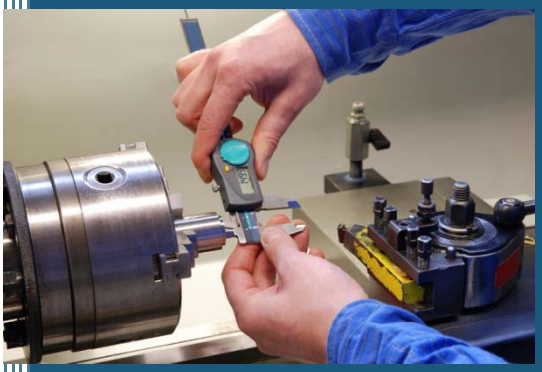
2009

Articulation Project – Year End Report



Special Projects

NAIT

7/1/2009

Preface

As a requirement of the Government of Alberta grant requirements, a yearend report has been generated to outline the curriculum development and progress of the project for the NAIT financial year, July 1, 2008 to June 30, 2009. This report includes research that has taken place, budget records, and other information related to the development of the project. This is the first of the year end reports with four more years remaining in the project.

Distribution List

Advanced Education

NAIT – Provost's Office

NAIT – Dean, School of Applied Building Science

NAIT – Special Projects

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1.1.1. Executive Summary

This articulation project is based on a five year Government of Alberta Innovative Fund grant. The project is to collaborate on the development of curriculum with secondary schools and a post secondary institution in the Career and Technology Studies. A major aspect of this five year program is the tracking of students from their secondary school experiences through to the end of their post secondary experience. The project will also be looking at a pan provincial model while developing this material. The outcome would allow students pathways into Post Secondary Institutions or careers.

The project started in July 2008 with the appointment of the Project Manager to the project. The financial records and accounts for the project were started July 1st to coincide with the NAIT financial year. The project moved forward in earnest starting September 1, 2008. Several meetings were arranged to make the link with Edmonton Public Schools (EPS) and NAIT to align the project goals, vision, and direction. EPS has decided to look at this project delivery through a Skill Centre Approach.

Three major programs will be addressed within the Skill Centre, located in the Amiskwaciy Academy: Aviation, Culinary Arts and Manufacturing & Materials. The approach looks at the post secondary curriculum and develops a process to integrate some of the concepts and skills into the secondary school Career Technology Education (CTE) programs. Within the current Alberta Curriculum there is no specific subject or content that may fit exclusively to the planned programming being developed. A career pathway has been created to use selective Career and Technologies Studies (CTS) Modules in the delivery of the new program, in particular Aviation.

1.1.2. Timeline

The program has had a six month delay in the implementation; however, it is expected that the NAIT development and the delivery of the programs in the Skill Centre will meet the target dates established in the original project document. Because of the delay of the overall project, some milestones will be altered to align with the overall project process and recording but at the present the target dates are still realistic.

Two programs that will be operational for the start of the 2009/2010 academic year will be the Aviation Maintenance Orientation Program (AMOP) and the Culinary Arts program. In February 2010 the Manufacturing and Material program will be implemented at the Skill Centre.

1.1.3. Communication

There has been ongoing communication with the two main stakeholders, EPS and NAIT. Bi-monthly meetings are held with the EPS representative to insure the key stages and timelines are noted and addressed. Monthly meetings are held with the Dean of the School of Applied Building Science to inform him of the developments and progress of the project.

1.1.4. NAIT Program Contacts

To date, twenty-eight programs (see Appendix 4 for list of programs) have been contacted regarding the Skills Centre Approach. All contacts have provided positive comments about the overall project and their potential involvement. Through the support of Associate Deans and Program Chairs, instructors have been identified to be content experts in developing material to be used within the high school setting.

1.1.5. Project Staff

Starting September 1st, the project required a research consultant and a curriculum developer. In the best interest of the project, an individual was hired to look after both research and curriculum. Shortly thereafter an Administrative Support was hired to look after the general office duties.

Outside of the three office staff, twelve individuals will be providing support from curriculum development to support services, such as editing and graphic design.

1.1.6. Curriculum Development

In developing the curriculum, assessment is made related to how the program will be delivered in a secondary school environment. A post secondary program is identified and a rough curriculum outline is based on the recommended post secondary outcomes and the outcomes needed for the secondary system. The Skill Centre Approach looks at the post secondary entrance requirements and then the curriculum is developed within the secondary delivery. This is referred to as the Skill Centre Approach.

The curriculum material being tracked in a one page format found in Appendix 5. This chart looks at the three main focuses related to the Skill Centre. As more courses are developed within the Skill Centre Approach, subsequent tracking will be presented. Edmonton Public Schools would like to look at two more initiatives, Health Sciences and Business within the NAIT environment.

1.1.7. Main Focus

Three main areas have been addressed in the initial phase of the curriculum development: Aviation, Culinary Arts and Manufacturing & Materials. Aviation has incorporated several key areas into the secondary program: avionics (electronics), air frame repair within wood and metal, aircraft engine repair and general aviation knowledge. From these basic skill outcomes, students could look at other potential post secondary programs such as: Carpentry, Sheet Metal, Electrical Technology, Electronics, and Millwork & Carpentry. In Culinary Arts the curriculum will be developed in alignment with the Cooking Apprenticeship program offered by Advanced Education. There are additional synergies from this high school program into Meat Cutting, Baking, and Hospitality. Manufacturing & Materials curriculum crossovers into many areas and post secondary programs however Robotics, AutoCAD, CNC Milling are a few of the areas being developed. Other potential post secondary programs that could benefit from this high school programming are Millwright, Machinists and Mechanical Engineering.

1.1.8. Others Programs for Consideration

There are other programs of studies also being considered such as: Architectural Technology, Graphic Sign Arts, Millwork & Carpentry, Radio & Television Arts, Digital Photography and Digital Media Design. Most of the programs offered in post secondary have related linkages to secondary CTS courses currently offered. NAIT's business courses will also be considered as the project develops over the next year. Health Professional courses are also provided at the Skill Centre and articulation linkages with NAIT are being investigated through the Skill Centre Approach.

1.1.9. Training

Key initial steps have been taken in the development of teacher training during the first year of the project with the knowledge of future expansion. Over the next two years, skill specific training will move forward quickly given the establishment of key directives aligned to the Skill Centre approach as articulated by EPS and NAIT. The project has already initiated training for teachers through the Summer Institute being delivered by the Continuing Education Department at NAIT. Several EPS teachers are

registered in the basic Construction Technology course and Foods course held during the second week in July. The primary intent is to provide basic skill and content training in these two respective areas.

NAIT was also heavily involved with the in-service day held in January 2009 for the Edmonton Public and Edmonton Separate School systems. NAIT provided information sessions representing thirteen program areas to CTS teachers from both districts.

1.1.10. Budget

Based on the grant's budget, the following information (Appendix 1) is submitted reflecting the finances related to the project. These figures are as of June 30, 2009. Included in this budget are dedicated funds that will be addressed at the fiscal year end, June 30. Not included are the office staff salaries which have yet to be deducted.

There will be a carryover of approximately of $359,000 into next year's operating budget. As the project evolves—and programs, projects, and curriculum are identified—the carry over funds and the next year's grant will be depleted.

1.1.11. Research

A major component of this project is the research component. Initial project research has been conducted to identify similar programs throughout the world having a comparable flavour of delivery. The research determined that seven other programs are operating in various levels of complexity. The next phase of the research will revolve around the pre-delivery questions to a selective student and identified participants. At the conclusion of each semester, a survey will be conducted of these participants and their experiences as they relate to the Skill Centre Approach model. This will continue through a number of cycles represented over three years. Additional research will also be completed as the students' progress into post secondary education. An exit survey will be completed once the students have their five years of education. This will be part of the overall project summary and research with the student and stakeholders input. Additional research information is available in Appendix 2.

1.1.12. Summary

Although the project started late, the structure and resources are in place to meet the mandate of the grant and its objective. With the communication and the collaboration of Edmonton Public Schools we can meet the target delivery and research components. Regrettably there will be a carry over of funds into the next budget year but the project feels that this will be utilized in the succeeding months as the programs and curriculum are identified to meet the secondary requirements.

Brian Andrus
Project Manager
Special Projects
NAIT

Appendix 1

AS OF PRINT DATE – THE BUDGET HAS NOT BEEN AUDITED

Appendix 2

Skill Centre Research Overview

Research Overview

1. **The goal of the research has been established and articulated in a formal and thorough proposal.**

   It has been established that the research will investigate the partnership and collaboration efforts of the Edmonton Public School Board and NAIT as they seek to fulfill the Government Commissions on Learning Report 2003 to improve student diploma completion rates, seamless entry into higher education and increase program retention rates for Alberta students.

2. **The research will also examine the implementation of an action plan called the *Skill Centre Approach* EPSB and NAIT.**

   This approach has been created to identify, and establish innovative pathways for students to find success in applying CTS strand skill development to actual hands-on authentic career orientated experiences.

3. **A formal research design has been established in the proposal. The design reflects an extensive examination of present literature in the field, as well as, current goals established by the province in its Business Plan and 2003 Commission on Learning Report.**

   It will critically examine the approach by using a longitudinal research design that will highlight the successes, challenges and lessons learned from stakeholders and make recommendations for developing an Alberta model for successful delivery of CTS courses in the province.

4. **An Alberta first, Skill Centre Research Approach has been specifically developed** to provide a solid research-based framework to establish a workable model for the evaluation, implementation, growth, and sustainability of current and future K – 12 system Career and Technology training in the province.

5. **The Research Approach and Design is unique in that it is specifically designed to encourage students to consider numerous career options including technical and/or trades education career pathways**.

   Such considerations are being implemented early in their education and it will reflect the efforts of community stakeholders who have a vested interest in the preparation of future technicians for industry, business, and other professional career considerations. The research will inform stakeholders and establish workable links to current CTS course content to current programs offered at higher academic institutions like NAIT. The Edmonton Public School will use findings from the research to establish a program that is founded on authentic, *real life* career and life experience principles. *The course objectives are relevant, motivational, and reflective of career pathways.*

   - By establishing such objectives it is hoped that students will remain in school to complete grade 12 diploma requirements and continue on after grade 12—without a delay, to higher education centres to complete further studies.

   - It is also hoped that the approach will observe students entering Higher Education institutions from the Skill Centre program better prepared to know what career they want to pursue, and to be better equipped and dedicated in completing their higher education programs. This would build

sustainability into current programming by increasing program retention numbers. The research model will evaluate this action and propose further recommendations for improvements in practice.

6. **The Research project has completed the preparation for all survey, questionnaire, and participant materials** to examine the Skill Centre Approach as it is implemented by the Skill Centre Program, which will be delivered at the EPSB Skill Centre—the old City Centre Airport Building. The research project will track students from their first year of entering the program through to post secondary programs.

7. **Research Surveys and other research related Materials have been created to follow the evaluation over a five-year period.** This longitudinal aspect of the study makes this research project unique in the province. The study also hopes to incorporate Aboriginal students from the Amiskwaciy program—Members of the EnCana Centre at NAIT look forward to supporting this initiative and taking part in the research in order to become more effective in further programming at the centre.

8. **A thorough research review of literature has been completed,** and will continue throughout the entire 5 year research implementation. Periodic research updates, as well as, publications for peer related journals will be carried out throughout the study. The intent is to keep the work current, and substantially contribute to the field over the next five years. Starting with information gathered from the original grant proposal to current research in the field in regards to K – 12 to Post Secondary student transition.

   The literature review substantiates current strategies in Career and Technology instruction in the field and provides how other constituencies have validated the work using research to better understand the strategies they have endeavoured to implement. The literature also provides a context for the study from the view of the Alberta government. It substantiates the goals and direction that the province wants in terms of further development of programming for students in the provinces.

9. **The research design has established the use of a number of research methodologies to increase validity**. The methodologies employed include longitudinal case studies, statistical surveys, and components of action-research. Action research is driven by grass-root involvement—it substantiates and extracts recommendations from those directly involved in the planning, implementation and teaching of the program. This makes it “action” authentic and current practice establishes relevancy.

   Incorporated into these three major methodologies will be data collected from statistical analysis, survey and questionnaires, narratives, and reflective practice materials. The research will provide for individual input, as well as, input gained from collaborative settings where stakeholders can provide input through active learning cohorts.

10. NAIT’s Statistical Research as well as EPSB has also been asked to provide pertinent data and related information to support the findings of the research.

11. The central focus of the study begins with the unfolding of three key questions:

Does the Skill Centre Approach initiated by the Edmonton School System and NAIT improve high school completion rates as well as Higher Education retention rates for NAIT students entering programs associated with the Skill Centre Program?

Does the Skill Centre Approach provide a workable process for developing a Pan Provincial model to improve seamless transitions between K-12 educational system and students pursuing Post Secondary Educational Institutions in the Province of Alberta?

What successes, challenges and lessons are identified from the study by stakeholders for implementing improvements for students by establishing the following key Provincial objectives?

- **A learner-centred Society**
- **Vibrant Learning Communities**
- **Global leadership in a knowledge-driven economy and society**
- **Innovation and Excellence through learning**
- **Seamless advanced learning for all Albertans**
- **Strategic advancement of learning opportunities**

Time Line of Research

✓ | x **Completion**	**Event**	**Time Line**
✓	Proposal Submitted for Grant Funding--Approved	April 2008
	Research Consultant Lead (Secondment)	November 2008
✓	Proposal Review—Articulation of Questions	November 2008
✓	Literature Review—Alberta Education and Advanced Education Documentation	November/December 2008
✓	Literature Review—National and International Studies	December 2008/January 2009
✓	Literature Review Findings open report	January 2009
✓	Rationale for Proposal Developed—stakeholder feedback, present literature, original proposal,	January/February 2009

	alignment to NAIT's Business and Academic Plans; alignment to EPSB policies and directives; Directives established by Advanced Education, Alberta Learning and Government of Alberta Business Plan	
✓	Research Methodology—Literature Review. Developed with Consultation of Stakeholders—required focus of research—Participants identified.	March 2009
✓	Research Methodology Proposed—Shared with EPSB/NAIT/Deans of Institution/NAIT's Institutional Research/	April 2009
✓	Research Validity Examined/Vetted by PhD at NAIT	April/May 2009
✓	Research Chapter 1—Draft 1—Coming to the question	April 2009
✓	Research Abstracts—Drafts 1, 2, 3	April 009
✓	Research Methodology—Draft 1	May 2009
✓	Research Design Diagram of Models Created—Draft 2	May 2009
✓	Research Proposal—Drafts 1 – 9 Completed	May 2009
✓	Questionnaires Created—Drafts 1, 2, 3	May 2009
✓	• Research Orientation Materials—Drafts 1, 2 • Participants—teachers, administrators, students, parents, industry leaders, and researcher • Three different approaches provided • Longitudinal research plans • Pre-Post time frame examined	May/June 2009 May/June 2009
✓	Biographical materials surveys created—Draft 1	June 2009
✓	Narrative data assessment created—Draft 1	June 2009
✓	**Overview of Research Report**	June 2009
X	Administrator articulation data reports	July/August 2009
X	Preparation for Data verification—neutrality, logistics, ethical considerations, etc.	July 2009
X	Time Table for Research established	July 2009
X	Final Proposal—Pre-launching of research	July 2009

X	Final Questionnaires/ Participation	
X	Research Surveys Prepared for EPSB	
X	Ethical Research Considerations Completed—NAIT and EPSB—Professional Research Considerations Discussions and Report	July/August 2009
X	On-line, distribution and logistical considerations completed for carrying out Phase I of research—preliminary study. September 2009	August 2009
X	Research open forum discussions—EPSB staff, students, parents, and other stakeholders	September 2009
X	Pre-materials and Post materials handed out to students	Early September 2009
X	Surveys handed out—pre-course	Late September 2009
X	Surveys/interviews/ begin 1st round of students	October 2009
X	Surveys/interviews/post 1st round of students	Dec. 2009 / January 2010
X	Surveys/ 2nd round of students	January 2010

Appendix 3

Edmonton Public Schools Overview

The development of The Skill Centre has been based on two areas; definition of The Skill Centre Approach and preparation for the delivery of the programs.

