboratories provide services in the areas of consultation, education and research, referral, reference and public health. Laboratories also provide and support the blood transfusion service in the Province.

As an essential part of laboratory practice, consultative services are provided in medical practice between pathologists, technologists, and clinicians, on a daily basis in most laboratories. In addition' management consultation is an important function in support of the planning and delivery of service.

Educational services are provided to clinicians, to the education and training of pathologists, and to the training of technologists. Many laboratories have affiliations with the training schools and with the University of British Columbia (UBC).

Research activities are undertaken by the major laboratories with the objective of the Development of new tests, the improvement of methodologies, and the improvement of laboratory standards.

Referral services are provided where testing is provided by a laboratory on behalf of another laboratory, which, for various reasons, is unable to perform the test, or where it is not economical for the referring laboratory to perform the test.

The reference function is a service provided by a small number of laboratories which provide sophisticated and unusual tests to clinical services.

The blood transfusion service in British Columbia, as in the rest of Canada is a function of the Red Cross Transfusion Service and is supported by the Red Cross Laboratory.

Most hospital laboratories are involved, in cooperation with the Red Cross Blood Transfusion Service, in the provision of compatible blood products to patients.

Public Health Services support the provision of communicable disease control and microbiological services required by legislation. These services also support surveillance and epidemiological studies in the community.

Diagnostic laboratory services are divisible into a number of specialty areas encompassing:

1) Surgical pathology, including autopsy service and forensic pathology;

2) Cytology;

3) Microbiology;

4) Medical biochemistry;

5) Haematopathology;

6) Immunology.

The more sophisticated hospital laboratories provide services in the whole range of the above specialty areas. The smaller hospitals provide a more restricted range of service, but arrange with other hospital laboratories for referral services to complement their own service. Surgical pathology services are provided in hospitals exclusively, as are cytology services. Federal legislation was enacted in 1957, the Hospital Insurance and Diagnostic Services Act, which entitled hospital in–patients to diagnostic testing at no charge. This Act had the effect of confining surgical pathology and cytology to the public hospital system.

Private laboratories, which in the main confine their activities to microbiology, haemato- pathology and medical biochemistry, provide out-patient diagnostic laboratory services, including domiciliary specimen acquisition services, to patients in their own homes and in such non-acute care institutions as nursing homes. In some cases hospitals have contracted with private laboratories for laboratory services. It is not unusual for hospitals to contract with pathologists engaged in practice in the private sector for pathology services.

The private sector, apart from a relatively small number of contracts, is funded by the Medical Services Plan (MSP) on a fee for service basis, with the fees charged being those in the MSP Schedule of Benefits.

The total services provided by out-patient diagnostic laboratories amounted to 3,394,923 in Category I laboratories and 9,905,575 in the remaining private laboratories. Billings were $13,568,208 and $162,321,567 respectively. The much larger difference between the numbers of services and the cost of those services reflects the relatively simple menu of tests available in category I laboratories plus the fact that category I tests are provided by Category III laboratories as well as category I laboratories.

In 1988/89 there were 191 full-time equivalent (FTE) pathologists practising in the Province, while in 1992 there were 105 pathologists who received payment from MSP.

The discrepancy in the figures relates to the fact that many pathologists are entirely hospital based, and often have a contractual arrangement with a group of pathologists and hospitals and therefore do not individually bill MSP for services.

The public sector laboratories employ 2577.93 FTE technical and support staff, while the private sector laboratories employ approximately 1200 FTEs. (Kilshaw, 1993) (p. 36)

According to the British Columbia Diagnostic Accreditation Program (DAP) Sub-Committee on Accreditation for Clinical laboratories any registered, physician in the province can bill for the tests in Category I. Whereas to achieve accreditation and to maintain accreditation in category II, III laboratories must fulfil the following requirements.

- Satisfy the ethical requirements of the BC College of Physicians and Surgeons.

- Return a satisfactorily completed accreditation protocol and keep the sub-committee on Accreditation on accreditation for clinical labs informed on the location and other particulars of any satellite facility such as a bleeding station.

- Be available for inspection during normal working hours to inspectors designated by the BC College of Physicians and Surgeons and the BC Medical Association.

- Subscribe to a quality-monitoring program, which is a mandatory requirement for most laboratories.

- Payment of an annual fee.

Tests in the various categories are reviewed from time to time usually to shift a test from Category III to Category II, and occasionally from Category II to Category I.

The major consideration is often the degree of complexity or difficulty in doing that test. (J.C, email , personal communication, April 19, 2010).

Dr. Kilshaw outlined the benefits of expanding public laboratory services as a strategy for reducing costs, eliminating unnecessary duplication, and improving overall coordination within the laboratory system. Based on this report there were a number of attempts to introduce reforms at a regional level (e.g. by the Vancouver /Richmond Health Boards).

At the time these events were unfolding I held the position of Manager Medical Laboratory Services at the BC Cancer Agency. It is indeed very fortunate for my research that I had kept my copies of the Vancouver Area Laboratory Managers (VALM) minutes. The purpose of this group, of which I was a member, outlined in its terms of reference was "To share information and ideas among the Vancouver Area laboratory Managers." Meetings were held monthly and we had a membership of 19 Laboratory Managers/Directors. I reviewed the past minutes from October 1990 to March 1995 and there are many references and revealing comments on the economic and political climate of the day which were affecting the medical laboratory industry in British Colombia.

As far back as 1992 it was noted that there was a great number of rumours circulating concerning the 1993/94 budgets. All the rumours indicated a decrease, or at best the same, funding as the 1992/93 year. It was said that even the private laboratories had been cutting staff and this trend in decreasing workload levels was expected to continue (VALM Minutes, personal communication, November 13, 1992).

In January 1993, the first reference to the *Diagnostic Services Review* occurs in the minutes of the VALMs. However within a month there was a strong undercurrent of mistrust and active resistance to Dr. Kilshaw's Diagnostic Services Review Committee.

In a memo from the Assistant Executive Director of the BC Medical Association, to all Hospital President's he writes,

> The British Columbia Medical Association has attempted to add B.C. Medical Association representatives onto this committee in order to be part of the process of review. It has attempted also to change the terms of reference to make the review committee's approach less confrontational. However, to date we have been unsuccessful in these approaches and the advice from the B.C.M.A is that all physicians should refuse to cooperate and/or meet with the Kilshaw Diagnostic Services Review Committee until those changes in the committee have been approved. You will be notified as soon as these changes occur (Dr. Clive Thompson, personal communication, February 16, 1993).

The contentious topic of the Diagnostic Services Review was even raised during question period in the BC legislature. (Official Report of Debates of the Legislative Assembly**,** Volume 11, Number 15, Page 7813 -7814, June 24, 1993, accessed at http://www.leg.bc.ca/hansard/35th2nd/h0624pm.htm#7813 on July 21, 2009)

> **L. Reid:** My question to the Minister of Health refers to the Kilshaw report on diagnostic medical laboratories. In May this minister said that she was strongly in support of seeing laboratories continue in this province. Today we have laboratories that believe they are being squeezed out. Does this minister have any direction in terms of changing the billing for medical laboratories in the province of British Columbia?
>
> **Hon. E. Cull:** I'm surprised that any medical laboratory should feel today that it's being squeezed out, because the report is still in progress. In fact, recently my deputy met with the B.C. Medical Association, and we have agreed to delay the work of the interim report from this committee for another four weeks so that more doctors can have input to the committee. No decisions have been made, and the report will continue, in consultation

with physicians, laboratories and technicians involved in providing diagnostic services.

L. Reid: If that is indeed the case, will this minister confirm that the report will contain a full and direct cost-benefit analysis before it is released? We want to see some dollar values contained in that report. Will you confirm that that will happen?

Hon. E. Cull: I certainly can't prejudge what the recommendations in the report may be. The recommendations may be that the whole situation with labs and diagnostics remain the same. But costs are one of the primary considerations and are why we're doing this review. The costs of diagnostic services have outstripped inflation, outstripped population growth -- in fact, they've even outstripped any growth in utilization in medical or hospital services. So it is an area that we're very concerned about, and we will be addressing that issue in the report.

The VALM wrote to Dr. Miles Kilshaw, Chairperson of the Review committee

(see Appendix 6 for draft of letter) asking for an opportunity to make a submission to the

committee (VALM Minutes, personal communication, January 15, 1993).

The Kilshaw Review Committee visited St. Paul's Hospital and Vancouver

General Hospital during the week of January 18, 1993, and following the receipt of the

VALM letter, accepted the invitation to a special meeting with the VALM on

April 16, 1993.

> The one hour meeting with the Kilshaw committee was varied and at times confusing, but several elements seemed to emerge. One was the concept that fee-for – service would very likely be looked at and possibly discontinued. Secondary, that the committee is looking at whether all hospitals need laboratories and whether all hospitals laboratories need to provide all the services they do, vis-à-vis private laboratories, and finally, the committee was interested in the manner in which laboratory administration reports in the hospital, specifically whether the lab manager reports directly to the hospital administration or reports to their clinical director (VALM -Minutes, personal communication, April 16, 1993).

The Final Diagnostic Services Review Report (Kilshaw, 1993), contained a recommendation to move funding for diagnostic services from the Medical Service Plan budget to Regional Health Boards. This led to many more discussions of such ideas and there potential impacts.

> This recommendation, if acted upon, will also change the fee-for-service remunerations of diagnostic physicians. If the government goes ahead with the plans to change the mixed economy of public and private diagnostic services, a significant impact on the MLT human resource requirements may be one of the outcomes, since some Regional Health Boards may choose to reduce laboratory budgets significantly (Scriabin, 1998) (p.28).

So there is considerable documentary evidence to collaborate the participants views that between 1993-98 consolidation and restructuring of hospital laboratories took place throughout BC. It was most dominant in the Lower Mainland and Victoria and occurred in both private and public sector laboratories. The medical laboratory workforce also changed drastically during this time period. Over a 10-year period of healthcare reform, Canada's MLT work force was reduced by 29%. "It was like someone flipped a light switch," said Davis, Executive Director of the Canadian Society for Medical Laboratory Science (CSMLS) (Appold, 2001).

> In addition to the positions identified as redundant, an accelerated natural attrition occurred in those hospitals that were undergoing laboratory reform. Technologists volunteered for early retirement, severance and re-training packages even though they were not identified to be displaced. These technologists chose not to deal with the changes taking place, the restructuring, the resultant cross-training and the uncertain future in the profession. As a result, they left the medical laboratory profession (Scriabin, 1998) (p.12).

British Columbia Healthcare Labour Adjustment Agency (HLAA)

The British Columbia Healthcare Labour Adjustment Agency (HLAA) was

formed in 1993 with a mandate of returning to gainful employment employees displaced

from hospital laboratories. A total of approximately 248 technologists registered with the

HLAA during the period 1993-1998. The technologists were given four options: an early

retirement, severance package, retraining for a non-health sector job or a possible

secondment opportunity.

- 111 medical laboratory technologists chose the secondment option.
  - 67 were matched successfully to a comparable new position in another hospital.
  - 44 were not matched to a position during the one year employment security period.
- The remainder of the 248 choose one of the other options. (Scriabin, 1998).

One of the interviewed laboratory mangers (1) clearly recalled employers encouraging

experienced technologists to leave the field by accepting "early retirement and retraining

packages."

> "We actually had all kinds of incentive programs at that time to help the techs that are being displaced to actually get retrained into new programs, and I kind of remember right at that time I helped a couple of people, one in chemistry who got what we called a scholarship, so to speak, to study something else in Ontario, she moved to Ontario to pursue her degree. And then another lab tech from hematology who took up jewellery design…yes that's still in my head, because it a totally new field and it not even related to what she was doing. Again she got this money to help her to retrain.
>
> So in a way this is what we call a waste of technologist's resources...Because we are not only displacing them… but we helped them find a totally new field… at that time we found that there was no hope for these people to get back into lab sciences, because we had way too many people available to work and the junior people certainly do not have any chance to get back into the field… that's why the rationale and approach we took was to help these people get out of labs; it was just that

kind of supply and demand. I think the industry at that time really believed that we had way too many lab techs in the field."

The Creation of Centralized/Core Laboratories

Since the early 1990's when health reform was initiated throughout Canada, medical laboratory technology graduates were finding it more and more difficult to find employment in their new profession. In response Medical Laboratory Programs across Canada, including the one at BCIT, reduced enrolment. As health reform continued into the mid 1990's, restructuring of laboratories resulted in the displacement of many medical laboratory technologists. The restructuring of medical laboratories in industry created a move away from the five traditional medical laboratory specialties toward a "core laboratory" concept, where workers require a broader range of skills than in individual specialties (Nicolson, 1998).

In a memo from the Director of Laboratories at the British Columbia's Children's Hospital (BCCH), to all laboratory staff he presents background information as to why BCCH was restructuring its department of Pathology.

> We have all been affected in some way by the recent budgetary cut–backs. Budget constraints will likely continue in the foreseeable future. With the closure of (Shaughnessy) University Hospital on this site, we are acquiring its DNA Laboratory. We will be providing the Laboratory Services for the Women's Centre and any other patient services left on-site. The Ministry of Health Task Force reviewing the provision of diagnostic services in the province will be making its recommendations to the Ministry this summer. From those recommendations we will likely see changes in the funding structure and other aspects of laboratory services within the next few years. In addition, technology continues to develop in a number of directions. Manual laboratory methods are continually being automated. DNA techniques for diagnostic services are expanding. Instruments for point of service testing are becoming available and demands for their use will increase.

It is essential that we have an organizational structure which will allow us to survive, and even to prosper in this sort of an environment, since laboratory services will still be needed as an essential aspect of healthcare (Dr. J.E. Dimmick, personal communication, June 21, 1993).

The laboratory sections were to be merged into five programs with one program encompassing the automated routine chemistry and hematology. The design was to act as an infrastructure for the future introduction of robotic specimen transfer systems (See Appendix 7 for New BCCH Organizational structure).

The motivation to do this was the need to address issues such as the closure of the Shaughnessy Hospital with its impacts, the negative budgetary impacts and the emergence of functional changes driven by technology and computerization.

b) **Impacts of New Technology and Automation**

The example of the changes in organizational structure and the creating of a core lab at BCCH outlined by Dr. Dimmick in June 1993 was just the first attempt by BC laboratories to leverage technology to help address the economic and political issues of the day. Technological change is not only reactive (to such factors as budgets and finances) but prospective as well; that is, it drives the type of care provided by delivery systems.

Technology presents enormous potential to meaningfully address some of healthcare's most pressing concerns. It can increase patient safety, reduce error rates, enhance quality, help retain staff and much more. But technology only can do all of these things if an organization also redesigns the way it provides care or the way it operates to optimize the product's or system's capabilities (Larsen, 2008) (p.10).

"The future of laboratory medicine can be barely predicted" (Guidi, Lippi, & Plebani, 2008) (p.52).

The relationship between human resources needs and technological change fluctuates constantly but is seldom explored, making it difficult to assess the future with much certainty. Although we have some understanding of the forces that drive technological change, the effects of such change on allied health practitioners have not been adequately researched (Institute of Medicine Allied Health Services, 1989).

Two key concepts of these newly created core laboratories systems are ''consolidation'' and ''integration''. Hoffmann (1998) suggests the following definitions:

> *Consolidation*: Combining different analytical technologies or strategies on one instrument or on one group of connected instruments.

> *Integration*: Linking analytical instruments or groups of instruments with pre- and post- analytical devices.

He goes on to say "Designing and building a consolidated and integrated automation system requires extensive planning that may take several months or even years"(Hoffmann, 1998) (p.215).

How the leading edge technologies of the day that were implemented by BC laboratories back in the early 1990's would influence the future employment of medical laboratory technologists in BC was not known at the time and could have been difficult to predict. However it seems that the healthcare managers appeared to be most interested in technologies that will improve productivity and lower costs.

In my research into the laboratory literature of the day I discovered there was substantial support for healthcare leaders to make changes in organizational structures to accommodate the creation of core laboratories (Boyd, Felder, & Savory, 1996; Ramanathan, 1996)

Technological innovation necessitates the creation of new organizational structures to deal with its own increasing complexity. Indeed, technological innovations that arise within the framework of existing organizational structures usually contain the seeds of change for those very structures. Organizational structures that were born during earlier periods retain their characteristics unless a specific "structural adjustment "takes place within the industry. The rapid proliferation of technology in the last twenty years is being accompanied by significant reorganization in the healthcare system(Ramanathan, 1996).

The laboratory of the future will systematically incorporate laboratory automation. The specimen-processing area will be fully automated, and each specimen will be assigned a front-end schedule of workstations through which it will pass for the requested assays to be carried out. Specimens will be distributed to intelligent, fully automated laboratory workstations by means of a laboratory-wide specimen transportation system. Remote automated laboratories will provide point-of-care testing. A sophisticated computer network will interconnect all analyzers and robotic devices, using AI aids to monitor laboratory testing and to schedule samples. Enterprise-wide automation on this scale will dramatically change the nature of the laboratory as we know it today. Instead of being discipline-based (e.g., chemistry, hematology, immunology, microbiology), the technical operation of the laboratory will more likely be structured around technologies (e.g., laboratory automation operations, information systems support, automation systems support, result validation and quality control, and laboratory methods and automation development).Such reengineering will have the goal of reducing the size of the laboratory workforce and improving the laboratory efficiency (Boyd et al., 1996) (p.1909).

Clearly, the marked changes in laboratory organization will result in redefined job roles for laboratory workers. Technologists and laboratory directors in the new era must have more knowledge of electronics, computers, simulation modeling, and methods of AI. Many menial roles will be filled in the future by automation, allowing technologists to manage the information generated by the laboratory rather than perform repetitious (and sometimes dangerous) chores, e.g., removing caps from sample tubes, manually pipetting aliquots, and placing consecutive racks of tubes on analyzers. These improvements in job roles should lead to enhanced worker satisfaction (Boyd et al., 1996) (p.1909).

The Associate Dean in his answer to the question of why the medical laboratory science program was closed said "BCIT was responding to what was going on out there … automation and privatization." This theme was confirmed by the recollections of the program head who said:

> At the same time MDS in Ontario… the lab has their facilities by the airport, was talking about going totally robotic. So (the Dean, Associate Dean and Program Head) flew back east to see this robotic lab. The samples all came in directly by plane from all over the province; it was the little choo choo train type delivery system and everything …and they had all this automated equipment…I think, the Vice President Education at that time, the Dean and Associate Dean all of them thought that mechanisms and mechanics were going to take over the job of lab techs. No matter what I said to them, it didn't seem to make a point that human beings wouldn't be needed. They seemed to think it (laboratories) would all be mechanized.

Castillo (2000) (Castillo, 2000) in trying to determine the answer to a similar question, *why have clinical laboratory science programs declined*? noted that:

> Technologic advancements that have affected the clinical laboratory include hand-held devices for performing laboratory tests at the patient bedside and robotics, where all primary functions from specimen processing thorough testing are totally automated. Personnel needed to operate many of the new instruments do not need the extensive education and training of certified medical laboratory technologists; this has resulted in predictions of decreases in the number of personnel and qualifications needed in the routine clinical laboratory (Castillo, 2000) (p.31).

(Lindler & Chapman, 2003) add to this dialogue and say that due to advances in medical technology, clinical laboratory workers perform an ever-increasing range of diagnostic tests, from simple tests of blood type or cholesterol levels to genetic testing for markers of inheritable diseases. They use computers and other sophisticated technologies to do their work. They agreed that automation in the laboratories could have a dramatic

impact on the laboratory technologist and that it is assumed that automation will increase the productivity of laboratories, but so far, there was no objective evidence available to confirm this (Assessment Strategies for Health Canada, 2001).

Other medical laboratories in British Columbia quickly followed the lead of the BCCH pathology group and went about restructuring their sites as well. The reorganization of the laboratory at Burnaby General Hospital in the following year resulted in the department being broken down into two programs: General Laboratory Services and Anatomic Pathology Services. The Section Heads (Tech VI) were reclassified downwards to Tech V and would have no responsibilities for resource management. The exception to this was the Section Head of Anatomic Pathology who remained a Tech VI. The Assistant Section Heads (Tech V) were also reclassified to Tech I. There were no changes in total FTE allotment (Minutes for Vancouver Area Laboratory Managers, personal communication, March 18, 1994).

Advancements in healthcare technology have certainly occurred over the past two decades in British Columbia (BC) and this has impacted the medical laboratory industry. In planning laboratory redesign in BC there must be a clear understanding of the impacts on laboratory human resources planning, through the continuum from training and education to recruitment, retraining and long term retention within the profession. Any changes in the system, particularly at the workforce level, must be integrated into both the education and service delivery systems, in order to ensure seamless, efficient, quality, care delivery (Amhurst HealthCare Consultants, 2007).

The 1990's were indeed a turbulent time in BC healthcare with many organizations undergoing restructuring. It often takes a crisis for an organization (or in

this case, the medical laboratory technologist profession and its academic programs) to recognize the need for change and to gather sufficient power and control to initiate it (Castillo, 2000).

Everywhere organizations are undergoing rapid change in the face of an ever – accelerating pace of technological change coupled with the resegmentation and redefinition of markets at regional and global scales (O'Donnell 2003). Even today the pace of technological discovery and implementation of new analyzers, equipment and robotics in medical laboratories continues as healthcare leaders struggle to find the delicate balance between efficiency and efficacy.

c) Prediction of a National Crisis is for Medical Laboratory Technologists - Aging Workforce and baby boomers retiring.

A looming crisis was indeed predicted by the Canadian Society of Laboratory Technologists (CSLT) who had early indicators from its membership database back in 1990 that predicted a future personal shortage. The data suggested that there could be a significant exodus from the profession in approximately 15 years, when the first of the many who entered the profession during the 1960s and early 1970s retired. However, many found this incredible during the devastation of health reform and budget cutbacks which cast doubts on the validity of the tool used. As the information sat on the shelf, reform rampaged throughout the country (Davis, 2002).

Then in 1996 the CSMLS membership data base was reanalyzed. The facts had not changed, and the CSMLS decided to advise the government. However there was little interest at the federal level and they were advised that this was a matter for the provinces.

The CSMLS Board of Directors then lobbied the Advisory Committee on Health Human Resources (ACHHR) to consider the issue and a consultant was engaged to conduct an environmental scan of both medical laboratory and radiation technologies. The report was released in May 1999 (Assessment Strategies for Health Canada, 2001) .

Most of the report was based on anecdotal information collected through focus groups. The lack of accurate data on the HR situation was noted as deserving major attention, as no one clearly could state the situation's seriousness. The report predicted that there will be a serious shortage of medical laboratory technologists within the next five to ten years. According to the report, approximately 16 per cent of technologists are expected to retire in five years – 33 per cent in ten years. However, training programs for medical laboratory technologists have been cut back or eliminated in recent years.

The authors of the recommendations suggested that increased use of technology and laboratory assistants would be keys in solving the profession's HR issues. However Davis, Executive Director of the Canadian Society for Medical Laboratory Science (CSMLS) commented that the expectations of robotics replacing the HR component of healthcare were not based on the reality of the economic situation in Canadian healthcare nor on the cash-strapped situation in which most provinces found themselves (Davis, 2002).

