The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College

by

Rena Borovilos

A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy
Department of Leadership, Higher and Adult Education
Ontario Institute for Studies in Education
University of Toronto

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Doctor of Philosophy (2015)

Rena Borovilos
Department of Leadership, Higher and Adult Education
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Abstract

Dual Credit Programs were introduced to the province of Ontario in 2005 as part of an educational reform initiative designed to help more students graduate high school and transition to college. The number of Ontario Dual Credit Programs has grown tremendously over the years but research has not kept pace with program expansion. This study was conducted to help fill that research gap.

This study investigated the impact of Dual Credit Programs on college students by focusing on a group of students who participated in dual credit courses and activities and subsequent postsecondary programs at Humber Institute of Technology and Advanced Learning (Humber College) in Toronto, Ontario. The study also included a comparison group of non-dual credit participants who attended postsecondary education at the same institution and at the same time as the dual credit participants.

Best described as a retrospective longitudinal study, this mixed methods research involved three data sources: college student records, college students, and college faculty. The data used in this study was derived from the student records, an online student survey, student interviews, and faculty interviews.

College students who were previously enrolled in dual credit courses and comparators with no dual credit experience were found to differ in college preparation, college engagement, and college success but not college persistence. However, independent analyses of the college
records of dual credit participants showed them to differ on college persistence depending on the number of dual credit courses they completed.

The findings of this study have implications for policy and practice, theory development, and future research in the dual credit area.
Acknowledgements

I am grateful to a number of people who supported me through this long and often arduous journey.

First and foremost, I would like to thank my kind and thoughtful daughter Alexandra. She helped me in countless ways over the course of this project and I was lucky to have her by my side.

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Finally, I would like to thank OISE consultant Oyesa Falenchuk for advising me on the quantitative piece of this study; School College Work Initiative Project Officer David Armstrong for keeping me abreast of the year-to-year developments in Ontario Dual Credit Programs; and retired Education Officer with the Ontario Ministry of Education Mary Smart for the material she shared with me on dual credit in this province and beyond.
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I dedicate this dissertation to my daughter, Alexandra Aliferis.
Chapter One: Introduction

The purpose of this study was to investigate the impact of Dual Credit Programs on college persistence, engagement, success, and preparation. The research focused on dual credit alumni who were enrolled in full-time postsecondary programs at Humber Institute of Technology and Advanced Learning (Humber College) from Fall 2008 to Fall 2012. The study also involved a comparison group of postsecondary students who attended Humber College during that same time period but who did not have dual credit experience.

Humber College is one of 24 postsecondary institutions that make up the publicly funded college system in the province of Ontario. This system consists of 19 Colleges of Applied Arts and Technology (CAATs) and five Institutes of Technology and Advanced Learning (ITALs). The CAATs were established by provincial legislation in 1967 to provide career education and training for the purpose of enhancing Ontario’s skilled workforce. In 2003 the Government of Ontario created the ITAL designation that allowed a limited number of CAATs to offer a more diverse mix of programs including having up to 15% of their programing in applied degrees (Ministry of Training, Colleges and Universities, 2003). All Ontario public colleges offer Dual Credit Programs in partnership with regional secondary school boards.

Humber College is located in the Greater Toronto Area (GTA), a large urban region that encompasses four other public colleges: Centennial College, George Brown College, Seneca College, and Sheridan Institute of Technology and Advanced Learning. While Humber College offers a unique mix of programs and credentials and tends to service a particular geographical area, it has a number of characteristics in common with the other GTA colleges, including an urban setting, multiple campuses, numerous and varied programs, and a large and diverse student population.
It should be noted that before this investigation was launched, written permission to identify Humber College was sought (Appendix A) and received (Appendix B) from the President of that institution.

**Background**

The benefits of higher education for individuals and society are well documented in the American and Canadian literature. According to a recent report published by The College Board (Baum, Ma, & Payea, 2013) in the United States, college graduates are more likely than high school graduates to report higher earnings and less likely to be unemployed or to rely on social assistance. In terms of the non-pecuniary benefits of higher education, the report stated that individuals with a postsecondary credential tend to be healthier, demonstrate more civic involvement and, in the case of women, spend more time facilitating enrichment activities for their children. In Canada, attainment of a college or university credential has been linked to higher earnings, lower unemployment risks (Employment and Social Development Canada, 2008), higher life expectancy (Wilkins, Tjepkema, Mustard, & Choiniere, 2008), better health (Mikkonen & Raphael, 2010) and lower participation in crime (Riddell, 2004).

The benefits of postsecondary attainment have also been viewed from a wider economic perspective. In his influential publication *People without jobs – Jobs without people*, Rick Miner (2010) stated that Ontario’s future prosperity rests on its ability to produce a sizeable, well-educated labour force that is capable of meeting the demands of an increasingly knowledge based global economy. He explained that, just as the province’s work force is set to shrink in response to demographic shifts brought on by an aging population, the emerging knowledge economy will demand an unprecedented number of highly skilled workers with postsecondary credentials. Miner argued that in order to prevent the scenario of people without jobs and jobs
without people, steps must be taken to increase postsecondary graduation rates, especially among underserved populations.

Ontario colleges have an important role to play when it comes to assisting groups that are struggling to attain higher education, most notably by contributing to the development and implementation of strategies that enhance postsecondary participation, persistence, and completion. The dual credit initiative is one of the more promising of these strategies. It encourages academic progress by allowing high school students to take college courses that count towards both their Ontario Secondary School Diploma (OSSD) and a college credential. Originally developed to help elevate secondary school graduation rates among students facing significant impediments to educational advancement, the dual credit strategy is increasingly being utilized to help students augment their awareness of various college pathways, make a smoother transition to college, and succeed once enrolled in a college program.

Programs that facilitate the transition from high school to college – often referred to as Credit-Based Transition Programs (CBTPs) – have been in existence for some time, especially in the United States where they come in a variety of types including Advanced Placement (AP), International Baccalaureate (IB), Middle College High School (MCHS), Early College High School (ECHS), Tech Prep, Dual Enrolment and Dual Credit models (Bailey & Karp, 2003). Before the dual credit learning option was introduced to Ontario in 2005, the province’s CBTPs consisted of AP and IB programs geared to high-achieving, university-bound students, and the Ontario Youth Apprenticeship Program (OYAP), a school-to-work program that trains students in the skilled trades. In contrast to programs involving universities, the dual credit strategy is built on partnerships between secondary schools and Ontario colleges. Moreover, it explicitly targets students who face significant challenges in
graduating from high school. This includes “disengaged and underachieving students who have the potential to succeed but are at risk of not graduating, and students who left school before graduating” (Ontario Ministry of Education, 2013, p. 5).

The genesis of the Ontario dual credit initiative can be traced back to a pivotal, multi-phase, longitudinal study conducted by Allen King and his colleagues (King, 2002, 2003; King, Warren, Boyer, and Chin, 2005) that revealed the province’s graduation rate to be an unacceptable 68% (in 2003-2004). This research, along with another investigation that established a connection between student disengagement and early school leaving (Ferguson, Tilleczek, Boydell, & Rummens, 2005), prompted the Government of Ontario to embark on a series of funding, policy, and legislative changes designed to help struggling high school students attain their OSSD and set a path to postsecondary education.

In 2003, the Ontario provincial government launched the $1.3 billion Student Success Strategy, a three-phase secondary school reform initiative organized around four themes: increasing literacy, increasing numeracy, establishing pathways to postsecondary education, and developing school cultures that foster student engagement (Zegarac & Franz, 2007). Implemented from 2003 to 2004, Phase 1 of the strategy focused on providing “immediate and remedial assistance” (Ontario Ministry of Education, 2005a, p. 2). This included revising the grade nine and ten applied math curriculum, upgrading facilities to improve the delivery of technological education, and providing each school board with a “Student Success Leader” for the purpose of developing local action plans to meet the needs of students in that jurisdiction (Ontario Ministry of Education, 2005a; Zegarac & Franz, 2007). The initial phase of the student success initiative also offered options to students who were experiencing challenges in high school. It gave struggling grade nine and ten students an
additional six compulsory credit courses to choose from (Ontario Ministry of Education, 2005a) and funded 105 Lighthouse projects aimed at students who had difficulty learning in the traditional classroom or who left high school before graduating (Ministry of Education, 2005a; Zegarac & Franz, 2007). One Lighthouse project had high schools and colleges establishing partnerships to develop Dual Credit Programs (Philpott-Skilton, 2013).

Introduced in 2004 and implemented until 2006, Phase 2 of the Student Success Strategy focused on “resource and program development” (Zegarac & Franz, 2007, p.3). During this phase efforts to re-engage students were intensified. This led to class size limits being placed on some key courses, the expansion of Lighthouse projects to 125 in total, and the addition of 1,300 high school teachers to deliver new courses and programs (Ontario Ministry of Education, 2005a, 2005b). It was midway through Phase 2, in 2005, that the province first began offering Dual Credit Programs. Phase 2 also saw the introduction of 800 “Student Success Teachers” dedicated to assisting students who were struggling to earn their OSSD by tracking their academic progress, helping them accumulate necessary credits, and advocating on their behalf for better programs and services (Ontario Ministry of Education, 2005a). The Student Success Strategy aimed to have one student success teacher in every secondary school by the 2007-2008 academic year (Zegarac & Franz, 2007).

Phase 3 of the student success initiative was launched in 2005 as “an ambitious program to increase educational attainment for all high school students through greater coordination and legislation” (Ontario Ministry of Education, 2005a, p.3). Concurrent to introducing the final phase of its educational reform package, the Government of Ontario set a target to increase the high school graduation rate to 85% by 2010 (Ontario Ministry of Education, 2005a). It also passed Bill 52, the Learning to 18 Act, which was designed to accomplish five main goals:
1) increase the graduation rate and decrease the drop-out rate; 2) support a good outcome for all students; 3) provide students with new and relevant learning opportunities; 4) build on students’ strengths and interests; and 5) provide students with an effective elementary to secondary school transition (Ungerleider, 2008). The main intent of Bill 52 was to keep students “learning in a classroom or workplace training program, including apprenticeship, until age 18 or until they graduate” (Zegarac & Franz, 2007, p. 15).

Ontario’s educational reform initiative is now known as the Student Success/Learning to 18 Strategy. Since 2006, it has brought a number of changes to the educational landscape of the province. The strategy is responsible for a number of programs and initiatives that help students complete their OSSD and transition to postsecondary education. Each Ontario high school now has a “Student Success Team” (comprised of a principal, student success teacher, guidance counsellor, and special education teacher) that supports “students who are struggling, who need extra attention to help them graduate, or who are looking for new challenges in high school” (Ontario Ministry of Education, 2014d). Through this team, students have access to three major programs that go beyond the traditional secondary school curriculum. Firstly, Students can participate in the Expanded Co-op Program (Ontario Ministry of Education, 2014b) that allows them to complete school-arranged work placements capable of earning them up to two credits toward their OSSD. A second option, the Specialist High Skill Major (SHSM) Program, helps students acquire experience related to a particular employment sector like hospitality and tourism or health and wellness. This option specifically involves the following components: a bundle of eight to ten grade 11 and 12 credits (four major credits that provide sector specific knowledge and skills; two to four other required credits from the Ontario curriculum; and two co-op credits); sector recognized certification; sector experiential learning opportunities and career exploration;
postsecondary reach ahead experiences; and documentation of essential skills and sector-related work habits (Ontario Ministry of Education, 2010b). Finally, students can choose to participate in one of the province’s many Dual Credit Programs. In addition to being supported by the Student Success/Learning to 18 Strategy, the dual credit initiative involves the Reaching Higher Plan, a $6.2 billion investment that seeks to increase the accessibility and affordability of postsecondary education (Ontario Ministry of Finance, 2005).

Ontario Dual Credit Programs are jointly delivered by secondary schools and colleges. As such, they require the financial support and oversight of the Ministry of Education (MEDU) and the Ministry of Training, Colleges and Universities (MTCU). When the dual credit initiative was launched, both Ministries looked to a pre-existing, collaborative entity, the School College Work Initiative (SCWI), to play a central role in program funding, expansion, and management. Launched in 1997 for the purpose of building better partnerships between colleges and secondary schools, SCWI was originally mandated by MEDU and MTCU to fund and support activities, programs, and forums that would provide students with a more seamless transition from high school to college by aligning curriculum between the two systems, articulating pathways to college and apprenticeship programs, increasing students’ awareness of the educational and career opportunities afforded by colleges, and providing opportunities for linkages between college and secondary school staff (Council of Ontario Directors of Education, 2011). The SCWI mandate was expanded in 2005-2006 to include the funding and development of dual credit projects.

A solid administrative structure (see Appendix C for SCWI organizational chart) allows SCWI to effectively fund, approve, manage, and monitor dual credit projects. Financially supported by the two education ministries, SCWI is overseen by the Council of Ontario Directors
of Education (CODE), a body that includes select directors of education from Public, Catholic, and French language school boards. Requiring the collaboration of CODE and the Committee of College Presidents (COC), the initiative is jointly managed by a Co-Management Team (CMT) consisting of college presidents, school board directors, and representatives from MEDU and MTCU. The Executive Director of CODE concurrently holds the position of SCWI Project Manager, a role that involves administering SCWI contracts between MEDU/MTCU and CODE, convening meetings of CMT, and providing reports on existing Dual Credit Programs to both ministries. The Project Manager is also responsible for creating and disseminating an annual Request for Proposals (RFP) document that invites college and school board partners to submit joint applications for dual credit projects.

In addition to a Project Manager, SCWI employs a Project Officer whose responsibility it is to administer the approval, implementation, and accountability of SCWI projects. The Project Officer – a member of CMT who works closely with the Project Manager – heads a Liaison Team that interacts with regional bodies called Regional Planning Teams (RPTs). Each RPT is responsible for the overall coordination of dual credit undertakings in its jurisdictions. Individual Liaison Team members are assigned to specific RPTs for the purpose of communicating and clarifying SCWI policy, monitoring RPT activities and events, and completing additional responsibilities as assigned by the Project Officer. There are 16 RPTs across Ontario, each consisting of representatives from colleges, school boards, government and, in some cases, business and industry (a list of the 16 RPTs and their partners is included in Appendix D). Under the leadership of a Chair, a Financial Services Coordinator and, when required, a Coordinator, RPT members design all new program proposals, evaluate programs, approve all program
promotional materials, manage their dual credit budget, and coordinate the preparation of program reports.

**Statement of the Problem**

Since they were first introduced almost 10 years ago, Ontario Dual Credit Programs have experienced tremendous expansion; increasing from 14 programs involving 361 students in 2005-2006 (Armstrong, Desbiens, & Yeo, 2006), to 513 programs involving 18,584 students in 2012-2013 (SCWI, 2013). Despite this remarkable growth, the programs remain largely untested. In fact, the literature on program effectiveness is currently limited to one analytical review (Armstrong et al., 2006) conducted shortly after the dual credit initiative was launched; some MEDU and SCWI memoranda, documents, and reports that mostly present data collected by high school and college dual credit staff; and two doctoral dissertations (Whitaker, 2011; Philpott-Skilton, 2013) that investigated Dual Credit Programs at two separate Ontario colleges.

Taken together, the available literature suggests that Dual Credit Programs have positive outcomes for high school students. Little is known, however, about program effectiveness as it relates to students who have completed dual credit courses and activities, graduated high school, and matriculated to postsecondary education.

Two studies (Whitaker, 2011; Philpott-Skilton, 2013) have examined the dual credit phenomenon from the vantage point of Ontario colleges. Whitaker (2011) explored the extent to which Dual Credit Programs at St. Lawrence College increased access to and participation in college. He questioned high school students, parents, teachers, professors, and administrators who were involved in the programs during the Fall 2008 term to learn their perceptions and expectations regarding program success. Whitaker wanted to bring to light the elements of St. Lawrence Dual Credit Programs that contributed to their success. Another one of his goals was
to identify the specific student group or groups that the programs best served. Whitaker’s study provided insight into the impact that dual credit programing has on college access and participation but his focus on high school students did not allow reliable conclusions to be made on whether the dual credit experience contributes to the success of participants once they get to college.

Philpott-Skilton (2013) examined former dual credit participants who were enrolled in full-time postsecondary programs at Fleming College in two semesters: Fall 2010 and Fall 2011. She set out to explore and describe how Dual Credit Programs completed in secondary school impacted the persistence and success of students who transition to college. Philpott-Skilton’s work established a base for studying the impact of Dual Credit Programs on students who actually matriculated to higher education. My investigation built on this earlier work in four ways. First, my predecessor’s research was a case study of Fleming College, a small eastern Ontario postsecondary institution that services an expansive geographical region comprised mainly of small cities and rural tracts. In contrast, my study involved Humber College, one of five large colleges situated in southern Ontario’s GTA, arguably North America’s most diverse and multicultural urban centre. Second, Philpott-Skilton’s study examined dual credit students who were enrolled in postsecondary programs at Fleming College in Fall 2010 or Fall 2011. My research looked at similar students within a four year time frame that extended from Fall 2008 to Fall 2012. Third, the earlier study involved the participation of students as informants while my investigation involved the contributions of both students and college faculty. Finally, my study built on Philpott-Skilton’s research by involving a comparison group comprised of non-dual credit postsecondary students who were each selected to match a particular dual credit participant on key demographic and program-related variables.
Purpose of the Study

The purpose of the current research was to explore the extent to which the benefits of participating in the dual credit learning option extended beyond high school graduation to the college years. The study focused on a group of students who completed Dual Credit Programs at Humber College and subsequently enrolled in postsecondary studies at the same institution. Investigating these students and comparing them with their non-dual credit peers has provided useful data on the long-term outcomes of the dual credit experience. It is expected that the results of this study will be of interest to educators, scholars, and government, as well as to students and parents.

Rationale and Significance of the Research

Dual Credit Programs were implemented in Ontario to help secondary school students complete their OSSD, earn college credits, and transition to higher education. As provincial high school graduation rates continue to rise – they have gone from 68% in 2003-2004 to 83% in 2011-2012 – and approach the government’s stated target of 85% (Ontario Ministry of Education, 2014c), it is likely that educational policy will increasingly align with the final objective of the dual credit initiative; namely, preparing students to succeed at the postsecondary level. It is therefore important to study the impact that Dual Credit Programs have on the experiences and outcomes of students who have transitioned to college.