The Skill Centre Approach

Collaboration between NAIT and Edmonton Public Schools staff occurred throughout 2008-2009 to develop the building blocks of The Skill Centre Approach. It was determined the four components are the following;

- Description of required tools, equipment and facilities
  NAIT instructors participated with district staff and vendors in determining renovations and purchases required to deliver the program being designed.

- Identification of content required as teacher background
  For Skill Centre courses, industry certifications for teaching positions were identified and are part of the hiring process for teachers for the fall opening. Additionally, practical arts areas of need were identified for summer coursework for teachers at other schools to build capacity for future Skill Centre Approach development. The beginning of this positive partnership was evident at a Professional Development day for CTS teachers in which NAIT staff participated as presenters.

- Teacher implementation guide
  Resource writers at NAIT (including subject experts) developed supporting resources for The Skill Centre teacher.

- Sequence of learning for recognition
  Once coursework was determined, NAIT reviewed the learning in the three-course sequence to determine potential for recognition by a post-secondary institution. Preferred Entry provides the recognition to have coursework as a valuable commodity and permits the students a easier transition to further learning in a wide range of career fields.

Preparation for delivery of program

The Skill Centre determined the areas to be offered with consultation and research performed in cooperation with NAIT and selected the following;

- Aviation Maintenance Orientation Program
- Culinary Arts
- Manufacturing & Materials (Pre-Engineering)

Once selected, the development of marketing materials (including presentations to Grade 10 classes) further defined the programs. Details such as scheduling, busing, fees, etc. were discussed at bi-weekly meetings to ensure increased input to solve identified challenges. An on-line collaboration area was created using Linden Lab's Second Life virtual reality.

Next Steps
Include other areas within The Skill Centre Approach to recognize and formally define existing programs in other high schools.

Appendix 4

GENERAL INFORMATION

A. School or Program Contacts

School	Program
School of Applied Building Science	Aircraft Skin and Structure Repair
	Architectural Technology
	Interior Design Technology
	Landscape Architectural Technology
	Cabinetmaker*
	Carpentry*
	Engineering Design & Drafting
	Graphic Sign Arts
	Millwork & Carpentry
	Sheet Metal Worker
School of Applied Media and Information Technology	Graphic Communication
	Photography Technology
	Radio & Television Arts
JR Shaw School of Business	No Program Identified yet
School of Electrical and Electronic Technology	Avionics Engineering Technology
	Electrician*
	Electronic Engineering Technologies
School of Health Sciences	No Program identified yet
Culinary Arts and Hospitality	Cook*
	Culinary Arts
	Hospitality Management
	Retail Meatcutting
School of Mechanical & Manufacturing Technology	Automotive Service Technician*
	Heavy Duty Mechanic
	Machinist*
	Millwright*
	Shell Manufacturing Centre
Continuing Education	Summer Institute

*Apprenticeship

B. Scheduled Hours Related to Project

Major Category	Hours	%
Meetings - one on one, group	76.25	22.07%
Travel - out of town, within city	187.25	54.20%
Presentations - groups, conferences, schools *see attached	82	23.73%
	345.5	

C. Presentations Related To the Project

Edmonton Public Schools - Board Meeting
Edmonton Public Schools - Breakfast Meeting
NAIT - Dean's Discussion Group
NAIT - Associate Dean's Discussion Group
NAIT - School of Hospitality and Culinary Arts
NAIT - School of Applied Building Science
Alberta CTS Supervisor's Meeting
CTS Annual Conference
NAIT - Millwright
Open House Presentation – Ross Sheppard High School
Open House Presentation – Queen Elizabeth High School
Grade 10 Presentation – Ross Sheppard High School
Grade 10 Presentation – Queen Elizabeth High School

Curriculum Overview

Appendix 5

As of June 30/2009

Appendix 5

Curriculum Overview
Year End
2008-2009

Skill Centre Program	NAIT Related Program		Year 10										Year 11										Year 12										Total Hours	Total Credits
		Area	Topic	Support Station	Teacher Resource	Year Plan, Outline	Work Sheets	Info Sheets	Quizzes	Evaluation	Capstone	Projects	Area	Support Station	Teacher Resource	Year Plan, Outline	Work Sheets	Info Sheets	Quizzes	Capstone	Evaluation	Projects	Area	Support Station	Teacher Resource	Year plan, Outline	Work Sheets	Info Sheets	Quizzes	Capstone	Evaluation	Projects		
Aviation	Avionics	1	Electronics (Elect)	N	✓	✓	✓	✓	✓	✓		✓	Elect	N	✓	✓	✓	✓	✓		✓	✓	Elect	N	✓	✓	✓	✓	✓		✓	✓	75	3
	Aircraft Skin & Structure Repair	2	Sheet Metal (SM)		✓		✓	✓	✓	✓		✓	SM		✓		✓	✓	✓		✓	✓	SM		✓		✓	✓	✓		✓	✓	75	3
		3	Woods		✓		✓	✓	✓	✓		✓	Composite		✓		✓	✓	✓		✓	✓	Woods		✓		✓	✓	✓		✓	✓	75	3
		4	Powerplant (PP)		E		E	E	E	E		E	PP, Pneumatics		E		E	E	E		E	E	PP, Turbine		E		E	E	E		E	✓	75	3
		5	Aviation Principles, Safety, Tools		D		D	D	D	D		✓	ATA, Manuals, Writing, Flt Controls		D		D	D	D		D	D	Air Regs, Ground Handling, Marshalling		D		D	D	D		D	D	75	3
Culinary Arts	Culinary Arts/Cook	1	Kitchen Orientation			D						E	Breakfast, Beverages & Dairy			D						E	Future										75	3
		2	Culinary Fundamentals			D						E	Intermediate Baking			D						E	Future										75	3
		3	Meat Cookery Basics			D						E	Entremetier			D						E	Future										75	3
		4	Baking Basics			D						E	Fish & Poultry			D						E	Future										75	3
		5	Soups, Stocks and Sauces			D						E	Pantry & Saucier			D						E	Future										75	3
Manufacturing and Materials	Millwright	1	Measurement	A1		D	E					E	Future	A2		D						E	Future			D							75	3
		2	Robotics	A1		D	E					E	Future	A2		D						E	Future			D							75	3
		3	CNC Milling	A		D	E					E	Future			D						E	Future			D							75	3
		4	Pneumatics	A1		D	E					E	Future	A2		D						E	Future			D							75	3
		5	Basic Hand Tools, Safety			D	E					E	Future			D						E	Future			D							75	3
																																	1125	45

Legend:		
	D	= initial draft complete
	✓	= completed documentation
	E	= material being edited
	A1	= Amatrol LAP 1
	A2	= Amatrol LAP 2
	N	= Nida Training system

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Skill Centre Project

Research Proposal

The document explores the partnership and collaboration efforts of the Edmonton Public School Board and NAIT as they seek fulfill the 2003 Commission on Learning Report to improve student diploma completion rates by implementing an innovative strategy to provide seamless pathways for students to transition into higher education centers like NAIT through the creation of a Skill Centre Project Approach to CTS instruction. The longitudinal case study design reports on successes, challenges and lessons as it implemented as a possible Pan Alberta model of delivery for CTS courses in the province.

Dr. John Ewing (Research Lead Consultant) & Brian Andrus (Project Manager for Special Projects)

11/26/2008

Executive Summary

This document highlights the research design that will be used to examine the successes, challenges, and lessons learned from the implementation of a new Skills Centre Project for CTS training in the Edmonton Public School Board's schools.

The Skills Centre program is innovative, unique and substantive in its vision to provide improvement in its offerings of CTS programming in the district through the implementation of new specialized training opportunities for public school students, while also providing a catalyst to increase the exposure of CTS programming in the system for the benefit of informing students, parents, and teachers about alternative possibilities for future career choices.

The Skills Centre Project is a collaborative partnership between the Edmonton Public School Board and NAIT. The project seeks to fulfill recommendations produced by the 2003 Alberta's Commission on Learning, *Every Child **learns**. Every child **succeeds** report*. The project looks to improve K-12 system student diploma completion rates through implementing various innovative strategies to improve program delivery. The focus will examine how to create a seamless pathway for students in order for them to transition from the K – 12 system into higher education centres like NAIT. Research will follow the implementation stages of a Skill Centre Project design and track the project over a three to five-year period. This longitudinal study will provide information that is vital in determining the successes of the project, and providing guidance into addressing challenges that come out of the study's findings.

The document begins by providing a thorough review of literature starting with information gathered from the original grant proposal to current research in the field in regards to K – 12 to Post Secondary student transition. The literature was reviewed to demonstrate how the research design fulfills many of the key questions currently in the field.

This document will also explore how current research supports the inclusion of the input of stakeholders in the research process. Stakeholders represent students, teachers, parents, administrators—from both partner groups—EPSB and NAIT, curriculum specialists, NAIT instructors, industry specialists, and a variety of social agencies. The document will also examine studies that have included members of the Aboriginal community.

Finally, the document will touch on a number of relevant research methodologies including a longitudinal case study, statistical design research, and components of action-research. Incorporated into these three

major methodologies will be data collected from statistical analysis, survey and questionnaires, narratives, and reflective practice materials. The research will provide for individual input, as well as, input gained from collaborative settings where stakeholders can provide input through active learning cohorts.

The longitudinal case study design provides an ongoing research model, which will help determine whether this strategy could be implemented as a Pan Alberta model of delivery for CTS courses in the Province of Alberta.

Research Synopsis
November 26, 2009

Introduction

If Career Technology Studies (CTS) is to be successful in the province of Alberta it must be afforded more recognition. Career Technology Studies (CTS) offer every child in the province a unique opportunity to explore options in careers by shaping and valuing hands-on skill development. Career Technology Studies establish transferable skills and is foundational in providing increased opportunity for students wanting alternative career choices. As such, CTS is an essential component to meeting the statement: Every Child Learns: Every Child Succeeds. If we are to succeed opportunities must be pursued. In this process we must examine what is being done, identify the successes and find workable strategies to address the barriers. It is then that we model the nature of learning. It is then that we can take the first step toward preparing our students for the 21st Century.

"The first step toward success in any occupation is to become interested in it." Sir William Osler

The question before us then is how do we pass on such an important vision to our children so that they grasp the importance and value of CTS training in the province as a pathway to explore career options early in their learning experience in order to prepare and step forward to capture their dreams?

The Alberta Advantage through the Process of Vision to Policy

A continued spirit of growth exists in Alberta as it moves into the 21st Century. This hope is built upon a track record of success. This hope has come from Albertan's who have given their best and sacrificed to pass on the legacy of success we enjoy today—it is the Alberta Advantage. (Alberta Government Business Plan, 2005)The Alberta Advantage is founded on the valuable contributions of our past and how we purpose to build a continued legacy for our children. Such a legacy is built on creative and innovative thinking that comes from an environment of freedom to explore. It is this freedom that builds a social synergy that embraces change to address the needs of all people living in this province. Albertans recognize that success comes from identifying key stakeholders and challenging them to come together to use their expertise in identifying, planning, and enacting strategies to meet current needs found in the province. (*Alberta Government Commission on Learning Report, 2003*)

From this provincial vision, Albertan's responded to examine our educational system in order to build upon the successes that have been accomplished, and to identify areas that could be improved. This examination was put into action through establishing the Alberta Commission on Learning. The Commission members traveled around the province and received public feedback on what Albertan's present view of the educational system, and what they envisioned as a direction for the future. From the presentations made to the board, a final report was presented in 2003 which is known as *The Alberta Government's Commission on Learning Report.*

The Alberta's Commission on learning placed in the title of the report the following vision: "Every child Learns: every child succeeds." From this report, Albertan's from all walks of life were challenged to examine the educational system and formulate in their minds what they wanted to see for the system as it addressed a picture of what we valued and wished communicated to our next generation of learners.

Pertinent data was collected to provide a solid theoretical foundation for the report. The literary resources represented hundreds of reports, articles, and research documents. The sources established a strategy to examine the heart of Alberta's education success and established a model to identify and listen to stakeholders, to articulate and address their concerns; and to issues, to formulate workable short and long term strategies in order to implement practical applications to address current issues and make the

necessary changes for success in the province. This was done through the creation of a strategy that would see the creation of a committee to gather information and begin an open dialogue with Albertans.

The commission heard the voices of students, parents, teachers, education-administrators, researchers, counselors, social workers, health care advocates. Groups also represented the voices of Aboriginal peoples, Francophone, multicultural, and special needs communities. Industry also provided feedback as well as Government specialists representing a numerous fields of interest. As these thousands of Albertans responded they articulated a common vision centered on the learner. Albertan's wanted a system that is transparent, flexible, seamless, and inclusive. They wanted a system that did not create barriers, but addressed the needs of all individuals. They wanted a system responsive to change and open to bring together an educational system that continued to be one of the best in the world. This is a bold vision, but not impossible.

This vision continued to be articulated in the report titled *A Learning Alberta: Final Report of the Steering Committee*. (Alberta Advanced Education, May 2006). In this report under the section, *A Strategic Framework for Advanced Learning for All Albertan* six key policy outcomes emerged that advanced specific priorities for education in the province:

- A Learner Centered Society
- Vibrant learning communities
- Global leadership in a knowledge-driven economy and society
- Innovation and excellence through learning
- Seamless advanced learning for all Albertans
- Strategic advancement of learning opportunities

To actively put these policies into practice, K-12 and Post Secondary education providers were challenged to explore issues facing education today and to present strategies to address these goals.

> Learning institutions are challenged in their desire to better meet the needs of learners from all walks of life and all parts of the province, to do the research that will drive the future, and to find ways to make a meaningful difference within a system based on completion. (*A Learning Alberta: Final Report of the Steering Committee*, 2006)

As such, many institutions representing the interests of K-12, Advanced Education, Higher Education and Specialized Education began to study the *Commission and on Learning* report and other high profile works such as A Learning Alberta: Final Report of the Steering Committee to prioritize areas to research, and build workable strategies to advance the education for all Albertans.

One such area that surfaced was identified in the, A *Learning Alberta: Final Report of the Steering Committee* report. It stated that while "Alberta has the highest workforce participation rate in Canada; it also has among the lowest participation rate in post-secondary studies." (Alberta Education, 2006) This finding was based on the results of a number of earlier studies including a Stats Canada study, *In and Out of high School: First results from the Second Cycle of the Youth in Transition Survey* in 2003; Post-Secondary Transitions in Alberta: Educational Outcomes for 1999/2000 Grade 12 Student by Alberta Learning in 2000; and, *Removing Barriers to High School Completion Final Report*—Alberta Learning September 2001. The reports identified a trend among high school students indicating many high school students were not completing a diploma even though the system provided supports for them to complete their programs. In fact, it was identified in these reports that many students that failed to graduate were only a few credits short of completion, but choose to not complete their diploma.

The studies also indicated that there appeared to be a discrepancy between the periods of time to complete a program among students going to technical or vocational career routes versus those going to university or colleges. Students who completed high school diplomas and went on to universities and colleges tended to do so right after high school, while students who followed technical institutions or community colleges tended to delay entrance for a couple of years. Furthermore, there were still huge numbers that completed a diploma but did not return at all to complete any higher education programs. (Stats Canada Report, 2002)

> . . .According to Statistics Canada, Alberta also had the fastest growth rates for the trades. (Stats Canada, 2002, p38)
>
> On the other hand, the results in a number of key areas are simply not good enough. Far too many Alberta young people fail to complete high school on time. One out of every four students does not complete high school within five years of entering grade 10. The completion rates are slightly below the national average 39% and simply unacceptable for a province like ours. The bulk of young people (close to 90%) eventually achieve some form of high school completion but that frequently happens later on in their lives when they see the consequences of dropping out and go back to post-secondary institutions to get a second chance to catch up.
>
> The result can be several "lost years" of working in lower paying jobs. When young people choose to return to post-secondary institutions to get the equivalent of a high school education, they pay directly through tuition fees and, in effect, Alberta society pays twice - once when the student is in high school and again, paying a significant portion of the costs of upgrading at post-secondary institutions. Government of Alberta, Commission on Learning Report, 2003)

It was clear that this area had to be examined if the Province was to succeed in its educational goals. The report also highlighted the impact that such poor completion records had on the province. First, it identified there were economic ramifications. As the report states the province pays twice for students when they do not complete their grade 12 diplomas as planned, but later come back for upgrading at local colleges or institutions. Second, it was identified that students lose valuable time and productivity when ongoing education becomes extended. In turn the province looses from this loss of potential productivity and potential investment from higher earnings. From these findings it is clear that educational institutions must take a proactive approach in preparing students for the future.