CSMLS released a report on May 10, 2001 entitled, "Medical Laboratory Technologists National Human Resources Review – A Call for Action," (Canadian Society for Medical Laboratory Science, 2001) in an attempt to again stimulate government and other decision makers into action. The report predicts a nation-wide shortage of general medical laboratory technologists within the next 5 to 15 years. Moreover, medical laboratory technologists are aging: 12% of the current workforce will

be eligible to retire in 5 years, an additional15.8% in 10 years and another 16.6% in 15

years. By the year 2015, 44.4% of the medical laboratory workforce will either have

retired or will be eligible to retire. The report urges federal and provincial governments to

take immediate steps to ensure that there are a sufficient number of medical laboratory

technologists to meet the future care needs of Canadian healthcare (K. Davis, 2002)

    d) **Labour Market Demand for Medical Laboratory Technologists following the healthcare reforms in BC:**

    Retraining issues became acute in British Columbia, due to the implementation of

core laboratories, and attention was focused on these issues. Reflections on how the

reorganizational moves towards creating these new core laboratories and the need to

retain many technologists, who were not being laid off, but would have to work in these

new core automated centers was shared by one of the participants who said:

> "At that point in time there was a big movement on in the lab world… that movement was around cross training technologists so that they could work in more areas, and that this was somehow going to save staffing. So some labs followed through with that approach… there was also a lot of layoffs at that time, there was some downsizing… a lot of it had to do with cutbacks as well as the so called cross training thing that it would work. The health labour relations board (Healthcare Labour Adjustment Agency) got involved with that.

> Grants were provided to pay people to retrain and there were also people that were paid to leave lab technology. They could get grants to go on and do other things and at that point in time, even myself I was concerned about where my future would be and I at that point embarked on my Masters Degree in Counseling Psychology. So, I picked up that degree just to protect myself because I needed another vocation if something happened with lab technology.

> But having said that, that was probably one of the biggest set backs lab technology had was embarking on cross training. I think in some areas the cross training was appropriate, especially in the smaller to medium sized

labs, I think it was a good opportunity for people to refresh their skills. Because we knew then that properly these labs were not going to be growing much more so everybody had make sure they were good general lab technologists in those sites. For the larger sites, it was really a waste of time and a lot of turmoil."

A Laboratory Human Resource Planning Task Force was struck by BCIT's School of Health Sciences with the mandate to gather information about the number of technologists employed in each discipline on a full time, part tine, and casual basis, and more importantly, the number requiring retraining. The work of this task force was published in the 1998 Provincial Medical Laboratory Human Resource Survey (Scriabin, 1998) which provided strong evidence of a shortage of medical laboratory technologists in BC.

> The results of this survey supported the British Columbia Society of Medical Technologists (BCSMT) request that the Canadian Society of Medical Laboratory Science (CSMLS) engage in the Core Lab Programs. Additional benefits included discussions with stakeholders about the proposed revised program at BCIT. Feedback from these employers identified additional skills and training requirements that need to be addressed in the new program curriculum.

> Using guidelines, developed by the Canadian Society for Medical Laboratory Sciences, and the competencies required for graduation from our BCIT program, the local hospital laboratories began upgrading many of their technologists to meet core-lab competencies. The Health Labour Adjustment Agency assisted in funding this venture (Scriabin, 1998).

The BCIT's 1998 provincial Medical Laboratory Human Resource Survey also revealed a confusing picture at the Vancouver Hospital and Health Sciences Centre.

> Laboratory consolidation at the Vancouver Hospital and Health Sciences Centre involved the UBC (Shaughnessy) site, the Vancouver General Hospital, and the BC Cancer Agency, Vancouver Centre. Medical laboratory technologists were first displaced at the Vancouver Cancer Centre with most lost to the MLT field as a result of retirement, retraining

and transfers to jobs in non-clinical laboratories. The technologists at the UBC laboratory followed much the same route with most lost to retraining, non-clinical lab jobs and some retirements.

Further laboratory reform and the creation of an integrated core laboratory at the Vancouver General Hospital affected approximately 75 medical laboratory technologist positions at that site.

Of these, approximately:

- 25 technologists were lost immediately as a result of an accelerated attrition with some technologists volunteering for early retirement and severance packages, others taking non healthsector training and 3 taking jobs in other hospital laboratories;
- 15 technologists being cross-trained for the core laboratory.

This left 35 to be registered with HLAA. Of these:

- 25 took various HLAA options: on list for secondment or retaining for a non-health sector job;
- 10 were reabsorbed, with time, back into the laboratory at VGH, mostly into casual positions.

An unclear picture emerged because of the discrepancies in the reporting of the number of medical laboratory technologists displaced and the re-absorption of some of the technologists back into the work force. The displacement numbers reported at the initiation of the consolidation and restructuring were very large (over 130) yet in the end very few (less than 10) technologists were available for seconded positions in other hospital laboratories.

Further confusion resulted in early October when the Vancouver Hospital & Health Science Centre placed an advertisement in the Edmonton Journal and the Calgary Herald recruiting medical laboratory technologists for their clinical laboratories (see Appendix 8). This contradictory action leads one to question if there is a shortage of medical laboratory technologists in Vancouver or if the problem is one of a lack of appropriate expertise for the restructured laboratories (Scriabin, 1998) (p.14).

- Although some downsizing and consolidation of medical laboratories had taken place in the province very few of the displaced technologists were seconded to a comparable position in another laboratory.

- Instead BC experienced a significant loss of valuable human resources and expertise from the medical laboratory workforce as a result of early retirements and career shifts. It is unlikely that the technologists who have left can be lured back into the profession.

- BC can no longer rely on the importation of technologists from the rest of Canada. Canadian MLT programs have reduced enrolment by 78% in the past five years. Other provinces are barely training sufficient technologists to meet their own needs (Nicolson, 1998).

e) **Impact of casual employment**

One of the other major problems of the day identified by all the interviewed participants was the fact that most clinical laboratories only offered casual employment to new graduates. There were very few permanent part-time and full-time positions available. New graduates who were called in on a casual basis usually were not eligible to receive health benefits which thus were a saving for the employers. Appendix 9 has a full review of the issue of casual employment in the medical laboratory conducted by the Dean, BCIT School of Health Sciences (Scriabin, 1998).

In 2001 the CSMLS conducted a review of the human resources for Medical Laboratory Technologists and reported that "Graduates must be assured of finding full-time employment upon graduation. The casualization of the work force in the health reform action of the 1990s must be undone if employers expect to be able to recruit for their future needs"(Canadian Society for Medical Laboratory Science, 2001) (p.22).

The "Perfect Storm" comes together and sweeps across Canada

The impacts of federal and provincial health reforms, laboratory restructuring and the implementation of new technologies created the "Perfect Storm" that would

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eventually have dire consequence on, not only the BCIT Medical Laboratory Science

Program but training programs right across Canada.

> "The effect has been devastating," says Valerie Booth, executive director
> of the Canadian Society of Laboratory Technologists. She says many
> technologists have felt left out of the decisions that led to the cuts, with
> serious consequences for morale. Moreover, workers are being laid off
> before the workload adjusts, causing remaining employees to feel rushed
> and heightening the risk of mistakes or ill-advised shortcuts. Even where
> cutbacks have not led to layoffs or service reductions, many cash-strapped
> hospitals are implementing radical management reforms (Baer, 1996)
> (p.1304).

> With huge automated laboratories about to take over much of the
> painstaking work now performed by skilled technicians and technologists,
> the profession is suffering the dual impact of cutbacks and technologic
> change. There is already a noticeable impact at the starting end of the
> profession: 10 of the country's 28 teaching programs within the field have
> been cancelled or suspended (Baer, 1996) (p.1304).

Since the early 90's when health reform was initiated throughout Canada, medical

laboratory technology graduates were finding it more and more difficult to find

employment in their new profession. In response Medical Laboratory Technology (MLT)

programs across Canada, including the BCIT, reduced enrollment. As health reform

continued into the mid 90's, restructuring of laboratories resulted in the displacement of

many medical laboratory technologists.

When asked the question "What was the thinking across Canada regarding the

future needs of techs? The program head lamented…

> "I think about one third of the programs in Canada had closed, before the
> BCIT closure. This was a cross Canada issue.

> I really don't think HR departments either educational or clinically based
> ones ever really thought about a decrease in workers, or actually thought
> about planning for the future. We were in a time when there were plenty

of experienced workers, the baby boomers, and no one really thought about what a huge portion of the demographic working world this group made up. CSMLS (Canadian Society for Medical Laboratory Science) also started looking at the demographics about this time too and lobbied the Canadian Government areas to alert them to the likely scenario that was about to develop – a real shortage of skilled medical laboratory workers."

Davis, Executive Director of the Canadian Society for Medical Laboratory Science (CSMLS) noted that educational programs were affected by government funding restraints, and, by the mid-1990s, the number of programs outside of Quebec was reduced from 21 to 8, representing a decrease in enrollment from 752 to 164 students by 1998. The lag in closing programs meant that graduates were generated until the latter part of the decade, and the effect of the closures was not immediately apparent to most areas (Davis, 2002).

The Associate Dean confirmed that both of British Columbia province's educational programs for MLT's were eliminated in the mid-1990s. The program at the University College of the Cariboo in Kamloops was closed first because it was not economically viable. BCIT traditionally had been accepting 60 students into its MLT program and decreased that number to 20 when entry-level positions for graduates became limited. He informed me that:

> "There were two programs in BC; the Cariboo College I believe was the other one if I'm not mistaken… we were both asked to consider closing or at least responding to this problem. And staff at BCIT and the management at BCIT were very ambivalent as to whether this was a good idea or not. It was a very difficult decision.
>
> Cariboo's Med lab program closed down ... We'd had a strong sort of a not exactly complementary system; we were always vying for clinical sites, you know, competing for students and that kind of thing. So we were just happy they didn't open again. They closed at the end of term, no

September start. But they independently came up with their results. We had nothing to do with influencing them. They knew what we were doing and we were aware of what they were doing and we came to the same conclusions independently. As did a lot of other places, especially in Ontario as well where that automation thing was probably bigger than here."

The Decision to Phase out the BCIT Medical Laboratory Science Program

The *status quo* was not working: despite acquiring job-ready skills, career success in the short- and intermediate-term was not likely. What courses of action could the School of Health Sciences take? The laboratory manager #2 told me that one option was to decrease the number of students.

"They (hospital laboratories) were having difficulties in both terms of providing the training (for medical laboratory technologists) and then in terms of having employment opportunities… they were very limited …there was a lot of discussion around what the next steps were for BCIT …and there were differing opinions.

There were some that were very adamant that BCIT should reduce their (class) size but were actually pushing somewhat for the closure…I know they were definitely pushing for the reduction."

This might give graduates better employment prospects in the short term, but it addressed only the supply side of the manpower part of the problem.

Another option was to review the program content. This might better reflect the current laboratory situation, but again, it addressed only the current technical skills part of the problem. BCIT's School of Health Sciences was not the only training institution facing employability issues, largely due to healthcare restructuring. Across Canada in 1998, the number of English-language programs for medical laboratory technologist

training had fallen to l0 programs with 164 students, down from 21 programs with 752 students in 1993 (Davis, 2002).

Rather than make incremental changes, BCIT decided to **temporarily close its Medical Laboratory Technology program while the new program was being designed.** The lack of full time employment as medical technologists, for the programs graduates and the impending layoffs of experienced and well-qualified technologists in British Columbia's health industry, also contributed to this temporary halt in training. **The decision was based on a 1996 needs assessment (Appendix 10)** which was said to have involved wide input from employers (Scriabin, 1998).

The 1996 Medical Laboratory Questionnaire – with answers. The survey mailed to 112 laboratories in total. 88 laboratories replied (78%).

(Scriabin, 1998)

Medical Laboratory Technology Survey Summary
January 1996

REVISED SUMMARY

1. How many Medical Laboratory personnel work in your laboratory?

   Registered Technologists _1731___FTEs   Lab Assistants__580____FTEs

THE REMAINDER OF THESE QUESTIONS REFER ONLY TO NUMBERS OF FULL-TIME EQUIVALENT REGISTERED MEDICAL LABORATORY TECHNOLOGISTS.
_____

2. How many technologists in total do you anticipate being employed in your lab in:

   1996_1566_**1997**_1509_**1998**_1483_**1999**_1475_ **2000**_1456_

(This is based on a steady population on those surveyed who could not predict future numbers.)

* A net reduction of 275 FTE Positions from 1995

3. How many of your present technologists would you anticipate being replaced, for any reason, in the next three years?   __85.8____

4. How many newly graduated technologists would you expect to hire in:

   1996__0___ **1997**__4___ **1998**___8_**1999**___7.5___**2000**__11.5___

A net total of 31 over the Five year period

In February 1996, the Dean of Health Sciences recommended to the BCIT Board of Governors and the Board ratified the recommendation that the MLT program not admit any students in 1996 or 1997. The last 15 graduates, already in the program, finished in 1998.

Applicants to the Medical Laboratory Technology Program received a memo, dated February 22, 1996, on the program status from the then Associate Dean, School of Health Sciences:

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We regret to advise you that the Medical laboratory Technology Program at BCIT will not have a student in take in September 1996. The next intake date has not been Determined. Please consult BCIT for updates.

Due to limited opportunities for employment and the rapid nature of change that this technology is experiencing, the existing program is being phased out over the next two years. During this period the appropriateness and focus of a newly designed approach to Medical Laboratory Technology training will be reviewed. (School of Health Sciences, 1999)

In a later memo to the Dean School of Health Sciences at BCIT from the MLS program redesign leader the background information leading to the closure of the MLS program was summarized as:

In February 1996, a decision was made to phase out the existing BCIT Medical Laboratory Technology Program over a two year period. The current program has been interrupted to allow a complete program redesign to address the needs of the future laboratory.

The lack of full time employment as medical technologists, for a, number of our graduates and the impending lay off of experienced and well qualified technologists in industry, also contributed to this temporary halt in training. The training program at the University College of the Cariboo (UCC), in Kamloops has also permanently closed. The last 15 students from the old BCIT program will graduate and write the Canadian Society of Medical Laboratory Sciences general studies certification examination in June 1998 (K.N. Personal communication, April, 9, 1998).

Technological changes in the laboratory also had been very rapid during these years and administrators felt that the program should close and a new program should be developed that would address the changes in technology (Appold, 2001).

f) Incomplete Data Collection and Analysis

CSMLS Executive Director, Davis believes officials made decisions without knowing all the facts, particularly that by the year 2015, 44.4% of MLT's in Canada would be eligible to retire.

> "Cutbacks to training programs for MLT's were extremely short-sighted," Davis says. "They were made without consideration of factors such as the aging of the medical laboratory workforce or the increased demand for medical testing created by Canada's aging population"(Appold, 2001).

The simple and brief BCIT1996 Needs Assessment Questionnaire (See Appendix 10) asked only four questions. However, the laboratory manager #2 interviewed clearly recalls that the aging workforce was indeed a topic of discussion and debate at the MLS Program Advisory committee meetings.

> "When I sat at the table I know how old I was and I knew how old my peers were. So you just… basically had to look around and you knew it was just going to happen… When? was more the question because we knew it was coming. We knew where our staff ages were, but the main issue in particular was… was it going to happen sooner or was it going to happen later? Particularly when you had people who had been in the system a long time and were going to be eligible to take retirement as early as 55. So were we looking at…was it going to start early with the 55 year olds or was it …people intent to work longer?
>
> So there was a lot of discussion around that and I for one felt that … there was some concerns for certainly BCIT for example who said like they just basically didn't have the resources to be able to conduct the kind of study that would have been necessary.
>
> My point of view and others was that there were other groups that had a vested interest in what was going to happen, two in particular that came to mind was the BC Society (of Medical Laboratory Technologists) as well as the Union. And so one of the things that had been proposed was to involve those groups into at least getting some kind of a polling number, to ask people what is your current thinking in the matter.

We realized that none of this was carved in stone but it was a least one step to help figure out, if we suddenly had a large group saying well it is my intent to leave at the age of 55 and realized you only got a five year period, you know again one would be silly to then shut down your source of replenishment.

So there was a lot of debate around all of this. So it was sort of this mixed bit of advice, but there certainly was a very strong push, particularly from some of the larger facilities for BCIT to reduce. I would have to say I think that the Advisory Committee had a lot of influence on the decision. Then after that of course, as to who made the decision and what factors they took into consideration I'm not privy to that."

It was not until the BCIT Laboratory Human Resource Planning Task Force (Scriabin, 1998) collated data received from a second survey (to monitor trends and shifts in manpower) sent to all Laboratory Managers in the province of BC in August 1997 did BCIT gather any statistics on upcoming retirements of medical laboratory technologists.

The survey also provided other interesting statistics: about 20% of the technologists within the province are over the age of 49, and the mean age of a technologist in the workforce is 42 (Scriabin, 1998).

Question; Who was involved? Who played a role? in making the decision to close the BCIT MLS program.

Analysis of the interview data identified two dominant leadership groups that participants viewed as significant players in the decision making – the School of Health Sciences Administration team and the Medical Laboratory Science Program Advisory Committee (PAC). Senior leaders at BCIT were certainly involved. The Associate Dean of the day said "I was very much involved… as was the Dean, and because of the president and the vice presidents backgrounds with health, they were also key players in the final decision." In addition to these BCIT administrative staff members other stakeholders were also identified by the participants. The Vice President said:

"There were very broad communities involved in the analysis and final decision about the med lab program. And certainly as I mentioned the Advisory Committee, which came from industry, had a nervousness about continuing on the same path and that was one place that we received data. The other came from students themselves and graduates, expressing concern about the availability of almost no full time employment… when they were seeing that they were going to land up having to work in several different labs perhaps to make a decent living.

Also because of BCITs routine review of programs, done in a way that reviews outcomes and inputs and so on, that played into it. But in terms of faculty…(they) were consulted and I guess we need to speak further about their perception."

The Vice President continued and went onto to say "these are not simplistic linear processes…It was always startling to them that they could be surrounded with the media who were telling them at the time that there were not jobs, and yet how could they have been surrounded with these strong, strong notices and yet the BCIT staff and advisory group members couldn't bring it back to the workplace with them?" They went on to state:

"I think it speaks to the very difficult connection between industry and education …industry kept thinking we (BCIT) should be on top of this. We (the BCIT medical laboratory science program leadership) should be coming to them with a plan, and we (the BCIT medical laboratory science program leadership) would go back to them (employers) and say what is it that you need? You're the ones buying the new equipment, changing the structure of your labs. Help describe that to us in a way that we can convert that into outcomes and curriculum, and it was this dance back and forth and it was exhausting. And I believe it's the same today."

John Snyder in his article entitled *Manpower Needs in the Year 2000: Medical Technology Education* (1992) identifies the importance of this critical interface between the employers of medical laboratory technologists and the educational programs from which they graduate.

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Laboratory managers have an obligation to help educators by providing clear job descriptions and defining the expectations for technical personnel. Mirroring this obligation is the educator's responsibility to design curricula that fill the laboratory manager's needs. This may require retaining of some existing staff, a collaborative effort that requires cooperative planning and implementation (Snyder, 1992) (p.417).

In follow up probe questions study participants were asked to reflect on how come they didn't know what was really happening in the industry at that time? And why wasn't the PAC giving them advice on what was happening in the industry? The Vice President and Associate Dean offered similar comments about how this may have occurred:

"We took real pride in having an Advisory Committee, as programs in many colleges have, but I'm left with the question whether they are actually the right people to being advising. So if I go back to the early warning days of something is wrong here. Many of our Advisory committee members were people who were hard working front line people but they didn't have the bigger picture of where the Labs were going. And in retrospect, I think as hard as it would have been, because senior leaders in that field are hard to get a hold of on a regular basis and they're sort of planning ahead into darkness as well. But you really need a mix of perspectives and to have the front line people who know the industry well, that's great, but what we were missing were some of those visionary, really foreword looking people that could propel us to a destiny." (VP)

"Bits and pieces were seen, but nobody wanted to believe it. Nobody wanted to think that the industry was going to have that big a change… all of a sudden when I think Metro was going to (install) their automated system; suddenly (this) made a big impact locally. Then suddenly everybody jumped on the bandwagon saying Oh! we have a problem." (AD)

Snyder (1992) also identifies the need for good environmental data collection and analysis when accessing the student capacities of educational programs.

Important aspects of supply are the numbers and capacities of educational programs, student recruitment efforts, and the graduate rate. These aspects are compared with demand, which includes the vacancy rates of technical positions, growth and replacement, and turnover in the laboratory (Snyder, 1992) (p.418).

As mentioned earlier, in a 1998 School of Health Science report (Scriabin, 1998) the past Dean of the School of Health Sciences reported that the decision to close was based on a 1996 needs assessment (Appendix 10) which involved wide input from employers. Only one of the interviewed participants was involved with both the suspension/closing of the MLS program and its subsequent reopening. This was the Program Head. They were in a key leadership position and had to deal with the all of the changes made to the MLS program structure and staff. Their recollection and comments about the pivotal 1996 survey that was sent out from the School of Health Sciences and the fallout from the subsequent announcement of the MLS program closure is a worthy of an extensive quote at this time. They said:

> "There was talk about having a survey, and at that time I recommended to (the vice president academics) asking him to plead with (the Dean SOHS) not to send the survey out. Because, at that time many, many programs in Canada were closing. There was not a need for techs, our graduates were not being employed there wasn't work for them and I asked him not to send the survey out because I was concerned the results would indicate the program should close or we should definitely downsize.
>
> My pleading went unlistened to, the survey was sent out and I remember a particular (MLS program) advisory committee meeting after the survey had gone out when (the Dean) announced that the program was going to close. The lab director from Victoria (a city on Vancouver Island) was extremely upset and he said had he known it was the intent of this he would have answered the survey completely differently. So a lot of animosity then was set up between the clinical sites and BCIT…and more at…I think, the management team at BCIT.

Anyway previous to that happening… the decision to close, the survey had gone out and (the Dean) had asked me to gather a bunch of data for him on reducing the enrolment. How low could we reduce the enrolment and still employ people? What other options did we have for staff? This is prior to the survey going out… and so I presented him the data. In those days I believe we had 60 students, three sets of 20… And so I reduced the student intake to 40, I reduced it down to 20 looking at who could retire… who could go on special development leave, you know, how we could keep people together. Could we job share? What could we do? We had a lot of staff meetings about it, and there was talk about if everybody cut to 80% until this was over, would we all survive? And it was yes, we could all survive on 80% because it wasn't that much less money.

So everybody was kind of talking about it and then I remember I had my meeting with (the Dean). I went and I took all my data to him. I handed the sheets of paper with everything on it …and he didn't even look at it and that's I think what shocked me most. He was working on his computer and he looked at the piece of paper… but didn't really look at it and he said I'm going to close the program. I was absolutely stunned, absolutely stunned and I walked out of his office. I went by (the Associate Dean's office) on the way and the door was open, she knew I was meeting with (the Dean) and she said how did it go and I just said to her he's going to close the program.