My own perspective on dual credit education is informed by the knowledge I have gained as a dual credit professor, SCWI contributor, and dual credit contact person for Humber College’s Department of Liberal Studies. I first became involved in the dual credit initiative in December 2006 when I was called upon to develop and deliver a college level social psychology course aimed mainly at disengaged and underachieving secondary school students. Having had no
experience teaching “at-risk” high school students, I was immediately struck by the many challenges that such students faced both inside and outside the classroom. At the same time, it became clear to me that whether they were labelled disengaged and underachieving or not, the students in my dual credit class appeared to benefit from participating in a college course and being exposed to a college environment. Most of these individuals showed high levels of motivation and engagement in class and managed to complete the course requirements, earning both high school and college credits. To my delight, a few of my dual credit students went on to win Humber College academic awards and several applied and were admitted to popular postsecondary programs offered by Humber College and other institutions of higher education.

As I continued teaching in the Humber College Dual Credit Program, I became increasingly more interested in contributing to dual credit education on a broader scale. This led me to participate in SCWI symposia, forums, and projects, and even present on dual credit at national and international conferences. With time, my involvement expanded to include a leadership role as a dual credit contact person for the department of Liberal Studies in the College’s School of Liberal Arts and Sciences and, more recently, participation in dual credit research.

It is widely acknowledged that a researcher’s work is informed by his or her general orientation about the world and the nature of research. That is why Creswell (2009) suggested that investigators clearly articulate their worldview assumptions. I acknowledge my pragmatic, advocacy/participatory, and post positivist assumptions. While all of these perspectives exert some influence on my life and work, I am most strongly defined by pragmatism, a world view that Creswell (2009) aligns with people who are problem-oriented and interested in finding solutions. That said, I must concede that my advocacy/participatory tendencies have gained strength over the years, particularly in relation to dual credit students. Working with these young
people has shown me that a significant level of inequality exists between them and more advantaged learners. This insight has led me to conclude that more effort and resources should be put into helping disengaged and underachieving students and students from underserved populations to acquire the educational benefits available to more privileged individuals and groups. In spite of my advocacy leanings, I did not wish for my research to be unduly influenced by any potential bias. Consequently, in conducting this study, I made every effort to be as objective as possible, but recognize that my own lens of necessity influenced how I selected and interpreted the data.

**Research Questions**

One overarching and three subsidiary research questions drove this study.

The overarching research question is:

What impact does participation in Dual Credit Programs have on college student experience and outcome?

The subsidiary research questions are:

1. To what extent do dual credit participants and non-dual credit participants differ in college persistence?
2. To what extent do dual credit participants and non-dual credit participants differ in college engagement?
3. To what extent do dual credit participants and non-dual credit participants differ in college success?
4. What aspects of the Dual Credit Program prepare students for college life as perceived by dual credit participants and college faculty?
Theoretical and Conceptual Frameworks

There is very little theoretical literature directly related to dual credit and other CBTPs. As a result, the study primarily relied on theories of college student change to explain how Dual Credit Programs might lead to their intended outcomes. It primarily focused on three college impact models of student development: Astin’s (1993, 1999) Theory of Involvement, Tinto’s (1993) Longitudinal Model of Student Departure, and Rendón’s (1994) Validation Theory. The research was also informed by Karp, Hughes, and O’Gara’s (2008) concept of “information networks” and Merton’s (1957) concept of “anticipatory socialization”. Finally, one implicit (Bailey & Karp, 2003) and two explicit (Karp & Hughes, 2008; Philpott-Skilton, 2013) dual credit conceptual frameworks were relevant to the study.

Overview of Methodology

The research took the form of a case study with comparative and longitudinal elements. It examined students with and without dual credit experience who were enrolled in Humber College postsecondary programs from Fall 2008 to Fall 2012. The study used a mixed method research design that included both quantitative and qualitative strategies. Data came from three main sources: college administrative records that document student academic outcomes, dual credit and non-dual credit students who completed a survey and participated in interviews, and college faculty who participated in interviews.

Scope and Limitations of the Study

In addition to offering high school students the opportunity to complete college courses for credits that count toward both their OSSD and a college credential, Ontario Dual Credit Programs offer apprenticeship training that culminates in apprenticeship certification. While many colleges are highly active in dual credit apprenticeship training, this study was limited to
the investigation of students who completed standard dual credit college courses and not those resulting in apprenticeship certification.

Studying dual credit education within the context of a single Ontario college can provide detailed, in-depth information about program outcomes. However, the case study approach also brings challenges. Most notably, it does not allow consideration of Dual Credit Programs offered by other colleges. Such programs may have distinctive characteristics, attract different types of students, and result in unique benefits to participants. Given these and other potential differences, it must be acknowledged that the case study approach used in the current study does not permit generalization of findings beyond narrow context of Humber College.

As Dual Credit Programs grow, so does the available literature on participants and outcomes. For example, SCWI and the Ontario government release several documents and reports each year on dual credit programming. Regarding the literature informing this study, material is included up to the end of 2013.

**Researcher’s Perspective**

My active participation in dual credit education presented both benefits and potential challenges to the research. The study benefited by the information, resources, and insights that I have gained through eight years of working with dual credit students, staff, and administrators. In terms of challenges, my position within a Humber College Dual Credit Program, particularly as a professor, had the potential to bias the study through the responses of certain participants with whom I once had an instructor-student relationship. To reduce any undue influence of participants who were once students in my courses, I was not directly involved in the recruitment and data collection phases of the investigation; these aspects of the study were handled by Research Assistants (RAs).
Outline of Remaining Chapters

This thesis document is organized into five chapters. Chapter One, the current introductory chapter, included sections on background information, statement of the problem, purpose of the research, rationale, the research questions, theoretical and conceptual frameworks, overview of methodology, scope and limitations of the research, and researcher’s perspective.

Chapter two consists of a review of the relevant literature. The chapter distinguishes between different types of CBTPs, presents a brief history of the types of Dual Credit/Dual Enrolment Programs that emerged in the United States; discusses Dual Credit Programs found in Canadian jurisdictions; documents the growth of Ontario’s dual credit initiative; compares American and Canadian Dual Credit/Dual Enrolment Programs; explores the theories related to dual credit and related programs; and presents a critical review of the findings and methodologies of studies that have evaluated relevant CBTPs.

Chapter three details the research design, methodology, data collection sources, and instruments of the study. The chapter also contains a description of the case study college and its Dual Credit Programs.

The findings of the study are presented and analyzed in Chapter four, with the research questions providing an organizing framework.

Chapter five is the final chapter of this dissertation. It contains the conclusions of the study and states the implications of the research for policy and practice, theory development, and future studies. Information regarding the dissemination of the research findings and the overall conclusion of the study also appear in Chapter five.
Terms and Definitions

Advanced Placement (AP) Program

Aimed at university-bound high school students, this program involves courses that can earn students postsecondary credits if they perform adequately on a standardized exam administered upon course completion.

Credit-Based Transition Program (CBTP)

This is a general term used to identify any program that allows students to earn postsecondary credit for coursework completed while they are still in high school.

Dual Credit Program

In this program, high school students receive both high school and college credits for the same college-level course.

Dual Enrolment Program

This is a program in which students are concurrently enrolled in high school and college courses but they do not necessarily receive secondary and postsecondary credits for the same course.

Early College High Schools (ECHS)

Typically located on or near college campuses, these schools help students earn both a high school diploma and two years of college credit in four or five years.

International Baccalaureate (IB) Program

Internationally recognized, this program involves a comprehensive two-year course of study at the high school level that culminates in exams and postsecondary credits based on exam cut-off scores.
Middle College High Schools (MCHS)

These small high schools are located on college campuses and provide students who are at risk of dropping out of school with a program of study that includes both secondary and postsecondary courses, including dual credit courses.

School College Work Initiative (SCWI)

The group that manages, approves, and monitors Ontario Dual Credit Programs. Jointly funded by the Ministry of Education and the Ministry of Training, Colleges and Universities, this initiative is co-managed by a panel comprised of college presidents, school board directors, and representatives from both education ministries.

School Within a College (SWAC) Program

This is a ‘made in Ontario’ model for the delivery of secondary school credit courses by secondary school teachers as well as college dual credit courses by college professors on a college campus.

Specialized High Skills Major (SHSM) Program

This learning option, that can involve dual credit courses, allows high school students to acquire experiences related to a particular employment sector.

Tech Prep

This is a sequence of study that integrates academic, technical, and workplace experience in a combined secondary and postsecondary education resulting in a technical certificate or diploma.
Chapter Two: Literature Review

The purpose of this research was to evaluate the impact of the dual credit experience on students who subsequently entered full-time college programs. Like other Credit-Based Transition Programs (CBTPs), Dual Credit Programs are believed to facilitate a student’s smooth transition to college. The overriding assumption is that by giving students the opportunity to participate in aspects of postsecondary education prior to entering college, these programs help learners develop knowledge, skills, and attitudes that enhance their college experience and improve their college outcomes. This literature review will distinguish between CBTPs, Dual Credit Programs, and Dual Enrolment Programs; provide a brief history of American Dual Credit/Dual Enrolment Programs; identify some of the dual credit learning opportunities available in Canada; detail the growth of the Ontario dual credit initiative; compare and contrast American and Canadian approaches to dual credit/dual enrolment; explore theoretical frameworks applicable to dual credit and related learning options; and critically evaluate the findings and methods of studies investigating the student outcomes of Dual Credit/Dual Enrolment Programs.

Credit-Based Transition, Dual Credit, and Dual Enrolment Programs

“Credit-Based Transition Program” is a general term used to identify a variety of accelerated learning options including Advanced Placement (AP), International Baccalaureate (IB), Middle College High School (MCHS), Early College High School (ECHS), Tech Prep, Dual Enrolment, and Dual Credit Programs. In contrast to AP and IB programs that offer specially designed advanced secondary school courses to high school students for postsecondary credit, dual credit and dual enrolment models have high school students enrolling in actual college courses for college credit. Although the terms are often used interchangeably, particularly in the United
States, there is reason to distinguish between dual credit and dual enrolment approaches. Whereas dual enrolment typically refers to high school students completing college courses for postsecondary level credits along with high school courses for secondary level credits, dual credit has students earning both postsecondary and secondary credits concurrently for the same college course. Middle College High School, ECHS, and Tech Prep Programs are specific types of American CBTPs that have dual credit or dual enrolment components.

Dual Credit/Dual Enrolment Programs vary widely in terms of course content, location, instructors, characteristics of students, and intensity of student involvement. The programs can be delivered at a secondary school, college, or an industrial/business location, or can involve students moving between two or more of these settings. While certified high school teachers are always involved in the delivery of Dual Credit/Dual Enrolment Programs, instruction can also come from college professors and/or adjunct faculty. Regarding learner characteristics, programs are available for different target groups including low-achieving, middle-achieving, and high-achieving students.

According to American researchers Bailey and Karp (2003), the intensity of a Dual Credit/Dual Enrolment Program varies on the basis of four factors: 1) how much of a students’ educational experience the program covers, 2) how many aspects of the postsecondary transition are included in the program, 3) the degree to which students are integrated into a college environment, and 4) the number of formal supports students receive with their transition to college. Bailey and Karp identify three categories of intensity in Dual Credit/Dual Enrolment Programs: “singleton” programs, “comprehensive” programs, and “enhanced comprehensive” programs. Singleton programs make up only a small part of a student’s overall educational experience. They typically involve one course through which the student can experience college
and gain credits that can be used toward a postsecondary credential. Beyond providing college credits and “a taste” of college-level work, singleton programs typically offer students few formal supports with their transition to higher education. Comprehensive programs, on the other hand, encompass more of a student’s educational experience and involve a higher number of courses than do singleton programs. Also, students are highly integrated into the college environment, although the emphasis is on academic rather than on social-psychological integration. Comprehensive programs provide students with minimal formal transition-to-college supports. Enhanced comprehensive programs are characterized by intense student involvement encompassing a high level of academic instruction, college integration, and formal college transition supports including assistance with college applications, mentoring, and counselling.

A Brief History of American Dual Enrolment/Dual Credit Programs

The United States has a much longer history of CBTPs than does Canada. The original American Dual Credit/Dual Enrolment Programs were developed for university-bound, academically-able students (Rogers & Kimpson, 1992). According to Fowler and Luna (2009), the earliest document program was the 1972 Project Advance at Syracuse University. That program was developed through a collaboration of high school principals, school board superintendents, and university staff to offer college courses to high school seniors who had fulfilled most or all of their requirements for graduation. Program Advance was a singleton-type program that served as a model for programs that followed.

The Running Start Program in Washington State (Office of Superintendent of Public Instruction, 2014) is another example of a Dual Credit/ Dual Enrolment Program aimed at high-achieving students. Launched in the early 1990s and representative of Bailey and Karp’s (2003) comprehensive category, this program allows grade 11 and 12 students to take free
postsecondary courses at any of Washington’s community colleges, technical colleges, or state universities. Participants leave their high schools and enrol in postsecondary education full-time, earning up to a year’s worth of college credits. Although the program allows students to experience college life, the focus is on academic accomplishment and not on providing participants with formal support for their high school-to-college transition.

Dual Credit/Dual Enrolment Programs in the United States were originally intended for high-achieving students but over the years they began targeting middle-achieving and low-achieving learners (Hoffman, 2005; Hughes, Karp, Fermin, & Bailey, 2005). As more academically-challenged students became the focus of dual credit/dual enrolment initiatives, new models emerged, including the MCHSs in 1974 (Middle College High School Consortium, 2012) and ECHSs in 2002 (Jobs for the Future, 2014). The theme linking these two programs is that in both cases students attend small high schools situated on or near partner college and/or university campuses. Both programs target underserved students who are at risk of dropping out of high school and are unlikely to attend college.

Middle College Programs are enhanced comprehensive type programs that provide students with a cost-free, seamless secondary-to-postsecondary educational continuum. All housed on college campuses and involving college credentialed instructors, Middle Colleges offer students simultaneous high school and college credits, exposure to college culture, and a range of personalized student supports and services. The support offered to Middle College students often continues after they graduate from high schools and matriculate into the partnered college. There are 40 MCHSs in 16 American states that are under the leadership of the Middle College National Consortium (2012).
Early College Programs are located on or very near college campuses. Like Middle Colleges, they are tuition free and provide at-risk students with strong academic programs and a supportive environment. In addition, Early Colleges enable students to earn both a high school diploma and an Associate’s Degree or up to two years of credit toward a Bachelor’s degree in four or five years. Early College programs use a variety of models for providing college courses to high school students, including: 1) high school teachers with adjunct faculty teaching courses at the high school, 2) college faculty teaching students at the high school, 3) college faculty teaching a group of students at the college, and 4) students, alone or in small groups attending regular college courses (Allen, 2010). The ECHS initiative supports over 240 schools serving over 75,000 students annually in 28 states and the District of Columbia (Jobs for the Future, 2014).

Enhanced comprehensive program elements can also be found in College Now, a program involving the nation’s most extensive dual credit partnership between the City University of New York (CUNY) – the largest urban university in the US consisting of 24 postsecondary institutions and 17 campuses – and more than 350 New York City high schools. College Now explicitly aims to prepare a wide range of students for college, including low-achieving students, by offering them dual enrolment and college-readiness opportunities (College Now, 2012). The program works with students in a structured way as early as their first year of high school. By graduation, students have typically earned several college credits and have been exposed to ample college preparation and transition activities.

Since the inception of Running Start, MCHSs, ECHSs, and College Now, there has been an explosion in Dual Credit/Dual Enrolment Programs in the United States. In 2002-2003, 71% of all American public high schools offered such programs (Waits, Setzer, & Lewis, 2005) and
approximately 813,000 high school students enrolled in college courses (Kliener & Lewis, 2005). Today, all American states offer dual enrolment learning opportunities (Bragg, Kim, & Rubin, 2005), 40 states have policies directly related to dual enrolment (Hughes et al., 2005), and half the states direct that high school students be given access to dual credit or dual enrolment courses (Bragg & Kim, 2006).

Dual Credit/Dual Enrolment Programs are now so widespread in the United States that they are supported by national initiatives. These include the College and Career Transition Initiative, a consortium that is sponsored by the United States Department of Education and led by the League for Innovation (2014) with a mandate to enhance the ability of community and technical colleges to facilitate the transition of students from high school to college and then on to employment. The Bridge Partnership is another League for Innovations led initiative that supports making available dual credit/dual enrolment opportunities to high school students (League for Innovation, 2004). It involves partnerships between community colleges and high schools for the purpose of increasing the number of secondary school students who proceed to college.

**Canadian Dual Credit Programs**

Secondary to postsecondary transfer programs that do not follow conventional AP or IB models are fairly new to Canada. Dual Credit Programs were first introduced in the province of British Columbia (BC) in the 1990s. Since that time, BC programs have grown and notable dual credit opportunities have been developed in the provinces of Manitoba, Alberta, and Ontario. Dual credit programing has only recently been implemented in the eastern part of the nation; namely, in the Atlantic provinces of New Brunswick and Nova Scotia.
British Columbia

British Columbia was the first Canadian province to embrace the dual credit approach. It began offering dual credit opportunities to grade 11 and 12 students in the mid-1990s through an open access system that allowed students to enrol part-time in postsecondary institutions for the purpose of completing a college course that could be used toward their secondary school diploma (British Columbia Ministry of Education, 2004). This was extended to grade 10 students in 2004 with the introduction of the Adult Graduation Program. Today all BC high school students can use credits earned through postsecondary institutions towards their secondary school graduation requirements (Desbiens, 2007).

Most dual credits earned in BC are part of apprenticeship/industry training programs. For example, the province’s Accelerated Credit Enrolment in Industrial Training (ACE IT) Program helps students gain dual credits in specialized technical training areas. Typically, school boards are funded by a local Industrial Training Authority that disperses $1000 for each student who enrols in the program and an equal amount for each student who successfully completes the dual credit course and passes a Level 1 apprenticeship certification in a particular trade (Desbiens, 2007; Industrial Training Authority, 2012).