Another key point that is found in the literature is that students must be encouraged to complete high school and go on to higher education simply because of the "greater" demands that will face them in the work place as society moves into the 21st Century. *The Alberta Commission on Learning* report states "it has been identified that the 21st Century will require specialized training in the future." (Alberta Commission on Learning, 2003) *The Alberta Apprenticeship and Industry Training Board 2006-2007Annual Report Managing Growth* and Building Tomorrow supports this perspective: "…work is becoming more knowledge and skills-based. Technology is changing the skills and competencies required of workers in many trades and occupations." (AAIT, 2006-2007, p.7)

Furthermore, AAITB also points out there is a need for increased numbers of students completing advanced career training in order to meet the present global market demands. "Canadian employers in many industries and regions raise concerns about the shortages of skilled workers in the trades and related occupations within 20 years."

The AAITB responded to this need by identifying four key strategies in its business plan.

1. Encouraging more employers to hire and train apprentices;
2. Increasing access to training and certification;
3. Maintaining standards while adapting to changes in the workplace;
4. Enhancing the image of trades.

The commitment of the AAIT board to this need is recognized in its Youth Apprentice Project (YAP); the Registered Apprenticeship Program (RAP); and the Youth in Transition to Apprenticeship Project (YITTA) which address barriers for non-traditional workers. (AAIT, 2006-2007, p11)

Technical institutions, like NAIT, also recognized the importance of creating and supporting programs that address these present and future challenges. This is evident in the Skills Centre Project strategy. NAIT realizes that students need to be afforded the opportunity to consider technical and vocational careers—not everyone is best-suited to go to universities—and that such success comes from providing a number of pathways to encourage more participation by students leaving high school.

The Skills Centre approach provides another option for students leaving K-12 systems as it positions both K-12 educational institutions with higher education centres to collaborate in a joint effort to provide a seamless transition through both systems. NAIT articulates this goal in its Academic Plan by recognizing the responsibility of supporting potential students before they make a final decision to step forward into technical institutions. This impact is ongoing and serves our community by building strong citizens. It prepares the "whole" student for success in his or her future career. (NAIT AP, 2007)

> As well, we must fully engage our students from the time that they are prospects through to active students and eventually alumni. This "whole person" approach to recruitment, admission, and selection will not only help us prepare the best student candidates for the world of work, it will also serve our society by building strong citizens. (NAIT Academic Plan, June 2007)

Responding together provides a stronger base for students to engage in their life time of learning—a learner centered society. Directives, like NAIT's, support a broader sense of the educational system. It provides linkages that go beyond the central concerns of an institution. That is, higher education often focuses on the product—the student they receive, but often do not have established links to influence earlier interventions. By seeking out and finding ways to link to the K-12 educational system, and becoming engaged in programs like Skill Centre Project, higher education institutions can improve the transition between the two worlds for students. It is these improved linkages that will provide easier access to students, and provide for them greater opportunities to advance their training. In a future that demands more students become specialized and trained workers, this linkage is essential for success.

An important point needs to be addressed at this juncture. As stated earlier in this document, it has been identified that the vision of the province is to encourage young people to complete their grade 12 diplomas and also to see more numbers of students move on to higher education opportunities in order to fill the needs of the province. It has been also argued that there are many different strategies being employed by the province to encourage this. While the strategies might be different, the outcomes are similar in terms preparing students to be trained in the specialized skills necessary to meet the needs of our society in the 21st century. Such skills bring success to the province as a whole, and with it success for the student. Success comes through bringing together the resources of educational institutions for the common goal. However, a burning question still lingers. Why are so many students still not completing the educational opportunities afforded to them? K-12 educators are asking this question. Technical institutions like NAIT are asking this question. The Alberta Apprenticeship and Industry Training Board are asking this question. If we have identified such a need in the province, and we have identified that academic and "hands-on" skills levels are becoming more complex, then why are students not pursing this option?

Some might argue that there are cases where people are successful even though they obtained little formal education. While this is true in some cases as a general rule this simply is not the case. However, while we might argue that many do transition easily into the workplace and find meaningful employment, we still cannot underestimate that the 21st century will demand people to be trained with specialized skills. In fact, the skills will also need to be transferable, as social predictions indicate that individuals in the 21st century

will need to be flexible and mobile in order to meet the demands of the future. The day of staying with one job, one career may become a thing of the past.

Given these factors, we still must ask why there are so many shortages of well trained trade's people in the country, and especially Alberta. While industry has responded to train more apprentices—an amazing 141 % increase since 1986 records, there still remains a shortage. (AAIT, 2006-2007, p8) What we can conclude is that we must make every effort to encourage more students to complete their high school training and then to move on to higher education opportunities to fill these higher skilled vacancies.

Alberta also has to deal with its booming economy. Many young people enter the work force because they can access jobs that pay quite well and require little to no prerequisite of completion of high school or any further institutional training. Students naturally see this as viable alternative to delaying their entrance into the work field. Such a delay costs them time, money, and immediate opportunity. They may even reason that college or institutional training might provide mobility in a chosen career, but it may also start them at a pay level lower than they can experience by staying in their current work.

It should also be noted, once young people become trained in such a work field it is harder for them to transition into either completing grade 12 diplomas, or following advanced educational training due to economics, logistics of moving, and social commitment factors. The incentive to transition must be greater than the incentive to stay in the current occupation.

In terms of high school completion rates, other research can identify why many students never return to school and still find gainful employment. Such research points out social, health, economic and geographical, issues that influence students throughout their schooling. *The Removing Barriers to High School Completion—Final Report 2001* provides us with insight.

"Students at risk of leaving school early tend to be the most disenfranchised in schools with coping with complex problems in their lives. " (Alberta Learning, 2001)

The report also provides suggested outcomes that need to be applied to meet the needs of At-Risk students. The report points out the following strategies for the Province to implement:

- Enhancing early childhood development supports
- Listening to and supporting students
- Managing student alienation
- Increasing opportunities for success among Aboriginal students
- Increasing student's knowledge of self and the effects of labeling
- Enhancing cooperative education opportunities
- Tracking Students
- Best Practices

These guidelines provide many principles that can guide the Skill Centre Project development. A key factor in the program is that the Skill Centre Project will need to address the supportive roles required for students. In this supportive role the centre can promote community, and also team work as part of it strategy. The Skill Centre is also geographically positioned as a strategy that increases the educational opportunities for Aboriginal students. While the centre is not "exclusive" in its approach—it is open to all Edmonton Public School students, it has strategically placed the centre so that Aboriginal students can visibly be connected to its influence. It is hoped that many Aboriginal young people will become part of the programs offered at the Skill Centre and appropriately follow through with higher education opportunities. Such logistics are intentional. The centre is intentionally visible and being promoted to bring attention to what it proposes to do for students.

Such visibility will enhance the image of trades and other vocational opportunities by providing important links among K-12, Higher Education, Aboriginal groups, industry and other community stakeholders involved in the project. While each stakeholder may come with specific needs, the collaboration of these groups will bring a synergy for change and innovation. This effort is important and identified in many documents from industry including the work done by Alberta in which they specifically outline details to address this need. (AAIT, 2006-2007, p8)

This was also identified in a British Columbia report that noted the following information from administrators and teacher involved in their ACE IT project:

> Two years ago high schools were downsizing shop facilities and converting shops into computer labs or performing arts spaces. During the current review, schools were ramping up trades programs and updating/expanding shop facilities…It would appear that the constant reporting of skills shortages in the trades, an increased desire to provide non-university options for students and the availability of support programs such as ACE IT and SSA have contributed to this change in attitude toward trades training (*Review of the Ace-It Program*, June 2006 p. 1,2)

Interesting in this discussion is also the point that a successful project must facilitate a change in society's perceptions of vocational and trades training. The report indicated that currently a bias exists that against pursuing vocational or trades training, and this bias (stereotype) needs to be addressed in a proactive manner.

> The bias towards academic programs is still alive and well in the minds of many parents, teachers, students, and administrators. Consequently, programs like ACE IT or SSA are sometimes still seen as second best elective options and, in some cases, dumping grounds for poor students." (*Review of the Ace-It Program*, June 2006)

It should be duly noted that this same research study identified a change in parental perception as one measure of success in the program.

> The ACE IT program affected parents' awareness of trades careers for their children as 21% of parents had not considered trades as an option for their children before ACE IT was offered. Two/thirds of parents interviewed had considered a trade career for their children before ACE IT was introduced and 13 % left career considerations entirely to the children. (*Review of the Ace-It Program*, June 2006 p. 1,2)

The Alberta Commission on Learning Report also pointed out that "Among parents and high school students, there also is a very strong focus on university education and not enough students consider the wide range of choices available, especially in the trades and technologies." (Alberta Commission on Learning Report, 2003 page 60)

Thus it could be argued that research examining issues related to promoting technical and vocational careers in schools can see success measured in terms of changes in perceptions. This change in perception can also be associated to students completing courses simply because they have been informed that the courses are meaningful and have purpose for them. CTS courses are simply for non-academics, the "left-over's" or perceived as courses that are "time" fillers and considered intellectual breaks from serious study such as offered in the core subject areas. This is not to minimize the importance of the core subject areas, it is merely to suggest that such a gap in the importance of core subject areas leading to success and the perception that CTS courses lead to less than successful areas must be shifted to accommodate the realities of the world outside of the school systems.

Changing such a perception is important for success in any program endeavor. Such perceptions take time to change and require the collaboration of a community of learners. It must bring together students, parents teachers, administrators, community leaders, business and trades people, and also those in the community representative of special interests including Aboriginal, special needs, and social agencies.

Industry submissions to the Commission on Learning Report identified the need for collaboration with stakeholders in the report when asked how the province should review the CTS program in its former structure. As stated in the Commission's report:

- Representatives of business and industry, professions, and communities should be actively involved and participate in the review of CTS.
- A variety of links should be developed with employers and non-profit organizations to provide opportunities for mentorships and work experience
- Community leaders, business and trades people and a range of professional should be able to play an active role in providing components of career and technology studies.

  (Alberta Commission on Learning Report, 2003 page 55)

The commission report went on to say:

> Alternative ways of delivering the courses should be explored including partnerships with post-secondary institutions, partnerships with industry, and alternative infrastructure such as portable labs and distance learning. (Alberta Commission on Learning Report, 2003 page 55)

The study also established the need to expand the scope of stakeholders to include the input provided by parents, teachers, and students which were often left out of administrative discussions. It was pointed out that such success in a program included the input of all those affected by such change.

Further Recognition of the Need to Identify Stakeholders

The Recognition to Engage with Parents and Family

The British Columbia model also provided important information regarding the relationship of parents, students and teachers to this process. The study pointed out that many parents attributed the ACE IT (Accelerated Credit Enrollment Industry Training) programs clearly defined longitudinal goals and "hands-on" approach to following a technical career path as a major contributing factor for their son or daughter staying in high school and for wanting to continue on with their training. (ITA, *A Review of Ace It*, 2005). This finding was not one of the questions that was asked by the researchers, but they felt it important to note as many parents and students identified the program as helping them stay engaged in the K-12 system and for the student to complete their diploma.

While the completion rate of the system saw a 10% increase in students obtaining their diploma (ITA, *A Review of Ace It, 2005*) it should be noted that the program in BC differs from the Alberta model. The BC model had students enter the program by an interview process. Students also had to maintain a certain academic level, maintain attendance, and demonstrate a good work attitude. In most cases this was completed, but it still does not address the larger majority of students that still feel disenfranchised or totally disengaged from the system. The CTS program in Albertan schools has an open policy and thus the Skill Centres will have to provide specific elements gained out of the BC and other school systems to ensure success.

Areas that need to be addressed will include topics related to longitudinal support for students, teachers, parents, school boards, and institutions. The strategy will also have to incorporate excellent communication utilizing a variety of vehicles such as both printed/graphical text and on-line Web 2.0 designs. From the studies incorporated in this review for the research there was overwhelming evidence that excellent communication practices ensured the success of each of the programs. This communication must be seen as bi-directional—that is it must both provide information to the community of stakeholders, and it must provide a flow of information that shapes the program. Thus the research must endeavor to provide pathways for communication. Stakeholders must be included in the study that include students, parents,

teachers, instructors—NAIT, administrators, curriculum experts, industry, articulation agreement experts, college and university, as well as community groups representing the needs of Aboriginal, women, special needs, Francophone, and other groups identified in the research.

This strategy aligns with the *Commission on Learning Report*, which highlighted the following aspects related to the need to include stakeholders representing the broad community we serve:

> One of the important functions of junior and senior high school is to give students an opportunity to learn about and explore different careers, technologies and skills. While the current program is flexible and provides a wide range of experiences for students, the Commission heard that it lacks focus and may not provide students with the kind of experiences they need to understand the world of work and the skills they need for various career paths. Several stakeholders' submissions suggested that this program and how it is delivered should be reviewed. As part of the review:
>
> - Representatives of business and industry, professions, and communities should be actively involved and participate in the review.
> - A variety of links should be developed with employers and non-profit organizations to provide opportunities for mentorships and work experience.
> - Community leaders, business and trades people, and a range of professionals should be able to play an active role in providing components of career and technology studies.
> - Principals should be able to put flexible staffing arrangements in place in order to harness the resources of people and businesses in the community. Where schools and school jurisdictions are unable to hire certificated teachers with the necessary skills and experience in a variety of career fields, superintendents should be able to apply to the Minister for permission to allow non-certificated personnel to teach in these fields.
> - Community leadership and volunteer modules should be strengthened.
> - Alternative ways of delivering the courses should be explored including partnerships with post-secondary institutions, partnerships with industry, and alternative infrastructure such as portable labs and distance learning. (Alberta Government, 2003, p 55)

This collaborative model was utilized in the British Columbia study of its similar program called the Accelerated Credit Enrollment Industry Training Program (ACE IT), which provided open communication opportunities among the stakeholders. This provided some interesting outcomes (actions) that are pertinent to the development of the Skills Centre Project and the research aspects of this study.

Emerging Topics

The British Columbia ACE-IT initiative created its program to also ensure the smoother transition from one system to another for the students. Another key goal was to provide students with a "hands-on" experience of possible trades or technical orientated career pathways. From the study a number of considerations emerged. These were identified in the preliminary research report *A Review of ACE-IT February 2005 Intake* carried out by Fulford Harbour Consulting, Ltd. and prepared for the Industry Training Authority. In this report a number of key recommendations (actions) were identified provide a number of important aspects to the success of the program and consider in any research design.

Short Term

- Implement a more rigorous application process for students entering ACE IT
- Prepare students for entry into ACE IT earlier
- Streamline Administration
- Ensure strong partnerships with colleges*
- Provide more information on the certification process
- Undertake additional promotion of ACE IT

Long Term

- Ensure availability of appropriate math courses
- Support the coordination of the ACE IT program
- Provide in-service for college instructors *
- Incorporate safety training*
- Increase the supply of certified teachers
- Monitor different delivery models

(A Review of ACE-IT February 2005 Intake, pp 21-25)

The following section highlights three of the outcomes (actions) as stated in the report.

Ensure strong partnerships with colleges

The study findings support the importance of developing a strong relationship between higher education providers and K – 12 education providers. This has implications for developing a seamless transition for students, but also for shaping and designing curriculum that will be used to link the two organizations together. In terms of NAIT and its partnership with the Edmonton Public Schools it also has implications for EPS CTL teacher and NAIT instructor interchange of training. This interchange is valuable as it prepares EPS CTL teachers to take on subject areas that they may not be up to date on and also for NAIT instructors to share the years of experience they can provide from being involved directly in industry practice. This interchange can also provide opportunities for collaboration on present instructional practices, and for finding solutions to incorporating such practices into the CTL courses in order to engage students more fully.