I have no idea if (the Associate Dean) knew ahead of time, I have absolutely no idea and I just thought Oh, and then we went off to a meeting with all the staff because it was right after that. So then (the Dean) announced he was going to close the program. Well of course everyone was really upset, yelling and screaming and it was really, really ugly. Anyway it progressed; the program was going to close. Some people were able to retire early; some people were able to take a PD (professional development) leave to finish degrees they had started… that type of thing. The institute was good about that, getting people into that.

But it ended up that people who were reeling and didn't see that there was anywhere to go because there was no need for techs to be hired. So I think there was that threat that… well there's nowhere for me to get work… there's no jobs. They (fellow faculty) wouldn't even talk to me in the halls; these were people I've worked with for 20 years, absolutely devastated. I had to go and take a course; I think it's called Survivor Effect. It's that one where you're the survivor and everybody else goes.

There were people in the department who wanted to transfer to the core chemistry department as assistants, as lab technical assistants and so then there was a challenge with someone who wanted to keep their job. The union was highly involved in the whole thing, it was really really ugly. It was a terrible thing.

So then there was a position created for someone to lead the design of the new program and I applied for that. I mean if you saw the description it was basically written for me. But there was another employee on staff who was qualified who could have applied but she didn't."

The emotional impact on the staff was certainly noted by this participant, who said,

"Techs were shocked and worried about the security of their jobs… some techs thought this was a very good idea (the closure of the program) as they were underemployed and recent graduates couldn't find work…others worried about the future and would we run dry of techs, what about when retirements in the clinical world occurred? Would we have sufficiently experienced techs to run the labs?

Similar concerns were also expressed by the past Associate Dean.

"It was a very emotional time, especially for the staff. A lot of the staff had been there over 30 years already. Med lab was the first program in health to start up at BCIT and so it was steeped in tradition, and it affected a lot of people in a very short time. People that had dedicated themselves to the institute …it was very hard on them."

However, as the Associate Dean continued to recall the events of the day they also provided a different perspective on the events leading to the closure/suspension, suggesting that other options were considered:

"They (BCIT School of Health Sciences) had numerous meetings with industry. It started off as a PAC sort of an observation saying we're not able to offer students much other than casual in three or four places, and a lot of them aren't getting jobs at all … what can we do? Do we turn down (reduce the intake of admissions to the program) the number of students, and if so how much?" …"We looked at all kinds of ways to address this, not just a closure. The closure was a kind of last straw. There were numerous meetings, and they're in those reports".

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Archival documentation was found to support comments that this decision was

not rushed.

> There was a focus group of all the med lab managers, and then there were
> some key personnel as well, including the private and public sector. This
> happened over the space of almost a year, the actual decision making
> process, if not longer (Scriabin, 1998)(p.7).

Further supporting evidence that this decision was not made in a hurry is provided

by the Dean who said "What I'd emphasize is this wasn't a snap decision… this

happened over several years…there was a progression of concern, to trying to find

solutions, to trying to look at what else we could do, and then finally a decision." One of

the proposed solutions identified was to reduce the intake of students:

> "I (the Dean) had proposed…I'm not sure it was myself or an associate…
> a reduction, I cannot remember what the size was then (of the class)….cut
> it in half or something like that, let's say cutting it in half is something that
> sticks in my mind. We proposed cutting the program in half. (Another
> suggestion made to the faculty was) let's agree on an independent survey,
> because we have no other interests but to make sure that the graduates are
> properly employed."

I was told by the Associate Dean that "The final step was the actual questionnaire (1996

survey) that went out." He went on to say:

> "That questionnaire was basically to see what it looked like down the road
> as best they could discern. I don't think we were the first program to close
> by any stretch. I think we were somewhere in the middle. Programs had
> closed all across the country for the same kinds of reasons.
>
> That questionnaire…that was my project. To basically develop a system
> for determining whether or not we need to be creating all of these folks
> (medical laboratory technologist graduates) right now. But there was a
> strong resistance by the staff (faculty), because they would be losing their
> jobs. So it was a very very delicate kind of a thing. At that time BCIT had
> very little experience in terms of layoffs, very few had ever been done and

so we tried to manage that in a way that was humane. If there was going to be anything, we needed really good proof.

So in conjunction with a professional group (C.V. Marketing Research) out of Coquitlam (a small city in British Columbia), they were professions in surveys, we basically asked the fundamental questions about what you (the employers) foresee in terms of hiring practices in the next five years? That's all we did… it was just a five year outlook.

The actual questions that were asked were developed by the personnel (faculty), by the FSA (Union- the Faculty Staff Association) group instructors in med lab. Because anything we came up with they criticized, and because they had a vested interest in keeping the program open. … So we let them use their questions so that there would be no bias perception. In the end the questions were still criticized. You know that we didn't ask the right questions. Well! The questions actually came from the instructors themselves not from the management group. And so it was just the wording. Questions were the same; it's just how they were worded that was the bone of contention."

Only four questions were asked in the BCIT 1996 Needs Assessment Questionnaire:

1. How many Medical Laboratory personnel work in your laboratory?
2. How many technologists in total do you anticipate being employed in your lab in: 1996, 1997, 1998, 1999, and 2000.
3. How many of your present technologists would you anticipate being replaced for any reason, in the next three years?
4. How many newly graduated technologists would you expect to hire in: 1996, 1997, 1998, 1999, and 2000.

On the bottom of the original survey form a small space was left for "further suggestions or comments". An invitation to contact the Associate Dean, School of Health Sciences, under whose name the questionnaire was sent out, was also given should the respondents "WISH TO MAKE DETAILED COMMENTS". The following comments were included in the Summary of the Survey: (Survey Summary Data - Memo from Dean SOHS, personal communication, February 6, 1996).

- It seems insane to me to have two training spots in this province that in the year l988 they will each train l5 and l6 graduates. How fiscally responsible is that? Why not just have one training site taking the load.

- Crossed trained technologists are becoming more in demand for smaller facilities who can not afford to run two separate departments due to the expense of calls and call backs. It is much more efficient to have more flexibility of staff. Some budgeting programs for both is necessary.

- Unionized lab technologists have priced themselves out of the market. We can hire two post-doctoral Ph.D. fellows for the same as a technician.

- We have tried new grads and they can't cope handling multiple benches with other staff.

In my review and research of the documentation I did find a couple of additional comments on the original survey forms that had been faxed back from respondents to the marketing research firm. They were:

- Will utilize current casual pool LAA pool or other laid off technologists.

- Unable to answer see attached….. (copied below)

It is very difficult to make any prediction about staff requirements for the next five years. We are currently renovating the Laboratory with the intent of going to a core Laboratory for routine testing and will likely realize some FTE savings.

The Simon Fraser Health Region is developing as an entity that will soon control the budget. We do not know what the outcome of that change will be for the Laboratories under the Regional.

In addition, the Fraser Valley Council of CEO's has requested a review of the Fraser Valley Regional Laboratory System. This review is currently in the early stages and the direction that will come out of it is very unclear at this time.

I continued my questioning of this participant and in answer to the question

"*Were you surprised from the results that came back from the questionnaire?* The

Associate Dean replied:

"I actually received the questionnaires one at a time in the mail and other ways through this professional body (the surveyors), and I started creating a spreadsheet to see how many jobs there were. I was really surprised. There was lots of psychological doom and gloom out there on behalf of the managers and it was a particularly bad time. I think their budgets were frozen; they couldn't hire anybody anyways and out of all the places that were polled. It seems to me it was around 75 if I'm not mistaken, plus or minus a few…Out of all the people who that were asked, and it was a staged kind of questionnaire where next year, the year after that and the year after that how many do you think you'll be hiring. The total was a very very small number."

My follow up question *Did it (the answers to the questionnaire) justify keeping the program open? w*as answered by the Associate Dean saying, "Not at all. I thought we'd have some reduction. The staff (faculty) were vehement that there'd be growth and it really backfired from their perspective." The Dean's answer to the same question was:

"The study came back basically saying there is absolutely no reason to graduate anyone. Not cutting it in half, there were no job prospects for a number of years. (Results were) much worse than we had thought or expected. It was also (sent out at) the time when people where talking about reducing the number of laboratories ….. That was the (laboratory reform) plan at the time… there would be core labs... this was in the spirit of the future….downsizing ...other lab school in the country also closed down because of the robotics and automation and all this stuff."

Further evidence on the critical and perhaps controversial importance of the 1996 survey (questionnaire) and its purpose was highlighted in my interview with a consultant who had worked for the BC Ministry of Health on laboratory services. They had in fact actually been approached to conduct this survey by the School of Health Sciences. The consultant recalled the events as follows:

"I honestly don't know the entire background. I was approached by the Executive Director of the Healthcare Labour Adjustment Agency to… he said that BCIT may be approaching me … do a project for them… and involved in that was around the closure of the BCIT med lab program. I

can't remember who supplied me with the report that BCIT prepared, it might have been on one of the lab managers, but I cannot remember. So I read the report that BCIT had done, which led them to closing their… I think partially to closing… and it was flawed in several areas and I talked to the person who wrote it and I asked her several questions about it and she wasn't aware of what was happening in the rest of Canada, it hadn't been really looked into. More of the local (scene only)…. I knew all along that Michener (the Michener Institute for Applied Health Sciences in Ontario) used to train a lot of the medical lab techs and they closed their program, and actually Michener trained so many extras that those techs would come out to BC and work. So they were picking up the slack that BCIT wasn't fulfilling at the time.

There was no real study done on what are the needs of the medical laboratories as we move forward, and I know it caused a crunch right away, and I did talk to the Dean of Health Sciences of the day. He called me and he talked to me in sort of round about terms and I asked him do you want me to do a quick and dirty and close the program down? Because consultants are often asked to do something like that which isn't my style or wouldn't be anything I'd want to get involved in. So I told him I had read the report and I found it was flawed and if I were going to recommend anything it would be to expand the program not to close it. And so he thanked me very much and that was the end of our conversation and that was about two weeks before it was closed, like very quickly. So I think they just wanted a rubber stamp on it with a consultant's outside sort of eye which I couldn't condone at all so I would have no part of it.

Then I had a conversation with, (three of the lab managers of the day) and I told them about this… right away they were up in arms about it and so they stormed the BCIT offices and met with the Dean of Health and demanded, actually demanded that the program stay open.… reopened and that didn't happen.

It wasn't that they weren't consulted before all of this was going on. You see that was my question to them, were you consulted about this?

From my viewpoint that program should not have closed, I think it should be expanded. I would recommend expanding it to 120 technologists."

Follow up questions of Why would you do that? What knowledge did you have? were asked in order the gather further insights and elaborations from this participant.

> "Well I knew Michener was closed down, I had a very good knowledge of how many techs were in, you know, that 50 age group, 50-60. I don't know of one technologist who's ever made it to 65 to retirement. So I knew it was all coming up."

I continued to probe by stating (*The impression I'm getting then is that you saw the "silver tsunami" (future retirements) coming way back then*?)

> "Well I saw it right away. I mean, it was just blatant in my face. So that made me think….Now are the privates (laboratories) again trying to come in with their robotic lab? To try to short the system of technologists and then they could come in then and say there aren't enough technologists so we can do the work for you.
>
> I don't think that anyone at BCIT can say they know what goes on in hospitals. It's chaotic and nobody knows. If you worked in a lab in the early 90's and work in a lab now it's difference between night and day. You're doing ten times the work at least, ten times the workload units per person for sure. But it's sicker patients, they're not staying as long, they've got really emergent needs and I don't think anyone's ever taken a good look at what the true needs of the patient population.
>
> And if they are going to pull labs out they must remember one thing, and you can quote me on …A hospital without a laboratory is a long term care facility. And that's the truth… they need to be careful."

g) Faculty Viewpoint and Concerns

Another rather revealing factor was acknowledged by a couple of the participants during their interview as they shared concerns about the competency and pursuit of continuing education of (faculty) staff. The influence and role played by the medical laboratory science program's faculty and their support (or lack of it) of the instructional changes to the MLS program is noteworthy of mention because it was definitely an item that came up several times through different participants as they answered the question , *Did everyone agree to the closure?*

The Associate Dean , who was responsible for the questionnaire/survey said, " It was a very emotional time and there was not a total agreement, but we went by the black and white of the survey… saying what kind of a service we are doing our graduates if there's nothing for them" (full time jobs available after graduation).

A very telling and possibly revealing comment was made by the Vice President who said:

> "Well first I'm going to call you on your wording. We (MLS program) didn't close and open the same program…. that would have been a problem… from (both) a union perspective and everything else. We had a long discussion around if it ever reopened… what would that be (perceived as). Because… it had all sorts of implications… because staff had been laid off."

Some additional context on the faculty situation during those days was provided by this participant:

> "As you can appreciate, the faculty had a very different view of the situation than say the administrators or the advisory committee did. (first) I need to give you the context in terms of there was a very mature faculty in med lab, they had been there a long, long time... Some of them (had been on) their professional development leave, returned and had a sense of some of the industry changes. That was not the case for all of them (the faculty). What was picked up internally (by BCIT) and externally (by employers) was a number of … particular difficulties with med lab… where faculty had not remained current.
>
> There was huge resistance to changing anything, and huge resistance to professional development and we spent unfortunately a lot of time in a place where we weren't moving forward… we were just debating the facts and that was very difficult.
>
> So I need to acknowledge that the faculty very understandably (anxious and frightened), we were talking about their students, their curriculum and their jobs… and understandably they were in a place where some of them could not imagine forward."

As they continued with their answer the administrative importance of statements about the lack of faculty taking advantage of professional development opportunities became apparent:

> "We were in a position where we had enjoyed a comfortable position for a long period of time and suddenly we were being confronted with data that told us that our students were not faring as well as they had been.
>
> What was a significant factor (considered in the decision making process) was, we had had an accreditation (by the Canadian Medical Association's Conjoint Accreditation Services) and the results of the accreditation reinforced concerns that existed around the currency of the faculty, the kind of curriculum that was being offered and there were worries about students who weren't able to use their skill set in a timely way and diminishing returns that didn't serve the graduates well who had invested time and money in the program and it was burdening the employers that they didn't want do retraining and upskilling."

During my ongoing analysis of the interview data an underlying indication surfaced that perhaps the decision to close/suspend the MLS program may have been seen to be an opportunity to address the program's recent accreditation report and poor faculty performance issues and would allow for the revamping of the staffing challenges.

When I asked if there was any validity to this possibility the response from one participant was "There just wasn't sufficient rationale to close, despite all the short sighted arguments that people made."

Whereas the Associate Dean had a different perspective of the situation and stated:

> "I've heard that also… the fact that it closed for exactly three years was the other thing about that. The rumor mill propagated that after the fact. After three years BCIT doesn't have to hire back the original people. I think that's coincidence myself… Very honestly, there was never any talk

or mention of any kind of a weeding process or screening…. That was not on the table… although I can see how it could look like that after the fact."

The Vice President also informed me that:

"These are never easy situations with the people that are involved and that was certainly a foremost concern. These were people who had long time employment at BCIT and in no way were they doing a bad job. It was the issue of …the world is changing. How do we deal with that? and the whole issue around change management…. and being adept at matching education to industry needs. It was hugely complicated …and very complex."

The other thing I guess that's maybe a bit specific to BCIT but perhaps more generalizable, the issue of professional development for faculty who work in that area and their administrators. How rigorously are people applying the time and funding that's made available for them to stay current? And I don't just mean going to a conference once every three years. It should be an expectation, in my opinion, that there's regular and rigorous and documented kinds of engagement so that you're not left with people being surprised (about what's happening in the industry)... They know very well that things are changing."

I was told by the Dean that the results of the 1996 questionnaire /survey were

taken back to the MLS Program Advisory Committee for review:

"Now when that message (no employment prospects for graduates) came back it of course went back to the advisory… that report was such that it was very difficult why we would be continuing to run the program. There was much debate at the meeting around the issues of closing the program. The PAC considered the impacts of options before making their decisions and a recommendation was made that was to be given to the BCIT Board of Governors by the Dean."

Participants' answers to my question: D*id everyone agree to the closure?*

confirmed that there was not unanimous agreement within the program advisory

committee as they contemplated the future of the program. The Program Head said:

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"No, definitely not the advisory committee, they were very against it. Particularly the laboratory medical director from Victoria. He was just irate… I don't think people had really realized that closure of the program was going to happen. I don't think they really thought of that."

Laboratory manager #2 went on to explain:

"There were differing opinions. There was a group that felt very strongly that at the very least there should be a reduction. To be honest with you I can't remember if there were any members that were pushing for a closure, I don't recall. But there were some very lively discussions. There were some of us, I'll put myself on that side of the camp, who basically … certainly understood the situation…but were feeling that decisions were being made without adequate data to support those decisions. And that yes there was an immediate impact on the system, but we didn't feel comfortable in terms of what the long term scenario was going to be. And in particular was because we knew, you know, we've know for a long time, we were going to have an aging population. And that there was going to be this large group who were retiring. We didn't have a sense of the numbers and we didn't have a sense of the when. But you had a gut feeling?"

A further insight into the discussions of the PAC is provided in the Dean's next comment with an admission that not everything that was happening in the changing laboratory environment of the day was captured by the survey:

"There were arguments about the money for the program (how to ensure it would still be available should the program re-open), and so that (issue) was taken to the (BCIT governors) board. (This was seen to be a)..time for a redesign of the curriculum and so on. The Board accepted that proposal and that's what we went with, but we realized later that other things happening in the province which were not captured."

5.2.2 DOCUMENTARY EVIDENCE SUPPORTING THE PARTICIPANTS STORY

Through all of my participant interviews I listened intently to the unfolding of a remarkable story, one that is full of intrigue, political, business and academic interests. In

order to validate and verify this story I searched the BCIT Library for archival evidence. I was able to discover past School of Health Sciences reports, MLS Program Advisory Committee minutes and correspondence to the Dean's office from laboratory leaders of the day. Some of this has already been referenced in the preceding case study. Additional key supporting documentary evidence will now be presented to verify the participant's comments.

A tough budget situation was anticipated by the Associate Dean, and the inability of employers to hire all MLS program graduates was noted in the Alumni report back in October of 1995.

> Due to the Federal Transfer Payments reduction, BCIT is anticipating a substantial budget reduction. We need to ensure that the number of students being trained, graduated and securing employment is appropriate. Based on comments from around the table, the minimum number would be 20 seats.

> Class of 1994: Number of students employed (approx.) - 37 out of 55 students

>> Technologists: FT -4, PT/CAS – 21

>> Technical assistants: FT/PT/CAS – 6

> Other pursuits include the Bachelor of Med Lab Science program and nonrelated employment.

> Class of 1995:
> The approximate number of students employed are not available.
> However only a small handful have found jobs as technologists and the rest have only found technical assistant positions. There is no indication that any of the jobs are full time. Most of them are contract based and/or casual work.

> Concerns
> 1. Future of Medical Laboratory Science - response to the rapid changes of this field and the healthcare system.

> 2. Ratio for students generated to number of jobs available

3. Rotation during clinical year - possible rotation through small hospital/large hospital/private lab.

(MLS Program Advisory Committee Minutes, personal communication, October 31, 1995).

Another significant concern that was mentioned and highlighted in the Report to the Program Advisory Committee was the redesign of the three year program. This issue was discussed and it was agreed that it needed to be addressed as soon as possible:

Redesign of the year three of the program - A redesign of the year three of the program needs to be undertaken because of the scarcity of clinical seats and because of the changing needs of the workplace. A group with representation from each clinical site should be formed to help facilitate discussion of the whole group. Coordinators were asked to discuss this item with their Laboratory Managers and Teaching Technologists, and provide the MLS Program Head with the name of the representative from their site. (MLS Program Advisory Committee Minutes, personal communication, October 31, 1995)

The Medical Laboratory Employment Needs Questionnaire /Survey (Scriabin, 1998) was sent out to assess the future employability needs of employers (see Appendix 10) in January 1996.This invoked at least two strongly worded letters back to the Dean's office. The first is from the then Chair of the MLS Program Advisory Committee who was also the Administrative Director, Department of Laboratory Medicine at Lions Gate Hospital (Pamela Friedrich, personal communication, January 17, 1996) .

She says: Re: Projecting the Need for Medical Laboratory Technology Graduates in BC over the Next Four Years

Thank you for your memorandum of 04 January 1996 and Happy New Year to you as well.

I will be faxing off our reply to CB Marketing Research tomorrow regarding the information you have been requesting on future needs for the above program.

However, in spending a lot of time, as you might imagine, thinking about this program as Chair of the BCIT Medical Laboratory Advisory Committee, I have some thoughts that could perhaps supplement the information I have faxed to the marketing company.

With Vancouver Hospital, the largest hospital in BC, now anticipating approximately 100 technologists being laid off over the next three years (in other words approximately 30 medical technologists per year) and with all the encompassing changes in health care in general and specifically within the medical technology field, BCIT should, I think, over the next several years concentrate on reinventing its program or re-engineering the total Medical Laboratory Technology Program. Some of the suggestions I have are as follows:

(1) Develop a retraining program rather than a program for new graduates that will address the laid-off technologists who are currently in the Labour Adjustment Pool, but also the 30 new laid-off technologists expected for each of the next three years from VH.

(2) Completely restructure the curriculum adding such areas as point-of-care testing, interpersonal skills as it relates to the emerging laboratory clinical specialist in a hospital team organization, and DNA testing (molecular biology) as just some examples.

(3) Retrain the current BCIT instructors and/or hire new instructors who are current with the new methodology and curriculum.

(4) Continue to develop in the interim of the next two to three years a degree-granting program for medical technologists.

If one were to put a halt to the actual program as it exists right now, in either '97 or '98 you could take two to three years to achieve the above results, at the same time retaining the staff you currently have, or a good percentage of it, and also retain the funding in place for the future program when it becomes viable. In this way, funds currently used to train students could be used instead to re-engineer and re-implement a new program.

A re-engineered program of this nature would allow us to meet two pressing objectives at this time:

1) To redesign the curriculum to match current changing technology and health care systems, and

2) To apply education funds in the most effective manner by applying a good portion to retraining experienced technologists, who have recently been laid-off due to restructuring.

I would be happy to discuss any of these thoughts with you further.

The second letter found was from the Chief, Department of Laboratory Medicine at the Greater Victoria Hospital Society (GVHS). (Dr. Keith Walker, personal communication, January 18, 1996)

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As you can see from my responses to the questionnaire the GVHS anticipates no requirement for increase and indeed it would be my prediction that a continuing decrease in the need for full time equivalent technologists will occur over the next five years. In light of this therefore, it is difficult to visualize positions for newly graduated technologists, particularly with such a readily available pool of well educated and experienced technologists seeking employment.