Another notable BC initiative that awards dual credits is Northern Opportunities. Focused on the Aboriginal population, this program involves partners from three district school boards and Northern Lights College, as well as industry, community agencies, and aboriginal groups (Northern Opportunities Learning Council, 2013; Smart, 2011). Students in grades 11 and 12 can concurrently earn credits toward their high school diploma and a postsecondary academic course, vocational program, or trade or apprenticeship.
Manitoba

Dual Credit Programs were introduced to the province of Manitoba in 2000. In contrast to those offered in BC, Manitoba programs focus on senior high school students and adult learners and involve a substantial online component offered through province-wide Adult Learning Centres (Sawchuck & MacMartin, 2003). In 2001, 712 Manitoba students received credit for courses recognized by postsecondary institutions; two-thirds of these students were secondary school students and one-third were adult learners enrolled in Adult Learning Centres across the province (Ministry of Advanced Education and Training, 2003). In 2010-2011, 15 school divisions registered dual credit courses with the provincial Ministry in charge of education (Smart, 2011). During the same year, 11 Adult Learning Centres made 107 dual credit courses available to adult learners.

The offering of dual credit opportunities in Manitoba has increased but a cohesive province-wide dual credit administration system has yet to be developed. The province does not track the number of high school students and adult learners that take advantage of dual credits nor does it have policies in place to facilitate the large scale dual credit enrolment of secondary school students (Smart, 2011). The typical scenario is that a single high school student shows interest in a particular postsecondary course and the secondary school makes arrangements with the postsecondary institution for the student to attend, at the same time registering the course with the province. In the case of both high school students and adult learners, the matter of tuition for the postsecondary course is handled by the student and the postsecondary institution.

Alberta

The province of Alberta employs a broad definition of dual credit that encompasses IB, AP, Registered Apprenticeship, and Green Certificate and Career and Technical Studies Programs
Administered by the Government of Alberta, the agriculture-focused Green Certificate Program is delivered in locations away from the secondary school where students take courses that result in credits that can be used toward their graduation requirements (Government of Alberta, 2013). Credits can be earned for Level 1 (Technician) or Level 2 (Supervisor) courses in 10 areas of specialization, including Bee Keeper Production and Cow-Calf Beef Production (Alberta Education, 2014). The Career and Technical Studies Program gives students an opportunity to gain credits toward a postsecondary credential through clusters of courses representing five occupational areas: 1) business, administration, finance, and information technology; 2) health, recreation, and human services; 3) media, design, and communication arts; natural resources; and 4) trades, manufacturing, and transportation (Alberta Education, 2009).

In 2009, Alberta launched the High School Completion Project that includes a dual credit component. The aim of the project is to assist the 30% of students who do not complete high school by offering them the opportunity to enrol in courses with credits that can be put toward both secondary and postsecondary credentials. The province’s two education Ministries, Alberta Education and Advanced Education and Technology, have recently funded six dual credit pilot projects to facilitate high school to secondary school transitions, including a collaborative program between Southern Alberta Institute of Technology (SAIT) and Calgary secondary schools, and a partnership between Olds College and Chinook high schools (Smart, 2011). The SAIT collaboration focuses on the pharmaceutical area while the Olds College partnership is agriculture and trade related.
Atlantic Provinces

Canada’s eastern provinces have only very recently begun to offer dual credit learning opportunities to secondary school students. The province of New Brunswick launched a Dual Credit Program in 2008 that involves New Brunswick Community College and Woodstock School Board (Association of Canadian Community Colleges, 2011). In Nova Scotia, a partnership between regional, district, and First Nations school boards and Nova Scotia Community College has resulted in the College Prep Program, a learning option that includes a dual credit component.

The Growth of Dual Credit Programs in Ontario

Ontario Dual Credit Programs grew out of a secondary school reform agenda established by the provincial Government in the mid1990s to increase high school graduation rates and facilitate the transition of students to postsecondary education and apprenticeship training. Subsequent funding, policy and legislative changes resulted in the Student Success/Learning to 18 Strategy and the Reaching Higher Plan, two initiatives that made possible a number of new learning pathways including the dual credit option.

Unlike other Canadian provinces that offer dual credit opportunities, Ontario has a system-wide dual credit administrative structure in place. Programs are managed, monitored, and approved by the School College Work Initiative (SCWI), an entity that is jointly funded by the Ministry of Education (MEDU) and the Ministry of Training, Colleges and Universities (MTCU). At the local level, Ontario Dual Credit Programs are coordinated by 16 Regional Planning Teams (RPTs) comprised of representative from colleges, school boards, business/industry, and government who liaison with secondary
and postsecondary institutions in their jurisdictions. It is the responsibility of each RPT, to complete dual credit student data reports and to deliver these reports, through its Chair, to the SCWI Project Officer.

Established in 1997 to support programs, activities, and forums that aim to ease the secondary school to college transition for students, SCWI was given the authority to fund and oversee Dual Credit Programs in 2005. School College Work Initiative first included dual credit projects, called Pilot B projects, in its Phase 9 (2005-2006) Request for Proposals (RFP) that was released across the province in April, 2005 (School College Work Initiative Co-Management Team, 2005). Approved funding of approximately $750,000 was provided to 11 RPTs for the implementation of 14 Dual Credit Programs in 2005-2006 (Armstrong et al., 2006).

The inaugural 14 dual credit projects involved 25 school boards, 14 colleges, and 361 students (Armstrong et al., 2006). Only two of those projects, with a total of 44 students, were based in the Greater Toronto Area (GTA): Steps to College, a partnership between Seneca College and Parkdale Collegiate Institute; and the School to College Transition Program, a Sheridan College and Dufferin-Peel Catholic District School Board joint venture (Ontario Ministry of Education, 2006). Both GTA programs focused on meeting the needs of at-risk students who were disengaged and disillusioned in the regular secondary school environment. The remaining nine programs were spread across the province and involved Algonquin, Cambrian, Canadore, Confederation, Fanshawe, Georgian, Loyalist, Mohawk, Niagara, Northern, St. Clair, and St. Lawrence Colleges and their area school boards.

The diversity of the initial Ontario programs is striking. For one thing, the programs awarded a wide range of credits, including those connected to co-op, Level 1 apprenticeship, pre-college preparation, general education, and program-specific courses. They also represented a
wide range of delivery approaches with courses being taught at a secondary school by a teacher, at a secondary school by a college faculty, at a college by a teacher, at a college by a college faculty, online, in a bilingual format, and so on. Finally, the programs of 2005-2006 involved students of varying levels of engagement and academic achievement. While some targeted at-risk students, most focused on mid-range learners. There were even three so called “Triple Play” programs delivered out of Algonquin College, St. Lawrence College, and Loyalist College, that offered enrichment opportunities to high-achieving students.

The first year of the dual credit initiative was followed by a SCWI-commissioned analytical review (Armstrong et al., 2006) of the 11 Phase 9, Pilot B projects. This culminated in a number of recommendations being made to SCWI including the following: (i) dual credit courses and programs should be made available to all secondary school students across the province, (ii) a multitude of dual credit course and program options should be offered, (iii) more program delivery modes should be explored, and (iv) planning for a sustainable provincial system should be put in place for 2007-2008. Clearly, the authors of the analytical review saw great promise in the dual credit approach and were confident that Dual Credit Programs would become an integral part of the Ontario educational system. They stated:

In the future, we see thousands of students enrolled in dual credit/ dual program[s]. The net result will be an increased number of students completing their OSSD; students who may not have been successful previously. In addition, many more students will have experienced a college environment while in secondary school, resulting in college credits and a more seamless transition to full time college preparation. In turn, this preparation will lead to increased rates of success in college level programming and more college graduates. (p. 69)
Largely on the basis of the analytical review, SCWI decided to expand the dual credit initiative. The Phase 10 RFP (School College Work Initiative Co-Management Team, 2006) stated that the intention was to grow dual credit education by offering a greater number and variety of programs to a broad range of secondary students from across the province. It also declared 2006-2007 as an experimentation year in which a variety of dual credit models would be advanced and supported. Consequently, during that year, 65 Phase 10, Pilot B projects were funded, involving 70 of the 72 school boards and all 24 colleges (Levin, 2007) and 1142 students (D. Armstrong, personal communication, April 7, 2014). That represents a 365% increase in programs and a 216% increase in student enrolment from the previous year. Forty nine percent of the 2006-2007 dual credit students were reported to have been at risk of not graduating from high school (SCWI, 2009ab). That figure included students who had previously dropped out. Seventeen percent of the dual credit students of 2006-2007 were previous high school dropouts.

Expansion of the dual credit initiative continued in 2007-2008. The Phase 11 RFP (School College Work Initiative Co-Management Team, 2007), noted that students in Specialized High Skills Major (SHSM) Programs might benefit from having access to dual credit learning opportunities and invited colleges and school boards to jointly develop and submit applications involving these types of learners. Like dual credit, the SHSM Program is a non-traditional learning option that grew out of the Student Success/Learning to 18 Strategy. It assists students in acquiring experience related to a particular employment sector like hospitality and tourism, manufacturing, landscaping, or business and entrepreneurship through the acquisition of courses, sector experiential learning, sector recognized certification, documentation of essential skills and sector-related work habits, and postsecondary reach ahead experiences (Ontario Ministry of Education, 2011d). While SHSM students were introduced to dual credit courses and activities in
2007-2008, it was not until 2009-2010 that MEDU data reports on dual credit students included information about SHSM students.

At the same time that it was encouraging colleges and school boards to develop Pilot B projects for SHSM students, SCWI was concerned that the dual credit initiative would lose sight of its main target audience: students who were at the greatest risk of not graduating from high school. In contrast to the RFP of the year before (2006-2007), the Phase II RFP clearly specified the types of students Dual Credit Programs should target.

The primary focus is on those students facing the biggest challenges in graduating. This includes disengaged and underachieving students with the potential to succeed but who are at risk of not graduating from high school, and students who have left high school before graduating. This would include, but is not limited to, aboriginal students, students learning English or French as their secondary language, students who are the first in their family to attend postsecondary education, students who have been designated as Crown Wards, students with special education needs, and students who have been out of school and are returning to complete optional credit requirements toward the OSSD. (School College Work Initiative Co-Management Team, 2007, p. 3)

The 2007-2008 school year saw the implementation of 128 Dual Credit Programs that involved 2,865 students, but only 28% (783) of those students were reported to be in the primary target group (Ontario Ministry of Education, 2009a), a significant drop from the previous year when 49% of all dual credit participants were labelled disengaged and underachieving or had previously dropped out of high school. In an attempting to explain this unexpected outcome, the authors of the 2007-2008 student data report suggested that the RPTs may not have been aggressive enough in encouraging the development of proposals targeting at-risk students or,
alternatively, the Student Success Teams (groups comprised of secondary school principals, teachers, and guidance personnel whose purpose is to help struggling students) may not have been active enough in guiding vulnerable students into the programs. Another explanation given for the relatively low involvement of at-risk students in 2007-2008 was that 24 of the 128 programs offered that year were geared to SHSM students, a group with a medium to high achievement profile.

The Phase 12 RFP (School College Work Initiative Co-Management Team, 2008) was released earlier than in previous years (January versus April/May) in anticipation of higher than usual interest on the part of colleges and school boards in developing new Dual Credit Programs. The number of programs and students reported by RPTs did in fact grow substantially in 2008-2009 to 174 and 3,883, respectively (Ontario Ministry of Education, 2009b). Compared to the previous year, there were 36% more programs and 33% more students. In the GTA, enrolment almost doubled, going from 376 in 2007-2008 to 751 in 2008-2009 (Connecting GTA Teachers, 2009). Approximately 42.9% of the students participating in 2008-2009 GTA dual credit courses were reported to be disengaged and/or underachieving or high school dropouts prior to entering the program, a figure that was slightly higher than the provincial average for that year which was 40.4% (Ontario Ministry of Education, 2009b).

The increased participation in 2008-2009 of dual credit students with an at-risk profile corresponds to the introduction of School Within a College (SWAC) Programs. Aimed at particularly challenged learners, SWAC Programs were developed to improve the academic success of struggling students through a comprehensive package of secondary school and college courses including credit recovery, remedial, and college readiness courses. They typically have high school students travelling to a college campus five days a week for one or two semesters.
During their time on campus, students are taught secondary school credit courses by secondary school teachers and college dual credit courses by college faculty. It is believed that the combination of being exposed to a college environment on a daily basis and receiving ongoing academic and other supports facilitates better outcomes for SWAC students. While all SWAC Programs are not the same, each offers students a comprehensive package of secondary school and college courses and a combination of board and college support. In 2008-2009, 13 colleges and 22 school boards joined forces to provide 20 SWAC Programs to 591 students (SCWI, 2009).

The fact that there was steady growth in Dual Credit Programs since 2006-2007 was noted in the Phase 13 RFP (College Work Initiative Co-Management Team, 2009a), as was the intention to grow the programs further in 2009-2010. According to the MEDU document reporting dual credit student data for 2009-2010 (Ontario Ministry of Education, 2011a), a total of 270 Dual Credit Programs were implemented that year, serving 7,570 students. This represents a 66% increase in programs and a 95% increase in students from the previous year. The MEDU document also shows that the Dual Credit Programs of 2009-2010 included 950 SHSM, 892 SWAC, and 2,689 at-risk students. The proportion of students who were in the primary target group decreased by four percent compared to the year before, going from 40% in 2008-2009 to 36% in 2009-2010. The 2009-2010 student data report suggested that the correct number of at-risk students was not captured in part because “educators are hesitant to label students as ‘disengaged and/or underachieving’” (p.4).

While it may have underestimated the number of dual credit students who were facing challenges in graduating, the 2009-2010 Dual Credit Student Data Report (Ontario Ministry of Education, 2011a) provided more information on SWAC students than was available in previous
reports. It noted that compared to 2009-2010 non-SWAC dual credit participants, those in SWAC Programs were older, more likely to be labelled disengaged and/or underachieving, and more likely to have previously dropped out of school. Specifically, 34.5% of SWAC students were 19 or older, 77% were identified as disengaged and/or underachieving, and 26% had previously been out of school. The corresponding figures for the non-SWAC dual credit group were 17.5%, 35.5%, and 11.5%.

The Phase 14 RFP released in October, 2009 (School College Work Initiative Co-Management Team, 2009b) introduced a three-year planning time frame for Dual Credit Programs comprised of a one-year request and approval process for 2010-2011 programs and a forecast for programs for 2011-2012 and 2012-2013. According to the Dual Credit Student Report of 2010-2011 (Ontario Ministry of Education, 2012a), the programs implemented in that year numbered 358, a 33% increase from the 270 of the previous year. Student participation increased by 62% over the same year going from 7,570 to 12,202 students. In 2010-2011, 38% (4,616) of dual credit participants were identified as disengaged and/or underachieving or had previously left high school without graduating. The 2010-2011 programs included 1,944 SHSM and 1,790 SWAC students. In line with data from the previous year, compared to all dual credit students, SWAC students were more likely to be 19 years or older (24% compared to 13%), labelled as disengaged/underachieving (70% compared to 38%), and to have been previously out of school (28% compared to 10%).

Data on 2011-2012, Phase 15, Dual Credit Programs show the participation of 15,961 students in 411 programs (Ontario Ministry of Education, 2013b). Compared to figures from the previous year, there was a 31% increase in students and 15% increase in programs. The data for 2011-2012 programs show the participation of 6,741 at-risk students (Ontario Ministry of
Education, 2011b). This figure represents 42% of the dual credit student population for that year.

The 2011-2012 student data report provided information on Ontario Youth Apprenticeship (OYAP) students as well as on SHSM and SWAC students. The numbers of OYAP, SHSM, and SWAC students who enrolled in dual credit courses in that year were 830 (5%), 2871 (17%), and 1,926 (12%), respectively. As in past years, 2011-2012 data show SWAC students to be older, more likely to be labelled disengaged/underachieving and more likely to have been previously out of school compared to all dual credit students. The corresponding figures are 29% compared to 14%, 82% compared to 42%, and 34% compared to 11%.

The most recent MEDU report (Ontario Ministry of Education, 2014a) provides student data on 2012-2013, Phase 16, Dual Credit Programs. At that time, 18,584 students from across the province were enrolled in 513 programs. This represents a 16% increase in student participation and an 11% increase in the number of programs from the previous year. In 2012-2013, 13,584 (74%) of dual credit students were in the primary target group of at-risk students, while 3,560 (19%), 1,255 (7%), 3,048 (19%) were SHSM, OYAP, and SWAC students, respectively. The high proportion of struggling students among 2012-2013 dual credit participants is understandable in light of SCWI’s renewed focus on accommodating that group.

Table 1 below shows the growth of Ontario Dual Credit programs from 2005-2006 to 20012-2013. The total number of programs and students are given for each year along with the number of at-risk, SWAC, SHSM, and OYAP students, where available.

In addition to showing consistent growth in terms of number of programs and students, Ontario Dual Credit Programs have expanded in variety. A look at the programs offered through one of the province’s largest RPTs shows a broad range of program types. Serving the GTA,
Table 1

Growth of Ontario Dual Credit Programs from 2005-2006 to 2012-2013

<table>
<thead>
<tr>
<th>Dual Credit Program Year</th>
<th>Dual Credit Program Phase</th>
<th>Number of Dual Credit Programs</th>
<th>Number of Dual Credit Students</th>
<th>Number of At-risk Student</th>
<th>Number of SWAC Students</th>
<th>Number of SHSM Students</th>
<th>Number of OYAP Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-2006</td>
<td>9</td>
<td>14</td>
<td>361</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006-2007</td>
<td>10</td>
<td>65</td>
<td>1142</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007-2008</td>
<td>11</td>
<td>128</td>
<td>2,865</td>
<td>783</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008-2009</td>
<td>12</td>
<td>164</td>
<td>3,883</td>
<td>1,569</td>
<td>591</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009-2010</td>
<td>13</td>
<td>270</td>
<td>7,570</td>
<td>2,689</td>
<td>892</td>
<td>950</td>
<td></td>
</tr>
<tr>
<td>2010-2011</td>
<td>14</td>
<td>358</td>
<td>12,202</td>
<td>4,616</td>
<td>1,790</td>
<td>1,944</td>
<td></td>
</tr>
<tr>
<td>2011-2012</td>
<td>15</td>
<td>411</td>
<td>15,961</td>
<td>6,741</td>
<td>1,926</td>
<td>2,871</td>
<td>830</td>
</tr>
<tr>
<td>2012-2013</td>
<td>16</td>
<td>513</td>
<td>18,584</td>
<td>13,769</td>
<td>3,048</td>
<td>3,560</td>
<td>1,255</td>
</tr>
</tbody>
</table>

Connecting GTA Teachers (CGTAT) RPT coordinates programs involving partnerships between six colleges and nine school boards (see Appendix B for list of partners). In 2012-2013 CGTAT oversaw a total of 59 Dual Credit Programs (Connecting GTA Teachers, 2012). Of those, 25 were general programs, 27 were Level 1 OYAP Programs, and seven were SWAC Programs. The general programs were quite diverse. For example, a program offered by Centennial College and Toronto District School Board taught computer skills related to art to SHSM students, a partnership between Georgian College and York Region District School Board delivered instruction on manufacturing to co-op students, an online Humber and Kawartha Pine Ridge District School Board program focused on e-journalism, and a partnership between Sheridan College, Mohawk College and Halton District School Board prepared students to enter postsecondary Early Childhood Education Programs. The OYAP programs also showed diversity
in that they were connected to different apprenticeship opportunities including Child and Youth Worker, Cook Assistant, Plumber, and Electrician.