> An effective relationship between the college and the high school greatly enhanced the success of students taking ACE IT. However, in cases were Districts are unable to develop a strong relationship with their local college they should be encouraged to seek a partnership with an alternate technical training partner that they can work with. *(A Review of ACE-IT February 2005 Intake, p25)*

The British Columbia model also identified a need to examine a strategy to increase the number of certified teachers in CTL programming. There are a number of issues to consider here. First, the certification of teachers focuses on the pedagogical training received in universities, and does not recognize trades certification as a pre-requisite to teach at the K-12 level. Whereas, technical institutions require trade ticketed people to teach adults, but not necessarily having a provincial teaching certification. To find individuals that have both is quite difficult, thus a system to train educators is foundational to the success of the program. The BC study highlighted this area of concern making the following points.

Provide in-service for college instructors

One common complaint by instructional staff at Higher Education institutions was that Grade 10 – 12 students tended to be more immature, and such immaturity was creating classroom management problems. A recommendation came out of this observation from instructors:

> It is recommended that all schools delivering ACE IT have a more rigorous application process in place that assesses the relevant academic capabilities and attitude (motivation, attendance) to ensure students have a reasonable chance of success in ACE IT and will not disrupt the learning environments of others. (*Industry Training Authority*, *A Review of ACE- IT*. 2005)

Furthermore, there was also a suggestion that High School teachers did not have the training to build the skills necessary to prepare students for the careers or to offer the students a dual credit or advanced credit in the chosen trade or technological route.

Industry experts indicated that it was also noting that few students in the Accelerated Credit Enrollment Industry Training Program (ACE IT) and/or the Secondary School Apprenticeship Program (SSA) were coming to the workplace without the safety skills required to ensure compliance with worksite regulations. Industry maintained that students must be given this training and that industry does not have the resources to complete this task. ((*ITA*, *A Review of ACE- IT*, 2005)

It is clear to see from these points that the training of staff was key to the success of the program. Alberta shares with British Columbia—as does the rest of the country a shortage of trained industry professionals willing to leave their work field and enter into the classroom. Recommendations from a study looking at the barriers facing the ACE IT and SSA program noted the need for the province to address this issue, and for the School Districts, the College of Teachers, and ITA to collaborate on finding a way to deal with this shortage.

> The general shortage of skilled trades people combined with recent changes to the teacher certification process for journeypersons has contributed to a shortage of qualified trades teachers. Colleges have already assisted some high school teachers to successfully attain their trade certification and could be a partner in this initiative.
>
> It is recommended that School Districts support trades teachers to attain their industry training certification. … It is also recommended that the ITA work with the Ministry of Education and the BC College of Teachers to make it easier for certified journeypersons to become certified high school teachers. *(Examining Barriers to ACE IT & SSA Enrolment, April 2007)*

This has a great bearing on how the model for the Skill Centre is being created and also for how the research component that will work along the project needs to be formulated.

Creating a Model

In order to address specific concerns identified in the Alberta Learning Commission report, and supported by four key papers: *RRS Survey 2003 In and Out of high school: First results from the Second Cycle of the Youth in Transition Survey*—Statistics Canada; *Removing Barriers to High School Completion Final Report Alberta Learning*, 2002; *Post-Secondary Transitions in Canada, Educational Outcomes for 1999/2000 Grade 12 Student*; *Prepared for Growth: Building Alberta's Labour Supply*, May 2004. The province encouraged higher education to build relationships with K-12 providers in order to address current needs in the system.

To this end, NAIT and the Edmonton Public School system proposed a joint venture. The venture was to create a workable model that would help more students stay actively engaged in their high school education by building an awareness of possible career opportunities through active engagement of building skills and interests that would prepare them—or provide advanced credit for continuing their education in higher education centres that offer ongoing skill development.

The idea was to follow up on a number of options and explore viable ways to bring the resources of both institutions together to build the links necessary to improve student diploma success rates, and also increases in the number of students entering institutions like NAIT. The subject area chosen by the Edmonton School Board to explore was Career Technology Studies. Connecting with NAIT made perfect sense as CTS focuses students on careers that are generally advanced at an institution like NAIT. NAIT could offer expertise in the area of the study, as well as provide support in terms of financial commitment, and also facilities in terms of training educators from the Edmonton Public Schools that required more in-depth knowledge as it relates to career options currently taught at NAIT.

Both education providers identified the need for collaborating on a model that would openly meet the needs of both schooling systems. The collaboration would explore the Skills Centre Project strategy and find ways to utilize the key resources of both educational systems. The Edmonton Public School system would

offer facilities, students, and educators; while NAIT would bring together technical and curriculum expertise regarding the further advancement of trades Skills training. The goal is to find a curriculum fit, and to provide 'hands-on" training for students from grades 10-12, but also to CTL teachers who might not have the skill levels required to teach the courses. NAIT instructors would also be able to build upon areas of pedagogy in their training whereby the collaboration of instructors would provide for the building of a strong and effective seamless system for students wishing to enter the technical and/or trades careers. The centre would also provide the opportunity to give a higher profile to CTL program initiatives which supports the evidence found in the literature to build a positive profile for students following a technical, vocational and/or trade alternative route in their education.

At the forefront was also the desire to build a stronger presence in CTS program in the Edmonton Public School system and provide expanded career training opportunities for students in the system. It should also be noticed that the Skill Centre was strategically placed at the Amiskwaciy Academy within the Edmonton Public School system so that it could support the needs of Aboriginal students.

As mentioned earlier in this report, while the Skill Centre and the Amiskwaciy Academy are separate entities, the proximity of the Skill Centre placed in this high school gives a higher profile to the CTL program, and also to the work that is going on at the Amiskwaciy Academy. This higher exposure provides a unique opportunity for Aboriginal students wishing to pursue courses in Health Services, Aircraft Maintenance, Culinary Arts, and Manufacturing and Materials.

The skill centre will also be used to provide leadership training for teachers of Practical Arts programming across the District through various supports to teaching and learning including Entrepreneurship, Architectural, and Mechanical Design. The Skill Centre will also be accessible to students who will be bused in from Queen Elizabeth, Ross Shepherd, and Victoria High School in Edmonton. Thus the model for the centre looked to build community while providing access to specialized programs not replicated in every high school. (Edmonton Public Schools Letter to Board of Trustees, October 28, 2008)

This type of innovative approach to improvement of the CTL programming is supported by the provincial government where the *Alberta Commission on Learning* report encouraged schools to improve programs through innovation and to support such innovation with research.

> "Long term research projects should be undertaken to assess the ongoing impact of innovative projects. "(*Alberta Commission on Learning Report,* 2003 page 87)

The board also challenged school boards in the province to guide their practice with longitudinal research projects. The report stated the following:

> The best schools continuously seek innovative ways of improving their student's results. Never ready to accept what they do as "good enough" the best schools constantly evaluate what they are doing, embrace new ideas, and search for the best ways to achieve excellence results for all their students… (Alberta Commission on Learning Report, 2003, page 98.)

Furthermore, the commission demonstrated its complete support for ongoing research to guide future policy. From the province the AISI (Alberta Initiative for School Improvement) was established which encouraged support for research and innovation across the province.

> The Alberta Initiative for School Improvement is a highly successful initiative that supports research and encourage innovations across the province. The focus on local initiatives empowers schools and school jurisdictions to identify challenges, develop innovate approaches, test their ideas, analyze the results, and share information with their communities "(*Alberta Commission on Learning Report,* 2003 page 97)

It was clear that the purpose of the commission was to build a solid base of research to support the province's efforts and to have information that could support other schools throughout the province.

> The Commission's research program also highlighted the need for ongoing, long-term research in a variety of issues in education including school leadership, various aspects of teaching and learning, the impact of class sizes and other factors in the classroom, as well as the impact of active involvement by parents and community members. Too often, major policy decisions are made without the benefit of research. The Commission believes that research should be used to guide future policy decisions. "(*Alberta Commission on Learning Report,* 2003 page 98)

Confirmation that the key to Success is Collaboration

It is interesting to note that in an early *Partners in Education* meeting held at the Amiskwaciy Centre on November 12, 2008 and sponsored by Edmonton public schools that the following key points were made by the stakeholders at the meeting. They stated that the program's success surrounded the continued collaboration with stakeholders. Represented at this meeting were people from the Edmonton Public school trustees, Edmonton Public superintendents, Alberta Government, Aboriginal communities and institutions, NAIT, and a number of industries. Emerging from the meeting were a number key points such as the following:

- Students need to be afforded opportunity to experiment.
- Students need to be given basic work skills (hands-on) and to see how they are transferable to many technical and trades related career choices.
- There needs to be cooperation and collaboration with stakeholders including industry.
- Industry needs to know what is working and what is not in skill development so that they can approach accreditation boards. This must be done quickly so that course materials stay current and meaningful to students.
- Women in trades must be promoted.
- Aboriginal programs need to continue throughout high school and into post secondary training.
- Dual Credits system needs to be pursued.
- Joint partnerships with Public School Systems, higher education, industry, and government supported areas like Health Services, Work Place initiative programs, and Education need to be encouraged.
- The CTS program needs to inform students, parents, and teachers about its importance and work to encourage the viability of following this pathway. We must shift the thinking so that such a pathway is not seen as a "second rate" choice, but a first choice for students in the 21 first century.

Summary

In summary, the research proposes a design that compliments the goals highlighted in the Alberta's Commission on Learning report. While the following terms reflect Albertan's view of what they wished in an education system—transparent, flexible, seamless, and inclusive—it also articulated specific points that need to be addressed in the design of the research. Albertan's wanted a system that did not create barriers, but addressed the needs of **all** individuals—every child learns.

Albertan's want an educational system that is responsive to change and is open to bring together people from various interest areas to ensure accountability and input into the system. In this same way the research design must invite stakeholders to provide input.

As referenced earlier, the vision was articulated from the report *A Learning Alberta: Final Report of the Steering Committee*. (Alberta Advanced Education, May 2006). In this report under the section, *A Strategic*

Framework for Advanced Learning for All Albertan six key policy outcomes emerged that advanced specific priorities for education in the province:

- A Learner Centered Society
- Vibrant learning communities
- Global leadership in a knowledge-driven economy and society
- Innovation and excellence through learning
- Seamless advanced learning for all Albertans
- Strategic advancement of learning opportunities

To actively put these policies into practice, K-12 and Post Secondary education providers were challenged to explore issues facing education today and to present strategies to address these goals.

> Learning institutions are challenged in their desire to better meet the needs of learners from all walks of life and all parts of the province, to do the research that will drive the future, and to find ways to make a meaningful difference within a system based on completion. (*A Learning Alberta: Final Report of the Steering Committee*, 2006)

It is this provincial mandate that the Skill Centre fulfilled by building into its strategic plan that findings would be reported and validated by research during the entire course of the project. This is a wonderful opportunity for NAIT and Edmonton Public School systems to establish an opportunity to provide a model for future plans. Furthermore, it establishes this work as significant in terms of research from other projects in the past. It fulfills man needs for both participants, but beyond that. It provides an invitation for other school systems to engage in the research that was discovered and use it to guide practice. It also builds community by creating linkages among learning institutional centres, students, parents, and industry; and, it contributes to various fields of knowledge.

As such, the literature coming from numerous local, provincial and international reports, research publications, meetings, and interviews establish a list of characteristics that need to be incorporated into the shape and design of the research. This was the case in this preliminary literature review. The following outlines some of the considerations that surfaced.

The research must fulfill the following areas:

- Identify areas in which the goals of the Alberta Government are addressed in the program.
- Identify and engage the various stakeholders—students, parents, teachers, etc.—in the research through opportunities using a variety of data collection strategies.
- Build Collaborative models to bring the collective and reflective knowledge together.
- Determine measurements for identifying successes, challenges, and lessons learned to date based on verifiable data.
- Define data in its numerous forms: statistical, narrative, and other representations.
- Explore current questions arising from literature and from the research.
- Engage educators to examine current curriculum and practice.
- Engage Aboriginal perspectives in the study.
- Engage other identifiable groups in the study.
- Engage in a longitudinal study to identify emerging themes and strategies for future development of program.

- Create a model for statistical data analysis to determine trends, and factors that will affect the outcomes of the research
- Produce *quantifiable* and *qualifiable* results to build up the field of knowledge in the field.
- Produce a timetable and guideline for research milestones, findings, and minor and major reports.

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Overview of Research Design

The following section provides an overview of the direction, unfolding, and goals of this research project. The entire study will examine questions emerging from the following statement that is articulated in the original proposal found in the Appendix A

> An appropriately designed and implemented career pathway program can act as a catalyst, encouraging high school students who would not normally continue their studies in post-secondary education, to do so. Highly integrated and focused career technology and trades studies offered in Alberta high schools can provide a seamless bridge for high school students into post-secondary studies. Effective career pathway programs can also influence student success and retention both in both secondary and post-secondary settings as noted in a recent study published by the National Research Centre for Career and Technical Education. (NRC, 2001)

The central focus begins with the following questions:

Will the following Skill Centre Strategy employed by the Edmonton School Board in Collaboration with NAIT and other key Stakeholders be successful in providing a model for seamless transition between K-12 educational system and students entering Technical and Vocational Higher Educational centres in the Province of Alberta? Will this success see the increase in numbers of Grade 12 students completing grade 12 diplomas, and will this success transfer to higher numbers entering and completing further advanced training? What will be the factors in the success, and what type of model could be put together to increase the effectiveness of program for students?

The purpose of the research has five key components. Each component is distinct and builds a common "macro" research focus, while also providing components that focus more specifically on key themes and practices having a "micro" research aspect.

1. First, to capture the global and historical context of the development of the project by incorporating a longitudinal case study. Such a study will follow the input of various stakeholder's and interest groups to establish and identify the processes, strategies, goals, and outcomes of the development of the project. The study will also examine barriers that were faced before, during and after the project and make current recommendations for stakeholders to follow. The study will also reflect other case base studies that were utilized in other jurisdictions including southern Alberta, Central Alberta, Northern regions, British Columbia, Manitoba, Ontario, and Australia as they relate to current practices for the development of CTL courses, training for educators, and collaboration efforts experienced by stakeholders in the project. This project will span the five years of this project, and will provide yearly reports associated with beginning and ending of educational cycles. This strategy will provide a foundational and historical context for the other aspects of the research. (See appendix for diagram.)

2. The research will also employ a statistical based study, which will utilize the resources of NAIT Institutional Research to examine students that enter a program at NAIT after completion of courses that have been linked to the Edmonton Public School Skill Centre Project. The information will explore and attempt to identify predictors such as age, gender, language comprehension and communication skills abilities—spoken, verbal and written, mathematical skill levels, cultural, and other predictors that will shed light on the students that come into the program, continue through the program, and complete the program. This study will cover all students that attend NAIT after the completion of grade 12 diplomas from those utilizing CTL access through the Edmonton School Skill Project Centres. The information gathered will be used to explore if there any relationships of specific identifying factors that can help us predict success rates, or demonstrate areas that need to be addressed with interventions.

The statistical based study will also employ statistical information offered by the Edmonton School Board. The information will be used to provide a biographical, ethnocentric, and academic overview of the students that will enter the courses. Such information will be used to provide key information for design of strategies for students entering the program. For example, if a proportionate amount of students entering a specific Skill Centre area self-identify themselves as Aboriginal, then the strategies employed by educators, and for the course will accommodate to meet the group of students that are identified. This could also play a factor in addressing students who have been coded for special educational considerations that are presently in the Edmonton Public School and are taking courses at one of the Skill Project Centres. (See appendix for an example of information gathered at NAIT)

3. The research will also provide a closer examination of specific stakeholder's views and concerns during the entire study. Stakeholders (participants) will include students, teachers, parents, NAIT instructors and administrators working with the project, EPS administrators and Trustees working with the project, industry involved directly with the project, and other stakeholders identified during the study.
   Participants will participate in a number of research opportunities in four ways:

   - Surveys
   - Questionnaires
   - Narratives
   - Limited Journal Writing (Wiki, Facebook-type*, and/or other types of Web 2.0 approaches)
   - Personal Interviews (Social Software Resources would be secured by NAIT IT)
   - Capstone Projects

   The content and focus of the surveys, questionnaires, and other aspects of the study will shift according to the time frame of the study—whether it is in Pilot Study; Phase II, Phase III, Phase IV, or Phase V of the research. The questions will also focus participants to address their responses and address the questions that are found in the original proposal for NAIT. It is also important to note that with each phase more students will enter the project. Thus the information will be collected in terms of the Phase it is recording, but also will become information that can be compared to previous years of participants. It is hoped that trends can be identified and that the greater number of participants will provide a clearer picture of findings of the study.