I have given this matter a great deal of consideration and as a member of the Advisory Committee at NAIT, as an Accreditation Inspector for the CMA/Conjoint Committee, I have become painfully aware of this type of question being placed before assessment committees in their attempt to obtain clinical positions following the didactic phase of rotation. Quite often the clinical institutions are aware of the fact that technologists are no longer at a premium and in reviewing their budget allocations it is not unusual for them to introduce cuts, eliminating or greatly reducing the number of students they are willing to take into the second and third year programmes of the clinical phase. In my opinion this is probably a perceptive elimination precipitated by the hospital industry, feeling that the market place is saturated with trained medical technologists and no longer requiring newly trained graduates.

The above statements, I am sure, are extremely unsettling to you as an Administrator of a Health Science Programme, since they would appear to indicate that to continue the programme in Medical Laboratory Science would be an unnecessary waste of resources. However I do believe it is important that Technology Institutes across the country determine, along with the Technologists Professional Society, the future manpower needs and curriculum requirements for training in laboratory technology, such that appropriate changes could be made to provide educational opportunities to technologists passing into the twenty first century, which may be quite different to those required in the latter part of the twentieth century. Additionally it may be that a well conducted power study would indicate that two or three training institutes in medical laboratory science may be sufficient to maintain the ongoing requirement for laboratory technologists and that further progressive training programmes, whereby a first year student could see avenues of alternative educational opportunities opening, should their prime selected endeavour be blocked as a result of over saturation.

I hope the above comments are helpful to you in your decision making process, however I do think it important to gather a cross section of ideas, thereby eliminating any possibility of creating an impression to our young students that job opportunities are readily available in medical technology, as has been the case over the last twenty five to thirty years.

Thanking you for giving me this opportunity to comment on this increasingly important area of consideration and should you have any further questions please feel free to contact me at your convenience.

A special meeting of the MLS- Program Advisory Committee was held on February 06, 1996 at which the Dean outlined the various influencing factors and events that led to the recommendation to phase out the current Medical Laboratory Science

program over the next two years (MLS Program Advisory Committee Minutes, personal

communication, February 6, 1996).

Update on the Status of the

Medical Laboratory Program at BCIT

Dean, School of Health Sciences

On January 24, 1996 the School of Health Sciences recommended to the Vice President, Education that:

a. THE EXISTING MEDICAL LABORATORY PROGRAM BE PHASED OUT OVER THE NEXT TWO ACADEMIC YEARS.

b. THE APPROPRIATENESS AND THE FOCUS OF A NEWLY DESIGNED APPROACH TO MEDICAL LABORATORY TRAINING BE REVIEWED.

This recommendation is based on wide input from employers about the new realities in the B.C. health care industry due to restructuring of the system and technological change. The exact staffing implications of this recommendation will be worked out over the next 2 - 3 weeks and a special meeting of the Advisory Committee is being organized.

The quality of the existing program has received international attention. Yet it is a sign of the times in Canadian and B.C. health care that employment conditions are changing rapidly and with it the outcome objectives of the training programs.

The recommendation to phase out the existing program created a stressful situation for the School, the Department, and especially for the affected individuals. Individually and collectively we will need, and will appreciate, the continued co-operation from the industry and the BCIT community as we attempt to establish the appropriate response to the new needs of the health care industry.

Numerous concerns and viewpoints following the Dean's presentation were

received from the Program Advisory committee members and these were recorded in a

letter sent to the Dean, the same day, by the Chair of the MLS Program Advisory

Committee (Pamela Friedrich, personal communication, February 6, 1996).

On 24 January 1996, the BCIT School of Health Sciences recommended to the BCIT Vice President Education that:

(a) The existing Medical Laboratory Program be phased out over the next two academic years.

(b) The appropriateness and focus of a newly designed approach to medical laboratory training be reviewed.

At the special meeting on 6 Feb 1996, the Committee discussed and deliberated these statements for more than two hours and requested I summarize and forward their response as follows to you prior to your BCIT Board Meeting 13 February 1996:

1. Concern that the above decisions were based on erroneous or incomplete data:

   (a) Questions in the survey may have been ambiguous.

   (b) Other data should be considered, i.e. workload and what is happening in the rest of Canada, etc.

   (c) Will the pool of displaced technologists be willing and able to relocate to rural areas?

2. General concern regarding closing the Program entirely for two years:

   (a) Things may change rapidly, leaving us with a hiatus and no new graduates for two years.

   (b) Funding may not be available when the need to restart the Program arises.

   (c) Concern that the excellent Faculty and team spirit will be lost if the Program is shut down entirely.

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   (d) Current funding for 20 seats should be retained so that the Program is considered in transition, not closed.

3. Concern that the Institute is responding to the situation at Vancouver Hospital, which is a Vancouver teaching hospital issue, not a provincial issue.

4. There was general consensus that the Program needed to be re-engineered/reorganized with emphasis on multi-skilling and also that the CSLT Syllabus should be updated.

5. There was strong agreement that there is a need for BCIT to be involved in a retraining program of displaced technologists who will require more general skills to compete in the workplace.

6. The Committee felt that a yearly review should take place throughout the province on the manpower and curriculum needs for medical technologists so that the Program can continue to exist and evolve to meet market needs.

PF/1b

cc: Special BCIT Meeting Attendees (06 Feb 96)

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The issue of the proposed closing of the BCIT Medical Laboratory program was then also raised at the Vancouver Area Laboratory Managers (VALM) meeting (VALM Minutes, personal communication, February 16, 1996).

Hospital managers expressed concern that the recommendation to close the BCIT program may result in an inadequate pool of technologists to draw from in the future. Many other schools have closed across Canada. BCIT had responsibly reduced from 60 students to 20 students, based on the advisory recommendations in the fall and

Cariboo College may not be taking in any students. We also do not have good data on to determine the normal attrition rate for technologists.

Many of the current graduates are employed on a casual basis. The hiring practices related to newly graduated technologists has often been to hire as a casual first, then into part time or full time positions. An additional concern was that the loss of the program now may make the development and start up of a new program very difficult.

Since the decision has been made, and the future market demand for laboratory technologists is not entirely clear, the group agreed to develop a position paper expressing our concerns and desire to support the transition to include recommendations for program changes.

The group, again concluded that the basic didactic "core" information being taught currently does capture the technical requirements of the employer, however, it needs to be retooled to reflect the removal of traditional discipline boarders and reflect a new more integrated approach of delivering training. We would like to work with BCIT to ensure a new program is developed to reflect our needs.

Marg Dragvik indicated that it is extremely important that we take a strong position, maintain the ability to deliver a program that maintains basic training at a high level, and develop a strong core training module.

Action:
On behalf of the group, Judy Green has agreed to put together a draft position paper with our recommendations. These will be reviewed by hospital mangers who are on the internet and the final draft faxed to all members. Elaine Grenon will bring forward our recommendations to Dean Eisler at the "Future Roles" of Allied Health Advisory meeting of Friday February 23rd. If you have any additional comments or concerns please communicate them to Judy prior to Thursday February 22nd.

The Memo on behalf of the VALM was sent on February 22, 1996 to the Deans

Office: (Judith Green, personal communication, February 12, 1996)

RE: THE DECISION TO PHASE OUT THE MEDICAL LABORATORY
         TECHNOLOGY PROGRAM AT BCIT

On February 16, 1996, the Vancouver Area Lab Managers met and
discussed the decision to phase out the BCIT Medical Laboratory
Technology Program. Much of the discussion concerned the responses
to, and the interpretation of, a recent survey conducted by BCIT.
We made the assumption that this survey played a significant role
in the decision. If this is the case, we feel it is necessary to
inform you that we believe the survey has given an incomplete and
inaccurate picture of the demand for BCIT graduates. Furthermore,
we also believe that there is a perception that employers' needs
can be met by utilizing technologists displaced primarily from
Vancouver area hospitals. This too is not entirely correct.

What the VALM committee wish to assert is first, we agree that:

·   the need for BCIT graduates will likely be less than in the
    past,
·   some positions can be filled with displaced employees, and
·   a newly designed approach to training is essential.

However, we also believe it is likely that:

·   temporary, part-time, casual and rural positions will not
    readily be filled by placements from the "pool".
·   there is an **immediate** and **urgent** need for multidisciplinary
    (crosstrained) technologists to work in "Core" laboratories,
    and that this need will not be met by these placements who, by
    and large, are subject RTs or technologists with no recent
    multidisciplinary experience.
·   a phasing out of the program will result in loss of the
    teaching staff at BCIT whose expertise must be retained to
    develop a new approach, and to assist or provide crosstraining.
·   a new program which would meet both our short term and long
    term needs, **could** and **should** be designed and implemented.

                                                              .../2

We would like to strongly recommend that alternatives to phasing
out the program be sought. We have enclosed as an example, a
proposal which could:

·   provide the employer with crosstrained staff in a very short
    time frame.
·   serve as a framework for a newly designed program that will
    provide for our ongoing needs.
·   enhance our ability to fill positions with technologists for
    the "pool" by offering retraining programs.
·   retain the expertise of the staff at BCIT.

I hope that we have the opportunity to discuss these issues with
you in the near future. In the interim, however, we wish to convey
our strong recommendation that BCIT be actively and immediately
involved in helping prepare displaced, specialized staff for a
rapidly changing, multidisciplinary workplace.

5.2.3 WAS THE RIGHT DECISION MADE?

BC lost approximately 551 technologists between 1993 and 1998. The normal attrition rate would account for a loss of approximately 280. A large number of technologists volunteered for early retirement or severance packages in hospital laboratories that were undergoing restructuring and downsizing. Very few of the displaced technologists were matched to a comparable position in another laboratory. Most of the displaced technologists left the medical laboratory technologist profession and are no longer available. The end result is a valuable loss of human resources and expertise in the medical laboratory technology profession (Scriabin, 1998).

I will end this section with two participants' answers to the question:

Retrospectively, do you think BCIT made the right decision to close the program, and

later to reopen the program? Why and why not?

First the Vice President reflected back and said:

"Was it a perfect solution? No. And would it be the right thing to do in a different context? No. But my belief is that you make a decision based on the very best fullest facts that you can at the time, and having made that decision you only go forward. There's no use to keep second guessing it, and say what if we'd done this or done that. We didn't, we made a decision, we moved forward. And again it wasn't universally held that was the right thing to do, but it had enough support in the institute, and interestingly even from other programs around Med Lab, who were in fact trying hard to get in front of what was affecting their world as well. And they were I guess giving feedback, certainly to me as Associate Dean ,saying this is the right thing to do, its hard but it needs to move."

The Associate Dean then recalled:

"I remember a meeting right after I finished the survey tally, I finished the spreadsheet and I put it together and I had a meeting with the Dean and Associate Dean right after that and we looked at the numbers and we were all astounded, like it was way worse that we ever expected. It was definitely not the direction we had originally intended to go."

5.2.4 REOPENING OF THE BCIT MLT PROGRAM

Both of the province's educational programs for MLT's were eliminated in the mid-1990s. Technological changes in the laboratory had been very rapid during these years and administrators felt that the BCIT program should close and a new program should be developed that would address the changes in new technology. BCIT traditionally had been accepting 60 students into its MLT program and decreased that number to 20 when entry-level positions for graduates became limited. About this same time there was a threat to lay off 100 laboratory workers in the Greater Vancouver area. Because new graduates would have difficulty competing with experienced technologists for the few jobs available.

BCIT's Medical Laboratory Employment Questionnaire /Survey in 1996 (Appendix 10) showed a need to respond to a decreased job market for MLT graduates. So the training program began to ramp down graduating numbers in order to meet industry hiring needs.

Year	1992	1994	1995	1996	1997	1998
BCIT MLT intake:	60	40	20	0	0	0

The BCIT program closed in 1996 with an understanding that a new program would reopen. Everyone in the department was laid off except the program head.

A new BCIT/Med Lab Advisory Task Force group was created and brought together on April 25, 1996. Its objective/mission was:

> This group was brought together to define and plan the immediate needs for training and re-training technologists in the system who will need new

skills to meet the changing laboratory structure. An initial meeting was held on March 27th 1996 (Advisory Task Force Minutes, personal communication, February 25, 1996).

A process known as "visioning" was chosen as the means to completely rethink the concept of medical laboratory technology and the training for it. Visioning is the process of creating a statement of an organization's purpose for being in the future. It is also a collective process through which communities envision the future they want and plan how to achieve it (e-Lead, 2009).

The process took some two years. It involved questioning the entire role of the occupation. Its goal was to identify, develop and provide skill sets appropriate for MLT's not just for then but for five to ten years.

In order to ensure that the new program would have broad ownership, approaching the province-wide one mandated by BCIT, it was decided early on to create a new committee for the visioning process. Thus, the 28-member Challenges and Opportunities for Laboratory Technologists in the Future (COLTF) Committee was established in September 1996. In January 1997, this group was renamed the Medical Laboratory Visioning (MLV) Committee. Its aim was to *envision the laboratory changes and identify the needs of the future...*

In the space of two years, BCIT's School of Health Sciences initiated and guided a broadly based review of the medical laboratory technologist occupation and the training required for it. This began by closing BCIT's MLT Program in 1996. It proceeded to challenge members of the medical laboratory science community across the province to work together through visioning to see the future of the workplace and the occupation. BCIT worked through this visioning process to develop a completely new program for

medical laboratory technologists of the future. Through the use of visioning, the School of Health Sciences had initiated a new method of ensuring that its MLT training programs did, in fact, contribute as fully as possible to BCIT's mission statement: *To provide British Columbians with world-class, job-ready skills for career success* (School of Health Sciences, 1999).

In March 1998 the Medical Laboratory Visioning (MLV) Committee presented the results of the 1997 needs assessment (Appendix 11). This survey identified the number of MLT's expected to retire over the next 5 years and the number of MLT's to leave and be hired in 1998. The conclusion was that there were enough MLT's in the province for 1998 but that shortages might be encountered in 1999/2000.

In April 1998 a small group of hospital laboratory managers contacted BCIT with the concern that a shortage of Registered MLT's was developing. The managers indicated that they were having difficulties filling positions. These vacancies were, however, mostly casual positions.

BCIT's last class of 15 students graduated in June of 1998. It had indicated its plans to start a new MLT program in September 1999. The first graduates from this program would be available for employment in June 2002 or later. The laboratory managers were concerned that a significant shortage would develop over the next couple of years unless alternate plans for increasing the MLT workforce were also put into place (Scriabin, 1998).

5.2.5 MOVING TO COMPETENCY– BASED EDUCATION

Amid all of the health-reform turmoil, CSMLS transitioned from a syllabus-based certification process to competency-based education and certification. The project started in 1994, beginning with a general certificate competency profile. It was completed by 1996 and was effective for the 1998 examination sessions. Several closed programs used this opportunity to redevelop their curricula, and, in a number of cases, started with a new approach to the education of their students (K. Davis, 2002)

BCIT was one such program that took advantage of its closure to update its curriculum. When asked the question *What is your perception of the benefits of the closure?* The Program Head said:

"It's hard to say. I think it gave people a chance to dream about implementing educational philosophies that apply to adult learners, in the new program. As no one knew what a new program might look like, it was of course difficult finding people who could help with the design. Because we couldn't call on staff that had been part of the old program, they weren't invited to come back, we had to look for new clinical participants to give us input about what changes they saw coming in the labs and then had only a few trained educators who could work on how to implement these thoughts into a cohesive plan.

We wanted to work with clinical people to make sure that what we designed was going to suit what these people thought to be the future in med lab. That in itself was difficult, as the top techs that we thought would be visionaries, were working full time, and we didn't really have money to buy their release from their regular places of employment. We had some money, initially, but the techs couldn't get time off from their regular work, as they were senior techs and remember, the world of med lab was in a great flux. We began meeting on weekends with the clinical techs being paid by BCIT as consultants. Finally we got some more money, allowing us to release some of them to work for us a little longer. But that was difficult getting meetings together. They hired educational consultants to work with us, a pair of women from BCIT and they were really good pulling things together from discussions and things like that."

Comments from Vice President and Associate Dean were:

> "The advantage, and again I'm going say this in an administrative sense, was the ability to step away from the program and start afresh trying to manage from within the resources that we had and mindsets of many staff members. As I mentioned earlier, it was non productive and it needed us consider the issue from how we were going to get to the next place." (VP)

> "I think it gave everybody a chance to look at the new directions that med lab was going and that perhaps the old system wasn't following that." (AD)

The first few pages of the new Medical Laboratory Science Program proposal that was submitted to the Educational Council at BCIT that was approved are reproduced and can be found in Appendix 12.

> The new program, started in the fall of 1999, was less expensive than the previous one. It offered students experience in a clinical environment earlier in their education so they could determine if they wanted to continue in the program. In addition, the program required 2.5 years of schooling instead of 3 years. Forty students were enrolled initially (Connor, 2001).

5.3   SUMMARY OF RESULTS

Interviews conducted with nine key participants provided insights into the context, and decision making process around the closing and reopening of the Medical Laboratory Science Program at BCIT and the reasons for doing so.

Through all of my analysis of the participant's comments and archival documents a picture of the many individual and yet interrelated events slowly became clear. When they were linked together and looked at over the timeframe of this case study, a mosaic of the complex and integrated nature of the healthcare environment that the medical

laboratory science program at BCIT found itself in the mid 1990's in British Columbia emerged. I have endeavoured to weave the threads of the participant's illuminating comments together in an attempt to illustrate that in their deliberations (re: the suspension and closure of an academic program), decision makers were subject to many stakeholders and forces, each pulling and trying to influence them either for or against the decision to suspend/close the program.

5.3.1 FORCE FIELD ANALYSIS

As I went through my data analysis it helped clarify why BCIT administration, the SOHS administration and the faculty responded to the situation in the way they did. This case study is an illustration of an organizational change that appeared to address a short term crisis for the MLS program, however there was heavy criticism from some individuals at several of the formal meetings.

> The ability to predict how others will respond to change is an essential leadership skill. In any situation, an individual's behavior is influenced by a barrage of external and internal forces or stimuli. Many of the forces are hidden and vary from one person to the next. But without exception they play a crucial role in shaping behavior. When anticipating change, a laboratory manager needs to identify these forces as an information gathering step.

> The technique of force field analysis was introduced by Kurt Lewin. He states that both driving and restraining forces are at work in any situation. The driving forces push in a particular direction, tending to promote and sustain change. Restraining forces can check or counterbalance the driving forces (Snyder, 1984).

> In this case study of the proposed closing of the MLS program, restructuring of

healthcare and laboratory reform, impact of new automation and technology, and a

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surplus of medical laboratory technologists, would act as a driving force. On the other

hand, centrality of the MLS program to the mission of BCIT, an aging workforce retiring

and incomplete data collection might be considered as restraining forces.

> Driving and restraining forces are sources of pressure. That's not pressure
> in a negative sense-- only a stimulus that influences behavior. For any
> given situation, these forces can be divided roughly into two categories:
> external and internal.

> External forces are perhaps more easily identified. They include such
> organizational forces as the demands of a particular job and the
> educational institutes' responsibilities as an academic and vocational
> training unit. It is important to consider the programs long term traditions
> and values. Past commitments to the healthcare industry also become
> external forces related to the work environment (Snyder, 1984).

Beyond the BCIT's organizational boundaries, any group with which the MLS

program identifies also generates external pressure. Potential sources include program

advisory committees, professional associations, unions, governmental or political groups.

According to Kurt Lewin " An issue is held in balance by the interaction of two

opposing sets of forces- those seeking to promote change(driving forces) and those

attempting to maintain the status quo(restraining forces). Snyder (1984) states that

observed behavior is the cumulative result of all driving and restraining forces.

The force field analysis diagram is thus a model built on this idea that forces both

drive and restrain change. The diagram helps us picture the "tug-of-war" between the

forces around any given issue. Because force-field analysis causes people to think about

what works for and against the status quo it can be used to study existing problems, or to

anticipate and plan more effectively for implementing change. It is a useful technique for

looking at all the forces for and against a decision or plan. In effect, it is a specialized

method of weighing pros and cons. It helps you to weigh the importance of these factors

and decide whether a plan is worth implementing.

A force field analysis, as shown in Figure 12 was carried out to evaluate the

driving and the restraining forces for the changes to the MLS Program following Lewin's

model by:

- Describing the proposal for change in the middle.
- Listing all forces for change (driving) in one column, and all forces against (restraining) change in another column.
- Assigning a score to each force according to their 'magnitude', ranging from one (weak) to five (strong).

Figure 12 Force Field Analysis

Forces for Change   Forces against Change

Forces for Change	Plan	Forces against Change
5 — Surplus of Technologists		Aging Workforce and baby boomers retiring — **1**
4 — Impact of new Automation & Technology		Lab Managers preferred a reduction in seats — **4**
4 — Political & Fiscal Pressures	Plan: Closure of the BCIT Medical Laboratory Science training Program	Faculty — **3**
5 — Restructuring of Healthcare & Laboratories		Incomplete Data Collection & Analysis — **2**
4 — Demands (current & future) for graduates		Centrality of program to mission of BCIT — **4**
		Lay off of Staff — **3**

Each force is scored for its magnitude. Ranging from one (weak) to five (strong)

Total: 22   Total: 17

Driving or positive forces are those which bring about change in a current situation, and restraining or negative forces maintain the status quo. The technique stimulates creativity. It helps to define a vision (goal or proposed change) and to identify strengths that should be facilitated, and weaknesses which need to be minimized.

The advantage of using Force Field Analysis in a group is that the different perceptions of a scenario and its affecting forces can be taken into consideration; different views and opinions of participants affect the output (scores) of the force field analysis.

Throughout my scoring process I exercised my judgments based on my own experience and knowledge, readings of the literature and archival documents discovered during my research. Hence my scores may well vary from those of someone else.

In response to my question of *In your opinion, what are some lessons learned? Among all the lessons learned what is the most important one?* In retrospect the Dean of the day acknowledges some oversights were indeed made in not having all the factors available during their decision making process.

> "So the major downside? In retrospect that was in the weakness of the information …wasn't as good as it could have been….
>
> The most significant issue was that the healthcare industry, because of the expected lab closures or downsizing of the labs, offered the practicing laboratory technologist retirement packages and hundreds of very unhappy working lab technologists took advantage of the opportunity to get out of the industry. This knowledge was absolutely not available to us while we were planning on the basis of the people of who were working, with the expectation that they would continue…so when laboratories were closed; several hundred lab techs disappeared taking the retirement packages.

So the linkage of human resources planning… especially when it came to labour relations is vital ….not so much as to what you need in terms of new laboratories… HR Planners in the industry were actually planning these changes and yet that was not even known to the people on our advisory committee.

So as soon as we closed there was a shortage…

I would say in retrospect our process was good, but the system didn't work. And I've been hammering for the last six years about the linking of educational planning …hundreds of people got offered early retirement packages...this is part of the forecasting that didn't factored into the equation."

The Vice President and Associate Dean also lamented that they did the right thing but may have acted too quickly.