Beyond showing growth in the number of programs and student enrolment, Ontario’s dual credit initiative has evolved in other ways since 2005-2006. For one thing, over time, there has been an increased emphasis on developing and implementing programs for students in the primary target group. The introduction and expansion of SWAC programs attest to the Ontario government’s commitment to assist particularly vulnerable learners, as do documents and reports flowing from SCWI. For example, a recent document that outlined SCWI requirements stated that “In 2013-14, the priorities for Dual Credits will be SWAC programs, programs for students in the primary target audience” (Ontario Ministry of Education, 2013a, p. 2). Another report commissioned by the Council of Ontario Directors of Education (Smart, 2012) analyzed three years of data (2008-2009, 2009-2010, and 2010-2011) to identify SWAC Programs that demonstrated effectiveness over a range of measures.

Change is also evident in the way Ontario Dual Credit Programs have been evaluated over the years. Until fairly recently, SCWI looked to student data and testimonials collected by high school and college dual credit staff as measures of program effectiveness. Over the last few years, however, attempts have been made to evaluate programs in alternative ways. For example, in Winter 2010, 370 SWAC participants were asked to respond to a survey designed to assess how Dual Credit Programs influenced students’ attitudes toward education and what students perceived as the benefits of participating in dual credit courses and activities (Ontario Ministry of Education, 2011c). A total of 94 students completed the survey. Subsequent SWAC student surveys were conducted over the next three school years. In 2010-2011, 1,500 students were asked to complete a survey and 436 complied (Ontario Ministry of Education, 2011b). The
request went out to 1926 students in 2011-2012 (Ontario Ministry of Education, 2012b) and 3048 students in 2012-2013 (Ontario Ministry of Education, 2013c). The compliance numbers for those two years were 358 and 513, respectively. In addition to surveying SWAC students, SCWI has endeavoured to test the effectiveness of the dual credit model through a SCWI-funded team research project out of Humber College. I was a member of that team and we launched our project in Fall 2010. At that time, we set out to examine and track 280 students who were enrolled in dual credit courses at the Humber College from Winter 2007 to Fall 2009 (Harrison, 2010). We managed to contact 134 of those individuals and have them respond to a phone survey that provided data on their post-dual credit education and employment goals.

Finally, there has been an evolution in the policies that support Ontario Dual Credit Programs. In 2013, MEDU introduced a new policy document aimed at administrators and educators. *Dual Credit Programs, Policy and Program Requirements, 2013* (Ontario Ministry of Education, 2013a) superseded the earlier, less comprehensive, *Dual Credit Policy and Implementation, 2010* (Ontario Ministry of Education, 2010). The more recent document consists of five chapters with the first chapter providing an overview of relevant policy as well as a description of the intended focus of Dual Credit Programs.

Dual credit programs are intended to assist secondary school students in completing their OSSD [Ontario Secondary School Diploma] and making a successful transition to college and/or apprenticeship programs. The primary focus is on students who face significant challenges in completing the requirements for graduation but have the potential to succeed. This group includes disengaged and underachieving students who have the potential to succeed but are at risk of not graduating, and students who have left school before graduating. Students in Specialist High Skills Major (SHSM) programs and students in the
Ontario Youth Apprenticeship Program (OYAP) are also eligible to participate in dual credit programs. (Ontario Ministry of Education, 2013a, p.5)

Unlike the 2010 policy document, the 2013 version contains clear criteria to help educators identify students who are disengaged and/or underachieving (See Appendix E). In addition to describing the primary target group, Chapter 1 covers i) the principles that must guide the development of all dual credit programs, ii) the categories of dual credit courses, iii) how students can gain entry into Dual Credit Programs, iv) the number of optional credits that dual credit students can be earn, and v) the role of secondary school dual credit teachers. Chapter 2 of the 2013 document outlines policy pertaining to different program delivery approaches and models, while Chapter 3 provides information on program enrolment. The policies and requirements related to the assessment, evaluation, and reporting of student achievement in dual credit courses are outlined in Chapter 4 of the document.

As stated in Dual Credit Programs, Policy and Program Requirements, 2013 (Ontario Ministry of Education, 2013a), there are two broad categories of Ontario dual credit courses: college-delivered courses and team-taught courses. In a college-delivered course, students enrol in a college course taught by a college professor or in Level 1 apprenticeship in-school training delivered by a college instructor. Students can take up to four college-delivered courses for optional credits that count toward their Ontario Secondary School Diploma (OSSD) and a college credential or apprenticeship certification. In a team-taught course, “closely matched college or apprenticeship and secondary school curriculum content is taught by both a college professor or instructor and a secondary school teacher (p. 7). Whereas college-taught courses restrict students to four optional credits, team-taught courses have no optional credit limit.
The recent policy document notes that “Dual credit programs may be delivered in various college or school board locations as appropriate – for example, in secondary schools, college campuses, college skills-training centres, alternative schools, or adult education centres” (Ontario Ministry of Education, 2013a, p. 11). Five possible program delivery approaches are described including dual credit 1) based on a college-delivered college course, 2) based on college-delivered Level 1 apprenticeship in-school training, 3) based on team-teaching of matched college and secondary school curriculum, 4) with an apprenticeship focus based on team-teaching of matched Level 1 apprenticeship training standards and secondary school curriculum, and 5) with an apprenticeship focus taught at a secondary school with college oversight. According to SCWI Project Officer David Armstrong (personal communication, April 7, 2014), the policy on delivery models is not restrictive with additional models being considered if they meet the needs of the primary target group of students. Nevertheless, most Ontario Dual Credit Programs are delivered in the college setting by a college professor. In 2011-2012, 76% of participants completed their dual credit courses on a college campus and 64% of participants completed courses delivered by a college professor on a college campus (Ontario Ministry of Education, 2012b). College-delivered dual credit courses are offered through one of two delivery models. The “congregated” model represents the most common approach where a college class is composed exclusively of dual credit high school students. In the “integrated” model, secondary school students are placed in already existing college classes made up of regular college students.

Prior to the publication of the 2013 dual credit policy document, Student Success Team members (i.e., principle, student success teacher, guidance counsellor, special education teacher) were expected to connect suitable students to the dual credit learning option without the benefit
of a clear selection criteria. The recent document provides such criteria (Appendix E) and other details pertaining to program entry. Specifically, it notes:

Students may enter dual credit programs in a variety of ways. Students in SHSM programs and OYAP are automatically eligible to take dual credit programs. Entry for all other students is guided by Student Success teams at the school and board level. Student Success teams who are considering a student for admission into a dual credit program will evaluate the student’s suitability on the basis of [the stated] criteria…They may also take into account criteria specific to the college program. Through the course selection process, students may have the opportunity to indicate an interest in earning dual credits, or they may be recommended for a dual credit program by school staff. (Ontario Ministry of Education, 2013a, p. 7)

**American and Canadian Dual Credit/Dual Enrolment Programs: Similarities and Differences**

There are similarities among and differences between North American Dual Credit/Dual Enrolment Programs. Programs in the United States run the gamut from those geared to university-bound high-achievers to those designed to help students who might otherwise never complete high school. There are programs of the singleton variety that involve students completing stand-alone college level courses. As described by Bailey and Karp (2003), such programs do not typically consume much of the students’ educational experience because the main goal is not to engage students in the college environment but instead to provide already motivated and academically-able students with enrichment opportunities. While singleton programs dominated during the early days of American Dual Enrolment/Dual Credit Programs, with time, comprehensive programs became popular. Still mainly geared to academically-able
students but also involving middle-achieving students, these programs provide learners with a more intense college experience than do singleton programs. However, they do not purposefully set out to assist students with their high school-to-college transition. Enhanced comprehensive programs, on the other hand, provide students with a wide range of formal supports in that they are meant to help non-traditional students who struggle to get to college; students like those enrolled in Middle College and Early College High Schools.

The variation in Canadian Dual Credit Programs is also striking. Programs in BC involve an open access system that allows a wide range of students to participate. Many BC programs also have an apprenticeship/industry focus. Programs in Manitoba include a large proportion of adult learners and a significant online component. In Alberta, dual credit is defined broadly and programs have a strong agriculture and technology application. Ontario programs have been developed with at-risk high school students in mind. Also, the Government of Ontario has invested in building a province-wide dual credit administration and support system that is intended to contribute to increasing the graduation rates in the province as well as helping more students earn a college credential or apprenticeship certification.

A comparison of American and Canadian Dual Credit/Dual Enrolment Programs reveals that there are far more programs offered in American jurisdictions. In fact, dual credit/dual enrolment is now a mainstream activity of most American colleges and high schools, with national entities like the College and Career Transition Initiative and the Bridge Partnership advocating for Dual Credit/Dual Enrolment Programs across the country. In contrast, programs in Canada do not have strong national support.

When focusing on Ontario, similarities do emerge among American and Canadian Dual Credit and related programs. For example, some Ontario programs have elements typical of
American singleton models in that program involvement only makes up a small part of students’ overall educational experience. As Whitaker (2011) observed, Ontario programs are not designed as multi-year initiatives for particular student groups but rather are offered on a semester basis to interested students. While that tends to be true, at least one of Ontario’s dual credit models has characteristics associated with the enhanced comprehensive programs seen in the United States. Smart (2012) likened SWAC Programs to American MCHSs, schools viewed by Bailey and Karp (2003) as representative of the enhanced comprehensive category. Like MCHSs, SWAC Programs target at-risk students, are located on college campuses, offer a high level of academic instruction, and provide students with formal supports meant to promote motivation and college readiness. While SWAC programs do not have all the features of middle colleges, Smart (2012) asserts that there is potential for these programs to further evolve into “a ‘made in Ontario’ model of middle college high schools” (p. 7).

**Theoretical and Conceptual Frameworks**

Dual credit and other CBTPs are believed to smooth student transition to postsecondary education by helping learners gain academic and other skills associated with college success. In essence, these programs seek to change students in cognitive, behavioural, and socio-emotional ways so that they can better meet the demands of college life. With student change lying at the core of the dual credit model, student change theory can be used to guide research on program effectiveness.

According to Pascarella and Terenzini (2005), there are two main types of college student change models: developmental models and college impact models. Developmental models like Chickering’s (1969) Seven Vectors Theory primarily focus on the individual characteristics of students when explaining change. In contrast, college impact models view student change
through a social psychological lens that takes into account the relationship between person and environment. Given that Dual Credit Programs seek to bring about student change through institutional activities and interventions, Whitaker (2011) observed that college impact theories show more promise than developmental theories when it comes to examining dual credit outcomes.

**Astin’s I-E-O Model and Theory of Involvement**

One of the most popular college impact theories was developed in the 1990s by Alexander Astin (1993). Originally intended to explain college student change in traditional students attending four year institutions, the theory has recently been used by American researchers (Kim & Bragg, 2008) to explain the development of dual credit/dual enrolment students. In Canada, Whitaker (2011) explored the college-going motivations of Ontario dual credit students with the help of Astin’s theory. Philpott-Skilton (2013), another Ontario researcher, also cited Astin, this time to explain college persistence and success in postsecondary students with dual credit experience.

Astin (1993) viewed college student outcomes as a function of three sets of elements: “inputs”, that refer to the background and experiences that students bring with them to college; “environment”, that has to do with the experiences students encounter during college, and “outcomes” that refer to the characteristics that students acquire through their exposure to the college environment. The input-environment-output (I-E-O) model was further developed by Astin into a Theory of Involvement that views student change as an outcome of both academic and social aspects of the college experience.

Quite simply, student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience. Thus, a highly involved student is one
who, for example, devotes considerable energy to studying, spends much time on campus, participates actively in student organizations, and interacts frequently with faculty members and other students. Conversely, a typically uninvolved student neglects studies, spends little time on campus, abstains from extracurricular activities, and has infrequent contact with faculty members and other students. (Astin, 1999, p.518)

Five postulates form the basis of the Theory of Involvement: 1) involvement entails the investment of physical and psychosocial energy into people, activities, tasks, and other experiences; 2) involvement occurs along a continuum with students investing varying degrees of energy; 3) involvement has both qualitative and quantitative features; 4) the amount of student development that results from an educational program is directly proportional to quality and quantity of involvement that a student invests in that program; and 5) the effectiveness of any educational policy or practice is directly related to its capacity to increase student involvement (Astin, 1999).

The Theory of Involvement is rooted in a longitudinal study that Aston (1975) conducted in order to identify the college environment factors linked to student persistence. This research showed that students who were involved in college life were more likely to persist. It found that student involvement and persistence were high among students who lived in residence, joined fraternities or sororities, participated in extracurricular activities, joined sports teams, or held part-time jobs on campus. Participation in honours programs, Army Reserve Officers’ Training Corps (ROTC) programs, and professor-led undergraduate research projects was also found to contribute to student involvement and retention.
Aston (1999) made a point of distinguishing between the involvement of students in two-year and four-year colleges. He suggested that community college students showed lower levels of involvement than students enrolled in four-year institutions, as follows:

Community colleges are places where the involvement of both faculty and students seems minimal. Most (if not all) students are commuters, and a large proportion attend college on a part-time basis (thus, they presumably manifest less involvement simply because of their part-time status). Similarly, a large proportion of faculty members are employed on a part-time basis. (p. 524)

**Tinto’s Longitudinal Model of Institutional Departure**

Tinto (1993) contributed to college impact theory by constructing an elaborate model to explain student retention and departure. His Longitudinal Model of Institutional Departure posits that a student’s decision to persist or leave college is the culmination of a process involving the student and people who he/she interacts with in the college setting. In Tinto’s view, student departure occurs due to failure on the part of both the student and the institution to integrate the student into college life. He claimed that students who experience connection and a sense of belonging when at college are more likely to persist while those who feel detached and isolated are more likely to drop out. Tinto identified two types of integration: academic and social integration. Academic integration occurs when students have positive experiences related to learning. Social integration takes place when students establish positive connections to others and feel a part of the college community. Tinto believed that persistence could result from either academic or social integration, but that students are especially likely to continue with their education when they experience both forms of integration.
Karp et al. (2008) noted a widespread assumption that Tinto’s work does not apply to community college students because their commuter status, employment schedules, and family obligations are not conducive to social integration. The investigators interviewed students from two urban community colleges located in the northeast United States to learn if those students experienced social integration. A total of 44 students who were new to the colleges in Fall 2005 were interviewed during their second semester of enrolment and six months later. Thirty one (70%) of the students reported feeling a sense of belonging on campus while 13 (30%) did not show any attachment to their institutions. Consistent with Tinto’s theory, students who showed signs of social integration were more likely to persist to second year.

Having established that a high proportion of the community college students in their sample showed attachment to their respective institutions, Karp et al. (2008) set out to learn how integration came about for these individuals. The researchers found that 84% of the integrated students participated in “information networks”, defined as “social ties that facilitate the transfer of institutional knowledge and procedures” (p. 8). A student’s information network could include professors, fellow students, and/or other campus staff; anyone who had the capacity to provide the student with useful information and resources. According to the investigators,

Students who engage in information networks begin to believe that there are people at the college who want them to succeed and who will help them try to reach their goals. Students who do not have these resources often feel adrift; they may feel as though the college does not care about their future. (p. 12)

Implicitly or explicitly, all Dual Credit Programs attempt to integrate participants into college life. Academic and social integration is facilitated by exposing students to college courses and activities, the campus environment, and members of the college community. It is
therefore useful to consider the theory of integration and related concepts like information networks when examining the effectiveness of Dual Credit Programs. To date, Tinto’s model has informed research on American (McCormick, 2010; Wintermeyer, 2012) and Ontario (Philpott-Skilton, 2013; Whitaker, 2011) Dual Credit/Dual Enrolment Programs and the concept of information networks was considered in one of the Ontario studies (Philpott-Skilton, 2013).

**Rendón’s Validation Theory**

In the early 1990s, Laura Rendón was one of several researchers (Terenzini, Rendón, Upcraft, Millar, Allison, Greg, & Jalomo, 1996) who conducted a large qualitative study that focused on a diverse group of 132 first-year students from four American postsecondary institutions: a community college; a residential liberal arts college; an urban, commuter, comprehensive state university; and a residential research university. Informed by Astin’s (1993) Theory of Involvement, the research set out to identify the out-of-class experiences that contributed to the learning and retention of study participants. As the research unfolded the investigators realized that most of the minority, low-income, first generation, and other non-traditional students in the sample required something other than college involvement in order to succeed at the postsecondary level. Study findings indicated that unlike traditional students – typically, individuals from white, affluent, college-going families – non-traditional students enter college with little confidence in their ability to succeed. Rendón (1994) theorized that it was not so much involvement in college life that changed non-traditional students into successful learners but the acknowledgement and external validation provided by significant others including professors, non-faculty college staff, family members, and friends. She noted:

> What had transformed these students were incidents where some individual, either in- or out-of-class, took an active interest in them – when someone took the initiative to lend a
helping hand, to do something that affirmed them as being capable of doing academic work and that supported them in their academic endeavours and social adjustments. (Rendón, 1994, p 44-45)

Rendón (1994) distinguished between academic and interpersonal validation. She defined academic validation as the in-class affirmation provided by others, particularly professors, that encourages students to feel confident in their ability to learn and comfortable in the student role. Several types of faculty-initiated actions were found to foster student development and success, including showing a genuine concern for students, being personable and approachable, treating students in an equitable fashion, offering educational experiences that permit students to view themselves as capable learners, providing students with extra help on an individual basis, and providing meaningful feedback to students. As for interpersonal validation, it occurred when the validating actions of significant others motivated students to develop in personal and social ways. Rendón (1994) identified six elements having to do with academic and interpersonal validation. First, validation is a student affirming process that must be initiated by in- and out-of-class agents with the capacity to foster student development. It is especially important for faculty and other college staff to take the initiative in offering non-traditional students validation because feelings of doubt and powerlessness usually prevent such students from making first contact with college agents (Rendón & Munoz, 2011). Second, validating experiences from significant others allow students to release their learning potential and realize that they have something to contribute to college life. Third, students who are validated are more likely to view themselves as able learners and in turn show patterns of college involvement. Fourth, validation should occur inside and outside the classroom and involve a wide spectrum of on-campus and off-campus supportive agents. Fifth, validation should be understood as a developmental process
that spans students’ entire time at college. Lastly, the effectiveness of validation is heightened when offered early in the college experience. According to Rendón, it is especially important for students to feel validated during the early weeks of their college career and throughout their first postsecondary year.