4. A selected number of students, parents, and educators will be asked to engage in a Reflective Action Based Research project over the entire length of the study. The research is designed in this way to bring participants together with a common goal to improve the activity they are engaged in during the school year. Studies have suggested that a sense of efficacy grows when participants feel they have something to offer to the entire process, and that they can take control within their programs. It is also important to see that the work is a collaboration of efforts from numerous people who have a common goal to help students in their lifetime of educational success.

   This group will be asked to remain as a supportive cohort and will communicate on a regular basis to address questions, and issues facing the group. This component of the research is a longitudinal study that will attempt to follow these participants using on-line and face-to-face activities, which will encourage on-line journal writing and reflective practice techniques. Participants will be asked

to engage in a number of discussions throughout the study and produce a communication package to bring forward their recommendations to guide future programs. The cohort will also discuss the nature of the cohort and how it affected their move toward a final career training choice. The research will also seek to discuss themes arising from the various discussions, and to follow through the processes when specific themes are addressed and how they were applied to current practice. Information from the cohort will be provided on a yearly basis. It is important to note that educators and instructors will also be asked to discuss elements of their training, administration support, and subject matter and other components found in the curriculum. This is all part of the success of the program. (See research diagram for explanation of the hermeneutical design in reflective active research practice.)

5. One important factor of the research is to provide information for further research in the field. The research will provide its findings in a number of reports. Each year a general report and update will be provided with one final report provided for public examination. The research findings will also be published and a number of workshops, seminars, and open session reports will be completed to share the findings. The information will also produce a record of the methodology employed in the research and theoretical foundations in which the research was designed. Findings of the research will follow research ethical guidelines and protect individual participants in the study with anonymity. However, given the “case” study nature of the study the actual places and references to names will not be changed in order that the study can remain historically valid.

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Research Paradigm

The research is designed into phases that correspond with specific time frame intakes of students:

Phase	Place	Program	Date
Pilot Study	**Amiskwaciy Centre**	**Airplane Maintenance**	**September 2009**
Phase I	**Amiskwaciy Centre**	**Culinary & Foods**	**September 2009**
Phase II	**Amiskwaciy Centre**	**Manufacturing**	**February 2010**
Phase III	**Amiskwaciy Centre**	**Grades 11, 12**	**September 2010**
Phase IV	**NAIT**	**First Program Intakes**	**September 2012**

Phase One: Pilot Study Component

A Pilot Study will be conducted at the Amiskwaciy high school where the introduction of an Aeronautics program for grade ten will be introduced. (Grades eleven and twelve will be introduced in the following year intake.) The Skills Centre will invite grade ten students from three Edmonton Public School District high schools to enroll in the program. The high schools are Queen Elizabeth, Ross Sheppard, and Victoria. Amiskwaciy students will also be invited and will be encouraged to attend the program. This first intake will take place in September 2009. The students will be bused to the Amiskwaciy Centre.

The pilot study will begin by establishing the reasons that students chose this specific program. The study will ask them to explore what their long range goals of career choices are and encourage a number of them to become part of an ongoing—longitudinal study, which will follow them over the next few years.

Parents, teachers, and other stakeholders will also be given surveys and questionnaires which will establish how the program supports students entering CTL and what expectations they have of the program. As the program progresses through the various Phases, the questions will seek to account for successes, concerns, or questions that arise in terms of meeting the needs of students. Every student entering the program will be responsible to complete a questionnaire and/or survey, while others will be asked to take part in interviews, and learning collaborative cohorts. The learning collaborative cohorts will serve as student advisors to the program and will be asked to pursue ideas that will improve the program and its delivery. The cohort will also welcome the input of teachers, parents and other stakeholders. The pilot research project will help construct better how this aspect of the research will work.

Another key component of the research is to have a number of Aboriginal students become part of the longitudinal study. The research study will shift in design in order to accommodate Aboriginal cultural and epistemological considerations so that such an opportunity will reflect the thinking of our Aboriginal participants. The questions will seek to identify and address specific needs for Aboriginal students, and also follow the students over a period of time through the entire transition between high school and higher education opportunities.

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Note! NAIT anticipated that a number of Aboriginal students will be participating in the program and the research study. As an incentive to engage them in the longitudinal component of the research, NAIT made arrangements to provide free tuition for the first year at NAIT to Aboriginal students who will commit themselves to the longitudinal research study and intend to complete a program at NAIT. The study will study the successes, challenges, and lessons learned from students in Grade 10 until their final year at NAIT.

Phase One: Culinary Art Program Component

Phase one of the study also includes the intake of students into the Culinary Arts program at the Amiskwaciy centre. Students will also be asked to be part of the ongoing research and other stakeholder participants will be asked to participate in other aspects of the research.

When the term ends all participants—students, teachers, parents and other stakeholders will be asked to do a second questionnaire and/or survey that will explore perceptions of the program and whether they will be continuing with the program.

As more students come into the program the number of participants will increase. This will mean that the information gathered in the study will begin to provide more conclusive results due to the increased number of participants providing data.

Phase Two: Manufacturing and Materials

Phase two will see the intake of students into the Manufacturing and Materials Study. This intake will provide a picture of students entering into this specific area of study. It will also begin another cycle of Aircraft Maintenance, and Culinary Arts. Once again, participants will be provided questionnaires and/or surveys to complete. If some participants wish to become involved in other aspects of the study—narratives, and interviews they will be invited to do so. At this juncture, the study may also incorporate another cohort to provide more detailed information to the study. A statistical analysis will be used for incoming, and outgoing participants.

Phase Three and Four: Students Entering Higher Education Centres (1 to 2 year programs)

Phase three will see the first number of students entering into the grade 11 and 12 components of the Aircraft maintenance, culinary arts, and manufacturing programs.

The study will follow the same pattern. Participants entering the program will be asked to fill in a questionnaire and/or survey to identify either their first impressions of the course, or ongoing impressions if they are returning and continuing on in the program.

Once again, participants will be invited to become part of the more detailed aspects of the research including interviews, and narratives. A statistical analysis will also be used to provide information in regards to the incoming and outgoing participants in the study.

Phase Four will begin a new component of the study. At this juncture, NAIT will begin to track students entering any of our programs and begin following their progress through the system. Students who have been identified from the research study and have agreed to be part of the on-going longitudinal component of the study will be encouraged to remain in the study during their years at NAIT. NAIT will also continue to follow the longitudinal research in terms of Aboriginal students remaining in the study. As with other students, their progress will be closely followed and the results provided in a report after completion of their program. It is also important here to indicate that participants—teachers, parents, and administrators will also be welcome to provide input during this transitional time. Questions will focus on the successes

they have observed, as well as any barriers or other theme that they wished to communicate or contribute to this study.

For other students registered in NAIT programs their statistical data will be followed along with the surveys and narratives that can give both institutions valuable feedback into the success of the program.

It is also important to note that students delaying their entrance into higher education programs will also be flagged and their progress followed. Such information will be valuable in determining why a student delayed in obtaining either a diploma or entering a higher education centre.

Finally, the Edmonton Public School will be asked to keep records of students completing their grade 12 diplomas to whether there has been any change over the three years of the program. Students identified in the program for the longitudinal study will also be included in the overall results.

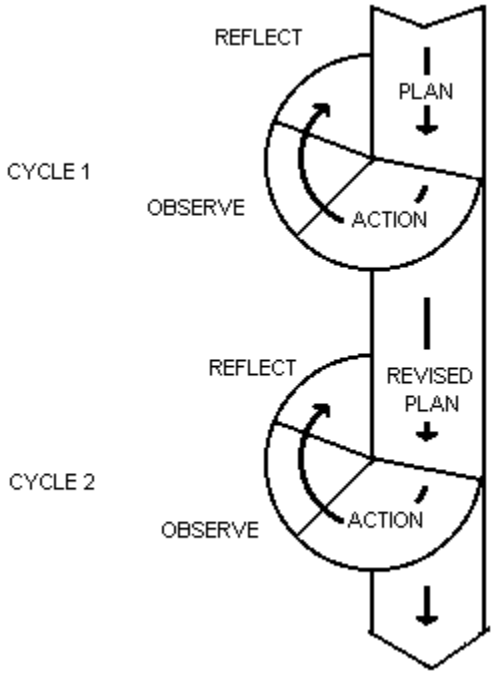
Summary

The study is very encompassing—any longitudinal study presents this to the research team. The study will continue to follow through with maintaining copious records of the processes and the data collected during this study. It is hoped that this study will foster the development of further studies, which will serve to enhance the findings. The following section deals with the detailed or “micro” component part of the research. From the longitudinal case study also comes the following model of action research designed for implementation in this study.

Research Methodology

Moving Toward Reflective Practice

Model of the Action Research Spiral: (from Kemmis & McTaggert, 1981)



> · · · Action research is a form of self-reflective inquiry undertaken by participants in social (including educational) situations in order to improve the rationality and justice of (a) their own social or educational practices, (b) their understanding of these practices, and (c) the situations in which the collaboratively...sometimes in cooperation with outsiders. (Kemmis, as cited in Hopkins, 1985)

The action-research model provides a number of features that address the nature of the question: First, the action-research model provides a context for reflective practice which affords participants opportunities to examine questions in the context of daily practice and to gain an understanding of the purpose behind the choices educators make. Thus, participants become a source of expertise in the field. Second, the action-research model recognizes the autonomy of the participants and identifies the participant as source of knowledge and an agent of change. Third, the action-research model provides a setting for participants to share in a collaborative fashion. In this context participants can share knowledge with other participants as they collaboratively address issues that they face.

The following is an overview of action-research. While the model of action research shapes some of the methodological design, the methodology designed for this research may not be identified by some as action-research simply because the research begins with a problem, rather than the process of action-research developing a problem to be discussed. The methodology seeks to discover how participants view their involvement in the Skill Centre Project and looks to uncover recommendations they have to improve their area of influence. In a sense we are asking them to explore what is working for them, and what is not working. The nature of action-research pulls together a team with a common view to improve practice—this is essential in this type of project.

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What is Action Research?

Writers such as Kemmis and McTaggert argue that action research can be traced back to around the conclusion of World War II. They give credit to this research methodology to the work of social psychologist, Kurt Lewin. The method of action-research has evolved over the years and has encompassed many different fields of study including: science, medicine, cultural studies, social reconstruction, and education to name a few. Despite the debate about the origins of action research, Kurt Lewin, in his book, *Resolving Social Conflicts* (1948) (Schubert, 378) developed a foundation of inquiry which described the process in action-research as "proceeding in a spiral of steps, each of which is composed of planning, action and the evaluation of the result of action" (Kemmis and McTaggert, 1990). Lewin also suggested that for social change to take place, the practitioners must influence and initiate such change. Lewin laid the foundation for the sense that knowledge could be extracted from those engaged in the problem, rather than older models of research that tended to call for experts, outside the situation, to observe and come to certain conclusions. Kemmis and McTaggert define action-research as:

> · · · "inquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out" (Kemmis and McTaggert 1990:5).

And, Elliot defines action-research as "The study of a social situation with a view of improving the quality of action within it." (Elliot, 1989) Common to action-research is the following cycle of planning, acting, observing, and reflecting. (Elliot, 1989)

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- **Planning** in which the participants of the research project come together to discuss identified problems which they wish to address.
- **Acting** in which the participants construct and carry out a plan to address the problem that has been identified.
- **Observing** in which the participants examine and collect data on how the plan is working.
- **Reflecting** in which the participants reflect upon what they have observed and make sense of what is being observed. In the observations the participants are to note changes and then record these changes. Reflection is supported through a collaborative effort in which the participants discuss the findings and bring up new questions that arise out of the first cycle. The process is then repeated with a new revised plan placed before the participants. The cycle continues until the problem is addressed. (Adapted from the work by Dr. Terry Carson on Action Research at the University of Alberta.)

In the context of this study a whole component of the methodological design has been shaped toward this model as it is believed that a similar research model in terms of the cycle of inquiry will provide a vehicle to explore the question, while addressing the concerns of triangulation, and concerns relating to validity that are important issues to resolve in any research design.

The Participant as a Source of Knowledge

Elliot is an important contributor to applying action-research to an educational setting. In his paper, "A Framework for Self-Evaluation in Schools," Elliot identifies what he calls two areas of tension. The first

source of tension is found between the current school systems and the public in terms of individual accountability. Elliot points out the desire for the public to find out what was happening in the school system became the impetuous for numerous evaluators entering the classrooms in search of action. Evaluators were seen as experts of research. The common result was that research tended to distance itself from the realities of lived-experiences within the daily lives of the teachers and their students. Consequently, the questions that needed to be addressed were not being addressed because the very structure and purpose that precipitated the research was unable to address the very questions that needed to be addressed. Elliot states:

> · · · The teacher knew there was a world of difference between identifying problem situations through an evaluation of review and doing something about them. Working through a check-list does not necessarily stimulate professional development and improvements in practice; even if it satisfies the requirements of accountability. (Elliot, p. 4, 1989)

The second area of tension Elliot observes is that teachers and students in past systems of research design were often examined as objects of research. His concern is that teachers were not seen as resources of a specific knowledge, but responsible only to administer knowledge to students as given by the society they served. In this paradigm teachers were expected to be technicians. Elliot also points out that changes in the educational system were needed. Teachers, students, and the public were all in agreement; however, what changes were needed and how such change could be incorporated was another question.

Elliot continues his concern by suggesting the existence of a link between identifying a problem, solving it and then implementing change. A link must be found between self-evaluation and professional development. Elliot explored a research design that would lead teachers to a cycle of self-reflection, with a purpose to identify areas in teacher practice that were identified by the teacher as areas that needed to be examined, a research project intended to plan such action, and a research design which would allow teachers to evaluate the changes that were taking place. Elliot identified this research model as action-research.

Elliot continued his work by outlining the process of analysis, pointing out that the process of analysis has no ending and is as such not based in action, whereas action research attaches itself to specific concrete situations. Action-research differs in that it is validated through practice.

Elliot sees research as empowering those engaged in a project. He suggests that change must be identified by participants because they are closest to the needs shared in common with the group. Once a problem is identified a process of research can initiate, articulate, and help implement the needed change. Change can be understood as having three levels: 1) Change in the curriculum is found by providing a forum to accentuate the voice of teachers. 2) The second level is to move curriculum planning and acceptance of such planning back to the grass-roots recognizing the autonomy participants as important dimensions in defining problems, influencing change, etc. 3) The third level works to develop personal efficacy through personal growth and connection with other participants in the field and through supplying action to initiate change.

Change begins by allowing individuals to identify areas of need in terms of their daily practice. Individuals purposely moving toward a common collaborative goal of improvement in personal practice influence positive changes within an institutional system. Institutional change brings about positive social change.

Within the context of this study, the process discussed by Elliot can be modified and constructed to direct the teacher to evaluate and reflect upon teacher practice as it relates to computers being used in the classroom. Teacher language to technology is an examination of the process and questions formulated by

teachers in the context of their practice. There are differing components here to action-research. Action research is not merely an examination of an issue, but a research that pursues change.

Modifying the notion of Action Research

The previous description of Action research is directed more towards those with a familiarity of research design. However, given the context of this study and the number of active participants without familiarity to research designs, it is incumbent to build a model that is more "reader" or "participant" friendly. The following descriptions do not in any way lesson the substantial contribution that Action research has made in social science research. Action research is established in substantial refereed journals, published research papers, and dissertations. It has also been incorporated into business, medical science, political science and numerous other disciplines.

The following modification in designing the model maintains the integrity of the research design. Any further discussions into the details related this modified design will be provided in the final draft of the research and supported in the published components of this research project.

Why Action Research?