"At the time it was the right thing to do for students and graduates. From an educationally moral point of view, why would you enlist students in such an intensive and consuming program, and given its shorts shelf life, why would you do that? And not be able to have an employment outcome which was certainly the mandate of BCIT for all programs."(VP)

"Now we know it was not the right thing to do, if we'd just hung in there another two or three years we'd have been fine. But it's so easy to say backwards." (AD)

5.4 DISCUSSION OF FINDINGS, CONCLUSIONS, IMPLICATIONS FOR PRACTICE

This study was not designed to generalize to all post secondary vocational institute administrators. However, it was intended to provide a snapshot of the experiences of nine individuals in particular and consequently may offer insight into how we can learn from past experiences and thus can improve future decision making processes for those contemplating the closure of an allied health training program. In

light of the findings from this study, I recommend that educational administrators adopt the Force Field Analysis model that encompasses the idea that forces both drive and restrain change. The diagram helps us picture the "tug-of-war" between the forces around any given issue. Because force-field analysis causes people to think about what works for and against the status quo it can be used to study existing problems, or to anticipate and plan more effectively for implementing change. It is a useful technique for looking at all the forces for and against a decision or plan. In effect, it is a specialized method of weighing pros and cons. It helps you to weigh the importance of these factors and decide whether a plan is worth implementing.

5.4.1 FUTURE SUPPLY DEMANDS FOR MLT GRADUATES

Chapter 5 described a number of factors—including changes in financing and the structure of the health industry particularly in British Columbia and impacts of new technology that drive the demand for personnel in the medical laboratory field. It also considered those forces that may affect the supply of healthcare workers —for example, the number of medical laboratory science training programs and graduates. Finally, the chapter presented a Force Field analysis model that decision makers may find useful in trying to evaluate the future of other specific allied health professions.

> Educators, employers, and others are faced with difficult investment decisions in planning for future human resource needs. They must make their best guesses about the forces that drive the demand for and supply of workers—guesses about their magnitude, the directions they may take, and their interactions. The answers are not always obvious (Institute of Medicine Allied Health Services, 1989) (p.93).

Despite uncertainty, however, it was possible to learn more about how these forces influenced employment and the supply of workers in the medical laboratory technologist field in British Columbia during the 1990's. Major factors included consolidation and centralization of services and the implementation of new technologies into core laboratories.

> Unlike other types of curricula, allied health education is dependent on clinical facilities for teaching resources and is therefore affected by healthcare financing policy as well as higher education budgets (Institute of Medicine Allied Health Services, 1989) (p.88).

It is clear from all the participants interviewed and the supporting archival documentation that there were many forces that affected medical laboratory service delivery and the demand for and supply of medical laboratory technologist personnel. It would have been virtually impossible for the BCIT administrators of the day to consider all of the elements of these forces in attempts to evaluate the future of the medical laboratory profession.

Therefore, in retrospect and based on my research I have developed assumptions about the major factors that influenced employment in the medical laboratory industry back in the 1990's. I believe that by looking at a limited number of broad issues is a useful tool for today's decision makers trying to evaluate the future of the medical laboratory technologist health profession.

> In a dynamic labour market the supply of workers in an occupation is constantly changing. New graduates emerge from education programs. People enter the labour markets who have worked in other occupations or who have studied related subjects. Individuals leave the work force and later reenter; some leave permanently. Projecting the future supply of workers in an occupation requires, first, an estimation of how many people are in the field in a base year and then an estimation of the various inflows

and outflows that will occur between the base year and the target year. Which inflows and outflows are important depends on the purpose of the projection (Institute of Medicine Allied Health Services, 1989) (p.58).

The health reforms of the 1990's had a profound impact on medical laboratory technologists. There was a perceived surplus of technologists, a major shift in practice to highly automated core laboratory -based settings, an increase in the casualization of the workforce; more technologists were working for multiple employers, and a workforce that was getting older.

> During the HR surplus, employers were accustomed to a pool of part-time and casual workers… The casualization of the healthcare workforce, which caused some of the most serious damage in the 1990s, was an addiction employers seem reluctant to relinquish (Davis, 2002).

Monitoring and investigating the key forces in the demand for and supply of medical laboratory personnel will provide useful insights into the future and better information for determining policy actions. However, the data collected (from the 1996 questionnaire sent out by BCIT -Appendix 10) from employers on their projected hiring needs for the five years provided a limited picture. If the underlying question truly was: *Will there be enough MLT's to fill the jobs that we expect to be available in the future,* more information was needed. The Dean admitted that he did not know about the likelihood that many of the MLT's who were in the work force would be leaving and taking early retirement packages that were being offered by the health authorities, he said:

> "The most significant issue was that the healthcare industry, because of the expected lab closures or downsizing of the labs, offered the practicing laboratory technologist retirement packages and hundreds of very unhappy working lab technologists took advantage of the opportunity to get out of the industry. This knowledge was absolutely not available to us while we

were planning on the basis of the people of who were working, with the expectation that they would continue…so when laboratories were closed; several hundred lab techs disappeared taking the retirement packages.

So the linkage of human resources planning… especially when it came to labour relations is vital ….HR Planners in the industry were actually planning these changes and yet that was not even known to the people on our advisory committee.

So as soon as we closed there was a shortage."

The employers projected their future supply of workers in the med labs in the years 1996-2000, assuming inflows to and outflows from the labour market remain as they were in 1996 and the number of MLT program graduates remained at the current level. These assumptions were unrealistic.

In writing this case study I have attempted to alert readers to the significant trends in factors influencing supply—most often, the number of graduates from educational programs. Yet labour force behaviour is equally important. Unfortunately, there was only crude data collected in the BCIT 1996 questionnaire and thus, the decision makers could make only very rough estimates of future supply. What is known is that even small changes in tenure in the work force can have a substantial effect on the future supply of MLT personnel.

The balance between the current demand for and supply of allied health personnel is of concern to a wide range of organizations, to educators seeking jobs for their students, to facility administrators who are unsure about the availability of needed personnel, and to allied health practitioners and the associations that represent them, all of whom are concerned about jobs, compensation, and career prospects. In functional terms an assessment of current personnel demand and supply is the essential baseline data point from which projections start. Current information about the labour market also enables those in positions to do

so to act early to prevent the occurrence of serious imbalances and the need for major corrective action later (O'Brien-Pallas et al., 2001).

5.4.2 PROGRESS IN THE WORKS

Planning is Essential to Balance Supply and Demand

For years, the supply of health professionals has been characterized by "boom and bust" cycles. At times, planners have perceived an oversupply of healthcare providers and, at other times, a shortage. This case study of the medical laboratory technologist occupation is a prime example. Cycles such as this are typical of markets where there are lags between when decisions are made - such as closing a training program - and when the impacts of these decisions become apparent. Policy makers now recognize that smoothing out these cycles requires an improved evidence base for HHR planning, including regular forecasting of future supply and demand. However current national and provincial work force data are still limited, affecting analysts' ability to determine the supply of medical laboratory technologists.

Reports from the professional association CSMLS underscore the need for concerted, ongoing HHR planning to identify gaps early on and develop appropriate policy responses.

The healthcare system has a limited capacity to respond quickly to shortages. It takes years to change policy and the capacity of medical laboratory science training programs, not to mention training new MLT's. This highlights the importance of predicting and planning for changes in supply and demand to ensure the healthcare system's long-term sustainability.

The First Ministers' 2003 Health Accord (Motiwala, Flood, Coyte, & Laporte, 2005) directed health ministers to undertake collaborative strategies to strengthen the evidence base for national planning, improve recruitment and retention, and ensure the supply of needed healthcare providers. National planning is crucial because many jurisdictions do not have the capacity to collect data or engage in major planning exercises.

The benefits of advance planning and forecasting the supply and demand of HHR are clear. While the field is still developing, available models are useful tools in helping planners determine the number and mix of HHR required to meet Canadians' future needs.

As an example, the following section describes how Canada and BC are trying to address the future supply and demand for medical laboratory technologists.

5.4.3 A COORDINATED NATIONAL APPROACH TO HHR PLANNING

In Canada, there is now a renewed commitment to a coordinated, national approach to HHR planning. The 2003 First Ministers' Accord on Healthcare Renewal (Motiwala et al., 2005), with its explicit goal of providing timely access to quality health services for all Canadians, recognized that planning for the right number and mix of providers, when and where they are needed, is crucial. In the Accord, the federal government, provinces, and territories made a commitment to work together to improve HHR planning and management.

As part of this commitment, the Advisory Committee on Health Delivery and Human Resources (ACHDHR), which advises federal, provincial and territorial governments on evidence-based health systems and HHR policy and planning has developed a proposed pan-Canadian framework to help shape the future of HHR planning and health service delivery. (Advisory Committee on Health Delivery and Human Resources, 2007)(p.10)

Healthcare restructuring resulted in significant downsizing of the medical laboratory technology work force in Canada during the 1990s. As a result, accredited training programs in medical laboratory technology were cut back or eliminated altogether. In 1997, an alarming trend was discovered while preparing a CSMLS membership report. A significant percentage of CSMLS members were eligible to retire within the next 20 years. This discovery, coupled with the dramatic reduction in the number of training positions, prompted CSMLS to ask the federal government to review human resource requirements for medical laboratory technologists(Canadian Society for Medical Laboratory Science, 2001).

At the urging of CSMLS, the Advisory Committee on Health Human Resources (ACHHR) conducted an environmental scan on the human issues affecting MLT's. The results were published in the May 1999 report entitled, *"An environmental scan of the human resource issues affecting medical laboratory technologists and medical radiation technologists"* (Assessment Strategies for Health Canada, 2001). The report concluded that "the anticipated rate of retirement in the baby boom technologists' work force in the next five to 10 years is expected to create a shortage, which is already being felt."

(Assessment Strategies for Health Canada, 2001)(P.28) Immediate actions were recommended. They included:

- establishment of a national database to identify the scope of the problem and define the short and long-term needs.
- coordination and sharing of labour market information to determine accurate projections at least 3 to 5 years in advance.
- coordination and sharing of educational program information to ensure that a sufficient number of positions are available to train future medical laboratory technologists.

One of the major difficulties of addressing the human resources issue for medical laboratory technologists is the lack of accurate data on the current work force. In fact, the Environmental Scan (Assessment Strategies for Health Canada, 2001) acknowledged the limitations of existing data and recommended the establishment of a national data base to develop accurate projections of future human resource requirements for medical laboratory technologists.

On April 26, 2001, CSMLS released the report: *Medical Laboratory Technologists National Human Resources Review—A Call for Action* (Canadian Society for Medical Laboratory Science, 2001). The report urges federal and provincial governments to take immediate steps to ensure that there is a sufficient number of MLT's to meet the future care needs of Canadians.

To address the data gaps and improve the information base for health human resources management, the Canadian Institute for Health Information (CIHI) is undertaking the Health Human Resources Databases Development Project. The Health Human Resources Databases Development Project will help to address information gaps by developing new national, supply-based databases and reporting systems for five

regulated health professions: Occupational Therapists, Pharmacists, Physiotherapists, Medical Radiation Technologists, and Medical Laboratory Technologists. The project is being funded by Health Canada, and includes phased development over a five-year period from 2004 to 2009.

The schedule for the development of the five databases is listed in Table 5 below:

Table 5 CIHI Health Human Resources Databases

Health Human Resources Databases	Timeframes
Database 1: Occupational Therapists	January 2005 to December 2007
Database 2: Pharmacists	January 2005 to December 2007
Database 3: Physiotherapists	June 2005 to April 2008
Database 4: Medical Laboratory Technologists	September 2006 to July 2009
Database 5: Medical Radiation Technologists	September 2006 to July 2009

The Medical Laboratory Technologist Database (MLTDB) will provide a new source of timely, quality information for the medical laboratory technology profession in Canada. The MLTDB aims to provide standardized comparative data and reports on the demographic, education and employment information for medical laboratory technologists in Canada. The data will allow for clear and objective analyses that will support informed decision-making and policy formulation. The data will also be used for statistical reporting and research purposes, including, but not limited to, Canadian reports, analytical tools, an annual statistical report, ad hoc data/information requests and analytical studies pertaining to the supply and distribution of the medical laboratory technologist workforce in Canada (CIHI, 2009).

The federal government has acknowledged the CSMLS report (Canadian Society for Medical Laboratory Science, 2001), and supports of the work of the ACHDHR. However, to date, the committee has not completed its Medical Laboratory Technologist Database (MLTDB).

5.4.4 MEDICAL LABORATORY WORKFORCE - MOST RECENT STUDY

In July 2005 the BC Academic Health Council (BCAHC) and the Provincial Laboratory Coordinating Office (PLCO), with BC Ministry of Health, Health Authority, private providers, academic and professional association representation formed the Joint Medical Laboratory Advisory Committee (JMLAC) to address future laboratory workforce supply and demand issues, with particular longer term considerations for their educational preparation.

The purpose of JMLAC is to serve as a collaboration and advisory forum for key stakeholders who need to participate in preparing the workforce for tomorrow's medical laboratory system in BC. Its primary objective is to achieve broad consensus on a go-forward action plan and, where appropriate, to facilitate and support its implementation. The committee serves as an interface forum between healthcare and post-secondary education and was established with a two-year term.

As a result of the Committee's first meeting, next steps were identified, including the identification of the most efficient ongoing workforce data gathering process, based on current practices in the industry.

The JMLAC began with a vision statement, provided by the PLCO, that considered population health service needs, environmental factors, and desired features of the emerging provincial laboratory system. This vision was articulated as a high-quality, patient-centred and sustainable laboratory system characterized by: improved quality, defined as reduced test turn-around time, reduced error rates and patient-centre service; improved accessibility to expertise; improved integration and standardization; and improved accountability, efficiency and utilization, with less fragmentation (BCAHC & PLCO., 2007) (p.3)

The partnership provides the best opportunity yet for a seamless process from healthcare vision to education action plan that may serve as model for other similar challenges.

To facilitate the JMLAC's work, a sub-committee collected baseline employment and workforce needs information for the major provider groups. A survey of all six Health Authorities and the two private laboratories (MDS and BC Bio) was completed in June 2006.

The group arrived at a set of workforce development objectives necessary to address the identified challenges. These objectives included:

- optimize supply and demand of the workforce based on clear strategic directions and an explicit vision for laboratory medicine;
- ensure workforce development is aligned with technological change;
- ensure appropriate education and training program content and curriculum; and

Identification of BC's laboratory workforce needs, challenges and objectives will help to ensure that appropriate workforce development and education activities are underway to maintain a supply of BC's laboratory human resources adequate to meet labour demands (BCAHC & PLCO., 2007) (p.4)

Details of the Joint Medical Laboratory Advisory Committee's work and its Final Report can be accessed at the following web address:

http://www.bcahc.ca/pdf/Joint%20Medical%20Lab%20Advisory%20Committee%20Fin al%20Report-%20April2007.pdf

5.5   CONCLUSIONS

Over the past decade medical laboratories have been in a period of rapid change. Technological changes that were implemented in BC allowed the performance of tests in new core laboratory settings. When analyzing these changes in terms of their impact on the demand for technologists, it is important to distinguish between changes that reduce demand, changes that increase demand, and changes that make no difference to manpower but only represent a change in location, techniques, or practice style.

Because the majority of medical laboratory technologists are employed by hospitals, changes in that setting greatly influenced the demand for those personnel and where and how they work. My research identified technological changes, together with healthcare /laboratory restructuring and financial pressures stimulated policy makers to make the decision to close the medical laboratory science program at BCIT which in turn affected the future supplies of MLT personnel.

Rather than make incremental changes, BCIT decided to temporarily close its Medical Laboratory Technology program while a new program was being designed. The pivotal evidence used in the decision making process was based on a 1996 needs assessment (Appendix 10) which was said to have involved wide input from employers (Scriabin, 1998).

However as the Executive Director of the CSMLS Davis said "Cutbacks to training programs for MLT's were extremely short-sighted. They were made without consideration of factors such as the aging of the medical laboratory workforce or the increased demand for medical testing created by Canada's aging population" (Appold, 2001).

Towards the middle of 1997, the BCIT School of Health Sciences began to hear from laboratory managers who were having trouble hiring staff for medical laboratories. They were concerned that a significant shortage would develop over the next couple of years unless alternate plans for increasing the MLT workforce we also put into place (Scriabin, 1998).

Other reports confirm this change (Canadian Society for Medical Laboratory Science, 2001), and support the suggestion that the labour market was getting tighter. A study commissioned by Health Canada through the Canadian Institute for Health Information (CIHI) to address the data gaps and improve the information base for health human resources management is currently under way - the Health Human Resources Databases Development Project.

The Health Human Resources Databases Development Project will help to address information gaps by developing new national, supply-based databases and reporting systems for five regulated health professions including Medical Laboratory Technologists. The project includes phased development over a five-year period from 2004 to 2009. However, to date, the Medical Laboratory Technologist Database (MLTDB) is not finished.

The most recent survey of the British Columbia medical laboratory technologist workforce was done in July 2005 by the BC Academic Health Council (BCAHC) and the Provincial Laboratory Coordinating Office (PLCO). In their work they note that shortages of medical technologists would be occurring in British Columbia.

> Over the next five years, employers are planning to hire approximately 130 MLT's per year. These hires may not all be new graduates but may be technologists from other organizations within or outside the province. If an assumption is made that only 90% of all new hires will be new graduates, BC would require 117 MLT's graduates per year. BCIT provides 67 graduates per year. The only exception is in 2009 when the class that would normally graduate in October of 2009 does not graduate until June 2010. BCIT will therefore only graduate 15 certificate students in 2009.
>
> BC employers not only provide practicum seats to BCIT but also to training institutions outside the province. In most cases, students find employment at the sites where they completed their practicum training. For the purpose of the discussion, it is therefore assumed that training institution from outside the province routinely provide an additional 14 graduates per year. The data indicates that there is an on-going shortage of 36 graduates per year with a shortage of 88 graduates in 2009. Cumulative data indicates that by 2011 there will be a shortage of 232 MLT's within the province(BCAHC & PLCO., 2007) (p.20).

Making statements about the likelihood of future balances or imbalances between the demand for and supply of medical laboratory personnel is complicated. During the course of my research of this case study the participants' reports of graduates having a hard time finding jobs were succeeded by reports of shortages of personnel. The reasons given for this turnaround are varied.

The closure of the BCIT medical laboratory science program in 1996 may have allowed MLT graduate levels to decline too far in an over-response to environmental factors issues of the days. Laboratory volume may have risen faster than the supply due

to unanticipated population and demographic changes. Others say that the level of stress at the work site increased because of productivity pressures and the increased complexity of care; consequently, people are leaving the field.

If these factors do generate an increase in the separation rate of workers from the labour force, it would have a significant negative impact on the supply of clinical laboratory technologists and technicians and necessitate greater market adjustments.

5.5.1 LESSONS LEARNED

Can we learn any lessons from this case study? More than a decade after the BCIT Medical Laboratory Science program closed, those interviewed for this study were asked about any lessons learned in their experience, what was important about telling this story, what advice they would give to others who are considering a program closure, and if anything could have been done differently. Their answers to the questions hold out hope that yes we can indeed learn from our past experiences.

In this section I quote many of the participants' insightful comments and have highlighted what I consider to be their words of wisdom and "nuggets of gold."

Question: In your opinion, what are some lessons learned? Among all the lessons learned what is the most important one?

"I think first and foremost is that we need to keep in mind what business we are in, and the training for **lab medicine really is part of the bigger picture of healthcare.** Lab medicine should be looked at as an integral part of medicine, rather than as an industrial process. I think because technology was changing and industrial processes were changing we thought some decisions were being based on that rather than the growth coming and the demographic changes... and the needs in medicine might

not have been looked at." (Director on Board of BCIT and a MLS Program Advisory Committee member)

"Well the biggest thing hopefully we have learned is that… **think very carefully before you make a change** of this magnitude… and that lab medicine training is very integral to health sciences… in general and we can't change something because of technology or industrial process changing. **I don't think we had the right players at the table… so also consult widely**, not just the Advisory Committee but as widely as possible in terms of the users." (Director on Board of BCIT and a MLS Program Advisory Committee member)

"**Lack of joint planning between healthcare and education** … then (at that time we had) very unsophisticated human resource healthcare system as an industry. They could not tell us how many techs were in the workforce… Why is it the job of the educators to do this kind of survey? **The healthcare (system) couldn't give us the right information**." (Dean)

 "**have a proper model for looking at what's going on**… how to make decisions… a proper decision making model that is all encompassing and doesn't just look at facts and figures about this number of hemoglobins or that number of … look at what's really going on in depth, do a really good study on it. And make it patient focused rather than program focused, or desired private interest focused or whatever that was. Because, it baffles me to this day that that ever happened. Especially with all the lab managers going in there and demanding that it be opened. (Consultant)

So learning from that, I think yes, I think the people that do reports for BCIT for decision making, they should be in a more collaborative mode and really get out there and **get their facts straight about what's going on** in education, in that area in the country." (Consultant)

"Do your homework properly, and have people review it and have people pull it apart for flaws until the final draft are in , leave the egos at home, do the right thing right." (Consultant)

"It still comes down to the whole thing I feel around all this came down for the **lack of information**. And that my personal opinion is that I think a lot of the decisions were being ….I almost want to say were being emotionally driven … I just don't feel they were … necessarily well thought out… and nobody is really at fault …I mean I'm not laying

blame…. But I think the whole thing was is that **there were so many factors and influences and people coming from a different direction** and I understand in terms of what was happening within the industry. I understand why the managers were saying what they were saying. It wasn't as though they were giving necessarily misinformation, they were reporting on the facts of the day. There was no question and to some degree BCIT didn't maybe have a choice but to respond to that. To me **there has always been this disconnect between the Ministry of Health and the Ministry of Education, maybe that's the lesson to be learned here**." (Laboratory Manager #2)

"I think if I was to hear again that BCIT was going to close (the MLT program), personally I would want to know more about the report. **I would want to see a report as to why it would be closing, what sort of analysis was used to make that decision.** I don't think any of us out in the actual clinical sites were aware that there was such a report or that anything was documented that we could look at. I think we were so caught up in our own turmoil. Now I might be wrong, maybe (the hospital laboratory Director/Administrator) had some inside track where she got some documentation. I'm not saying she didn't, but certainly none of us as managers were aware that this was going to happen." (Laboratory Director)

"I think before a program would ever be closed or opened the proper reporting has to be done. I think that **we have to look at populations; we have to look at our patient populations and growth at clinical sites. We have to look at our resources in clinical sites and what's going on with that staff. What is the average age and we have to look at the technology and ask ourselves what is real in the foreseeable future, not what a few consultants are trying to conspire.**

I think we really have to get a few very smart people in the area that have been in lab technology for a long time, or in any of the other healthcare fields, to really take a look at the forecasting for the next 10 or 15 years. And you can do that, those years pass by so quickly. Time goes by so fast and not as much gets done as one thinks. Things do not progress as quickly as what one thinks. And also it can't, because of the cost in healthcare. You know, the cost is prohibitive, as well to make it go too fast.

So I just think**, more care needs has to be taken around the actual analysis and the decision making around that.** It shouldn't just

succumb to political pressures or to somebody saying we can contract work out, we don't need all these people or whatever. You really need to sit down and take a look at that when somebody says a statement like that." (Laboratory Director)

"Look at forecasting out to the future and to do some surveys on average age of their staff, length of service, technological change, even to go so far as to try to forecast budgets into the future to see what it's going to cost to run a program, a clinical program.