In 2002, Rendón published the results of a study that set out to identify validating elements in Community College Puente, an award winning transition program created to facilitate the transfer of low-achieving Latin American students from two-year to four-year colleges in California. At the time of Rendón’s investigation, almost 40 two-year colleges in the state of California were involved in the Puente Project which aimed to increase the educational advancement of Latino students through a combination of writing courses and supportive relationships involving specially trained English instructors, counsellors, and mentors from the Latino community. On the basis of classroom observations, student testimonials, and interviews with program administrators, staff trainers, and counsellors, Rendón concluded that students in Community College Puente received an abundance of academic and interpersonal validation from faculty, counsellors, mentors, and each other.

Barnett (2010) proposed that validation might be a precondition for integration. To test this proposition she conducted a case study involving 333 students from a Midwest American community college. The research was designed “to examine the extent to which community college students’ experiences with validating faculty contributed to their sense of academic integration in college and whether such experiences contributed to their intent to persist in college” (p. 197). Barnett identified four components of faculty validation: 1) students feeling known and valued, 2) caring instruction, 3) appreciation for diversity, and 4) mentoring. Findings showed that each of these components predicted academic integration but caring
instruction was the strongest predictor of all. Study results also revealed a positive relationship between faculty validation and student intent to persist. Two categories of faculty validation were especially strong predictors of intent to persist: students known and valued and mentoring.

Philpott-Skilton (2013) discussed validation in the context of Ontario Dual Credit Programs. She proposed that these programs are successful because they provide students, particularly at-risk learners, with validating experiences. According to Philpott-Skilton, “Validation begins at the time that a student is invited to enrol in a DC course(s) and is strengthened through the experience of the DC course(s) and during the first semester of full-time studies at college” (p. 144). In line with Barrett (2010), Philpott-Skilton viewed validation as a pre-condition for integration. After completing a study of former dual credit students enrolled in postsecondary programs at Fleming College, she concluded that “validation contributed to increases in both engagement in the DC program and integration into college life” (p.143).

**Merton’s Concept of Anticipatory Socialization**

The concept of “anticipatory socialization” is tied to Reference Group Theory, a sociological theory developed by Robert Merton (1957) to explain how people come to occupy new and unfamiliar social roles. According to Pascarella, Terenzini, and Wolfe (1986), anticipatory socialization is “a process or set of experiences through which individuals come to anticipate correctly the values, norms, and behaviours they will encounter in a new social setting ” (p. 156). In essence, anticipatory socialization allows people to learn new roles before actually occupying them. That includes learning the role of college student before beginning a postsecondary college program.
Pascarella et al. (1986) proposed that college orientation programs encourage anticipatory socialization in soon-to-be college students. The researchers conducted a study to test a causal model predicated on Tinto’s (1993) theory of integration. The model suggests that students who attend orientation activities and events become better integrated into college and, in turn, show greater persistence than peers with no orientation experience. A random sample of 1,906 university students was involved in the Pascarella et al study. All participants were administered questionnaires before, during, and after their first year on campus, which was 1976-1977. After analyzing questionnaire data as well as information contained in the academic records of study participants, the investigators concluded that orientation to college did in fact serve as a type of anticipatory socialization.

More recently, anticipatory socialization has been used to explain the college outcomes of dual credit/dual enrolment students. Swanson (2008) conducted a large scale study in the US to determine, among other things, if participation in dual enrolment courses impacted the anticipatory socialization of college-going students. Informed by Tinto’s theory of involvement, the study found support for the notion that anticipatory socialization contributes to college persistence and degree attainment.

The results of this study suggest that dual enrolment participation likely played a role in changing students’ attitudes toward degree attainment. Positive experiences in a dual enrolment class may, therefore, impact a change in attitude and reinforce retention rather than departure from college, as noted on Tinto’s model of student departure (1993). (Swanson, 2008, p. 7)

Philpott-Skilton (2013) considered the validity of anticipatory socialization as applied to Ontario dual credit students. Based on the findings of her study, she concluded that dual credit courses
and activities help socialize students into the college setting. Philpott-Skilton also suggested that, for dual credit students, integration into college life is the result of a combination of anticipatory socialization and validation processes.

**Conceptual Frameworks**

Whitaker (2011) pointed to the work of Bailey and Karp (2003) as representing an implicit conceptual framework for understanding Dual Credit/Dual Enrolment Programs. It was these two investigators who distinguished between singleton, comprehensive, and enhanced comprehensive CBTPs. Whitaker questioned the applicability of the Bailey and Karp (2003) framework to Ontario Dual Credit Programs because such programs are overwhelmingly of the singleton variety. While that might be true today, the proliferation of SWAC Programs might make the Bailey and Karp model more applicable to Ontario programs in the future.

Karp and Hughes (2008) developed an explicit conceptual model to explain “why and how CBTPs may lead to their intended outcomes” (p. 838). In line with Tinto’s (1993) Theory of Integration, the model focuses on both academic and social aspects of student development. It suggests that course work and support services components of CBTPs combine to promote three student outcomes that align with successful college transitions: 1) improved academic skills, 2) academic success in a college course which leads to increased confidence and the desire to enrol in college, and 3) knowledge of the social aspects of college. The researchers tested their model by conducting five qualitative case studies involving a (MCHS) Program in California, a Tech Prep Program in Texas, an IB Program in Minnesota, and two Dual Enrolment Programs – one in Iowa and one in New York City. On the basis of the findings of their five studies, Karp and Hughes refined their conceptual model and came to hypothesize:

…student participation in college coursework and support services, along with the attendant
growth in academic skills, knowledge of the social aspects of college, and motivation, will lead students to matriculate into postsecondary education. Moreover, because of their strong skills, students will be likely to persist in college once there. (pp. 838-839)

Barnett and Stamm (2010) have noted that Dual Enrolment Programs vary considerably in terms of the types of supports they provide. Programs might offer academic support services, usually delivered by high school teachers but sometimes available through the affiliated college. Other ways that programs provide support to participants is through re-configured college courses (e.g., extending the time of a course), college preparatory initiatives, career exploration opportunities, and mentoring. According to Barnett and Stamm,

Student support systems are important for ensuring that high school students succeed in college-level courses. This is particularly the case for dual enrolment programs designed for a broad range of students, including underrepresented students, at-risk students, and low- and middle-achieving students. (p. 3)

Philpott-Skilton (2013) developed an explicit conceptual framework (Figure 1) to explain the college outcomes of Ontario dual credit participants. Longitudinal in nature, the model incorporates Tinto’s (1993) Theory of Integration, Rendón’s (1994) Validation Theory, and Merton’s (1959) concept of anticipatory socialization. It follows students from the latter years of high school when they first engaged in dual credit, through the high school to college transition process, and finally to semester one of college. The model views college persistence as the culmination of several transition-related processes including validation, social and academic integration, and anticipatory socialization.
Research on Dual Credit and Related Programs

Although CBTPs are widely offered, particularly in the United States, several investigators have asserted that there is not enough research confirming program benefits, especially as they apply to students who have completed high school and matriculated to higher education. Following their review of 45 articles and reports on American Dual Credit Programs, Bailey and Karp (2003) concluded that there is so little information on long-term student outcomes that it is difficult to determine if the programs are in fact a success. Learner and Brand (2006) drew
similar conclusions after reviewing 22 US CBTPs, as did Allen (2010), who completed what is arguably the most comprehensive review of the dual enrolment literature.

**Short-Term Outcomes Involving High School Students**

Available research suggests that high school students benefit from participating in Dual Credit/Dual Enrolment Programs. While positive short-term outcomes have been associated with both American and Ontario programs, programs delivered south of the border have been subjected to far more research scrutiny.

**Research on the short-term outcomes of American Dual Credit/Dual Enrolment Programs.**

There is evidence that the dual enrolment option is facilitating school engagement and satisfaction among American high school students. A study by Burns and Lewis (2000) interviewed two groups of dual enrolees who were matched on the basis of academic background: one group was comprised of students taking college credit courses delivered on a college campus while the other was comprised of students taking similar courses in a high school environment. Participants in both groups reported positive dual enrolment experiences but those taking the college-based courses showed higher levels of satisfaction, independence and maturity.

American Dual Credit/Dual Enrolment Programs have been found to increase the academic confidence and educational aspirations of low-achieving students. In one investigation (Hughes et al., 2005) that conducted case study research on Iowa and New York Dual Enrolment Programs, student participants reported increased confidence in their academic abilities and heightened educational aspirations. Smith (2007) more recently examined the relationship between dual enrolment participation and educational aspirations in a study involving 304
Kansas high school students that controlled for level of parental education and other student personal factors. Although investigators were unable to establish a cause and effect link between dual enrolment and high educational aspirations, it found the two variables to be positively and significantly related.

Increased high school graduation rates and higher levels of college preparedness have been linked to American Dual Enrolment Programs. In one Arizona program, dual enrolment students showed higher high school graduation rates than peers who were not program participants (Finch, 1997). Similar results were reported by researchers examining programs in Florida (Karp, Calcagno, Hughes, Jeong, & Bailey, 2007) who concluded that the dual enrolment experience increased students’ college preparedness by helping them gain a better understanding of the role of a college student.

As the focus of Dual Enrolment Programs shifts from high-achieving students to learners who struggle academically, more effort is being directed toward creating and testing programs that are suitable for the latter group. In 2008, The James Irvine Foundation funded the Concurrent Courses Initiative in California that saw the creation, implementation, and expansion of eight career-focused Dual Enrolment Programs for underrepresented and underachieving youth. Investigators (Edward, Hughes, & Weisberg, 2011) who analyzed the programs identified two qualities that enhanced a students’ dual enrolment involvement. “A dual enrolment class should be perceived by students as an authentic college experience where they can ‘try on’ the college student role and view themselves as capable of doing college work” (p. 4). Secondly, programs should provide students with supports in an integrated way “by building learning support into class time, more so than through limited, independent interventions such as one-on-one tutoring” (p.4). Six program features were found to contribute to the achievement of the two
program-enhancing qualities: location of classes, type of instructor, course offerings, mix of students, type of credit, and timing of courses. Classes that were delivered on a college campus provided students with a more authentic college experience and made it easier for them to access academic and other support services. Regarding instructor characteristics, college professors who had the capacity to understand and engage dual enrolment students and high school teachers who delivered college courses that were adequately rigorous were better able to connect students to the college environment. The courses made available to students also enhanced the dual enrolment experience. Students benefited from having access to a mix of academic, student success, and career-technical courses. They also gained from taking classes with regular college students because interacting with such students enhanced the maturity of dual enrolment students and convinced them that they were having a genuine college experience. Another way that students benefited from the programs was by receiving both high school and college credits for dual enrolment course work. Finally, the researchers concluded that students were advantaged when dual enrolment courses were offered during the regular high school day because courses offered outside that timeframe potentially conflicted with students’ employment and other responsibilities. They conceded, however, that students who took a college course at a high school location during regular high school hours were less likely to perceive themselves as real college students.

**Research on the short-term outcomes of Ontario Dual Credit Programs.**

Studies conducted on Ontario Dual Credit Programs have identified a number of short-term program benefits. Students have reported higher levels of engagement at the secondary school level as a result of program participation. This includes having better relationships with their teachers and peers (Armstrong et al., 2006). As well, students indicated improvement in their
organizational skills, social skills and self-esteem (Ontario Ministry of Education, 2009b). Program administrators and teachers have agreed that students obtain immediate gains. They observe greater interest in school, improved communication skills, and higher levels of maturity, motivation, and self-esteem on the part of dual credit participants (Rogers, 2009; Ontario Ministry of Education, 2009b; Ungerleider, 2008).

Research on SWAC Programs confirms that the dual credit approach is enhancing student motivation and learning at the high school level, particularly in vulnerable students. A high proportions of the 370 students who responded to the 2010 SWAC survey (Ontario Ministry of Education, 2011c) reported that the programs helped them be better prepared academically for postsecondary education (82%), develop more realistic expectations about the academic challenges of postsecondary education (81%), feel more confident about their ability to succeed in postsecondary education (77%), and develop better studying habits (57%). Furthermore, the results of the survey suggest that most of the participants experienced positive change in their school-related perceptions. Participants were asked to use a scale ranging from 1 (not at all) to 7 (a lot) to respond to several statements about their high school experience before and after enrolling in SWAC. When asked to respond from a pre-SWAC perspective to the statement “I usually had a good understanding of the subjects taught at high school”, 36% of participants gave a rating of 6 or 7. In contrast, 78% of participants gave the same rating in response to the statement “I usually have a good understanding of the subjects taught at college” which tapped into their SWAC experiences. Equally sizeable differences between pre and post SWAC student perceptions were seen when participants responded to statements about having a good relationship with teachers (29% compared 82%), showing interest in learning (15% compared 62%), having a good relationship with peers (43% compared 62%), attending school regularly
(18% compared 56%), having a feeling of belonging (27% compared 68%), and being academically successful (19% compared 63%). In all cases the differences between high school and SWAC responses were statistically significant at the 95% confidence level. The results of the 2010-2011 (Ontario Ministry of Education, 2011b), 2011-2012 (Ontario Ministry of Education, 2012b), and 2012-2013 (Ontario Ministry of Education, 2013c) SWAC surveys consistently showed that the dual credit approach enhanced the academic confidence and educational experiences of SWAC students.

Information gathered by the RPTs indicates that Dual Credit Programs are helping students earn credits and graduate high school. Programs typically show impressive student success rates, expressed as “the percentage of secondary school dual credits earned out of the total of secondary school credits attempted” (Ontario Ministry of Education, 2013b, p. 6). According to available MEDU statistics, the provincial dual credit student success rate has remained high over a number of years: 74.2% in 2007-2008 (Ontario Ministry of Education, 2009a), 79.1% in 2008-2009 (Ontario Ministry of Education, 2009b), 80.3% in 2009-2010 (Ontario Ministry of Education, 2011a), 80% in 2010-2011 (Ontario Ministry of Education, 2012a), 80.6% in 2011-2012 (Ontario Ministry of Education, 2013b), and 86% in 2012-2013 (Ontario Ministry of Education, 2014a). School Within A College Programs show impressive student success rates as well, even though they contain higher proportions of at-risk students. In 2008-2009, 72.8% of all SWAC participants successfully completed their dual credit courses (Ontario Ministry of Education, 2009b). The figures for 2009-2010, 2010-2011, and 2011-2012 were 76%, 71%, and 78%, respectively (Ontario Ministry of Education, 2011a, 2012a, 2013b). As expected, programs involving SHSM students show the highest student success rates. In 2012-2013, 90% of SHSM
students who attempted to earn dual credit actually did so (Ontario Ministry of Education, 2014a).

When considering the capacity of the dual credit approach to help students earn credits, it should be noted that there is a relationship between student success rate and course delivery approach. In 2011-2012, two delivery approaches showed the highest student success rate of 84%: “team-taught course at secondary school” and “team-taught course at college” approaches (Ontario Ministry of Education, 2013b). The lowest success rate, 68%, of that year was associated with the “college-delivered Level 1 apprenticeship at secondary school” approach. However, the latter approach involved only 7% of dual credit participants. The most popular delivery approach in 2011-2012, as in previous years, was the “college-delivered course at college” approach which accounted for 64% of all participants. The success rate of that approach was 80%. In any event, high student success rates show that dual credit participants are earning credits that move them closer to graduation. In 2011-2012, 6,026 (56%) dual credit participants earned their OSSD.

Beyond providing participants with college credits for successful completion of college courses, Dual Credit Programs are meant to help students prepare for college in cognitive, behavioural, and socio-emotional ways. This is accomplished by exposing students to the academic and social aspects of college life. A recent study by Whitaker (2011) suggests that the dual credit model can be successful in preparing students for college. Using a mixed methods approach that involved collecting both quantitative and qualitative data, Whitaker examined students, parents, teachers, professors, and administrators who were involved in Dual Credit Program offered at St. Lawrence College in Fall 2008. He found that the programs were rated highly by all groups. Specifically, they were viewed as effective in terms of academic benefits,
creating a greater awareness of college, contributing to student confidence, and leading to increased likelihood of college participation. Although Whitaker’s research was in the form of an interpretive case study and intended to provide analytical rather than statistical generalizations, it provided insight on the short-term student outcomes of Dual Credit Programs.

Research conducted by Fleming Data Research (2010) also supports the notion that Dual Credit Programs prepare secondary school students for college. Investigators surveyed 459 students enrolled in Fleming College dual credit courses during Fall 2009 and/or Winter 2010 semesters and found that the majority of participants believed that they gained stronger study habits, writing skills, and speaking skills as a result of taking the courses. Moreover, 95% of the students surveyed indicated that dual credit courses helped them develop more realistic expectations about the academic challenges of college and feel more confident about their ability to succeed in college.

**Long-Term Outcomes Involving High School Graduates and Postsecondary Students**

It is challenging to evaluate the long-term outcomes of CBTPs, mainly because students cannot be easily located once they leave high school. With few American states and Canadian provinces having systems that permit the tracking of students from secondary to postsecondary education, researchers have had to come up with other ways of accessing post-high school student data.