Action research design provides a lot of leeway in its creation. The researcher can incorporate many research methodologies including surveys, questionnaires, interviews, statistical studies, narratives, reflective practice, observations, and case studies. The research can also be effective in both a "micro" research and/or "macro" research setting. In fact, you can have research within research as this study will demonstrate. The research is also beneficial as it helps to inform and guide practice. It seeks practical solutions through collaboration and promotes "teamwork" to accomplish change within an educational setting or even an entire system. It can be used to identify successes, challenges, and lessons and practical steps to deal with each aspect. Action research empowers stakeholders as participants tend to gain a sense of efficacy to express their observations and also to encourage others in doing the same. This open communication supports a freedom to make a difference in daily practice, as well as building a common purpose to work together for an identified need. Action research is result orientated. Participants tend to be engaged and active rather than "outside" observers.

In this study, action research is used in the context of the longitudinal case study to observe specific practices or actions that the participants observe.

In this type of research the model will help students, parents, teachers and other stakeholders to build upon what they discover. Such input will help students to be successful in finding strategies to complete their grade 12 diploma while also seeing whether such a program will also encourage students to continue in their education at a higher education centre. In fact, action research could be as simple as following a cohort's processes as they develop support groups for students in their CTS classes and then follow through by finding what works and what does not work in helping their peers to complete their education and career plans.

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A New Paradigm for Action Research

The following provides a graphical overview of the action research design. It is intended to be written in friendlier language for the novice and expert in research design.

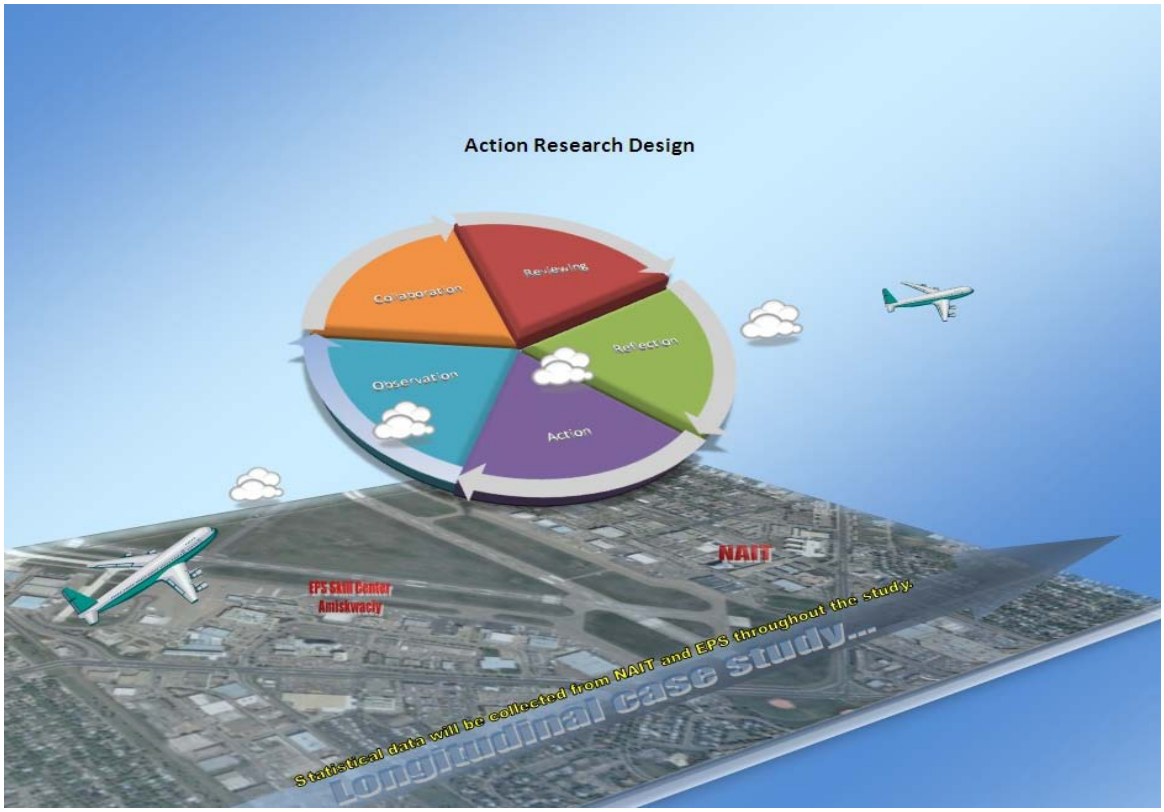

Figure 1 Research Design Overview

The above diagram uses the metaphor of airplane travel. In this metaphor the student is going on a journey to a future destination—his or her career. The student begins at an airport—in this case it is the Amiskwaciy Centre where the Pilot Study and the First Phase of research on the Skill Centre will take place. (It was natural to choose this airport/trip scenario seeing that the first course will be in airplane maintenance.) From this place of reference, the study begins. To begin to understand the entire research design, follow the logical steps provided in the next few pages.

Airport

Place

You will notice an aerial photograph of the Edmonton City Airport. This picture provides a geographical context to the research. In most research designs this is called the limitations or delimitations. In other words this is where the study will take place, who will be part of the study, and how long the study will take to complete. Other considerations include how participants will be chosen, how data will be collected, and how it is to be interpreted.

Time

The study will take place over the five years as indicated in the previous section.

Participants

In this research, the study will first take place at the Amiskwaciy High School. The study will include all students involved in coming to this specific Skill Centre. Others will also be part of this study. They will be denoted as "participants." Participants can include parents, teachers, instructors, curriculum specialists, researchers, administrators, councilors, and industry specialists. Their input into the research is essential to this study as it will provide information that represents those active in the Skill Centre Project. Participants will be encouraged to be involved in the many levels of the research including the more intensive longitudinal study.

The study will include a specialized study of Aboriginal students from Amiskwaciy—and other schools. Students, teachers, and parents will be interviewed, and asked to take part on an on-going basis. It is hoped that the Aboriginal community will become engaged in the Action Research components as their input would provide valuable information to this study.

The other contributing partner of course is NAIT, which is also labeled with red lettering in this diagram. As in all research design, the research will take place at specific geographical or population centres. In this case it will be the Amiskwaciy Centre (EPSB) and also at NAIT. In terms of NAIT involvement in the study, NAIT will be contributing to the training of staff early in the Skills Centre Project. This will also be included as part of the study. It is also important to note that as students move through the various Phases of the study—through the cycles, NAIT will begin its contribution to the study by collecting data from students entering NAIT, and also following-up on students that are part of the longitudinal study.

Airplane

The airplane represents the goal of the project to see students complete a grade 12 diplomas and move onto higher education. In this case, since the Skill Centres focus on CTS, the natural conclusion will be to follow how such a program can help students to further their education at NAIT. You will notice that the airplane goes beyond the boundaries of NAIT which is indicative of students pursuing a career and moving into horizons well beyond those years of formal institutional training. The research will examine this "flight" and obtain data through the use a variety of strategies in order to capture the successes, challenges, and lessons learned from the implementation of a new The Skills Centre Project for CTS training in the Edmonton Public School Board. As mentioned before, the airplane also will have airplane pilot crews, which will ensure the safety of the airplane and will represent the various professionals that will collaborate on the project to ensure the airplane has a clear and barrier free flight. This will represent exchanges between instructors and teachers of both systems, exchanges of expertise between administrators, and exchanges of information from industry and business. This information will be valuable to shape curriculum and provide excellence in teacher training for both institutions.

Clouds

The clouds in the sky are positioned to indicate that throughout the study there will be key points where specific micro "snap shots" of data will be collected using specific methodologies focused on specific activities. For example, EPSB and NAIT will be asked to provide current statistical data at the intake of all

students, and at the completion of each school term. The data gained from these surveys and questionnaires will be used to assess whether there are specific trends or correlations that emerge that will inform the cumulative information gathered from other studies being held in the field.

The clouds also point to places where participants in the study will provide feedback through the use of questionnaires, surveys, narratives, journal writing, and interviews. The methodology in this case is similar to doing biographical, ethnological, and historical types of data collection. The questions from these methodologies will be used to provide greater depth and insight into what the statistical data provides for us in the study. Careful validation procedures will be employed to ensure the accuracy of the data collected.

Providing such an over view provides a more comprehensive view of the questions that the research is examining. In research terms this builds validity into the study through triangulation, which is essential in any research project.

Jet Stream or Wind Direction

The diagram also has a grey translucent arrow near the ground. This symbolizes the direction of the study and that the study is not “static” but ongoing. This component of the study is called a Longitudinal Case Study. The case study will provide an historical “context” for the entire study. The longitudinal focus provides information that is hard to obtain because many questions and observations do not surface unless a study is longitudinal in nature. As mentioned before students and other stakeholders will be encouraged to stay in the research program over the duration of the study.

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Action Research Component of Study

The action research component demonstrates the ongoing hermeneutic component of the research. It is called hermeneutic because it indicates that knowledge gained in the study builds and shapes what is learned previously in the study.

It is this process that makes our research engaging to our students, parents and teachers because it involves them as "researchers" rather than passive spectators. As the research continues through a number of cycles—indicated by the grey arrows, new questions emerge, and these questions direct the study into pathways that may or may not have been considered when the study was first initiated.

Thus, such research is not linear or entirely chronological. The research demonstrates that is there is no finality to the research, it continues well beyond the project and actually establishes a way of supporting the project by engaging participants to take an active role in what they are doing. In this case, participants will be involved in the Skill Centre Project and seek to understand what works, and what does not. The participants in the study will work as a cohort and begin to suggest places that might work better to bring success to the program. In this way, participants have a buy into the program as they are actively engaged in improving and sharing how the program has worked for them. This builds community and empowers the participants with a synergy that is passed on to participants entering the program. It is from this type of methodology that we see today in many schools and institutions professional learning communities. In this study, students, teachers, and parents will communicate together to find workable solutions in advancing this program. The research findings will come from the cohort discussions and provide identifiable and practical action to the answers being sought after. Thus the question shifts slightly from -is the following program a success? to here are some actual "deliverables" or "action" or "applications" that will bring us success. Both arrive at the same question, but one provides a testing of the actions rather than remaining in a theoretical level.

You will also notice there are five components in the cycle in this diagram: Reviewing, Reflection, Action, Observation, and Collaboration. These components are composed of a cycle interdependent on each other.

While the diagram suggests an order, they are really not ordered at all. Some of the areas may overlap or work together to accomplish the cycle of inquiry that is portrayed here in the diagram. A closer look at each of the cycles will help us to understand the entire cycle more clearly.

Reviewing

The reviewing component has the idea of reviewing and analyzing information during a study. The information may come from a discussion with someone—not necessarily in a collaborative cohort. It can come in the form of an observation, a question that someone poses about the project or an observation about a very specific strategy used in the project. Reviewing also encompasses what someone may have read, or heard or viewed that relates to a current question that group is attempting to address.

Thus reviewing looks at being attentive to what type of information can be used to learn more about a subject, an action, or a direction that the project is taking. It seeks to find support and information to understand what is being observed. It may ask what type of information you can find about the subject you are studying. Do you think this information should be included in your studies? Why, or why not? Or, you may be reviewing another way to get information to your parents about the CTL program. What type of strategies can you think of that will be useful to your parents? If you can't think of any, reviewing can help you look for the information. Working together you can review the information and then decide what may work and what will not.

Reflection

Reflection works well to record and discuss personal observations about things that work and things that do not work for the participant in a study. Reflection is merely writing down, or recording your personal thinking about what is being observed. Often this is done using a journal or in today's world it might be updating a BLOG or Wiki. The reflections can be shared with the cohort or left for the observation of the researcher who will keep such information private. Reflection pushes us to active participation as it provides us with a way to explore our thinking more, to listen to the input of others, and to respond to what others are saying. In a sense it is asking, what have I gained or learned from this interaction and what do I still want clarity to understand?

Action

When the cohort meets together—whether on-line or face to face, the group will decide whether there are areas that have been identified that could be, or need to be acted upon. The group can discuss strategies that could be implemented and then carry it out. At times, it could have an element of risk—that is some ideas work, and others may not. The key to this step is to experiment a little to find practical ways to improve on what is being done. Actions could be a simple as taking time to encourage instructors, students, or staff members in your school. By such a strategy, you may have determined that this will build up the person and they will continue to do the "great" job they are doing

Actions do not always have to be "fixing" something. Action could also be realizing that students are not getting enough "hands-on" time in class to keep them engaged in the topic area. Perhaps the action will provide some suggestions on how to keep the students focused in a certain topic area. Remember, this is not intended to tear down someone or to "blame" someone. It seeks to support each other so that together a solution is discovered and put into action that works. The action should be recorded by members in the group. This action is to be recorded as "data" for the research project. Such data is useful in knowing that a strategy works, or doesn't work.

Observation

Members of the cohort will observe the "action" over the next few weeks to see if they can see change. In the case of the staff member who receives encouragement, someone in the group might ask them how it made them feel and as a result what happened. This observation over a period of time demonstrates how the "action" or practical idea worked. What is observed by others in the class that suggests a change has occurred? Perhaps other students encourage each other, or the student is now more focused in what he or she is doing. Observations should be noted and written down so that they are remembered for when the cohort meets again.

Collaboration

Collaboration is when the cohort meets together to share ideas, observations, and encouragement. The cohort will be responsible to set up a way that works for the participants to work together—it is a commitment to support one another through this program and to be part of helping to create a successful environment for all those involved at the Skill Centre. The cohort might want to meet every now and then face to face or may desire to form an on-line community. There will be help and support for those being involved in the cohort. It is hoped that some cohorts will continue throughout the three years of the study. Others will be involved in shorter time periods.

Ethical Considerations

The study will ensure that the highest code of ethical research standards is followed throughout the entire program. It will also ensure that all EPSB, NAIT, and other research guidelines and considerations are followed. The researcher will also ensure the reliability of data and ensure that members are respected in all aspects of the study. This will ensure that participant's identities will be guarded and that all information obtained will be held in a safe and secure place until destroyed after the study is completed. The standards for questionnaires, surveys and interviews will be openly stated, and permission from NAIT and EPSB will be obtained. The following of professional and cultural protocols will also be highly valued and maintained by research staff throughout the study. This includes protocols for initiating Aboriginal Elders and/or leaders into the study.

Conclusion

In conclusion, the document has provided an overview of the research design that will be used to determine successes, challenges, and lessons learned from the implementation of a new The Skills Centre Project for CTS training with the Edmonton Public School system.

The design is based on a solid base of literature from the field. It is founded on directives from the Alberta Government and it reflects good practice. The design is inclusive in nature and provides avenues for stakeholders to address issues that will come for the study. Stakeholders can play an active role in the processes and creation of a program that is excellent in every way. As mentioned before, this study purposely facilitates the collaboration of various stakeholders who include students, teachers, parents, and administrators, curriculum specialists, NAIT instructors, industry specialists, and a variety of social agencies. The research will also provide for individual input, as well as, input gained from collaborative settings where stakeholders can even provide input through active learning cohorts.

It is important also to mention that the study also includes a parallel study that will examine students, parents, and staff from the Aboriginal community and measures their successes in the program. As well, the study will also seek to highlight the successes of other key interest groups in the study including special needs or coded students.

Finally, the study incorporates a number of research methodologies including a longitudinal case study, statistical design research, and components of action-research. Incorporated into these three major methodologies will be data collected from statistical analysis, survey and questionnaires, narratives, and reflective practice materials.

The longitudinal case study design provides an ongoing research model will help determine whether this strategy could be implemented as a Pan Alberta model of delivery for CTS courses in the Province of Alberta.

As a final statement, this study stands out from other studies in the field. The research will guide practice while it explores the many facets of the Skills Centre project. The research will also inform educators from both institutions, as well as find practical ways that can be initiated in creating a system that truly works for our students. If we are to act upon the notion that all students learn; all students succeed then it will take the efforts of all those engaged in this study to see this to fruition. The statement must not become mere rhetoric lost in a distancing between action and theory. The research before us bridges both worlds in which theory shapes action; and action shapes theory. This is the challenge for us. Let us together fulfill the mandate and reach forward for the children of the 21st Century.

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Original Proposal Documentation
September 30, 2007

Applicant Information

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Project Overview

Project Name: Secondary to Post-Secondary Career Technology and Trades Skills Program

Duration of Project: Five Years

Updated on September 20, 2007

Original Proposal Documentation
September 30, 2007

A. Project Summary

What Need is Being Addressed?