And then the institution that's running that program needs that information. They need that information from all the clinical sites to make their sound decision. They need something to base their decision on as to whether a program should be open or closed, and if we don't give them that information, how can they really make a good decision for us? Because, ultimately all those programs are for the actual clinical sites. Right. It's not for the institution to say Oh look at us we're running a lab tech program or we're running an ultra sound program aren't we great. If it's for the actual healthcare sites or the healthcare industry to remain intact and provide good quality service, that's what they're there for." (Laboratory Director)

Question: If you were to give advice to others who are considering a program closure, what advice would you give?

"Well it comes back to what I've said before, I think that they have to **look at both the short and the long impacts… and it comes basically around current and future manpower needs.** That would be my main advice, examine not only the current but the future manpower." (Laboratory Manager #2)

"Think about the interim measures, phased out, gradual anything that would buy you some time without being irresponsible." (Associate Dean)

"For any training of this type it's the **having the radar up, and having both qualitative and quantitative data that you can use as an early warning signal, that you can track trends over time, and I think it has to be both, its not just the numbers**. And that I guess brings into question the process of how you do this. It's all very fine to have policies that say thou shalt review your program every two, three years or whatever. But, the learning for me was, **was how do you engage, on a**

regular basis, all of the stakeholders? And that includes students because they so often were excluded and it was their comments that were very meaningful, certainly to me. When I heard students coming back saying I don't believe I got what I paid for. You gotta pay attention to that. So what did we learn out of it? You can do a lot, but you gotta do more." (Vice President)

"Well I guess it may be reiterating but, **finding that symbiotic relationship between education and industry, when you're dealing with such a highly technical area. Neither one can wander off and do their own thing, there has to be that cohesion and it has to be multi-level cohesion.** As I mentioned, I think front line workers terribly important but who is it that's building forward? And those voices need to be in there." (Vice President)

"To have as much data as possible that's accurate and relevant so that you are not side tracked with the emotion of these kinds of decisions." (Vice President)

Question: "What do you think is important about this story? What's the 'So what?' for you?"

"It still comes down to… my point of view is like always …the important thing to me is **don't be shortsighted**." (Laboratory Manager #2)

"So did we learn any thing from that process or not? I don't know. Probably **be even more careful, if that was possible."** (Associate Dean)

Question: If BCIT were to do it again (closure and reopening of the program), is there anything it could do differently? If so, what could be done differently?

"No. I think that again based on what it had to do from my observation it did it well. There was nothing that went wrong with that. From closing and reopening, **the difficulties were the circumstances that affected both parties".** (Laboratory Manager #2)

"Well, I think we have to carefully look at staff. What are we going to do with the staff? They need to **do something to keep that staff.** I think that was the most difficult part of re-opening the program, **losing people who**

were already clinically trained and educators. So that's a huge piece."
(Program Head)

"I would suggest **rather than completely closing they would be better to do a reduction of some sort** and do a reduced number of students. If there were massive changes that had to happen at least keep some students in the system.

I think it would be interesting to look at the cost of keeping a small group of students going through the program on the old system, while we're setting up a new one, versus what it actually cost in manpower hours and money when the new program was set up…. I don't know if one could ever do it, because the costs are hidden. You don't know what they really are but it would be interesting." (Program Head)

"It was simply not reasonable to train young people when there were no decent job prospects for them upon graduation, which is the reason they came to BCIT; some of them with university degrees. This was their main reason for spending another two years in education. If the healthcare system was concerned about the aging workforce, it had the responsibility to put in place appropriate workforce strategies, including keeping people employed even if they were not fully needed in the short run. It is simply not reasonable to ask young people to carry the load. It also was not BCIT's responsibility to subvert its mission to make up for the lack of long term vision in healthcare workforce planning. None of the lab managers or smart HR visionaries would have sent their own kids into the med lab program at the time.

Of course, **the answer to the complex situation is continuous joint planning involving all stakeholders**. The infrastructure to support such processes across the healthcare system is still evolving. This was the reason for the creation of the BC Academic Health Council. Healthcare funding should support visionary health human resource strategies, education funding should support the bridging of hard industry times, and applicants to programs should be fully informed about their job prospects. **A balanced approach can only emerge from ongoing collaboration and information sharing among all affected parties. These ideals will realistically at times be hampered by secrecy around labour relations and political decision making.** How all the forces combine to shape reality is not predictable at any one time. In addition to snap-shot surveys, **there is a need for constant and continuous dialogue supported by the appropriate collaboration and communication infrastructure**, such as

the BC Academic Health Council, if it can achieve its full mission. **The promise lies in the application of complex systems theory and inter-organizational network leadership strategies.** We will all have to become more sophisticated in these areas." (Dean)

5.5.2 SKILLS SHORTAGES AND THE ROLE OF THE VOCATIONAL EDUCATION AND TRAINING SYSTEM

Canada's vocational colleges and institutes of technology are integrally aligned with the needs of employers. Through Program Advisory Committees to solicit business and industry input continuously into curriculum development, they should be on the leading edge of skills identification, economic trends and market shifts. Colleges and institutes of technology are the labour market trainers of choice for many of the allied health professions including medical laboratory technologists.

> The vocational education and training system has an important role to play in assisting with the smooth matching of the skills wanted by employers with the skills offered by workers. A market economy is a very dynamic thing. Firms and their jobs are constantly being born, expanding, contracting and dying. Many skills take years to acquire (especially professional and technical skills like those of medical laboratory technologists) and are quite specific to a particular type of work. For example, a music teacher cannot readily become an accountant; a chef cannot readily become an electrician. It is inconceivable in such an environment that there will be a continuous precise match between the types of skills that are required and the types of skills that the workforce has to offer.

> When there are sizeable levels of unemployment, under-employment and non-employment, much of this inevitable imbalance is hidden from the notice of firms. With a few exceptions, they find that when they advertise a job, they have a number of people with the relevant skills who apply--sometimes a large number. They are then able to look for additional qualities, such as precise relevant experience, desirable personal qualities, evidence of enthusiasm and commitment to the firm. From the employers' perspective, the skills system therefore seems to be working quite well.

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However, the consequences of the imbalance are borne by workers, who cannot find employment that uses the skills that they have laboured (and paid) to acquire. As the overall labour market tightens, the structural mismatch between skills and job requirements becomes more apparent to employers. It is then that we start to hear about skills shortages, and the extent of the mismatch becomes an issue of policy concern.

The degree of mismatch will be greater in areas of the economy in which there is rapid structural or cyclical change--either in the type of work done or in the quantity of jobs. (As illustrated by this case study of the effects of the healthcare and medical laboratory reforms in British Columbia in the mid 1990's).

The provision of good intelligence on the state of the labour market is a very effective strategy for assisting normal market mechanisms to resolve shortages more rapidly. There is an important role for industry and professional associations in routinely collecting data that reflect the state of the labour market for skills that are important for their members. It is expensive for any individual firm to do this and the information is valuable to a wide range of firms once collected (Richardson, 2009) (p.28).

5.5.3 WHAT DOES THE FUTURE HOLD FOR MEDICAL LABORATORY WORKFORCE?

Like other research studies where supply and demand of health professions human resources was projected, workforce research in the laboratory community has gathered supply and demand analysis that have included a lack of timely data and conflicting data from the same federal and provincial agencies.

Quantitative evidence concerning the effects of future factors that will influence the magnitude of vacancy rates, such as difficulties in the hiring and using staff, effect of automation and new technologies such as decentralization of laboratory services, expansion of point-of-care testing and the effect of increased volumes of testing and new diagnostic technologies need to be considered.

Future clinical laboratory workforce studies are necessary to monitor and to project demand, supply, use, and the magnitude of any shortages and the healthcare system effects. Employers need to recognize their human capital in the next decade. Academic institutions, healthcare organizations, and community leaders should invest in the recruitment and retention of laboratory professionals who are trained properly and who posses the competencies necessary to be a satisfied and safe practitioner" (Ward-Cook, 2002) (p.368).

5.6   SUMMARY OF THE STUDY

The central research question this study asked was: **What caused the**

discontinuance in 1996 of the BCIT Medical Laboratory Science program and its

subsequent revival in 1999? This study was not designed to generalize to all post

secondary vocational institute administrators. However, it was intended to provide a

snapshot of the experiences of nine individuals in particular and consequently may offer

insight into how we can learn from past experiences and thus can improve future

decisions making processes for those contemplating the discontinuance of an allied health

training program.

There were several things that I hoped to observe during this study. One of those

was I looked for the participants to openly express their perspectives in regard to their

experiences of the closing and reopening of the MLS program at BCIT.

Secondly, I sought to determine what experiences the participants had in their past

academic leadership settings and how the experiences had an impact on the decision

making process to discontinue the medical laboratory science program in the BCIT

School of Health Science back in 1996.

What I discovered was evidence that over the past decade medical laboratories have been in a period of rapid change. The health reforms of the 1990's had a profound impact on medical laboratory technologists. Technological changes that were implemented in British Columbia included a major shift in practice to highly automated core laboratory -based settings. Because the majority of medical laboratory technologists are employed by hospitals, changes in that setting greatly influenced the demand for those personnel and where and how they worked. There was an increase in the casualization of the workforce; more technologists were working for multiple employers, and the workforce was getting older. My research identified there was a perceived surplus of technologists.

Technological changes, together with changes in the structure of the healthcare /laboratory delivery system in British Columbia and financial pressures stimulated policy makers at BCIT to make the decision to discontinue the medical laboratory science program which in turn affected the future supplies of MLT personnel.

Even today, there is still much ongoing dialogue and discussion of further restructuring in the BC healthcare system and medical laboratories that may potentially reduce future personnel needs or lower the skill levels required (see Appendix 13).

Factors that would cause workforce demand to change significantly should therefore be monitored by those attempting to track the future employment of medical laboratory personnel. These factors must include technological change and trends in provincial and federal regulation of laboratory settings.

Technological changes to improve cost-effectiveness and decrease personnel, both in numbers and skill levels, were adopted back in the mid 1990's. Yet demographic

pressures continued to exert upward pressures with an aging population receiving care and this should have been anticipated to increase the demand for laboratory personnel.

At the start of this case study, anecdotal evidence from the nine past educators and others interviewed pointed to a surplus of medical laboratory technologists. The lack of full time employment as medical technologists for the BCIT MLT program's graduates and the impending layoffs of experienced and well-qualified technologists in British Columbia's health industry, contributed to the temporary halting in training at BCIT. This was confirmed by archival documentation.

Rather than make incremental changes, BCIT decided to temporarily discontinue its Medical Laboratory Technology program while a new program was being designed. The pivotal evidence used in the decision making process was based on a 1996 needs assessment (Appendix 10) which was said to have involved wide input from employers (Scriabin, 1998).

What I learned is that these decisions are not easy to make. There are many stakeholders that need to be consulted and a complete environmental scan must be undertaken considering all internal and external factors that would be relevant to the question at hand.

A force field analysis, as shown in Figure12 was carried out to evaluate the driving and the restraining forces for the changes acting on the MLS Program following Kurt Lewin's model. Restructuring of healthcare and laboratory reform, impact of new automation and technology, and a surplus of medical laboratory technologists, acted as driving forces. These forces were so compelling that they may have forced change to occur in an unplanned way. This created great anxiety, feelings of resentment and

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insecurity in staff as there was a sudden reduction in faculty. However, if senior administration of the day had considered all of the restraining forces they might have anticipated such matters and perhaps could have taken steps to getting all of the information and data necessary to offer other alternatives to address the issue. It would have been imperative to have considered the longer range plans as the medical laboratory professional association CSMLS had warned of an aging workforce and the baby boomers retiring.

There is still much work to be done in the efforts to improve decision making abilities of administrators to be more thorough in their data gathering and analysis. The experiences in this one setting at BCIT, though challenging, do not have to determine the outcome in another. In spite of numerous challenges with the closure and subsequent reopening, the MLS program in this study became once again a premier program graduating medical laboratory technologists that are in such great demand in today's healthcare system. As the program continues to find its way forward, its past experiences may smooth the road for other similar programs, which may be contemplating a discontinuance of an allied health program.

5.7   RECOMMENDATIONS

The theme here is that we rarely have good research evidence to support health human resources planning. And this is not a phenomenon unique to Canada. Globally, it is increasingly recognized that planning and management of health human resources requires a stronger evidence base and a far more prominent focus on meeting population health needs, rather than relying on current or past utilization trends.

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1. In light of the findings from this study my first recommendation is that there is a the need for the development, testing, and use by decision makers of a dynamic model that adequately accounts for both the number of influencing factors and how each factor is likely to influence the others. Figure 11 illustrates a conceptual model for population needs-based, system design driven HHR planning. It was developed by O'Brien-Pallas, Tomblin Murphy, Birch, and Baumann (O'Brien-Pallas et al., 2001). It is designed to include the essential elements of health human resource planning in a way that captures the dynamic interplay among a number of factors that have previously been conceptualized in isolation of one another. It provides policy makers and planners with a guide to decision-making which takes account of current circumstances (e.g., supply of workers) as well as those factors which need to be accounted for in HHR planning (e.g., fiscal resources, changes in worker education and training). At the core is the recognition that health human resources must be matched as closely as possible to the healthcare needs of the population (O'Brien-Pallas et al., 2001) .

2. My second recommendation is that educational administrators adopt the Force Field Analysis model that encompasses the idea that forces both drive and restrain change. The diagram helps us picture the "tug-of-war" between the forces around any given issue. Because force-field analysis causes people to think about what works for and against the status quo it can be used to study existing problems, or to anticipate and plan more effectively for implementing change. It is a useful technique for looking at all the forces for and against a decision or plan. In effect, it is a specialized method of

weighing pros and cons. It helps you to weigh the importance of these factors and decide whether a plan is worth implementing.

I am confident that the salient information presented in this case study concerning the process of how BCIT discontinued its medical laboratory science program and the implementation of these recommendations may be helpful to others contemplating a closure or discontinuance of an allied health training program.

5.8   IMPLICATIONS FOR FURTHER STUDY

This study is just a beginning, and just one contribution to an important issue facing medical laboratory technologist training programs in Canada. Further study is needed on the gap between employers' perceptions of their future workforce needs and the post secondary educational institutes' needs to produce highly trained and up to date skilled graduates.

Healthcare employers of allied health personnel and the academic programs producing these professionals (such as the British Columbia Institute of Technology – BCIT) have had to cope with an environment of major changes and ongoing turbulence since the 1990's with many organizations undergoing restructuring as well as mergers and acquisitions. As the healthcare system struggles with the challenges of change, the students and the post secondary education system are always impacted (Amhurst HealthCare Consultants, 2007).

My dissertation has highlighted the significant impact laboratory redesign in BC had on the Medical Laboratory Science program at BCIT in 1996. There were many

possible reasons why the BCIT medical laboratory science program was closed/suspended: frustrations with MLT graduates not gaining full time employment; a lack of a comprehensive provincial human resources plan for medical laboratory technologist; and lack of awareness of local and national tends for future retirements.

It is important to note that reorganization of the Medical Laboratory sector in the province of British Columbia by the health authorities continued into the next decade.

In July 2003, the BC Ministry of Health Planning and Health Services Review was completed, the BC Laboratory Services Review by (Bayne, 2003). Confirming government concerns, this report identified problems with the laboratory delivery system that impact the efficiency of the system. It pointed to the fact that lab costs in BC are the highest in the country and again called for significant reforms of the lab system. It identified major future challenges that need to be addressed. These challenges included impending shortages of trained medical laboratory technologists. This is a national problem related to an aging workforce combined with the reduced size of training programs for new entrants to the field. There is no reference to the Kilshaw report whatsoever in Baynes' report. In response to the "Bayne Report", the government created the Provincial Laboratory Coordinating Office (PLCO) to study the provision of laboratory services in British Columbia and to make recommendations on necessary reforms that will improve the delivery of services and ensure the service delivery model is sustainable over the long term.

On the basis of my personal knowledge and experience working as the Associate Dean School of Health Sciences at BCIT 2004-2008, I think that next stage of this

investigation could be a continuation of the research into the BCIT Medical laboratory Science program as a case study with the objective to *research into and identify the early challenges encountered after the MLT program reopened in 1999 and the barriers and obstacles it faced in the first five years.*

Readers may be surprised to learn that the historical decision to suspend the BCIT Med Lab program in 1996-1999 led several BC hospital laboratories to develop new relationships with other Medical Laboratory Science training programs. During this time there were also decreased budgets in health and teaching technologists' positions were eliminated which had impacts on the laboratory supervision of students. Several health authorities decided to take students from other another province, Alberta, specifically Northern Alberta Institute of Technology (NAIT), instead of BCIT.

Due to the unforeseen shortages of Med Lab Technologists, the BCIT program was reopened three years after it closed. Within a couple of years there was increasing pressure from several Health Authorities, outside the lower mainland, to have Medical Laboratory programs established in their regions, they felt that students recruited from their area and educated in their area were more likely to stay for work.

The number of clinical practicum spaces available in the BC health industry was also decreasing at a time when the student intake capacity required by the Ministry of Advanced Education was increased from 40 to 60 places for Medical Laboratory Technologists at BCIT in 2004. (The first expanded class graduated in 2006.) This increase in the number of students admitted into the BCIT Medical Laboratory Science Program required an aggressive approach in the search for additional clinical seats throughout B.C.

In 2005 the BCIT School of Health Sciences (SOHS) conducted a curriculum review of the Medical Laboratory Science (MLS) Program (BCIT, 2005) to examine the effectiveness of the new curriculum, and to address issues raised by the Program Advisory Committee (PAC) and the medical laboratory community, since the program's reinstatement .

Meetings with stakeholders (e.g., employers, technologists, pathologists, union representatives, professional society representatives) and current students, and conducting a graduate survey, were done by the curriculum review team.

Stakeholders were largely *satisfied with program content*, but had *strong reservations about the integrated clinical placement model.* They understood the value to student learning this model provides, but were unable to make the necessary compensations to accommodate students in practice.

Stakeholders described a general resource shortage, which translates into an inability to commit to maintaining training capacity in BC. Ongoing and recent *laboratory reengineering (for some sites) has resulted in a reduced capacity to train students.*

The key concerns were BCIT's need for committed clinical spaces in order to reach training capacity and respond to the Ministry of Advanced Education's request to increase training spaces for all health occupations training, and the challenge for industry to provide those spaces due to restructuring, and decreased resources.

A crisis point occurred in December 2005 when there were insufficient seats for the January 2006 practicum needs. The implications of which were seen to be:

- Potentially insufficient MLT graduates to fulfil the demands.

- Current students might not find clinical placements delaying their time to graduation and creating a potential legal issue for BCIT.

- Breach of affiliation agreements by not providing appropriate clinical supervision may lead to loss of BCIT program accreditation by CMA, therefore BCIT students would not be eligible to write the CSMLS National Certification exam.

In addition there was a significant drop-off in the BCIT Medical Laboratory Science Program Advisory Committee (PAC) members' attendance after 2003. The PAC did not have a quorum in several meetings, which was a hindrance to BCIT's progress.

In having to rebuild programs, institutions must re-establish their standing in the educational sphere and re-develop goodwill within the training sector.   Changes of this nature impact the recruitment of faculty, the recruitment of high quality students and the overall education and training programs.   The attrition rates for the early years, Table 6, would support the need for further research into the effectiveness of the new curriculum and reinstated MLT program.

Table 6 MLS Program Attrition Rates 2003-2006

Diploma of Technology	2003	2004	2005	2006
Admitted	40	44	44	60
Graduated	28	38	28	46
Attrition Numbers	**12**	**6**	**16**	**14**
%	**30%**	**14%**	**36%**	**23%**

We should endeavour to research this further by asking courageous questions about those early years, the roles of the Program Advisory committee, faculty and students. Let us remember the words of the philosopher Alasdair MacIntyre who defined a 'practice' as:

> …any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended (MacIntyre, 2006) (p.187).

There are three types of internal goods in practice (MacIntyre, 2006). First, there is the "excellence of the products" (p.189). Second, there is that good defined as such within the moral tradition of a particular practice (p.187). Third, in the act of producing the product and functioning within multiple settings, the individual may achieve the "good of a certain kind of life" (p.190).

More simply put, the 'goods internal to a practice' we might say, are those goods which can only be achieved through participation in that specific practice and such goods must, moreover, have historically evolved standards of excellence internal to them.

Medical Laboratory Science which may be defined as research and development, design, production, and distribution of laboratory-related services and intellectual capital used for measurement, analysis and diagnosis, is representative of "practice" in this MacIntyrian way of thinking.

Hence, there is a living tradition in medical laboratory science of diagnostic testing, accuracy and precision of results and good quality control which have been

identified as goods that are internal to medical laboratory science whereas income and

prestige are considered external goods to the provision of diagnostic services.

MacIntyre writes of the need to recognize excellence in the work of practitioners

who have come before:

> "To enter into a practice is to enter into a relationship not only with its
> contemporary practitioners, but also with those who have preceded us in
> the practice, particularly those whose achievements extended the reach of
> the practice to its present point. It is this achievement, and a fortiori the
> authority, of a tradition which I then confront and from which I have to
> learn" (MacIntyre, 2006) (p. 131).

So when practices are erased and then reformed, as they were in this case of the

Medical laboratory science program at BCIT, the traditions and critical skills no longer

hold and are broken. The good intent of the practice (i.e. intellectual capital, quality and

excellence of service, ethos, craftsmanship, values and pride) are lost.

In the mid 1990's the practice of medical laboratory science had been neglected

and the MLS program was discontinued.

APPENDICES

APPENDIX 1:   INTERVIEW PROTOCOLS

Interviewer to complete:

ID	Sex	Title	Date of Interview	Location of Interview	Time Begin	Time Finish

Setting the Scene

Good morning/afternoon, I'm Andy Basi, I am an SFU doctoral student and I am conducting research on the topic of Closing and Reopening of the Medical Laboratory Science Program at BCIT, 1996-1999

Thank you for agreeing to be interviewed for my research study. I expect our interview to take between 40 to 50 minutes. You are being asked to participate in this study because of your knowledge of the closing and reopening process.

I'd like to tape our discussion and I will summarize what you've said and integrate it into my dissertation research and paper.

[Have the interviewee read the consent form, answer any questions, have interviewee sign form and give them copy of form. Turn on the tape recorder and test it]

Back Ground Questions.

1. What is your current title?
2. Tell me a little about yourself and how you have been connected with BCIT.

Specific Questions Related to Research Goal

1. Tell me about BCIT's approach to the MLS program closure. How was the decision to go ahead made?

Why was it done?
Who was involved? Who played a role?
What was involved? Were any criteria used or official policies governing program closures followed?
Did everyone agree?

2. What key processes were put in place to support this closure?

3. What is your perception of the benefits of the closure?

4. Any downsides to the approach used to close the program?

5. What is your perception of the success of the reopening of the program?

6. Do you have any questions or Is there anything more to tell to round out the story?.

7. Retrospectively, do you think BCIT made the right decision to close the program, and later to reopen the program? Why and why not?