**Research on the long-term outcomes of American Dual Enrolment/Dual Credit Programs.**

The State of Florida maintains a comprehensive record system that permits the tracking of students from their first years in public school through to the end of postsecondary education. This allowed the Florida Department of Education (2004) to conduct a study that compared the
high school and college records of dual enrolment and non-dual enrolment students. The research found that African American and Hispanic students with dual enrolment experience were more likely to enrol in college than their peers without that experience. The figures were 70% compared to 45% for African American and 69% compared to 54% for Hispanic students.

In another study that was able to follow students from secondary to postsecondary education, Karp et al. (2007) compared dual enrolment participants and non-participants in Florida and New York City. This well-cited longitudinal study analyzed student records contained in two existing large-scale administrative datasets: one included the records of 299,685 students graduating from Florida public schools in 2000-2001 and 2001-2002 and the other held the records of 2,303 students graduating from 19 New York City vocational high schools during the same time periods. All four cohorts were monitored for up to four years of postsecondary education and efforts were made to control for variables other than dual enrolment participation that might have influenced college attainment.

In the Florida portion of their study, Karp et al. (2007) tracked 36,217 students with dual enrolment experience. This group included 4,654 students who, in addition to being involved in dual enrolment programs, participated in Career and Technical Education (CTE) Programs known to contain a high proportion of low-achieving students. The study found that participation in dual enrolment was positively related to enrolment in college for the students in dual enrolment programs only, as well as for the CTE sub-sample. Furthermore, the research revealed that dual enrolment students, whether in the full or CTE sub-sample, were significantly more likely than their non-participating peers to attend college on a full-time basis; persist in college to a second semester; attain higher Grade Point Averages (GPAs) one, two and three years after high school graduation; stay enrolled in college two years after high school graduation;
graduation; and earn more postsecondary credits three years after their high school graduation. Interestingly, male and low-income students stood out as benefiting more from the dual enrolment experience than their peers, as did students with lower high school grades.

The New York City sample of the Karp et al. (2007) study consisted of participants from College Now, the long-standing City University of New York (CUNY) Dual Enrolment Program that explicitly aims to prepare a wide range of students for college, including low-achieving students. Unlike the Florida sample, the New York City sample involved only CTE students. The study found that College Now participants were more likely to pursue a bachelor’s degree, attain higher first semester GPAs, and accrue more credits three and a half years after postsecondary enrolment, as compared to non-participants.

Karp et al. (2007) identified both the methodological strengths and weaknesses associated with their study’s non-experimental design. In terms of strengths, they pointed to the study’s capacity to track students beyond high school graduation and to thereby assess the long-term outcomes of dual enrolment. The use of longitudinal data also enabled the investigators to control for many, although not all, of the pre-existing student characteristics that might cause dual enrolment students to be more successful in high school than their non-dual enrolment counterparts. Comparing dual enrolment CTE students with non-dual enrolment CTE students provided an additional measure of control over pre-existing student characteristics. That is because CTE students are similar to one another in terms of motivation, career and academic aspirations, and high school experience. Two other strengths associated with the Karp et al. study’s methodology were the use of large sample sizes and the involvement of students from two different American states. According to the investigators, these factors enabled them to “generalize [their] results to a larger population than would be possible using data from only one
or two colleges” (p.19). In terms of shortcomings, Karp et al. acknowledge that the inability to control for all potentially important pre-existing student characteristics was their study’s greatest weakness. That is because unmeasured variables, like student motivation, may have been correlated with dual enrolment participation, thus contributing to study outcomes. Since factors affecting a student’s decision to participate in dual enrolment were not adequately controlled for, Karp et al. warned that their results should be interpreted with caution.

A number of other American studies, although more modest than the one conducted by Karp et al. (2007), have assessed dual enrolment outcomes by tracking students who transitioned to college and comparing those students to peers without dual enrolment experience. For example, research by Michalowski (2007) that controlled for students’ race, family income, gender, age, and academic preparedness, found that, compared to non-participating peers, College Now participants entering CUNY colleges in Fall 2003 earned additional credits in their first year, had higher GPAs and had an increased probability of persisting to a third semester. According to a study commissioned by the Florida Department of Education (2006) that examined 2004-2005 program participants, students completing dual enrolment programs in that state showed similar gains. The study found that dual enrolment participants maintained a higher GPA in the State university system than did their non-participating peers. In Washington, students finishing the Running Start Dual Enrolment Program were able to complete more of the credits that they attempted and achieve higher grades than a comparison group of other recent high school graduates who attended postsecondary education during 2006-2007 (Washington State Board for Community and Technical Colleges, 2008).

In a study that employed a nationally representative student population accessed through data sets assembled by the National Centre for Education Statistics, Swanson (2008) examined
the impact of dual enrolment participation on college outcomes in students who graduated from high school in 1992. The researcher created a causal model and used logical regression equations to determine if dual enrolment participants and non-participants differed in college persistence and success. The use of regression analysis allowed Swanson to control for several potentially confounding student variables including gender, race, first generation status, socioeconomic status, high school class rank, high school GPA, standardized test scores, and the level of rigour of a student’s secondary school curriculum. Study findings showed that compared to direct entry college students those with dual enrolment experience were more likely to persist through the second year of college, more likely to complete a degree in less time, and more likely to earn a higher credential. A major limitation of Swanson’s study was that it focused on a cohort of students that completed dual enrolment and participated in postsecondary programs in the early 1990s. Dual enrolment students and college students in general have changed significantly since that time. One major change is that today far more middle- and low-achieving students are being admitted into dual enrolment and postsecondary programs.

In a study that focused on more recent students, Wintermeyer (2012) examined the academic records of 593 former dual enrolees and 171 direct entry students attending California’s Santa Barbara City College from Fall 2008 to Spring 2011. Compared to their direct entry peers, students with dual enrolment experience registered in full-time postsecondary programs at a higher rate, required less remediation in college, attained higher college GPAs, and accumulated more transferable college units that would allow them to transition to a four year college/university program. The study also found a relationship between these four college outcome variables and the location of the dual enrolment experience. Students who participated in dual enrolment on both high school and college campuses did better on all measures compared
to those participating only at the high school location or only at the college location. While Winterneyer’s study shed light on the long-term college outcomes of dual enrolment participants in the state of California – a state that has produced little research on the effectiveness of its Dual Enrolment Programs – use of the case study method does not permit the findings to be generalized to other populations. Another drawback of the research is that it was unable to control for any of the pre-existing student characteristics that could have had an effect on the resultant college student outcomes.

McCormick (2010) was another researcher who relied on archival sources to test the college outcomes of dual enrolment students. She examined the institutional records of Chattanooga State Community College and extracted data on 389 south Tennessee dual enrolees who graduated from high school in Spring 2005. The investigator used linear and step-wise regression to explore the relationship between dual enrolment participation, college persistence, and five intervening variables including college admission test score, high school GPA, and dual enrolment GPA, and number of high school dual enrolment credits earned. Persistence was defined in the study as the number of terms that a student remained in college seeking program completion. McCormick’s sample consisted predominantly of female (62%), Caucasian (90%), and academically-able students (the average high school GPA was 3.61) students. Ninety five percent of the students matriculated to postsecondary education in Fall 2005: 314 (86%) attended a four year college/university and 53 (14%) enrolled in a two year institution. Linear regression analysis indicated significant relationships between college admission test score, high school GPA, and dual enrolment GPA, on one hand, and college persistence, on the other. A statistically significant relationship was not found between dual enrolment credits earned and number of college terms persisting. When step-wise regression analysis was performed with the four
intervening variables introduced in a step-wise manner, the strongest relationship to emerge was
the one between dual enrolment GPA and number of college terms persisting. A second
regression model that involved the simultaneous introduction of the four intervening variables
resulted in the emergence of a pair of variables, dual enrolment GPA and number of dual
enrolment credits earned, that jointly showed significance in relation to the college persistence
variable. As noted by the researcher “dual credits earned showed no significant relationship to
number of college terms persisting until paired with dual enrolment GPA” (p. 86). In the end,
McCormick concluded that the results of her study revealed “a highly successful yet
homogenous group of students who were likely most successful when they participated in dual
enrolment, did well in the dual enrolment courses, and took multiple courses” (p. 87).

When analyzing her findings, McCormick cited earlier research by Kim and Bragg (2008)
that uncovered a significant negative relationship between academic dual credit hours earned and
total college credit hours earned in two samples of Tech Prep students: one in Texas and the
other in Florida. The researchers concluded: “Based on these results, students’ academic dual
credit course-taking was likely to shorten their stay in community college” (p. 16). They went on
to propose that students who accumulated a high number of academic dual enrolment credits
may have left college early to attend a four year institution.

According to Speroni (2011), despite efforts by American researchers to identify the post-
high school impact of Dual Credit/Dual Enrolment Programs, the problem of selection bias
continues to thwart progress. She explained that because academically able students are more
likely to take dual enrolment courses, it is difficult, if not impossible, to establish a clear cause
and effect relationship between program participation and college-level student outcomes like
college access and attainment. In the absence of employing an experimental approach as a
possible solution to the selection bias problem, Speroni (2011) used a quasi-experimental strategy to examine the causal aspects of dual enrolment participation. In a unique study that focused on two Florida high school cohorts tracked from 2000-2001 and 2001-2001 through to the summer of 2007, she conducted regression discontinuity analyses that gauged the causal effects of dual enrolment by comparing the outcomes of students who just made and those who just miss the admission cut offs set out by the State of Florida. On the basis of her analyses, Speroni (2011) concludes that simply taking a dual enrolment course did not improve rates of high school graduation, college enrolment, or college degree attainment for students on the margin of participation. She did find, however, that the students in her sample who took a challenging college algebra course, did show significantly improved college enrolment and graduation rates.

Two recent investigators used quasi-experimental methods to control for non-dual enrolment factors that might account for the success of dual enrolment students. Struel and Vargus (2012) employed a statistical technique called propensity score modeling (PSM) to increase confidence that the difference in college outcomes between a sample of Texas dual enrolment and non-dual enrolment students was associated with program participation and non-participation and not with pre-existing student characteristics. These investigators had access to information on a cohort of 32,908 students that graduated from state high schools in 2004. They were able to follow the progress of a select number of these students from high school graduation to college completion. The PSM technique allowed Struel and Vargus to pair each former dual enrollee with a similar student who did not have a dual enrolment background. This resulted in a treatment group of 16,454 dual enrolment participants and a control group of 16,454 non-dual enrolment participants. Treatment and control group data were analyzed using logical regression models in
order to uncover possible relationships between dual enrolment participation, on one hand, and college access, participation, and completion, on the other.

Compared to students in the control group, those in Struel and Vargus’ (2012) treatment group were 2.2 times more likely to enrol in a two or four year college, 2.0 times more likely to return for a second year of college, and 1.7 times more likely to complete a college degree. The investigators also looked at the college outcomes of specific demographic groups, including students of different races and economic statuses. They reported that white dual enrolees were 2.21 times more likely to attend college than white non-dual enrolees. In the case of African American students, those who completed dual enrolment courses were 1.6 times more likely to register in college than peers who did not complete such courses. In terms of economic background, non-disadvantaged students with dual enrolment experience were 2.3 times more likely to attend a four-year college/university immediately after graduating high school than were similar students with no dual enrolment experience. The corresponding figure for economically disadvantaged students was even higher with those who completed dual enrolment courses being 2.41 times more likely to attend university. The researchers concluded:

Given the strength of these results and the methodology used, the research strongly suggests that enabling students to complete college courses in high school can be an effective strategy for raising rates of college enrolment, persistence, and completion in two-year and four-year colleges…the research suggests that dual enrolment is related to benefits for all demographic groups. (p. 17)

Due to the use of a state-wide student population and a strong research methodology, the Struel and Vargus (2012) study surpassed many other efforts to identify the long-term outcomes of Dual Enrolment Programs. However, given that these investigators did not employ an
experimental approach with students being randomly assignment to dual enrolment and non-dual enrolment conditions, questions remain about the effectiveness of dual enrolment. Although use of the PMS strategy helped the investigators control for some of the pre-existing student variables that might influence college student outcomes, variables that were not represented in the dataset could not be controlled for. This included things like student motivational levels and an array of personality characteristics. The study can also be criticized because of its limited generalizability. Not only did it focus on Texas students who attended college in that state, it did so during a particular time period.

Relatively few American studies have examined the postsecondary outcomes of marginalized students who participated in dual enrolment. Robinson (2011) conducted a qualitative case study of African American students in Tennessee who completed dual enrolment courses offered through a partnership between River Charter Academy and St Aquinas University in 2007-2008, 2008-2009, and 2009-2010. The investigator used an online survey, focus groups, and interviews to question students about their college readiness, college persistence, and high school and postsecondary academic and social experiences. A total of 21 students participated in some aspect of the study. All participants were admitted to a four-year postsecondary institution and 95% were still enrolled in higher education at the time of the study. Robinson’s analysis of the qualitative data revealed four emerging themes: isolation, college-going, preparedness, and balance. The isolation theme reflected feelings of seclusion that students experienced as they navigated their way through dual enrolment courses and activities. Students commented on not receiving a sufficient orientation to college, having limited opportunities to interact with regular college students, having limited time on campus, and being restricted to only two college courses. The college-going theme encompassed the view on the
part of students that dual enrolment participation and related factors (their own reactions to the program, parental support, their high school’s focus of college going), motivated them to pursue higher education. Preparedness emerged as a theme because students had a lot to say about the challenges that they experienced as dual enrollees and the factors that allowed them to overcome obstacles once they enrolled in full-time college studies. Students indicated that their college preparedness was advanced by gaining more knowledge about academic and other aspects of college, drawing on the similarities that existed between high school and college environment, being able to manage the content of their college courses, and countering the greater leniency that they experienced in dual enrolment courses compared to courses they took as full-time college students. Finally, students spoke about maturing and growing through the dual enrolment experience, especially as it related to being able to balance their academic and social lives when they transitioned to higher education.

**Research on the long-term outcomes of Ontario Dual Credit Programs.**

I found a paucity of information on the long-term outcomes of Ontario Dual Credit Programs. That is largely because until very recently the province did not have a record system with the capacity to track students from secondary to postsecondary education. The absence of a K-16 tracking system made it very difficult to locate dual credit students once they exited high school in order to learn about their post-high school experiences.

The Ontario Ministry of Education (School College Work Initiative, 2013) used data available through the Ontario College Application Service and the Ontario University Application Centre to determine if dual credit students were gaining access to higher education. Specifically, EDU followed two groups of dual credit students to learn how many and what percent applied to college, registered in college, and applied to university. The students who
were tracked completed dual credit courses in 2009-2010 and 2010-2011. Of the 7,570 students enrolled in 2009-2010 Dual Credit Programs, 1,473 (19%) applied to college one year later (in 2010-2011) and 2,347 (31%) were college applicants two years later (in 2011-2012). In the case of the 12,202 students who completed dual credit courses and activities in 2010-2011, 2,458 (21%) were enrolled in college one year later but the two year later figure was not reported. There was also evidence that several students in each of the cohorts registered for college. A total of 1050 (14%) of the 2009-2010 dual credit participants registered in college one year later and 1852 (24%) did so two years later. The one year later figure for the 2010-2011 participants was 1842 (15%). The college conversion rates (those registered as a percentage of those applied) for the 2009-2010 group was 71% one year after and 79% two years after. For the 2010-2011 group, the one year college conversion rate was 73%. Moreover, the data indicated that a number of students from each of the two cohorts applied to university. Of the 2009-2010 participants, 171 (2%) applied to university one year after and 404 (5%) did so two years after. The one year after university application figure for the 2010-2011 participants was 291 (2%).

Researchers have used data collected by Ontario colleges to track former dual credit students. The research project that my Humber College colleagues and I conducted in Fall 2010 (Harrison, 2011) used information contained in college student records to contact 280 individuals who participated in dual credit courses at Humber College from Winter 2007 to Fall 2009. The goal was to ask these dual credit alumni to respond to a phone survey designed to reveal their post-dual credit educational and employment activities. We managed to contact 159 of the 280 individuals and 134 agreed to participate in the study; a response rate of 45%. Of the 71 females and 63 males who responded to the survey, 105 (78.4%) had attained their OSSD, 18 (13.4%) were still in high school, and 11 (8.2%) had left high school without graduating. The study found
that 84 (80%) of the high school graduates went on to postsecondary education. Tellingly, 81.9% of this group reported that the dual credit experience influenced their decision to apply to a postsecondary institution and 93.9% said that it increased their confidence to succeed in higher education. An overwhelming majority (95.8%) of the participants who had not graduated from high school also planned to attend postsecondary education; 82.6% under the influence of the dual credit program. Moreover, 91.3% of the non-graduates reported experiencing increased confidence related to postsecondary success as a result of their participation in dual credit.

The former dual credit students participating in the Humber College study acknowledged many of the benefits identified in the past by secondary school students who enrolled in dual credit. For example, 95.5% of participants agreed that the dual credit experience allowed them to test their potential to succeed in college, while 94.7% said that it helped them become familiar with the postsecondary educational system. A majority of participants also acknowledged that dual credit allowed them to test out a specific college program (82.7%), increased their awareness of college program options (78.8%), and informed them of different career possibilities (77.7%).

Most of the participants in the Humber study who went on to postsecondary education chose to attend Humber College. While geographical convenience probably influenced participants to enrol at that institution, it is possible that familiarity with Humber College campus and programs played a role in their decision. Of the 84 study participants who enrolled in postsecondary programs, 47 named Humber College as the school that they attended. York University was the second most popular school, attended by 8 participants, followed by Seneca College, George Brown College, Centennial College, University of Toronto, and Sheridan College, attended by seven, five, four, two, and two participants, respectively. Eight more postsecondary institutions
were mentioned but each of those was only attended by a single student. A number of participants reported attending more than one institution.

All 84 postsecondary education attendees were also asked to name the program(s) they enrolled in. The Police Foundation Program was found to be the most popular program with 10 individuals indicating attendance. That is not surprising given that a related dual credit course is well attended by Humber College dual credit students. The second most popular program was the business program, reported by nine participants, followed by the media program, reported by seven participants. Twenty eight other programs were listed, each by five or fewer participants.