Alberta's high school to post-secondary participation rate is the lowest in Canada when university participation is measured separately. "*Just over half of Alberta's high school students make the transition into advanced education*."[1]

An appropriately designed and implemented career pathway program can act as a catalyst, encouraging high school students who would not normally continue their studies in post-secondary education, to do so. Highly integrated and focused career technology and trades studies offered in Alberta high schools can provide a seamless bridge for high school students into post-secondary studies. Effective career pathway programs can also influence student success and retention both in both secondary and post-secondary settings as noted in a recent study published by the National Research Center for Career and Technical Education. The study's findings strongly suggested that "*transition programs that provide high school students with a dual focus on CTE [Career and Technical Education] and academic preparation can facilitate student transition to college and a career without hindering academic performance*."[2]

Expected Outcomes

In the long term we fully expect an increase in secondary to post-secondary participation rate within the Edmonton Public School system. This new approach to learner transitions programs, will assist the Ministry of Education and the Ministry of Advanced Education and Technology in their efforts to realize success in Alberta becoming a:

- Learner-centered society,
- Vibrant learning community, and
- Seamless education system for all Albertans.

In the short term, we can expect to see more high school students including underrepresented groups, i.e., Aboriginal and new immigrant:

1. Indicating that they have a clearly defined career goal including the intent to enrol in a post-secondary program, and
2. Matriculating into post-secondary education.

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1 Foundational Learning and Diversity Sub-Committee Report to the A Learning Alberta Steering Committee, May 2006

2 Career and Technical Education Pathway Programs, Academic Performance, and the Transition to College and Career, National Research Center for Career and Technical Education, University of Minnesota, May 2007, http://www.nccte.org/publications/infosynthesis/r&dreport/CTE_Pathway_Programs.pdf, last accessed on September 4, 2007

Additionally, student and system benefits arising from the initiative include:

- Increased student success and student retention in both the secondary and post-secondary systems as a direct result of increased student motivation as demonstrated by increased confidence and satisfaction levels.
- Increased overall literacy and numeracy proficiency of participants as a direct result of fully aligned programming (i.e. alignment of secondary core subjects with technology and trades subjects as part of the students chosen career path) as demonstrated by increased proficiency in core secondary subjects of English Language Arts and Mathematics.

Project Scope

The overall project scope will include:

- The development and repurposing of secondary and post-secondary education curriculum related to Technology and Trades studies.
- In order to both evaluate the project outcomes and to add to the knowledge base of career technology education research, we will be hiring a research associate to design, administer, and analyze the results of an Educational Research Project. The research portion will investigate the efficacy of Career Technology and Trades Skills program which includes a rigours academic and technical core, as well as selective off-campus learning opportunities. The evaluation portion will analyze project outcomes and success factors, and make recommendations for future consideration.
- The development of the Technology and Trades Skills Centre inclusive of the following work units in each centre.
    - A Pedagogy and Curriculum Development Unit - instructional designer(s), subject matter experts from EPSB and NAIT, and administrative support staff;
    - A Delivery Unit - EPSB and selectively NAIT faculty will be teaching in the centre with delivery costs born by EPSB;
    - A Professional Development and Training Unit for teachers teaching in the skills program including access to a NAIT developed Technology and Trades In-Service program for teachers, as well as other types of technical training for teachers, and if possible cross training for qualified NAIT faculty;
    - A Technology and Trades Resource Unit - access to curriculum, curricular materials, laboratory and shop materials, and reference materials;
    - A Business, Industry, Secondary Education, and Post-Secondary Education Collaboratory Unit, where educators (teachers and instructors) meet with Business and Industry Advisors;
    - Utilization of EPSB/NAIT laboratories and shops – Skill Centre; and,
    - An Educational Research Unit – EPSB and NAIT will jointly develop and administer an educational research project.

Sustainability

Long term sustainability will be provided on multiple fronts. The table below outlines ongoing activities and associated responsibilities. Both organizations will commit to long term support of the Technology and Trades Skills program so long as the program is mutually beneficial to secondary and post-secondary students, EPS, and NAIT.

Table 1: Ongoing Activities and Responsibility Matrix

	Activity Description	Responsible Organization
1	Program delivery and elements associated with orderly delivery of curriculum	Edmonton Public Schools
2	Continued maintenance of curriculum and curriculum materials – jointly owned and licensed curriculum	Jointly Held
3	Continued professional development of EPSB teachers and select NAIT faculty	NAIT will take the lead on development and delivery of professional development In-Service training for teachers. Delivery costs will be reduced as much as possible.
4	Administration of Dual-Credit System inclusive of record keeping and longitudinal data collection	Jointly Held
5	Delivery site facility improvements and maintenance	Edmonton Public Schools
6	Capital Equipment directly associated with Technology and Trades Transition program	NAIT
7	Capital Equipment directly associated with the administration of the program including teacher and faculty computers and other resources	Jointly Held

B. Links to Innovation Fund Objectives and *A Learning Alberta*

The proposed project meets all the Innovation Fund objectives and additionally, will assist the Ministry in progressing towards successful fruition of at least three of the policy outcomes included in the *A Learning Alberta* report. These three policy outcomes include: a learner-centered society, vibrant learning community, and seamless advanced learning for all Albertans.

Innovation

The proposed project is innovative in its approach to bridging the gap between secondary and post-secondary education. The project is predicated on the notion that a continually engaged student will be a successful student. As noted earlier the National Research Center for Career

and Technical Education findings indicated that participation in a career and technology education Skills programs:

1. Does not interfere with academic course-taking and in fact in many cases may enhance student success in core academic subjects;
2. Had a positive influence student's feelings of confidence and satisfaction regarding their selection of post-secondary education and career pathways;
3. Had a positive influence on persistence in post-secondary education, even in cases where remedial coursework was required; and
4. Finally, the dual-credit nature of such programs played a "*role in the participants' accelerated progress and success at earning college certificates and degrees*", and further, also suggests that "*dual credit, in association with academics and CTE, may be an incentive for college persistence and completion*."

The adoption of this innovative approach to increasing high school student matriculation from secondary into post-secondary education is directly aligned with *A Learning Alberta* policy outcomes of:

1. A Learner-Centered Society by providing high school students with advanced learning opportunities when and where they need it most;
2. Vibrant learning Communities by tearing down the secondary and post-secondary education barrier to learning, providing integrated learning opportunities when and where the learner needs it most; and
3. Seamless Advanced Learning for all Albertans by offering the value-add learning package to students as a dual-credit, career technology and trades skills development program of studies.

Similar initiatives are underway in Alberta, each with a slightly different focus although the intent in each is the same – successful transitions from secondary education to post-secondary education. In the case of the Calgary Board of Education, Career Pathways program students have 10 possible pathways from which they can select. The Career Pathway program has only been available to students the last few of years and therefore results have as yet to be published. The other model currently in place in Alberta is the Central Alberta Career Prep. While modestly successful over the past several years, the management function was taken over by Alberta Career Education Network, a not-for-profit society. The impact of this move is unknown at this time.

Both models reference strong articulation into post-secondary as an important feature of the program. Unfortunately both models fail to fully deliver on this feature. To be considered for advanced placement or dual-credit, high school course learning outcomes and objectives must match up with learning outcomes and objectives in a post-secondary course. In both cases the mix of learning outcomes and objectives in the high school courses fail to reach sufficient depth and rigour to be considered equivalent to a post-secondary education course. In most cases the subject matter is too diverse for depth and rigour to occur. The model proposed herein requires that the student select a pre-defined stream or concentration of studies where there is sufficient academic and technical depth and rigor to meet post-secondary standards. Sufficient academic and technical depth and rigour will be determined by mutual agreement using secondary and post-secondary curriculum standards as benchmarks.

The Technology and Trades Skills program proposed herein is modeled on two successful dual-credit high school career and technology transition programs. These are the Sabin-Schellenberg Skills Center in Milwaukie, Oregon and The Center for Advanced Learning in Gresham, Oregon**.** It should also be noted that there has been a significant surge in dual-credit opportunities Canada and the United States in the past 10 years. As noted in the *A Learning Alberta* companion document, A Cross-jurisdictional Overview of Accessibility, Affordability and Quality, "*dual credit programs on a large scale are relatively new in Canada but have been available in a number of United States (US) jurisdictions for over thirty years*." [3] Most notable is the dual-credit programs offered in Manitoba where a significant proportion of the high school population is Aboriginal. A 2003 review noted that the "*implementation of dual credit courses is having a widespread positive impact for learners and educational providers in Manitoba.*"[4] Likewise, in Ontario a review of the pilots currently underway lead reviewers to comment that they "*see dual credits/dual programs as an integral part of Ontario's education system to promote student success,*"[5]

Collaboration

The proposed project is collaborative in its approach with the Edmonton Public School Board. Students completing the Technology and Trades Skills program will seamlessly bridge into their NAIT program of choice. By providing this opportunity we will improve access to post-secondary education for high school students participating in the skills program. The Technology and Trades curriculum provided in the transition program will be jointly developed by EPS teachers and NAIT faculty. As part of the evaluation of the program, we will be monitoring the success of high school students progressing through post-secondary education, and as required, improve curriculum to better serve student needs. The tables below summarize each partner's reasons for participating, and their respective roles and responsibilities.

Table 2: Partner's Reasons for Participating

	EPSB	NAIT
1	Increase number of students successfully completing high school, i.e., increase retention, increase student literacy and numeracy achievement.	Increase number of fully prepared students applying to NAIT programs – by definition fully prepared includes: academic, motivational, and vocational preparation.
2	Increase number of students successfully matriculating to post-	Increase number of students who are fully engaged in their program, i.e. confident in: correct program

3 Advanced Education: A Cross-jurisdictional Overview of Accessibility, Affordability and Quality, A Document to Support the *A Learning Alberta* Discussion Papers, June 2005

4 Manitoba Advanced Education and Training, and Manitoba Education and Youth, The Dual Credit Initiative: Pathways to Post-Secondary Education in Manitoba, 2003, http://www.edu.gov.mb.ca/ael/all/publications/dc_report.pdf, last accessed on September 12, 2007

5 Armstrong, Desbiens, and Yeo, Report on the Analytical Review of Phase 9 School/College/Work Initiative Pilot B – Dual Credit/ Dual Program 2005-2006, http://www.gotocollege.ca/pdfs/SCWI_Phase9_Review-Generic.pdf, last accessed on September 12, 2007

	secondary.	choice, academic abilities.
3	Identification and standardization of programming in non-Skills Centre schools.	Increased full-credit articulation between EPS secondary schools and NAIT.

Table 3: Partner's Roles and Responsibility

	EPSB	NAIT
1	Curriculum Development	Curriculum Development
2	Teacher participation in taking Technology and Trades professional development	Development of Technology and Trades Skills professional development program for teachers
3	EPSB facilities for Technology and Trades Skills Centres	NAIT facilities for curriculum development and program administration
4	Delivery of curriculum	Faculty available for consultation and support
5	Resource Centre at each site	Faculty and staff supply necessary resources – curriculum, technical, reference materials
6	Site specific Business, Industry, and Education Collaboratory	Provide linkage to NAIT Program Advisory Committee members
7	Educational Research Unit: Teachers will participate in development, administration, and evaluation of the research study	NAIT faculty and staff to participate in development, administration, and evaluation of the research study
7	Inter-visitation of high school teachers to NAIT	Inter-visitation of NAIT instructors to high schools

Participation

We believe that both Aboriginal and new immigrant students will find the courses particularly appealing given the focus on practical career skills development. As well, literature and research studies indicate that an appropriate balance of academic and career Technology and Trades curriculum can act as a significant motivator for these and other underrepresented groups. As an example, in Manitoba, where Aboriginal peoples make up 13.6% of the population, dual credit programs are seen to be an "*effective way of directing high-quality programming to high-needs groups*".[6]

6 Manitoba Advanced Education and Training, and Manitoba Education and Youth, The Dual Credit Initiative: Pathways to Post-Secondary Education in Manitoba, 2003, http://www.edu.gov.mb.ca/ael/all/publications/dc_report.pdf, last accessed on September 12, 2007

C. Project Design

Outline of Project Design

Inputs from Partners

- EPS and Alberta Education –Programming developed based on Career and Technology Studies (CTS) curriculum and locally developed courses
- EPS Facilities – Site for Skills Centres
- NAIT – Technology and Trades curriculum, i.e. program curriculum
- NAIT – Technology and Trades curriculum materials, i.e. program curriculum materials
- NAIT – Technology and Trades reference resources and materials

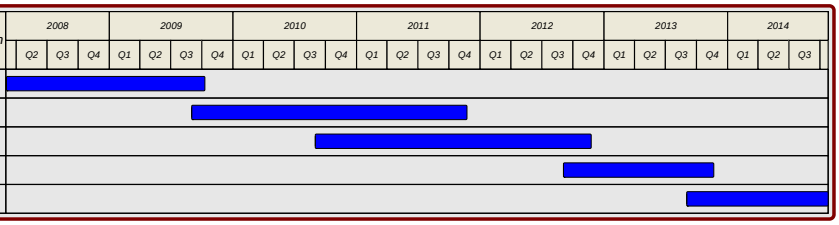
Activities and Timelines

- Overall Project Duration - Analysis to Final Evaluation: 4 ½ years
  Please reference Gantt Chart 1 on the next page. Additional detail may be found in Appendix 1.
- Analysis Phases (180 days in total) – During this phase the partners will evaluate, match, and align secondary and post-secondary learning outcomes and objectives.
- Design and Development Phases (400 days in total) – During this phase the partners will design and develop curriculum and curricular materials and activities for the skills program
- Implementation Phases (1280 days in total through to completion) - Start Up – September 1, 2008: Begins with Grade 10 students taking core subjects plus some introductory post-secondary education course work, depending on pre-requisite and co-requisite considerations.
- Implementation – Completion – May 1, 2014: Students who started in Grade 10 complete their 2nd year of post-secondary education at NAIT.
- Evaluation - November 30, 2014: Completion of the final report and project evaluation. Annual progress reports presented to EPS and NAIT respective Boards.

The Gantt chart below provides an overall summary of Analysis, Design, Development, Implementation, and Evaluation (ADDIE) and the stages of roll out through to completion.

Gantt Chart 1: Overall Summary inclusive of NAIT Delivery and Evaluation

ID	Task Name	Start	Finish	Duration
1	Grade 10 ADDIE	3/3/2008	10/9/2009	420d
2	Grade 11 ADDIE	9/1/2009	11/22/2011	581d
3	Grade 12 ADDIE	9/1/2010	11/23/2012	583d
4	NAIT 1st Year Delivery and Evaluation	9/3/2012	11/20/2013	318d
5	NAIT 2nd Year Delivery and Evaluation	9/2/2013	11/20/2014	319d



Outputs Realized

Direct and tangible results include:

- Dual purpose curriculum which will serve both secondary and post-secondary education needs.
- A comprehensive model for assessing learner transitions from secondary to post-secondary education.
- A body of knowledge in the form of a research project which will assess the efficacy of learner transition programs, as well as the elements which ensure student success.

Outcomes

In the short term we expect to see:

- An increase in the number of high students indicating their intent to pursue post-secondary education as a direct result of participating in a Technology and Trades Skills program.
- An increase in the number of high school students indicating that they have a clear career goal and plan to achieve their academic goals, after completion of at least one year Technology and Trades studies.
- An increase in the number of high school students within a Technology and Trades Skills program of studies to matriculate to post-secondary education within one year of high school completion as compared to that of the general high school population.
- An increase in the number of 'underrepresented' students matriculating from secondary education to post-secondary as a direct result of the Skills program.

In the long term, especially if this model is adopted across the systems, we can expect to see:

- An provincial increase in secondary to post-secondary participation rate, and
- Renewed emphasis on technology and trades education.

Why approach taken is taken?

The genesis of this project dates back more than six years. Most recently, the partners began the process of the fleshing out the project deliverables, timelines, and budgets. As the benefits for students, EPS, NAIT, and Alberta are profound; selection of the project was easy. Published research shows that focused connections between secondary and post-secondary education can lead to greater student persistence and heightened motivational levels in both secondary and post-secondary education.

Long Term Plans

As noted in Part A: Project Summary – Sustainability, both organizations will commit to long term support of the program so long as the program is mutually beneficial to the students served and to the partners. Ongoing funding for the initiative will be in-kind support from each of the partners.