Larger Context
When the person has finished telling the story as he or she wants to tell it, it will be helpful to my study to try to get the story into a larger context. So here are a couple of possible questions for getting at this:

1. What do you understand to be the research that I am proposing to carry out?

2. "What do you think is important about this story? What's the 'So what?' for you?"

3. In your opinion, what are some lessons learned? Among all the lessons learned what is the most important one?

4. If BCIT were to do it again (closure and reopening of the program), is there anything it could do differently? If so, what could be done differently?

5. If you were to give advice to others who are considering a program, what advice would you give?

APPENDIX 2:   SFU ETHICAL APPROVAL OF RESEARCH

FOR CONTACT IN REFERENCE TO THIS REVIEW

Application Number: 39531

Dr. H. Weinberg   B. Ralph, Ethics Officer
Director, Office of Research Ethics
Voice: (778) 782-6593   Voice: (778) 782-3447
Fax: (778) 782-6785   email: bralph@sfu.ca
Mobile: (778) 999-7251

email: hal_weinber@sfu.ca

        Reference Ethics Policy 20.01: http://www.sfu.ca/policies/research/r20-01revised.htm

Notification of Application Status

Investigator Surname	Basi	**APPROVED**
Investigator First Name	Andy	By Hal Weinberg at 11:05 am, Mar 11, 2009
Investigator Department	Faculty of Education	
Investigator SFU Email	andyb@sfu.ca	
Investigator Position	Graduate Student	
Title Of Research	A case study of the decision making process that led to the closing of the Medical Laboratory Science Program at BCIT in 1996 and its reopening in 1999	
Supervisor Surname	Madoc Jones	
Supervisor First Name	Geoff	
Supervisor SFU Email	madocjo@sfu.ca	
Co-Investigators		
Risk	Minimal	
Approval Status	Pending REB (Blue)	
Approval Date	March 11, 2009	
Approval Start Date	March 11, 2009	
Approval End Date	March 11, 2012	
REB Date	00/00/00	

Grant Information	
Submitted To Agency For Review	No
Approved Subject To Ethics Approval	No
Reviewed By Any Other Agency	No
Title Of Grant	
Date Granting Agency Approval Began	00/00/00
Date Grant Ends	00/00/00

Amendment Date	00/00/00

Page: 1

APPENDIX 3: INTERVIEW CONSENT FORM AND PROTOCOLS

SIMON FRASER UNIVERSITY

Form 2- Informed Consent By Participants In a Research Study

The University and those conducting this research study subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at hweinber@sfu.ca or phone at 778-782-6593.

Your signature on this form will signify that you have received a document which describes the procedures, whether there are possible risks, and benefits of this research study, that you have received an adequate opportunity to consider the information in the documents describing the study, and that you voluntarily agree to participate in the study.

Title: A case study of the decision making process that led to the closing of the Medical Laboratory Science Program at BCIT in 1996 and its reopening in 1999

Investigator Name: Andy Basi

Investigator Department: Faculty of Education

Having been asked to participate in the research study named above, I certify that I have read the procedures specified in the Study Information Document describing the study. I understand the procedures to be used in this study and the personal risks to me in taking part in the study as described below:

Purpose and goals of this study:

The purpose of my qualitative study will be to explore, discover, understand and describe the closure and reopening of the Medical Laboratory Science Program at the British Columbia Institute of Technology (BCIT) and discuss the issues and lessons to be learned from the decision making criteria and process used by the leadership of the day. This

research and case study will be my dissertation in completion of the EdD, Doctor of education in educational leadership (post secondary) degree at Simon Fraser University.

Central Research Question: What caused the discontinuance in 1996 of the BCIT

Medical Laboratory Science program and its subsequent revival in 1999?

What the participants will be required to do:

You are invited to participate in an interview with the researcher to discuss your experience and knowledge of the Medical Laboratory program at BCIT. The interview has been scheduled at (*insert date and location*). The estimated time commitment for the session will be about 60 minutes. The purpose of the interview is to obtain your perspectives on the closing and reopening of the program, and any challenges you had to overcome.

Risks to the participant, third parties or society:

There are no known risks to participants.

Benefits of study to the development of new knowledge:

Hopefully in my case study I will be able to illustrate what happened, how it happened, how critical decisions were made, review the outcomes and see what potential lessons we can learn from such a program closure and reopening. Your participation in this project is valuable and will comprise the data used in the final thesis report. It is not anticipated that there will be any risk involved in your participation in this case study. One of the benefits of participation in this research is to acknowledge the lesson learned which will assist other health science programs in their decision making process. Additionally, your perspectives will be of great value if they are considering academic program closures

Statement of confidentiality: The data of this study will maintain confidentiality of your name and the contributions you have made to the extent allowed by the law.

I will be the only individual who will have access the raw data. Digital records from the interview will be stored on my personal computer and will be transcribed as soon as possible after the interview. The accuracy of the textual transcriptions will be verified with project participants prior to analysis of data. The transcribed documents will also be stored electronically on my personal computer. All data will be retained until acceptance of my dissertation in completion of the EdD, Doctor of education in educational leadership (post secondary) degree. At this time I will shred all written documents and delete data from my computer.

Participation in this project is voluntary. All potential participants are thanked for considering participating in this research. All participants will retain the right to withdraw

from this research at any time. All data gathered from a departing participant will be destroyed and will not be contained in the research findings.

Interview of employees about their company or agency:

The interview will be conversational in nature and will be relatively unstructured. Throughout the interview, I will also likely ask you to engage in conversation that relates to the topic of this research study. I will ask you to share your personal accounts in story or anecdote form related to the closure and reopening of the Medical Laboratory Science Program at BCIT. Apart from casual note-taking, the interview will also be recorded. I will store digital records and will transcribe them as soon as possible after the interviews. The transcribed documents will also be stored electronically. I will verify the accuracy of the textual transcriptions with case participants before analyzing the data. These notes and digital tape will be securely stored on my personal computer for a period of three years and then destroyed.

Inclusion of names of participants in reports of the study:

If you (or your actions) are referenced in dialogue, discussion or story this reference will remain anonymous in the written text of this study. Your confidentiality as a participant in this study is assured through the use of a pseudonym. Please be informed and note that in research on close-knit communities; sometimes it is impossible to guarantee anonymity: some members of a community are going to deduce the identity of participants, because they know their career history, their employers, etc.

Contact of participants at a future time or use of the data in other studies:

You will also be given the opportunity to see how any material from the interview may be integrated into research publications, and will have the chance to request revisions, deletions and other changes in this context. After the research project and its attendant writing are completed any remaining record of the interview will be destroyed or erased.

I understand that I may withdraw my participation at any time. I also understand that I may register any complaint with the Director of the Office of Research Ethics.

Dr. Hal Weinberg
Director, Office of Research Ethics
Office of Research Ethics
Simon Fraser University
8888 University Drive
Multi-Tenant Facility
Burnaby, B.C. V5A 1S6
hal_weinberg@sfu.ca

I may obtain copies of the results of this study, upon its completion by contacting:

By mail: contact Andy Basi, 4607 Holly Park Wynd, Delta, BC, V4K 4S2 or email : andybasi@telus.net or call mobile: 604.323.3895

I understand the risks and contributions of my participation in this study and agree to participate:

The participant and witness shall fill in this area. Please print legibly

Participant Last Name: Participant First Name:

Participant Contact Information:

Participant Signature (for adults):   Witness (if required by the Office of Research Ethics):

Date (use format MM/DD/YYYY)   Contact at a future time / use of data in other studies

APPENDIX 4:   CODING CATEGORIES

Code Word	Definition
Parent Code :	
AUTOMATION	
BCIT ADMINISTRATION	
BENEFITS OF CLOSURE	
CLINICAL SITES	
CLOSURE	
COMPETENCIES	
COMPLEX	
CONSULTANT	
CSMLS	**Canadian Society for Medical Laboratory Science**
DOWNSIDE TO CLOSING	
ENVIRONMENT	
FACULTY	
GOOD QUOTE TO USE	
LESSONS LEARNED	
NATIONAL CONTEXT	
PATIENT POPULATIONS	
PRIVATE LABS	
RECOMMENDATIONS	
ROBOTICS	
UNIONS	
Parent Code : ADVISORY COMMITTEE	
LAB MANAGERS	
Parent Code : AUTO LAB	
HIGH VOLUME	
Parent Code : BCIT ADMINISTRATION	
ACCREDITATION	
ADVISORY COMMITTEE	
AGENDA	
DATA	
DECISIONS	
MLS CLOSURE	
MLS REOPENING	
Parent Code : BLACK BOX	
JUST IN TIME	
POINT OF CARE	
Parent Code : BUDGET CUTS	
CUTBACKS	
Parent Code : CSMLS	
SUBJECT RT	
Parent Code : DATA	
QUESTIONNAIRE	

Code Word	Definition
Parent Code : ENVIRONMENT	
BUDGET CUTS	
POLITICAL	
RESTRUCTURING	
TECHNOLOGY	
Parent Code : FACULTY	
INSTRUCTORS	
Parent Code : HLAA	
LAYOFFS	
RETRAINING	
Parent Code : HUMAN RESOURCES	
CASUALS	
HLAA	**Healthcare Labour Adjustment Agency**
HUMAN RESOURCES	
RETIRING	
STAFF	
STUDENTS	
Parent Code : INSTRUCTORS	
PRO DEVELOPMENT	
Parent Code : POLICY	
POLICY	
Parent Code : POLITICAL	
MINISTRY	
PLCO	**Provincial Laboratory Coordinating Office**
Parent Code : RESTRUCTURING	
AMALGAMATIONS	
CORE LABS	
DOWNSIZING	
PRESSURE	
SHAUGHNESSY	
SURPLUS TECHS	
TURMOIL	
Parent Code : STUDENTS	
GRADUATES	
PRACTICUM	
Parent Code : TECHNOLOGY	
AUTO LAB	
BLACK BOX	

APPENDIX 5 :   PARTIAL REGIONALIZATION IN BC –
TIMELINE ADAPTED FROM PAUL WEAVER
(WEAVER, 2006)

Date	Event
1990	The Social Credit government of Bill Vander Zalm establishes the *Royal Commission on Healthcare and Costs* (Seaton Commission) to review the provincial healthcare system and make recommendations for its reform.
1991	The Seaton Commission releases its two-volume report on the British Columbia healthcare system, *Closer to Home*. Citing a number of problems, the commission recommends regionalization as a way to improve management and delivery of health services in British Columbia.
Feb, 1993	Minister of Health Elizabeth Cull announces" *New Directions for a Healthy British Columbia*," the ministry's strategic plan for reforming the provincial health system.
1993	Bill 45, Health Authorities Act passes in the provincial legislature, creating the legal framework for regionalization to proceed. The Act outlines the authority of Regional Health Boards (RHB), Community Health Councils (CHC) and Ministry of Health.
Spring 1993	Work begins on the creating of 20 RHB's and 82 CHC's. Ministry coordinates the start of a new funding structure and policies that stipulate the core services and standards for both RHB and CHC's.
July 1996	New Minister of Health, Joy McPhail, announces a temporary hold on the process of regionalization, appointing the Regional Assessment Team to examine the cost-effectiveness of implementation.
October 1996	The Regional Assessment Team presents its findings to Health Minister Joy McPhail, recommending 20 changes to the regional health system.
November 29, 1996	The Health Minister announces the governments' intention to implement a new plan for regionalization in *BC, Better Teamwork, Better Care*.
April 1, 1997	As a partial response to criticism of the Regionalization Assessment Team, the province creates 11 RHB in urban/semi-urban areas, 34 CHC, and 7 Community Health Service Societies in rural areas.
April, 1997	Full responsibility for the management and governance of most health services in British Columbia is transferred to the 52 RHA's.

Date	Event

December, 2001	The BC government announces a new administrative structure for health services, comprising five geographically-based regional health authorities plus the Provincial Health Services Authority (PHSA), which is responsible for specialized, province-wide services.
	
	    Northern Health
	    Interior Health
	    Vancouver Island Health Authority
	    Vancouver Coastal Health
	    Fraser Health
	    Provincial Health Services Authority
	
	This structure, modernized the complicated, confusing and expensive healthcare system by merging the previous 52 regional health authorities into a streamlined governance and management model.

APPENDIX 6: VANCOUVER AREA LABORATORY MANAGERS LETTER TO DR. MILES KILSHAW, CHAIRPERSON OF THE LABORATORY REVIEW COMMITTEE

03/10/93   11:16   R.G.H. LAB   Æ   002

DRAFT

10 March 1993

Dr. Miles F. Kilshaw
Medical Consultant, Hospital Care
Ministry of Health
Parliament Buildings
Victoria, British Columbia
V8V 1X4

Dear Dr. Kilshaw:

I am a member of the Lower Mainland Laboratory Managers group. This membership of this group includes the managers of laboratories from each hospital in the Lower Mainland, as well as associate members from hospitals outside the Lower Mainland. We meet monthly to discuss issues and concerns that are common to all our facilities.

It has recently come to our attention that the Ministry of Health has decided to conduct a review of diagnostic services in this province, and that the task force responsible for this review will be chaired by yourself. We believe that this is a very positive step and one that needs to be taken.

However, we are concerned that input from the day-to-day providers of the diagnostics services is not being solicited. The list of parties outlined in the terms of reference from whom the Review Team can obtain information does not include groups such as the British Columbia Society of Medical Technologists, the Clinical Laboratory Managers Association (B.C. Chapter), and our own Lower Mainland Laboratory Managers.

We feel that we can provide significant insight into the current delivery of diagnostic services as well as recommendations for improving the service. We also feel that input should be solicited from organizations representing the technologists and technicians who are involved in the delivery of those diagnostic services.

APPENDIX 7: NEW BCCH ORGANIZATIONAL STRUCTURE MEMO FROM DIRECTOR OF LABORATORIES

British Columbia's Children's Hospital

INTER-DEPARTMENTAL MEMORANDUM   PATHOLOGY ADMINISTRATION

DATE: June 21, 1993

TO: **ALL LABORATORY STAFF**

FROM: Dr. J.E. Dimmick, Director of Laboratories

RE: <u>A NEW ORGANIZATIONAL DIRECTION FOR THE DEPARTMENT OF PATHOLOGY</u>

As all of you know, the Department of Pathology is in a critical situation, facing a number of external pressures. We have all been effected in some way by the recent budgetary cut-backs. Budget constraints will likely continue in the foreseeable future. With the closure of University Hospital on this site, we are acquiring its DNA Laboratory. We will be providing the Laboratory Services for the Women's Centre and any other patient services left on-site. The Ministry of Health Task Force reviewing the provision of diagnostic services in the province will be making its recommendations to the Ministry this summer. From those recommendations we will likely see changes in the funding structure and other aspects of laboratory services within the next few years. In addition, technology continues to develop in a number of directions. Manual laboratory methods are continually being automated. DNA techniques for diagnostic services are expanding. Instruments for point of service testing are becoming available and demands for their use will increase.

It is essential that we have an organizational structure which will allow us to survive, and even to prosper in this sort of an environment, since laboratory services will still be needed as an essential aspect of health care. Attached is a document outlining the new organizational direction for our department. This structure is based on functional alignments with a centralization of routine automated laboratory procedures. The details have not been worked out and will need to be done with the help and advice of all staff. Your commitment will be needed in order to effect these changes successfully.

Please review the attached material. I am sure there will be questions, which can be raised and discussed over the next few weeks.

JED\DSH:tl

- Human Resources support

- re-computerization

- exploration of, and acquisition of new generation instrumentation

- space/remodelling

Sequencing

1. Concept proposal to Program Heads - Modification/Acceptance

2. Concept presentation to Administration

3. Involvement of Human Resources

4. Involvement of Head Technologists

5. Merged Program Heads and Head Technologists undertake reorganization

6. Augmentation of reorganized Automated Production Laboratory

7. Commence investigation of enhanced patient focus testing

8. Renew goals and objectives

9. Review function of new organization structure

Budgetary Implications

If fully realized, the re-organizationed structure will result in a reduction from 9 programs to 5, the reduction from 10 Head Technologists to 5, and a reduction from 7 Program Heads to 4 Program Heads plus the Director overseeing the automated production laboratory with professional staff input from especially Haematology and Biochemistry. There will be a reduction in Assistant Head Technologists, Grade V and a probable reduction in Supervisory Technologists at the Grade III level. The latter changes are highly dependent upon the organizational structure of the merged programs, and at this point one cannot predict with accuracy the final number. The entire process of realignment, of course, is dependent on the Human Resources Department support particularly as it relates to terminations, early retirements, re-positioning of individuals, possibly retraining, and union-hospital interactions.
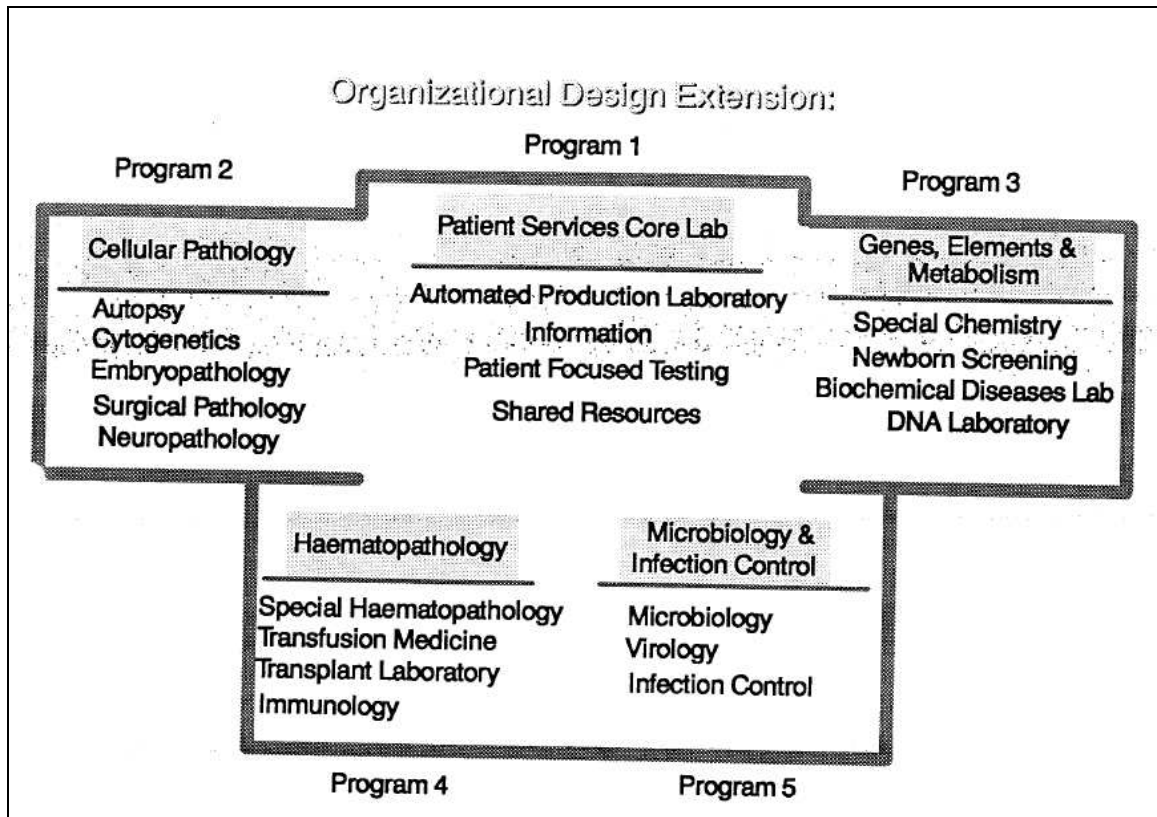
- D R A F T -

Timing

The planning for the reorganization must begin now. April 1, 1994 is the target date for the cost centres and budgets to be realigned. Staffing changes may take place before or after this date as required by the existing circumstance, and as opportunities arise.

Conclusion

The proposed design extension is built upon the initial concept of a central automated laboratory with peripheral complex, professional intensive laboratories. The realignment is based on present and future functional/technological considerations and is driven by site transition impacts and budget reductions.

Organizational Design Extension:

Program 1

Program 2

Program 3

Patient Services Core Lab

Automated Production Laboratory
Information
Patient Focused Testing
Shared Resources

Cellular Pathology

Autopsy
Cytogenetics
Embryopathology
Surgical Pathology
Neuropathology

Genes, Elements & Metabolism

Special Chemistry
Newborn Screening
Biochemical Diseases Lab
DNA Laboratory

Haematopathology

Special Haematopathology
Transfusion Medicine
Transplant Laboratory
Immunology

Microbiology & Infection Control

Microbiology
Virology
Infection Control

Program 4

Program 5

236

DRAFT

DEPARTMENT OF PATHOLOGY - EVOLUTIONARY DESIGN

Goal

To extend the original design concept of the laboratory according to present and developing functional alignments and technologies.

Motivating Sources

It is appropriate to address the laboratory design in view of the closure of Shaughnessy Hospital with its impact on our laboratory, especially with the acquisition and incorporation of the DNA Diagnostic Laboratory. Additional motivating factors are the impending re-computerization, and negative budgetary impacts. The emerging functional changes are driven by technological advances.

Integral Principles

1. To undertake change with the utmost sensitivity to the personnel involved.

2. To enhance efficiency by converting, where possible, to simplified testing, and evaluating tests continually.

3. To augment the policy and practice of peripheral patient focus testing.

4. To continue to augment and introduce appropriate complex tertiary testing as clinically demanded.

5. To merge where functionally possible complex (tertiary care) testing.

6. To augment collaboration and cooperation of complex testing, and the movement of complex to simple.

7. To augment, where possible, the sharing of costly complex instrumentation.

8. To administratively simplify the laboratory.

Prerequisites

- commitment to and participation in extension of laboratory design along functional corridors and instrumentation
- Administration support

APPENDIX 8: ADVERTISEMENTS IN THE EDMONTON JOURNAL AND THE CALGARY HERALD RECRUITING MEDICAL LABORATORY TECHNOLOGISTS FOR VGH CLINICAL LABORATORIES.

careerclick.com
➡ Your Job Search Results

VANCOUVER HOSPITAL

GENERAL MEDICAL LABORATORY TECHNOLOGISTS

Vancouver Hospital & Health Sciences Center, Canada's second-largest multi-site facility, is a major referral, teaching and research hospital. We are offering experienced Medical Lab Technologists, registered with the CSMLT, the chance to work in our dynamic environment.

Exciting opportunities exist within our Pathology & Laboratory Medicine department in a variety of settings such as a rapid response lab, a high-volume core lab and discipline-specific areas.

Please forward your resume as soon as possible to: Human Resources, Vancouver General Hospital, 855 West 12th Avenue, V5Z 1M9; fax:604-875-4761. We regret that only applicants will be acknowledged.