In order to more fully explore the college student outcomes of former dual credit students, it is necessary to follow students as they make their way through postsecondary education. I found only one previous investigator who attempted to do this. Philpott-Skilton (2013) focused on two cohorts of dual credit alumni that attended postsecondary programs at Fleming College. One group consisted of 75 students who newly enrolled in higher education in Fall 2010 and the other included 195 students who were new enrolees in Fall 2011. Both groups were followed through the first term to the start of the second term: Winter 2011 in the case of the first group and Winter 2012 in the case of the second group. The investigator collected data by examining student transcripts, administering a student survey, and completing student interviews. She sought to answer the study’s main research question: “How does participation in Dual Credit (DC) programs impact the academic performance and persistence of participating students at Fleming College” (p. 12). A student was considered persistent when he or she returned to Fleming College in the winter term. Two types of persisters were identified: 1) “B-2 persisters” who progressed to the second semester of the same program and “B-3 persisters” who repeated the first semester of the same program or enrolled in the first semester of a different program.
The label “B1-non-persister” was applied to students who did not return to the College in the winter term.

Of the 75 former dual credit participants in Philpott-Skilton’s (2013) Fall 2010 sample, 55 (47 B2 persisters and eight B3 persisters) registered at the College in the following (Winter 2011) term while 20 did not. That represented a 73.3% retention rate for the Fall 2010 dual credit group, a figure that was lower than the 82.5% retention rate for all (including dual credit) Fall 2010 Fleming College students. Regarding the 195 students in the Fall 2011 dual credit group, 160 (140 B2 persisters and 20 B3 persisters) returned and 35 did not return to the College in the following term (Winter 2012). The second term retention rates for the Fall 2011 dual credit group and all (including dual credit) Fleming College students were comparable: 82.1% and 81.5%, respectively.

Philpott-Skilton (2013) originally intended to restrict her investigation to the 2010 dual credit cohort but only 28% (21 of the 75 students) of that group agreed to participate in the study. This necessitated expanding the research to include the dual credit students that registered at the College in Fall 2011. Thirty one percent (60 of the 195 students) of the second group consented to participate. While the inclusion of the 2011 cohort increased the total number of consenting participants to 71, several individuals failed to actually complete the survey, release their transcripts to the investigator, and/or complete an interview. This resulted in missing data for some measures and Fall 2010 and Fall 2011 samples that were not representative of their respective populations. In the case of the 2010 cohort, of the 21 students who consented to participate, 13 (1 B1 non-persister, 12 B2 persisters, 0 B3 persisters) completed the survey, 19 (3 B1 non-persisters, 16 B2 persisters, 0 B3 persisters), released their grades, and 2 completed an interview (0 B1 non-persisters, 2 B2 persisters, 0 B3 persisters). The highest participation rate
was 34% and that represented the 16 B2 persisters who gave the investigator access to their grades. Participation rates of zero were obtained on all measures for the B3 persisters and on the interview measure for the B1 non-persisters. The participation figures for the 60 consenting students from the 2011 group were 45 (9 B1 persisters, 33 B2 persisters, 3 B3 non-persisters), for the survey, 51 (10 B1 non-persisters, 37 B2 persisters, 4 B3 persisters) for releasing the grades, and 14 (2 B1 non-persisters, 10 B2 persisters, 2 B3 persisters) for the interview. Regarding the second cohort, the highest participation rate of 34% involved the 29 B1 non-persisters who completed the survey and the lowest of 6% encompassed the 2 B1 non-persisters who completed an interview.

The lack of data or limited data that particular persister/non-persistor groups contributed through survey, student transcript, and/or interview modes constitutes a limitation of the Philpott-Skilton (2013) study, which she acknowledged, as does the unrepresentative nature of her 2010 and 2011 dual credit student samples. Despite these limitations, the research provided much needed insight into the possible impact of Ontario Dual Credit Programs on several student outcomes including college transition, school engagement, college persistence, and academic success.

Philpott-Skilton’s (2013) findings suggest that Dual Credit Programs helped the majority of students in her sample transition to college. Almost all participants from the 2010 cohort (12/13 or 92%) and more than half (26/45 or 58%) from the 2011 cohort reported that the dual credit experience allowed them to better navigate the secondary to postsecondary educational path. Students identified three main ways that Dual Credit Programs aided their college transition: 1) by providing them with knowledge about what to expect at college, 2) by preparing them to tackle college work, and 3) by giving them the opportunity to interact with professors and better
understand the role that professors play in the college setting. The programs also encouraged college going by re-engaging previously disengaged high school students. When asked to report on their level of engagement during their final year of high school – a period of time when they were enrolled in dual credit – very few participants (9%) answered that they were “disengaged” or “very disengaged”, several (40%) said that they were “somewhat engaged”, and half (50%) responded that they were “very engaged”. In some cases student engagement continued when students entered postsecondary programs as evidenced by student involvement in college extra-curricular and orientation activities. As expected, the B2 persisters reported higher levels of participation in these activities than did the B1 non-persisters and B3 persisters.

According to Philpott-Skilton (2013), the type of dual credit course a student completes and the subsequent postsecondary program they enrol in could be related to their college persistence. She found that B2 persisters in the 2011 sample were more likely than B1 non-persisters and B3 persisters in the same sample to report that their dual credit courses were “very much related” or “somewhat related” to the program that they enrolled in during their first postsecondary semester at the College. The B2 persisters in the 2010 sample gave similar responses to those in the 2011 sample. It was not possible to compare the three types of persisters/non-persisters in the 2010 sample because no B3 persisters and only one B1 non-persister completed the survey. On the basis of these findings, Philpott-Skilton concluded that “DC students who enrolled in a College program that was ‘related’ to their DC program were more likely to persist at College” (p. 134).

Philpott-Skilton (2013) examined data contained in the academic records of 70 participants (19 from the 2010 sample and 51 from the 2011 sample) to determine the extent to which the academic performance of dual credit students was related to college persistence and success. She looked at grade 12 grades and first semester college grades as measures of academic
performance. Significant differences were not found between the grade 12 grade averages of B1 non-persisters (75%) and B2 persisters (74%) in the 2010 sample. No B3 persisters were included in the comparison because none gave the investigator permission to access their grades. Notable differences in the grades of the three groups were found, however, in the larger 2011 sample. In that sample, the grade 12 grade averages for B1 non-persisters, B2 persisters, and B3 persisters were 71%, 76%, and 69%, respectively. The investigator went on to compare the grade 12 grade average and first semester college grade average of each of the three groups in the 2011 sample. On the basis of her findings, she concluded that “the academic performance of participating DC students in high school may be related to academic success at college” (p. 116). Philpott-Skilton also compared the first semester college grade average of each of the persistence/non-persistence groups in the 2010 and 2011 samples to that of all Fleming College semester one students. In the 2010 sample, the grade average for the B1 non-persisters was 42% and for the B2 persisters it was 70%. The investigator noted that the average for both B1 non-persisters and B2 persisters was 67% and for all 75 students in the 2010 cohort it was 60%. The Fleming College average for Fall 2010 was 67%. These findings show that the B2 persisters outperformed both the B1 non-persisters (by 28%) and the group consisting of all first semester students (by 3%) but the academic performance of all first semester students exceeded that of all 2010 former dual credit students (by 7%). The first semester college grade averages for the 2011 B1 non-persisters, B2 persisters, B3 persisters, and all three categories ofpersisters/non-persisters were 47%, 74%, 46%, and 67%, respectively. The average for all first semester Fall 2011 Fleming College students was 68%. Consistent with the findings for 2010, the 2011 B2 persisters outperformed both the B1 non-persisters (by 27%) and all Fall 2011 first semester students (by 6%). They also outperformed the B3 persisters from that year (by 28%). The
academic performance of all 2011 first semester students exceeded that of all students in the 2011 dual credit cohort but only by one percent. Taken together, Philpott-Skilton’s 2010 and 2011 academic performance findings show that while some former dual credit students, the B2 persisters, were able to academically surpass their peers, “semester one DC students on average did not perform as well academically as all semester one College students” (p.123).

One way that Dual Credit Programs are intended to help students do better in college is by introducing them to an array of learning services and supports. In her case study of Fleming College, Philpott-Skilton (2013) examined the frequency with which former dual credit participants accessed Learning Support Services (LSS) compared to all Fleming College students. Data on LSS use by all students at the College was contained in 2010 and 2011 Key Performance Indicator (KPI) reports released by MTCU. The investigator found higher use of counselling, tutoring, advising, and note-taking services among Fall 2010 former dual credit students than all 2010 Fleming College students. However, these results should be interpreted with caution due to the small size of the 2010 sample. Students in the larger 2011 sample reported lower use of the first three services but higher use of the note-taking service, compared to all Fleming College 2011 students. Focusing on the 2011 results, Philpott-Skilton proposed that the learning supports provided to these dual credit participants in high school might have reduced their need to access support structures when they transitioned to college. She also suggested that engaging in dual credit courses and activities could have increased the overall confidence of these students to the point that upon entering college they believed that they no longer needed supports.

Philpott-Skilton (2013) concluded her study by asking participants to suggest improvements that could be made to Dual Credit Programs in order to increase the success of students at the
postsecondary level. Participants recommended that the programs should, above all, provide students with an authentic college experience. Many said that dual credit teachers and professors should have higher expectations when interacting with dual credit students; expectations that are consistent with what the students will encounter when they actually get to college. One student suggested: “Make the program a little harder with a bit more homework, it will show students the reality of college” (p. 127) and another said “I found that my professor was not particularly hard on students in comparison in comparison to my professors at Fleming” (p. 127). Another popular recommendation was that the variety of dual credit courses be expanded and that dual credit opportunities be available to more high school students. Finally, participants suggested that dual credit student should be encouraged to spend more time in the college environment. Students who participated in dual credit in a high school setting were especially likely to recommend that dual credit courses and activities take place on a college campus.

Summary of Literature Review

Transition programs that allow high school students to earn postsecondary credits were first introduced to North America over 50 years ago. In reviewing the literature on dual credit, dual enrolment, and other CBTPs, I found general agreement that these programs are worthwhile and help student make educational progress. It is important to note, however, that most studies on CBTPs have focused on short-term rather than long-term outcomes. As a result, there is more information on how programs impact high school students than the effects they have on participants who have transitioned to college. Information is especially limited when it comes to the long-term outcomes of Ontario Dual Credit Programs. Given that the focus of the Ontario dual credit initiative is not only to increase high school graduation rates but to also help students
transition to and succeed at college, it is essential that both short-term and long-term program benefits be investigated.

While the positive findings of American studies on college students with dual enrolment experience provide some support for the expansion of Ontario dual credit programs, the uniqueness of Ontario colleges limits the generalizability of American findings. In the United States, community colleges, junior colleges, technical colleges, and affiliated colleges of universities offer two-year Associate degrees while liberal arts colleges and universities offer four-year Bachelor degrees. Students with Associate’s degrees can leave college and enter the workforce or transfer to a four-year institution in order to continue their education in pursuit of a Bachelor’s degree. Ontario college and university systems involve more separate administrative structures and educational offerings. For the most part, Ontario colleges provide applied programs of one, two, or three year duration that culminate in a credential that leads to employment whereas the province’s universities offer degree programs that open the door to further study. While Bachelor programs of an applied nature are now available at Ontario colleges, such programs make up a very small proportion of college programing.

Outline of Remaining Chapters

Chapter three discusses the methodology of the research. It provides details on research design, study site, data sources, data collection, data analysis, methodological assumptions, study limitations, and ethical issues and considerations.

Chapter four presents the findings of the study based on data derived from college student records, an online student survey, student interviews, and faculty interview. Study findings are also analyzed in Chapter four. The research questions provide an organizing framework for the presentation and analysis of the findings.
Chapter five is the final chapter of this thesis document. It includes the conclusions of the study, the implications of the findings, plans on how the findings will be shared with others, and the overall conclusion of the research.
Chapter Three: Research Design and Methodology

The purpose of this investigation was to examine the impact of dual credit participation on college student persistence, engagement, success, and preparation. The research took the form of a case study of Humber College Institute of Technology and Advanced Learning (Humber College) in Toronto, Ontario. Employing a quantitative and qualitative research design, the study compared the experiences and outcomes of dual credit and non-dual credit participants enrolled in Humber College postsecondary programs during a four year period ranging from Fall 2008 to Fall 2012.

Research Questions

This study sought to answer one overarching research question: What impact does participation in Dual Credit Programs have on college student experience and outcome? The following subsidiary research questions drove the data collection for this investigation:

1. To what extent do dual credit participants and non-dual credit participants differ in college persistence?
2. To what extent do dual credit participants and non-dual credit participants differ in college engagement?
3. To what extent do dual credit participants and non-dual credit participants differ in college success?
4. What aspects of a Dual Credit Program prepare students for college life as perceived by dual credit participants and college faculty?

Research Design Considerations

Before selecting a research design for the study, I weighed the strengths and limitations of qualitative, quantitative, and mixed methods approaches. I also considered the research designs
employed by previous American and Canadian Credit-Based Transition Program (CBTP) investigators. Interestingly, the majority of North American studies on dual credit and related programs reflect either a qualitative or quantitative approach. I found the use of mixed methods to be far less prevalent in this area of research.

Lauded for its exploratory ability, natural setting orientation, focus on multiple data sources (e.g., interviews, observations, documents), and capacity to investigate and give meaning to complex human phenomena (Creswell, 2009), the qualitative method is well represented in CBTP research, especially in studies aimed at investigating new programs. However, the qualitative strategy has its weaknesses. These include problems related to isolating variables in a meaningful way, separating the voice of researcher and participant, and generalizing findings beyond research participants (Creswell, 2009). It is precisely these types of limitations that have led many CBTP investigators to embrace the quantitative paradigm, even though it comes with its own set of challenges, like the reliance on closed-ended questions and the tendency to simplify otherwise complex human experiences and relationships (Creswell, 2009).

The use of a research design that combines qualitative and quantitative paradigms is not common among CBTP investigators. However, a look at studies published over the last few years indicates that this approach is gaining popularity, especially in Ontario. Whitaker (2011) used mixed methods to examine Dual Credit Programs at St. Lawrence College, as did Philpott-Skilton (2013) in her study of similar programs at Fleming College. There are sound reasons for examining Ontario Dual Credit Programs through mixed methods. These programs involve a complex web of social and professional relationships that span two educational systems (secondary and postsecondary), two government ministries (Ministry of Education and Ministry
of Training, Colleges and Universities) and multiple provincial regions. As a multifaceted phenomenon, dual credit may be challenging to understand from the vantage point of a single methodology. Creswell (2009) asserts that quantitative or qualitative approaches on their own are inadequate when it comes to addressing issues involving complex social phenomena. He claims that in such multifaceted cases insight can best be gained by adopting a design that combines both approaches. Similarly, Yin (2009) notes that mixed methods “can permit investigators to address more complicated research questions and collect a richer and stronger array of evidence than can be accomplished by any single method alone” (p. 63).

**Selected Research Design**

A mixed methods research design was used in this investigation because of its capacity to provide a deep and nuanced understanding of the impact of dual credit participation on college student experience and outcome. The use of a mix of qualitative and quantitative approaches enriched the study in a number of ways. It allowed me to capitalize on the strengths and diminish the weaknesses associated with each of the primary paradigms, provided me with a greater number of research tools with which to study the dual credit phenomenon, and permitted me to cross-validate findings. These are important mixed methods benefits identified by Creswell (2009) and other researchers (Seifert, Goodman, King, & Magolda, 2010).

In addition to incorporating a mixed methods design, the research is organized in the form of a case study of one Ontario college: Humber College. The case study approach is prevalent within education research in general (Merriam, 1998; Yin, 2009) and CBTP research in particular (Armstrong et al., 2006; Hughes et al., 2005; Karp & Hughes, 2008; Philpott-Skilton, 2013; Whitaker, 2011). Although case studies are typically categorized as qualitative strategies (Creswell, 2009; Stake, 1995), Yin (2009) argues that they can involve both qualitative and
quantitative data. That is true of this research which examined dual credit at Humber College by generating a mix of qualitative and quantitative evidence.

Stake (2006) defines a case as “a noun, a thing, an entity” (p.2). Citing Stouffer (1941), he argues that cases are real things that are easy to envision but much harder to understand. With reference to the current study, it is not difficult to mentally represent the entity of Humber College and delineate it from other Ontario postsecondary institutions that offer Dual Credit Programs. However, gaining knowledge on the impact of dual credit within the context of Humber College is a more challenging endeavour.

Yin (2009) offers a twofold definition of case studies. First, he defines a case study as “an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p. 18). Consistent with this view, this research examined the impact of dual credit within the real-life context of a single Ontario college with the understanding that a student’s dual credit experience is deeply rooted in the college context and cannot be separated from it. The second part of Yin’s (2009) definition focuses on data collection and analysis and states that because phenomenon and context cannot be de-linked in case studies, investigators using this form of inquiry typically face many variables of interest, most of which cannot be anticipated or pre-determined. Consequently, they rely on multiple sources of evidence that need to be substantiated through triangulation, the process whereby two or more data sources are used to boost the credibility of findings. According to Lin, investigators using the case study approach also benefit from being able to draw on pre-existing theory to drive data collection and analysis. In this study, the link between the dual credit phenomenon and its college context increased the potential for many unanticipated dual credit impact and outcome variables to emerge. As a result,
the study relied on multiple sources of evidence to enhance confidence in the findings. Consistent with Yin’s third point, the research benefits from testing theoretical propositions that were developed by earlier investigators.

Experts in research design have identified several types of case studies. Stake (1995) differentiates between three main categories: ‘intrinsic’ case studies, where the goal is to gain knowledge about one particular and unique case; ‘instrumental’ case studies, conducted in order to provide insight into some broader phenomena than the case under investigation represents; and ‘collective’ case studies, where two or more cases are investigated in the same study. Yin (2009) also separated case studies into three main types: ‘descriptive’, ‘exploratory’, and ‘explanatory’. While a descriptive case study aims to identify aspects of a phenomenon, case studies of the exploratory type involve more probing on the part of the investigator who attempts to bring to light variables that are important to the phenomenon. In contrast to descriptive and exploratory types, explanatory case studies have the capacity to test theories, explain possible connections between variables, and make generalizations from the particular case being examined to other cases. In terms of the categories proposed by Stake, this case study is of the instrumental variety because my goal was to examine dual credit at Humber College in order to gain a better understanding of the dual credit phenomenon in general. Although it has elements consistent with descriptive, exploratory, and explanatory categories, my case study best resembles Yin’s exploratory type.