Applicability across the Advanced Learning System

We believe that the structure of the project is well suited for applicability across the secondary and post-secondary education systems. The reasons for this are two-fold; both of which are related to curriculum standards. First, the secondary curriculum is directly aligned to CTS and locally developed courses learning outcomes and objectives, and as such is portable to any Alberta high school. Secondly, the post-secondary curriculum is, for the most part, directly aligned to national standards, i.e., Canadian Council of Technicians and Technologists, or the Canadian Information Processing Society, or for trades, the Interprovincial Standards Red Seal program – national occupational analysis for apprenticeship trades. As such, post-secondary education institutions in Alberta with similar national accreditations will have comparable programming in place.

C. Project Governance

Overall Governance Structure

Decision Making Processes

A steering committee, comprised of senior academic and administrative members from the each organization, will have oversight of, and make decisions regarding, the nature of organization changes, education content, resources, and communication about the initiative. A project management team consisting of project manager, research director, secondary education director, post-secondary education director, and communication manager will implement all aspects of the initiative and report directly to the steering committee. Decision-making will be by consensus, wherever possible.

Project Management

A project manager will be hired by NAIT (lead) to coordinate all activities of the project. The project will be managed by standard project management principles and best practices.

Legal and Financial Responsibility

Legal and financial responsibility will be part of the NAIT's responsibilities as lead institution.

Accountability and Reporting

Reports required by the funding agreement, will be provided to the Ministry by NAIT; however, both parties will collaborate on the contents of the reports.

E. Evaluation Plan

Project Evaluation

The evaluation scheme will encompass two major themes. The first theme involves the analysis, design, development, and implementation of a career pathways program. The second theme involves a research study into the efficacy of career pathways in secondary and post-secondary education. There will be considerable overlap between the two themes; however, the evaluation of the first – success of the project, will be our primary focus with the outcomes of the second – a research study, being secondary.

The evaluation of the project (both themes) will use standard research methodology to address the research question: How does the post-secondary transition and performance of participants in the transition programs compare to that of students in other high school programs in Alberta? The evaluation and research projects will encompass quantitative and qualitative research in both the secondary school setting as well as the post-secondary setting. The evaluation methodology will include the use of surveys, interviews, and focus groups; analysis of marks and attendance records for the assessment of academic preparation; comparison of outcomes of participation and non-participation in transition programs at the secondary and postsecondary levels. Detailed information on the evaluation and research study may be found in Appendix 2.

Prior to designing the transition program, we will complete an assessment of best practices adopted across North America. We will start with an in-depth literature review, followed up by selective site visits (to high schools, colleges, technical institutes, and universities) to view successful models first hand. Additional information on the types of questions posed may be found in Appendix 3.

Dissemination of Lessons Learned?

To ensure that the lessons learned are transfer to the education community, as part of the overall project scope, the partners will develop and publish of an electronic Knowledge Base Exchange to ensure that the research findings and project learnings are available to all. Secondarily, the partners will develop a communication strategy to reach out to significant stakeholders (K-12 and post-secondary education systems, parents, and Albertans in general).

F. Financial information

1. Project Budget

Project Revenue Source	Contribution Amount	Confirmed Funding (Yes/No)
Contributions from participating organizations.		
Edmonton Public Schools Board (in-kind)	$1,729,991	Yes
NAIT (in-kind)	$674,066	Yes
Total (in-kind)	$2,404,058	Yes
Fundraising (discussion with business and industry will focus on fundraising for capital equipment, although no amount has been identified as yet)	$-	N/A
Other government of Alberta funding	$-	N/A
Other funding sources	$-	N/A
Innovation Fund – requested funding	$1,925,904	No
Total Project funding	$4,329,962	

Project Expenses		
Budgeted list of anticipated expenditures. A detailed budget schedule is included in Appendix 4	$4,329,962	
Total Project Expenses	$4,329,962	

2. Can project be modified if less funding is available?
   No, the project budget is for development of Skills Centre inclusive of curriculum development and student progress/success monitoring.

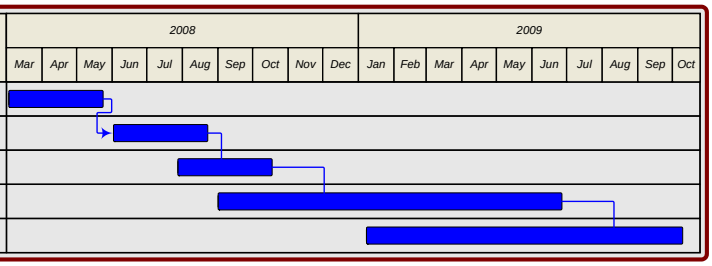
3. Identify source of funding if this project is to continue beyond funded period.

Revenue Source	Contribution Amount	Timeframe/ Duration of funding	Confirmed Funding (Yes/No)
Ministry of Education – Edmonton Public Schools base grant for delivery of programming	Variable dependent on student numbers	Ongoing	Yes
NAIT – High School Liaison Function	Variable dependent on activity annually	Ongoing	Yes

Appendix 1: Project Timelines

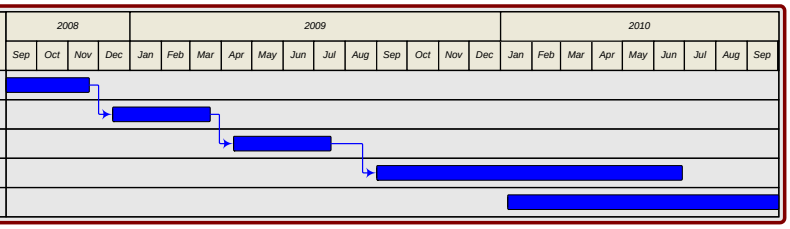
Gantt Chart 2: Grade 10 Analysis, Design, Development, Implementation and Evaluation

ID	Task Name	Start	Finish	Duration
1	Analysis Phase	03/03/2008	23/05/2008	60d
2	Design Phase	6/2/2008	8/22/2008	60d
3	Development Phase	7/28/2008	10/17/2008	60d
4	Implementation – Grade 10	9/1/2008	6/26/2009	215d
5	Evaluation – Grade 10	1/8/2009	10/9/2009	197d



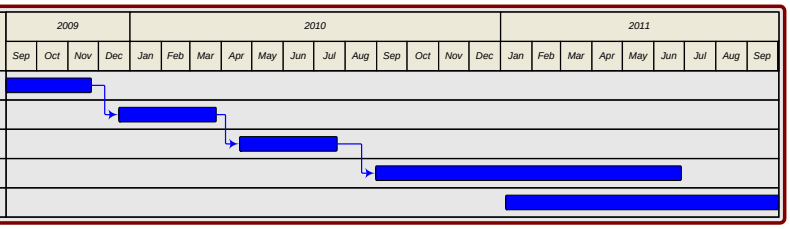
Gantt Chart 3: Grade 11 Analysis, Design, Development, Implementation and Evaluation

ID	Task Name	Start	Finish	Duration
1	Analysis Phase	01/09/2008	21/11/2008	60d
2	Design Phase	15/12/2008	20/03/2009	70d
3	Development Phase	13/04/2009	17/07/2009	70d
4	Implementation – Grade 11	01/09/2009	28/06/2010	215d
5	Evaluation – Grade 11	08/01/2010	11/10/2010	197d



Gantt Chart 4: Grade 12 Analysis, Design, Development, Implementation and Evaluation

ID	Task Name	Start	Finish	Duration
1	Analysis Phase	01/09/2009	23/11/2009	60d
2	Design Phase	21/12/2009	26/03/2010	70d
3	Development Phase	19/04/2010	23/07/2010	70d
4	Implementation – Grade 12	31/08/2010	27/06/2011	215d
5	Evaluation – Grade 12	06/01/2011	07/10/2011	197d



Gantt Chart 5: Overall Summary inclusive of NAIT Delivery and Evaluation

ID	Task Name	Start	Finish	Duration
1	Grade 10 ADDIE	3/3/2008	10/9/2009	420d
2	Grade 11 ADDIE	9/1/2009	11/22/2011	581d
3	Grade 12 ADDIE	9/1/2010	11/23/2012	583d
4	NAIT 1st Year Delivery and Evaluation	9/3/2012	11/20/2013	318d
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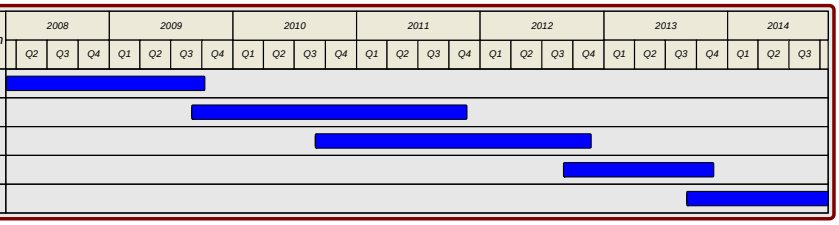

Appendix 2: Project Evaluation Schema and Research Study

How does the post-secondary transition and performance of participants in the transition programs compare to that of students in other high school programs in Alberta?

The project evaluation and research design will include the following elements.

- Participants – A complete assessment of variables: age, gender, racial/ethnic background and socioeconomic status;
- Remedial level in Mathematics, and English Language Arts – Because no other index of high school performance is often available, the level of remedial coursework in Math and English courses from very low levels through post-secondary level will be used as covariants in analyses of post-secondary performance, persistence, and credential attainment;
- Post-secondary education informed intent – this pre and post assessment of intent to attend will be used as covariant in the analyses;
- Participation in the skills program – quantity and rigor of course(s) taken versus performance in secondary and subsequently post-secondary
- Level of engagement with stakeholders (students, parents, business and industry, and post-secondary institutions) involved in the skills program – i.e. level and number of articulation agreements, activities undertaken including use of products and service (brochures, calendars, on-site counselling, etc.), and the actual amount of skills program enrolment in post-secondary.

Dependent Variables will include:

- Post-secondary participation
- Post-secondary readiness – assessed either by placement exams or by amount and level of remedial work required – level determined by ranked level 1 – adult basic education to level 7 - higher order skills, knowledge, and abilities.
- Academic performance – as defined by academic performance in junior high, high school, and post-secondary.
- Persistence –high school through post-secondary education based on time taken, remedial work required, and courses retaken.
- Credential attainment – i.e. level of final credential attained
- High school academic preparation – academic progress in all courses taken (non-academic course rank of 2 through to calculus at 8).

Appendix 3: Questions Posed

1. Students:

- What student type would benefit most from a dual credit program experience?
- Can students benefit from transition programs from secondary schools into post secondary education or should they go out to work first?
- Will students enroll in post-secondary courses while in secondary school?
- Can adding post-secondary course requirements on secondary students motivate them?
- Can students experiencing behavioural, academic or motivational difficulties benefit?

2. Type of Program:

- Does the type of program being offered attract and sustain the type of student intended?
- For which programs are there champions?
- Do modes of delivery vary in outcomes intended?
- How can we get students properly oriented for success?
- Can post-secondary setting count for co-operative education?
- Does a post-secondary in a school work? If so for whom?
- Does a school in a post-secondary work? If so for whom?
- Does section size matter in dual credit/dual program courses?
- Do secondary students need a standalone cohort or can they succeed in integrated sections with other post secondary students?
- Does computer assisted instruction / online learning work in dual program pilots?
- Does Dual Credit replicate other post-secondary programs?

3. EVALUATION:

- Will the initial positive effect of the "pilot" programs have a lasting impact on student achievement?
- Is the present system adequate in tracking students for credit status at the start of the program, credit accumulation while in the program, graduation rates, post-secondary applications, post-secondary credits earned and employment/apprenticeship attainment?
- Who should do the evaluation of the programs/courses?
- Who should evaluate student achievement for secondary credit?
- Who should evaluate student achievement for post-secondary credit?
- What are the indices of success for "pilot" programs?
- Will the short term gains be sustained over the long term?

4. DEMAND:

- Dual credits/dual programs – an idea whose time has come?
- Does the Government want dual credit/dual programs?
- Do students want dual credit/dual programs?
- Do the educational institutions want dual credit/dual programs?
- Is there a sufficient demand and benefit to merit further investment?

5. CAPACITY/FACILITIES:

- Do post-secondary or school boards have space to accommodate "pilot" programs?
- Should secondary students fill post secondary seats in post-secondary courses?
- Will the educational systems make these programs a priority and find the space?
- Can the places in schools and post-secondary where there are unfilled seats and spaces be identified and utilized?

6. STAFFING/LABOUR RELATIONS

- Is there sufficient staff with the level of experience and commitment to sustain programs?
- Are there the right selection processes in place to ensure outstanding teachers match program instructional demands?
- Are there sufficiently strong teacher/ post-secondary faculty relationships to promote dual credit/dual programming?
- Do post-secondary have sufficient administrative support to make programs successful?
- Who can teach a secondary or post-secondary course for credit recognition?
- Are there staff champions for particular programs and not for others?
- Who supervises whom?
- Are the work spaces and office spaces adequate?
- Does dual credit/dual programming by virtue of retaining students create more employment for secondary school teachers?
- Does the dual credit/dual program create more employment for the post-secondary faculty?

7. SUPPORT SERVICES

- Do students have access to post-secondary and school support services?
- Do post-secondary and school boards have the capacity to provide support services if dual credits/dual programming becomes mainstreamed?
- Are there provisions for exceptional students?

8. SCHEDULING

- How can the schedules of the school boards and post-secondary be coordinated?
- How do you coordinate school breaks, statutory holidays, PA Days?
- How can you coordinate the printing of calendars and the other media information elements?

9. ADMISSION

- Who is best positioned to identify prospective secondary school students for dual credits/dual programs?
- What are the selection criteria utilized that would lead to student success?
- Are participants admitted to the post-secondary program?
- Do post-secondary credits attained provide preferred or improved access to post secondary programs?

10. REGISTRATION

- Will the 'pilot' students be fully enrolled secondary students?
- Are students able to be simultaneously enrolled in the post-secondary while being fully enrolled in secondary school?
- Is the student enrolled at post-secondary as a post secondary student? If so, will the courses taken be on an official post-secondary transcript?

11. CREDITS

- What is a credit (number of hours) for secondary school recognition?
- Who should determine if a post-secondary course is recognized as a secondary credit?
- Do the post-secondary course credits have portability across the post-secondary or with other post-secondary or with other school boards?
- Are board courses compulsory or optional for secondary graduation?
- Is the course taken true dual credit where a single course counts toward graduation requirement both for secondary school and post-secondary?
- Should post-secondary course hours be counted as co-op hours in dual credit programs?

12. TRANSPORTATION

- Should transportation be provided for secondary students attending post-secondary?
- Who should pay for extra transportation costs?
- Do transportation challenges differ between urban and rural settings?
- What is the capacity to expand/extend existing transportation services to accommodate dual credit/dual program students?

13. FEES

- Should students pay for:
  - material costs?
  - tuition?
  - student activities (discretionary such as access to swimming pools?
  - registration?
  - evaluation (PLAR, apprenticeship)?
- Should dual credit/dual program students pay less or more than regular post-secondary students?
- If fees are to be charged who should pay? The student? The parent? The school board? The Government?
- Should fees be waived by the post-secondary?

14. FUNDING

- Who pays for what?
- Are different program delivery models more or less costly?
- What funding model best fits dual credit/dual program initiatives?
- What is the most sustainable funding for an ongoing program?
- Should parents/student have to pay?
- Is a dual credit/dual program any different than any other targeted intervention program that incurs additional costs in order to improve results for targeted populations?
- Does the tax payer have to pay twice?

15. PLANNING/COMMUNICATION

- Will timing of grant approvals affect the quality of delivery of pilot projects?
- In the future can Ministry approval be given in a timely way so as to allow early student recruitment and teacher/faculty scheduling?
- Will the good will extended in Pilot projects to date be able to be sustained if proper notification is not provided?
- Will there always be annual funding approval or is it possible to get multi year funding to stabilize arrangements?
- Are regional planning teams working?
- How can we help students and parents to identify the dual credit/dual program as an educational option?
- How can we assure good communications between school boards and post-secondary?
- How can we sustain the leadership of the pilot projects?