Published: 09/26/98

Friday, October 2, 1998

VGH lab techs query new jobs

Staff Reporter

Vancouver General Hospital is under fire for trying to recruit lab technologists in Alberta a year after eliminating about 70 positions in a major restructuring.

"The employees have gone through hell and back during the restructuring last summer," Cindy Stewart, president of the Health Sciences Association of B.C. which represents lab techs, said last night.

"It's been very, very tough for the last 18 months, and now we find out they are recruiting in Alberta."

Stewart said about a third of the techs employed by the hospital were affected by last year's restructuring.

The Edmonton Journal and Calgary Herald ran ads last week placed by the hospital. The Journal's web site ad says: "Exciting opportunities exist within our Pathology and Laboratory Medicine departments in a variety of settings...."

Stewart said she will ask the health ministry and the Vancouver/Richmond Health Board to investigate.

Hospital officials could not be reached last night.

02/10/98 3:11 PM

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APPENDIX 9:   THE ISSUE OF CASUAL EMPLOYMENT IN THE MEDICAL LABORATORY

THE ISSUE OF CASUAL EMPLOYMENT IN TIIT MEDICAL LABORATORY (Scriabin, 1998)

1.0 THE NEED FOR CASUAL POSITIONS

The diagnostic service provided by the medical laboratory requires an efficient tumaround time. To meet that expectation there has always been a need to replace medical laboratory technologists on sick leave or vacation. Prior to 1993, laboratories rolled some of this relief coverage into permanent positions. For example if a hematology laboratory required 5 permanent hematology technologists, there may have been 6 permanent positions so that there were sufficient people to cover the normal rate of sick leave and vacations in that laboratory for the regular work week. In addition there would be a small casual pool of multi-disciplined technologists to cover additional illnesses or leaves for all of the disciplines and all of the shifts. These casuals would eventually move into regular full-time positions as they became available.

2.0 INCREASE IN SIZE OF THE CASUAL POOL

BCIT has become aware, over the last five years, that the ratio of casual to regular positions available for the MLT Program graduates was changing drastically. The graduates were obtaining fewer and fewer regular positions each year. Further follow-up also indicated that the length of time it takes for the casual technologist to obtain a regular position was increasing significantly.

This issue is a national issue with CSMLS reporting that the number of casuals employed has been increasing in every province.

2.1 Causes of the Increased Casual Pool Size for BC Hospital Laboratories

The increase in the casual pool and the slow transition to regular positions in the BC hospital laboratories appear to be as a result of:

a. An uncertain future.

Regular staff positions that were built in for the purpose of covering sick leave and vacation time have been removed in response to an uncertain future. Laboratory managers have cut back on the number of permanent positions as opportunities presented themselves (e.g. a retirement would not be replaced). As a result of these changes, the present number of regular staff is not sufficient to cover the normal amount of illnesses and vacations that had been covered in the past.

Laboratory managers are concerned that they are facing further budget cuts or in the case of the Vancouver/Richmond Health Region hospitals, that consolidation and centralization within the region will further alter their workforce. Regular positions are protected by the Health Labour Accord for 13 months (one month notice plus one year of secured employment). Casual positions are not protected in any way.

b. Increased sick leave rate.

The rate of sick leave seems to have increased in the large urban laboratories. This is thought to be a consequence of increased pressures and low morale in the laboratory.

c. An older workforce

The number of technologists in the laboratory has not been expanding for several years. This has resulted in an older workforce with vacation entitlement at maximum for most of the regular employees. This causes fairly large staffing fluctuations at various times of the year. Casual employees are used to complement the staff in time periods when staffing numbers are low.

d. An increased flexibility requirement.

The need for flexibility has increased in all hospitals as a result of increased emphasis on 24- hour laboratory service with a faster turn-around time due to the increased acuity in the hospital. The larger hospitals that have undergone laboratory reform and incorporated the core lab structure have indicated that the 24-hour scheduling complications have increased requiring additional flexibility of the workforce. In addition the consolidations and centralizations within a health region require the flexibility of certain technologists working at more than one site.

The flexibility required is available with a casual work force. It is not available within the collective agreement with the regular positions. Although the recent cross training has provided additional flexibility in expertise that did not exist before, the regular positions do not provide sufficient flexibility in the areas of hours, shifts and sites. Regular positions are protected by the collective agreement from quick or significant changes in these areas. Laboratory managers are often faced with having to cover illness or leaves at short notice and this is only possible with a technologist in a casual position.

Apparently further negotiations with HSA are taking place in some hospitals to increase the flexibility associated with regular positions.

A limitation to the flexibility provided by casuals has arisen with several casuals working at more than one site to increase their workload. This causes problems if both sites require the person at the same time.

e. Budget Issue

Casual positions result in some savings although all laboratory managers claim that this is not the reason for the increase in casual positions.

However, difficulties obtaining upper management budget approval for an increase in the total number of regular positions have been encountered because of:

- Other priorities within the hospital;
- An uncertain future for the laboratory.

f. Relation to Size and Type of Laboratory

The increase in the casual pool has occurred mostly within large urban hospitals in the Lower Mainland and to a small extent in the greater Victoria region. Rural hospitals have not undergone as much change and have therefore not had the need to increase their casual pool in the laboratory. They also do not have the same opportunities to increase it because of the limited number of technologists in their area. Technologists in rural areas that need to work full time cannot pick up extra casual hours at another hospital nearby and may, as a result, look for other full-time non laboratory work.

3.0 DISADVANTAGES AND ADVANTAGES OF THE CASUAL POSITION:

To attract and maintain a high quality work force a secure environment with an attractive career path is necessary. Employment security is of equal benefit to employer and employee. Lack of security leads to high turnover and a general drop in morale.

Laboratory managers are aware that the increased use of casual positions is not beneficial to the MLT workforce in the long run. Some hospitals are finding that some casuals lack commitment and loyalty to their laboratory if they do not obtain a regular position within a reasonable time period. As a result, these laboratories have difficulty keeping casuals and are constantly finding they have to present their orientation program to a new employee. This is expensive and time consuming.

Some laboratory managers indicated that they are making an effort to lower the casual pool size by converting casual positions to regular positions in order to build some relief coverage back into the permanent positions. Although in most cases this is a conversion to a part-time regular position, rather than full-time, with an opportunity for the employee to pick up extra casual hours. This appears to be a positive move. The employee receives benefits and an improved sense of security. The employer receives commitment and still bas some flexibility.

On the positive side, there are some laboratory technologists who prefer the freedom to choose when they will work and how many hours they will work. The casual position gives the employee control over their workload and work schedule that is otherwise not available.

A few hospitals report that they have a stable casual pool that they can count on.

4.0 CONCLUSIONS AND IMPLICATIONS FOR BCIT

Casual positions will always be necessary in both the public and private clinical laboratory sector because of the flexibility it provides and the nature of the work. A reasonable size pool of casuals has existed in the past and will exist again in the future although probably slightly larger in size. This is not a concern if regular positions become available within a reasonable time period for those technologists in the pool that seek security. In addition, a small number of technologists prefer the flexibility a casual position provides allowing them more control over their workload and work schedule than is available in a regular position.

What has been a concern is the increase in the size of the casual pool over the last five years, the lack of regular positions for new graduates and the length of time it takes for the technologists in the casual pool to obtain a regular position.

The present large casual pool appears to be necessary in the larger urban hospital laboratories for the new restructured laboratory. Regular positions do not provide sufficient flexibility to cover vacation and sick days on a 24-hour basis and do not allow enough movement between various sites. In addition, the uncertain future (the possibility of continuing laboratory reform) combined with the 13-month employment security period provided by BC's Labour Accord discourages the establishment of regular positions.

Since laboratory managers are becoming aware that large casual pools are a disadvantage to both the employee and the employer, attempts are being made to decrease the casual pool size. A significant decrease will not occur, however, until:

- changes are made to the collective agreement that will allow more flexibility in the deployment of regular positions;
- Major laboratory reform has come to an end. The laboratory environment needs to stabilize before managers will feel comfortable incorporating coverage relief time back into the regular (permanent) workforce especially since regular employees have a 13-month employment security period.

Although the survey indicates that regular full-time positions will become vacant over the next three to four years, these positions will be filled by laboratory technologists from the home institutions casual pool whenever possible. BCIT's new graduates will therefore be filling the casual position vacancies that result from this shift.

Although it is unfortunate that the demand will be mostly for casual employees, this does not release BCIT from the responsibility to respond to BC's market needs. The clinical laboratories require a competent workforce to meet the needs of the healthcare system. If the appropriate workforce is not available patient care will suffer the consequences.

If and when the laboratory environment stabilizes, a decrease in the size of the casual pool can be expected and regular positions will again become available for BCIT's graduates.

Although laboratory reform has had a negative effect on the morale of the workforce, the medical laboratory environment can and will re-establish an appropriate atmosphere for maintaining an interested, challenged, committed, and satisfied professional work force. It will, however, require time for the technologists to adjust to the changes that have taken place, to come to terms with the new challenges, to regain some confidence through professional development and training and to have a sense of security and self worth. Everyone in the medical laboratory community (especially laboratory managers, BCSMT, and CSMLS) needs to work towards re-establishing medical laboratory technology as a career rather than just a job and BCIT needs to take part in that endeavour.

APPENDIX 10: THE MEDICAL LABORATORY EMPLOYMENT QUESTIONNAIRE /SURVEY

MEDICAL LABORATORY EMPLOYMENT SURVEY RESULT SUMMARY
January 1996

Survey was mailed to 112 laboratories in total. 88 laboratories responded (78%). The purpose of the survey was to project the need for medical laboratory technology graduates in BC until the year 2000. The summary of results to this survey, performed by C.V. Marketing Research company, are:

		Year	No. of MLTs in FTE
Question 1			
How many FTE of Registered Medical Laboratory Technologists work in your laboratory?			
	Total	1995	1731
Question 2			
How many technologists in total do you anticipate being employed in your laboratory?			
		1996	1566
		1997	1509
		1998	1484
		1999	1475
		2000	1456
	Total		- 275
Question 3			
How many of your present technologists would you anticipate being replaced for any reason in the next 3 years?			
	Total	1995 to 1998	85.8
Question 4			
How many newly graduated technologists would you expect to hire?			
		1996	0
		1997	4
		1998	8
		1999	7.5
		2000	11.5
	Total		31

1996mltsurvey.doc

APPENDIX 11:   BCIT MEDICAL LABORATORY TECHNOLOGY HUMAN RESOURCE SURVEY SEPTEMBER 1998 COVERING LETTER AND SURVEY FORM

BCIT

BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY
3700 Willingdon Avenue
Burnaby, British Columbia
Canada V5G 3H2
Tel. (604) 434-5734

18 September, 1998

Name
Title/Location
Address
City
P. Code

Dear (Lab Manager Name)

Re: MEDICAL LABORATORY HUMAN RESOURCE SURVEY

BCIT is planning to open the new Medical Laboratory Technology (MLT) program in September of 1999. The first graduates from this program would emerge into B.C.'s labour market in the year 2001 or later. As a result, BCIT is attempting to identify the MLT human resource needs for B.C. for the time period 2000 to 2002. This data is required to make decisions on enrolment numbers for the new program.

In addition BCIT is seeking confirmation for an industry-expressed need for medical laboratory technologists in the immediate future (i.e. 1998 to 2000). If an immediate need is indicated in the survey data then BCIT will consider delivering an accelerated MLT training program to previously trained MLT's who presently do not have appropriate skills for employment.

Please complete the attached survey by September 28, 1998 and fax it to BCIT at (604) 432-1816 using the fax cover sheet provided.

Thank you very much for your assistance. Your participation will enable us to make more appropriate decisions regarding MLT human resource needs.

Yours truly,

Jannie Scriabin, M.Sc., A.R.T.
Associate Dean, Diagnostic Technologies

JS/m

c: K. Nicolson

BCIT MEDICAL LABORATORY HUMAN RESOURCE SURVEY

Laboratory_____

Contact Person_____

Telephone:_____ Fax:_____

1. Indicate how many vacancies currently exist in your laboratory in the areas listed.

Chart A. (as of Sept. 15)

	1998		
	Total Regular Positions in FTE	Total Temporary Positions in FTE	Total Casual Positions in FTE
Multi-discipline technologist✶			
Hematology			
Clinical Chemistry			
Blood transfusion services (BTS)			
Microbiology			
Anatomical Pathology			
Other (specify areas)_____			

✶ hem., clin. chem., BTS & limited microbiology

2. Estimate,[1] to the best of your ability, how many vacancies will occur in your laboratory for each of the next four years in the areas listed (due to e.g. retirements, planned expansion, new technology, etc.)

Chart B.

	1999			2000		
	Total Regular Positions in FTE	Total Temporary Positions in FTE	Total Casual Positions in FTE	Total Regular Positions in FTE	Total Temporary Positions in FTE	Total Casual Positions in FTE
Multi-discipline technologist						
Hematology						
Clinical Chemistry						
Blood transfusion services (BTS)						
Microbiology						
Anatomical Pathology						
Other (specify areas)_____						

---

[1] Base your estimate of casual vacancies on the total number of casual FTE used during 1997 (i.e. previous year's casual utilization) and the size of your present casual pool.

2. continued

	2001				2002		
	Total Regular Positions in FTE	Total Temporary Positions in FTE	Total Casual Positions in FTE		Total Regular Positions in FTE	Total Temporary Positions in FTE	Total Casual Positions in FTE
Multi-discipline technologist							
Hematology							
Clinical Chemistry							
Blood transfusion services (BTS)							
Microbiology							
Anatomical Pathology							
Other (specify areas)							

3. Indicate any anticipated decreases in the number of positions in your laboratory over the next two years in the areas listed (as a result of e.g. consolidation, restructuring, automation, etc.)

Chart C.

	1999				2000		
	Total Regular Positions in FTE	Total Temporary Positions in FTE	Total Casual Positions in FTE		Total Regular Positions in FTE	Total Temporary Positions in FTE	Total Casual Positions in FTE
Multi-discipline technologist							
Hematology							
Clinical Chemistry							
Blood transfusion services (BTS)							
Microbiology							
Anatomical Pathology							
Other (specify areas)							

All information provided will remain confidential. Only survey totals will be used for planning MLT training at BCIT.

Thank you for assisting in the planning of the new MLT program.

Please fax to Health Sciences, BCIT by September 30th, 1998, using the fax cover sheet provided.

APPENDIX 12:   1999 MEDICAL LABORATORY
SCIENCE PROGRAM PROPOSAL

HEALTH SCIENCES   *BCIT*

Proposal for Medical Laboratory Science Program
1999

Credential:

Graduates of this program will earn a Diploma of Technology in Medical Laboratory Science.

Purpose and Benefits:

To address the need of industry for skilled medical laboratory technologists, a competency based full-time Medical Laboratory Science Diploma Program is proposed to be delivered beginning in the fall of 1999. The newly revised curriculum will prepare graduates capable of assuming the role of a medical laboratory technologist in a variety of settings throughout British Columbia and Canada. This will be the only Medical Laboratory Science (MLS) program within the province, and the only competency-based MLS program in Canada.

The restructuring of medical laboratories in industry has created a move away from the five traditional medical laboratory specialties toward a "core laboratory" concept, where workers require a broader range of skills than in individual specialties. The new program focuses on the capabilities and competencies required of entry to practice level workers for these restructured laboratories. Graduates of this program will demonstrate competence as required by the Canadian Society of Medical Laboratory Science for certification. Certification as a medical laboratory technologist is nationally recognized and is a requirement for employment in most Canadian medical laboratories. Certified graduates will seek work primarily in hospital or private clinical laboratories. Opportunities for employment as medical laboratory technologists also exist with the Canadian Blood Services, B.C. Laboratory Centre for Disease Control and other public health laboratories, veterinary and industrial laboratories, clinical research laboratories, pharmaceutical and biological supply houses, and commercial companies in sales, research and product development.

Delivery:

The program will be offered in a modularized delivery format, as appropriate, to provide a flexible, accessible, and learner-focused program to meet diversified student needs. Initially, a traditional classroom-based delivery model will be used that builds in competency-based curricular approaches such as problem-based learning, cooperative learning, and application activities. Ultimately the program will move toward alternative delivery formats (computer-managed learning, computer-assisted instruction, computer-based training, and internet-assisted learning) for some of the modules. Use of these alternative delivery formats will be of particular importance in assisting student learning during the clinical phases of the program, especially during the final concentrated clinical phase, when students may be in clinical laboratories throughout the province.

Consultations:

Medical Laboratory Science program previously existed at BCIT as the Medical Laboratory Technology program. The competency-based Medical Laboratory program is designed and based on competencies determined in 1998 by the national certification organization, the Canadian Society of Medical Laboratory Science (CSMLS), and the BCIT medical laboratory industry-based competencies established in consultation with the medical laboratory community.

Research by BCIT's medical laboratory program in consultation with industry shows that the following general areas of competence will be particularly suited to meet the needs of the BC medical laboratory industries - the ability to: adapt to change, work effectively in teams, communicate effectively, use safe work practices, perform work with an awareness of cost, use computers for all type of laboratory work and to manage information, practice risk management, manage projects, apply research skills, manage new and existing technology, maintain a global perspective with regard to both diversity and health care delivery systems, enhance personal skills, continue own professional education, and think critically.

Labour Market Demand:

The BC medical laboratory employment market was investigated through a process of interviews and a paper based provincial survey in mid 1998. In addition a quick scan of the Canadian market was performed because BC was traditionally an importer of a significant number of medical laboratory technologists from the rest of Canada (approximately 50%).

The 1998 provincial Medical Laboratory Human Resource Survey provided strong evidence of a shortage of medical laboratory technologists in BC. There were approximately 30 vacant regular positions at the time of the survey and an estimated 60 to 70 regular positions will become vacant annually from 1999 to the year 2002.

- Although some downsizing and consolidation of medical laboratories has taken place in the province, very few of the displaced technologists have been seconded to a comparable position in another laboratory.
- Instead BC has experienced a significant loss of valuable human resources and expertise from the medical laboratory workforce as a result of early retirements and career shifts. It is unlikely that the technologists who have left can be lured back into the profession.
- BC can no longer rely on the importation of technologists from the rest of Canada. Canadian MLT programs have reduced enrolment by 78% in the past five years. Other provinces are barely training sufficient technologists to meet their own needs.

Since the investigation, the shortage of medical laboratory technologists has been increasing. In March of 1999, an extensive representation of members from BC's medical laboratory community prepared a resolution indicating "great concern with the present and rapidly worsening serious shortage of medical laboratory technologists in the province and the disappearance of the usual sources of replacement technologists". This resolution was forwarded to the Ministry of Health, the Ministry of Advanced Education and BCIT.

(Nicolson, 1998)

APPENDIX 13: MEMO TO HEALTH AUTHORITIES - AUGUST 2009 RE: LOWER MAINLAND CONSOLIDATION OPPORTUNITIES

Date: August 17, 2009

To: All staff within Fraser Health, Providence Health Care, Provincial Health Services Authority and Vancouver Coastal Health

From Dr. Nigel Murray, President and CEO, Fraser Health
Dianne Doyle, President and CEO, Providence Health Care
Lynda Cranston, President and CEO, PHSA
Dr. David Ostrow, President and CEO, Vancouver Coastal Health

Re: Lower Mainland Consolidation Opportunities

As you know, all of our organizations are facing the challenge of delivering services within the resources that are available. In spite of significant funding increases over the last few years, demand continues to grow. Our number one priority is to protect the quality and accessibility of our core clinical services. Efficiencies in non-clinical areas must be looked for before we consider reducing essential patient care services.

The geographic proximity of the three lower mainland health authorities presents the opportunity to look for efficiencies within departments that are common across our four organizations as a way of finding additional money that can be used for clinical care. For this reason, we are looking at a number of corporate, back office and support service consolidations across the lower mainland. Some very successful work has already been done both within and across our organizations – including consolidated services and initiatives such as integrated support service contracts, security, and a common pharmacy formulary.

Going forward, virtually every non-clinical service will be looked at as a potential consolidation opportunity. At the end of this memo is a preliminary list of departments that will be looked at for consolidation. The second chart shows those departments where initial decisions have been made and discussions will begin immediately. Each of the health authorities will be assigned responsibility for managing the planning, implementation and delivery of specific services.

By continuing to reduce duplication or triplication (of effort, structures and systems) savings can be realized from a variety of sources. In addition to reducing the overall number of positions, these might include standardization of workflow, a reduction in space and facilities, consolidation of technology, shared licenses and the elimination of redundant processes. Consolidation of three or four departments into a single, central service also has the potential to create a pool of staff with a wide range of skills and expertise. This will increase a consolidated department's flexibility to deploy staff and reduce the need for external consultants.

We know that this will be a difficult message for people in these departments. Some of you have already been part of the Fraser Health – Vancouver Coastal Health integration initiatives and will now become part of broader consolidation discussions. For others, the idea of consolidating across the lower mainland will be totally new. Many of you will have questions about what this means for you.

While it is too early in the process to determine what the impact will be on individuals who work in any of the consolidated departments, we do know that the overall number of positions within these departments will be reduced. Until the service delivery model and staffing requirements are finalized, we will not know how many staff will be affected. Employees will be treated with respect

throughout the process and will receive information as soon as possible. Health authorities will, of course, follow the terms and conditions of existing contracts and legislation.

If a department is identified to be consolidated, the lead health authority will develop communication processes to keep all employees in that service across all of the health authorities informed about the plan and implementation steps. This will ensure that all employees within a service receive timely and accurate information at the same time. We will also produce regular updates for everyone who works within our organizations.

We believe that we must look for opportunities to save money within non-clinical areas if we are to protect clinical services and contribute to the sustainability of our health care system. Thank you for your ongoing commitment and contribution to all of our organizations as we undertake this work.

List of potential consolidated services:

Human Resources Management	FOI, Privacy & Legal Services
Financial Services	Patient Care Quality Office
Communications	Interpreter Services
IM/IT	Health Records
Facilities Management	Portering
Environmental Management	Transcription
Security and Parking	Switchboard
Emergency Planning	Project Management
Business Initiatives	Pharmacy
Patient Transport	Laboratory Services
Biomedical Engineering	Diagnostic Imaging
Sterile Processing	Housekeeping
Risk Management	Food
	Laundry

Initial Decisions:

1. Housekeeping, Food, Laundry, Business Initiatives	FH / VCH already consolidating	PHSA and PHC will onboard	VCH Lead
2. Facilities Management, Environmental Management, Security, Parking	FH / VCH already consolidating	PHSA and PHC will onboard	FH Lead
3. Diagnostic Imaging	FH / VCH already consolidating	PHSA and PHC will onboard	VCH Lead
4. Patient Transport	FH / VCH consolidation	PHSA and PHC will onboard	VCH Lead
5. Interpretation Services	PHSA / VCH consolidation	FHA will onboard	PHSA Lead
6. Pharmacy	Plans underway for common formulary		FHA Lead
7. Laboratory Services	Discussions underway FHA/PHC/PHSA/VCH		PHSA Lead
8. Health Records, Transcription	Discussions underway FHA/PHC/PHSA/VCH		PHC-VCH Lead

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