The research adopted a concurrent triangulation strategy, one of six mixed methods strategies advanced by Creswell (2009). According to Creswell, this strategy involves particular aspects of timing (scheduling of qualitative and quantitative data collection), weighing (prioritizing of qualitative and quantitative research), mixing (combining of qualitative and
quantitative data), and theorizing (employing explicit versus implicit theorizing). Typical of studies that adopt the concurrent triangulation approach, this study examined both quantitative and qualitative data within the same time span and then proceeded to compare the two resultant datasets to determine areas of convergence and divergence. As noted by Seifert et al. (2010), the concurrent data collection strategy is consistent with the complementary nature of mixed methods research in which investigators seek to elaborate and clarify their results through alternative research approaches. Regarding the weighting of qualitative and quantitative components, the study did not emphasize one over the other but recognized the importance of both. The mixing of data in the research involves integrating qualitative and quantitative datasets such that, ultimately, results are presented in a side-by-side fashion. Finally, on the level of theory, the study was guided by explicit theorizing including Austin’s (1999) theory of involvement, Tinto’s (1993) integration model, and Rendón’s (1994) theory of validation. The concepts of information networks (Karp et al. 2008) and anticipatory socialization (Merton, 1957) were also tested in the study.

The concurrent triangulation strategy was selected for the study because there is merit in examining dual credit outcomes from both qualitative and quantitative perspectives in a simultaneous fashion and then subjecting the resultant databases to cross-validation. Creswell (2009) maintains that this strategy can provide researchers with well-validated and substantiated findings. Moreover, he notes that it “uses separate quantitative and qualitative methods as a means to offset the weaknesses inherent within one method with the strengths of the other (or conversely, the strength of one adds to the strength of the other)” (p. 213). Another benefit of the concurrent triangulation approach is that it requires a relatively short data collection phase since qualitative and quantitative data are gathered at one time. Admittedly, the model also
presents challenges. For example, examining a phenomenon with two separate methods requires greater expertise and effort on the part of the investigator. Furthermore, comparing the very different forms of data gleaned from each method can be challenging, as can resolving discrepancies between qualitative and quantitative results.

There are also longitudinal and comparative elements in the research. The past college experiences and outcomes of students who did and did not participated in Dual Credit Programs were examined and compared through the examination of college student academic records, an online student survey questionnaire, and face-to-face interviews with students and faculty. Best described as a retrospective longitudinal study, the investigation focused on students enrolled in Humber College postsecondary programs from Fall 2008 to Fall 2012. The longitudinal strategy was used because of its capacity to identify changes over time as they relate to dual credit involvement. Karp et al. (2007) noted the importance of having access to longitudinal data as a means of determining the implications of dual enrolment participation, a view that was echoed by Armstrong et al. (2006) in the context of Ontario Dual Credit Programs.

**Study Site**

**Description of Case Study College**

The case study college is located in the Greater Toronto Area (GTA), a high density region with a population of approximately 6,000,000. One of the largest institutions in the Ontario college system, Humber College services over 27,000 full-time and 56,000 continuing education students through eight academic schools and three campuses (North, Lakeshore, and Orangeville). It offers a wide spectrum of programs that culminate in certificates, diplomas, bachelor degrees, postgraduate certificates, or apprenticeships. During the 2013-2014 academic year, the College enrolled students in 135 Certificate of Achievement (CA), 67 Certificate of
Completion (CC), 3 Certificate of Participation (CP), 41 Ontario College Certificate (OCC), 88 Ontario College Diploma (OCD), 50 Ontario College Advanced Diploma (OCAD), 37 Applied Degree, 5 Degree, and 51 Ontario Graduate Certificate (OGC) Programs.

The North Campus is Humber College’s largest campus. Situated in northwest Toronto, it is home to more than 19,000 full-time students, 1,000 of whom live in residence. The main offices of six of the College’s eight academic schools are found on the North Campus, including Applied Technology; Business; Health Sciences; Hospitality, Recreation and Tourism; Liberal Arts and Sciences; and Media Studies and Information Technology. The College’s second largest campus, Lakeshore Campus, is located in the southwest part of Toronto. It services more than 7,800 students, with approximately 400 residing on campus. Two academic schools are exclusively located on Lakeshore Campus: Social and Community Services and Creative Performing Arts. Secondary offices of three other schools (Business; Media Studies and Information Technology; and Liberal Arts and Sciences) also have a presence on that campus. The College’s third and smallest campus is situated in the town of Orangeville which is located approximately 60 kilometers northwest of the North Campus. Orangeville Campus offers three programs to approximately 200 full-time students. The programs are: Early Childhood Education, Police Foundations, and Social Service Worker.

Humber College has a diverse student population. A recent Annual Report (Humber Planning & Development Office, 2013) documenting the characteristics of 2012-2013 first year students shows variation in gender (51% female, 49% male), age (20% under 19, 30% were between 19 and 20, 43% were between 21 and 31, and 7% were over 31), and first language (87% English, .3% French, 13% other). Many (32%) of these students were the first in their families to attend higher education; so called, first generation students. While 62% of the 2012-
2013 first year students were born in Canada, 38% were born in another country, and 13% were international students. These individuals also had different educational experiences upon entering the College: 4% had less than grade 12, 56% grade 12, 1% an apprenticeship, 8% a college diploma, 8% some university, 8% a university or college degree, 2% postgraduate studies, and 13% other.

**Dual Credit Education at the Case Study College**

Humber College began providing high school students with dual credit learning opportunities in Fall 2006 in the form of School College Work Initiative (SCWI) Phase 10 Pilot Projects. During the 2006-2007 academic year, a total of 84 students registered in courses offered through three Humber College Dual Credit Programs: 1) the Orangeville Program (Orangeville Campus) that involved partnerships with three high schools administered through the Upper Grand District School Board and the Dufferin-Peel Catholic District School Board, 2) the Collegiates of Northern Etobicoke (CONE) Program (North Campus) that saw the participation of three local Toronto District School Board high schools, and 3) the Opportunities in Hospitality, Recreation, and Tourism (HRT) Program (North Campus) that involved one Toronto Catholic District School Board high school. The Humber College Phase 11 Pilot Projects of 2007-2008 included four Dual Credit Programs (a Landscape Program was added) and registered 167 students. The 2008-2009 academic year saw the addition of three Ontario Youth Apprenticeship (OYAP) programs (Culinary, Electrical, and Plumbing Programs), and the registration of 296 dual credit students. Keeping pace with the incredible growth of dual credit across Ontario at the time, in 2009-2010, Humber College expanded its dual credit offerings by introducing a School Within A College (SWAC) Program and welcoming a total of 454 students to its eight Dual Credit Programs. In 2010-2011, 602 dual credit students attended the College,
the HRT program was rolled into what was originally called the CONE program, and a partnership with the Kawartha Pine Ridge District School Board resulted in the Crestwood Program, a program that delivered online dual credit courses to students from Crestwood Secondary School in Peterborough, Ontario. In 2011-12, dual credit enrolment at Humber College reached 867 students. A second Landscape Program was added at that time. There was a levelling off of dual credit enrolment in 2012-13 with the participation of 838 students. Yet, that year, the College introduced a fourth OYAP program (having to do with baking). In 2013-2014, Humber College made nine dual credit programs available to approximately 1000 students from dozens of public and Catholic high schools spread across the GTA.

Most students engaged in dual credit learning at Humber College do so through the Secondary Schools of Greater Toronto (SSOGT) Program. Beginning as the CONE Program in 2006-2007, this popular program has shown remarkable growth since its inception when it offered only one dual credit course (a social psychology course) to a mere 27 students from three local high schools. One year later, in 2007-2008, the CONE Program was re-named the Collegiates of West Toronto (COWT) Program. At that time it registered 76 students from five west Toronto high schools in five dual credit courses. The program has continued to grow, collaborating with more school Boards and high schools and registering increasing numbers of students. It was called the Secondary Schools of West Toronto (SSWT) Program during the 2008-2009 and 2009-2010 school years and has been known as the SSOGT Program since 2010-2011. In 2012-2013, the program offered over 20 courses to 448 students from five different school Boards and dozens of GTA high schools located in Toronto, Scarborough, Mississauga, Brampton, Markham, Woodbridge, and Bolton. Approximately 52% of all high school students
who participated in dual credit at Humber College in 2013-2014 did so through the SSOGT program.

All SSOGT dual credit courses are delivered by Humber College professors on North and Lakeshore Campuses. They are ‘congregated’ type courses that are restricted to dual credit students; postsecondary students are not permitted to enrol in these courses. Secondary Schools of Greater Toronto Program participants can select from an array of courses that are core to particular college certificate, diploma, and advanced diploma programs. These include courses such as Introduction to Canadian Criminal Justice Systems, Introduction to Spa Management, or Basic Contemporary Culinary Skills and Techniques. Alternatively, students can choose from a list of non-program, general education courses taught by faculty from the School of Liberal Arts and Sciences; courses like Social Psychology and Digital Culture.

The Orangeville Dual Credit Program enrols the second highest number of Humber College dual credit participants. It offered both program and general education dual credit courses until Winter 2011 when the decision was made to restrict dual credit students to program courses. Orangeville dual credit courses are delivered by Humber College professors on Orangeville Campus. Since Winter 2011, all courses have been of the congregated type. However, from Fall 2007 to Fall 2010 a mix of congregated and ‘integrated’ courses were available. In integrated courses, dual credit students and postsecondary students are combined in the same class. The Orangeville Program began in Winter 2007. During that time, 44 students were enrolled in four courses, all delivered through the congregated model. In 2013-2014, about 13% of all Humber dual credit students were enrolled in the Orangeville Program.

The SWAC Program does not enrol as many students as SSOGT and Orangeville Programs but has shown the same degree of growth over the years; going from 13 students in 2009-2010 to
56 students in 2012-2013. Offered at the North Campus, the SWAC Program includes a high proportion of ‘disengaged and underachieving’ students. SWAC students participate in high school credit courses taught by secondary school teachers and SSOGT dual credit courses taught by Humber College professors. All classes are delivered in the college setting. While high school courses consist only of SWAC students, dual credit courses include a mix of SWAC and non-SWAC secondary school students. Six percent of all 2013-2014 Humber College dual credit students were enrolled in the SWAC Program.

In addition to SSOGT, Orangeville, and SWAC programs, the College offers two landscape programs to dual credit students. In 2013-2014, these programs contained eight percent of the College’s dual credit students. Although funded separately, landscape and SSOGT programs are administered together, thereby serving about 60% of the 2013-2014 dual credit participants.

The remaining four Dual Credit Programs at the College are Plumber, Electrical, Cook, and Baker OYAPs. In 2013-2014, 22% of all students participated in these programs.

Selection of Case Study College

I selected Humber College for my case study primarily because of my affiliation with the institution as a professor of psychology in the School of Liberal Arts and Sciences and as the contact person for general education dual credit courses. My connection with the College also involves dual credit research that I conducted in Fall 2010 in partnership with four Humber College colleagues. The primary goal of our investigation was to locate the approximately 290 students who participated in CONE, COWT, and SSOWT programs from Winter 2007 to Fall 2009 for the purpose of engaging them in an outcome-related phone survey designed to reveal their post-dual credit educational and employment activities. In the current study my goal was to
provide a more fulsome understanding of the impact of dual credit on students who have transitioned to postsecondary programs at the College.

The President of Humber College, Chris Whitaker, has granted permission (Appendix B) for me to identify the College as the study site.

**Data Sources**

The data for this study came from three main sources: 1) document analysis of college student records, 2) college student informants whose records were a part of the study and who responded to an online survey and participated in face-to-face interviews, and 3) college faculty who completed interviews. Student informants were recruited from a pool of prospective participants consisting of all individuals whose academic records were investigated as part of this study.

**College Student Records**

The target population of the study consisted of all (N=205) non-apprenticeship Humber College dual credit alumni who were enrolled in Humber College postsecondary programs from Fall 2008 to Fall 2012. The research examined the college student records of 203 of these individuals (two records were eliminated because they were void of academic information). It also involved the records of a comparison group (i.e., control group) of 203 postsecondary students with no dual credit experience who attended the College during the Fall 2008 to Fall 2012 time period. The College’s Manager, Institutional Research was asked to match each dual credit student record with that of a comparison student on the basis of criteria that I provided. In the end, comparisons were made between the records of 168 past dual credit participants and 168 non-dual credit participants who shared the same gender, age, initial postsecondary term, and initial postsecondary program. Matching problems (discussed on pp. 110-111) resulted in the
elimination of 70 records (35 dual credit and 35 non-dual credit) from comparative analyses. Analyses involving dual credit students alone made use of the full set of 203 records associated with that group. A demographic profile of the 203 dual credit record holders is presented below, followed by a profile of the 168 dual credit/non-dual credit matched pairs.

**Demographic profile of all dual credit participants.**

Of the 203 dual credit participants whose records were involved in the study, 111 (54.7%) were female and 92 (45.3%) were male. In terms of age, one (0.5%) was born in 1987 while five (2.5%) were born in 1988, 13 (6.4%) in 1990, 33 (16.3%) in 1991, 42 (20.7%) in 1992, 37 (18.2%) in 1993, and 43 (21.2%) in 1994. Study participants attended 62 different high schools and began taking dual credit courses at different times from Winter 2007 to Winter 2012: five (2.5%) first enrolled in dual credit in Winter 2007, eight (3.9) in Fall 2007, 28 (13.8) in Winter 2008, nine (4.4%) in Fall 2008, 15 (7.4%) in Winter 2009, 14 (6.9%) in Fall 2009, 32 (15.8%) in Winter 2010, 11 (5.4%) in Fall 2010, 22 (10.8%) in Winter 2011, 29 (14.3%) in Fall 2011, and 30 (14.8%) in Winter 2012. One hundred sixty nine participants (83.3%) completed one dual credit course, 30 (14.8%) two courses, and four (2.0%) three courses. Most (164 or 80.8%) students enrolled in courses administered through the SSOGT program while smaller numbers did so through Orangeville (17 or 8.4%) and SWAC (10 or 4.9%) programs (the dual credit program of 12 students was not known).

The Winter 2007 to Winter 2012 dual credit participants entered Humber College postsecondary programs during the following terms: 16 (7.9%) in Fall 2008, 13 (6.4%) in Fall 2009, three (1.1%) in Winter 2010, two (1.0%) in Spring 2010, 42 (20.7%) in Fall 2010, 10 (4.9%) in Winter 2011, one (0.5%) in Spring 2011, 36 (17.7%) in Fall 2011, nine (4.4%) in Winter 2012, two (1.0%) in Spring 2012, and 69 (34.0%) in Fall 2012. Participants registered in
a total of 60 college programs (Appendix F) with the majority (177 or 87.2%) selecting programs that award a college diploma. The most popular program, chosen by 43 (21.2%) students, was the Police Foundations Program. This was followed by Early Childhood Education, Community and Justice Services, and Business Administration programs, selected by 13 (6.4%), 12 (5.9%), and 11 (5.4%) students, respectively.

As of the end of Fall 2012, 32 (15.0%) of the 203 of the dual credit alumni successfully completed a Humber College postsecondary program. Of these graduates, 25 (78.1%) earning OCD, six (18.8%) an OCC, and one (3.1%) an OCAD.

**Demographic profile of matched dual credit and non-dual credit participants.**

The 168 dual credit participants and 168 non-dual credit participants whose records were investigated were identical in gender, age, initial postsecondary term, and initial postsecondary program, the four matching criteria variables. Although they were not matched on admission Grade Point Average (GPA), it was found that the two groups were equivalent in terms of this variable. The average admission GPA in the dual credit sample was 78.46% and in the control sample it was 79.72%. The difference in these averages was shown by a t-test to not be statistically significant (t (303) = -1.552, p. 121).

Each dual credit and non-dual credit group consisted of 91 (54.2%) females and 77 (45.8%) males who were born within a seven year period: three (1.8%) in 1988, nine (5.4%) in 1989, 20 (11.9%) in 1990, 25 (14.9%) in 1991, 40 (23.8%) in 1992, 29 (17.3%) in 1993, and 42 (25%) in 1994. Dual credit and non-dual credit pairs entered Humber postsecondary programs during the following semesters: 14 (8.3%) in Fall 2008, 13 (7.7%) in Fall 2009, two (1.2%) in Winter 2010, one (0.6%) in Spring 2010, 32 (19.0%) in Fall 2010, 9 (5.4%) in Winter 2011, 31 (18.5%) in Fall 2011, seven (4.2%) in Winter 2012, two (1.2%) in Spring 2012, and 57 (33.9%) in Fall 2012.
They enrolled in 56 college programs (Appendix G) with 146 (86.9%) entering programs that award a college diploma credential. The most popular programs among dual credit and non-dual matched pairs were Police Foundations, Early Childhood Education, and Business Administration programs, chosen by 40 (23.8%), 12 (7.1%), 10 (6.0%), and seven (4.2%) of the pairs, respectively.

Before transitioning to higher education, the 168 dual credit participants attended 58 different secondary schools. It was through these schools that participants were first introduced to Humber College dual credit courses: three (1.8%) in Winter 2007, seven (4.2%) in Fall 2007, 21 (12.5%) in Winter 2008, seven (4.2%) in Fall 2008, 11 (6.5%) in Winter 2009, nine (5.4%) in Fall 2009, 28 (16.7) in Winter 2010, 11 (6.5%) in Fall 2010, 21 (12.5%) in Winter 2011, 25 (14.9%) in Fall 2011, and 25 (14.9%) in Winter 2012. The majority of participants (142 or 84.5%) completed one dual credit course, while two courses and three courses were completed by 22 (13.1%) and four (2.4%) participants. A total of 136 (81.0%) participants enrolled in courses administered through the SSOGT program. Orangeville and SWAC Programs registered 16 (9.5%) and seven (4.2%) participants, respectively (the dual credit programs of 9 students were not known).

By the end of the Fall 2012 semester, 27 (16.1%) of the 168 dual credit participants earned a postsecondary credential: 22 (81.5%) earning an OCD, 4 (14.8%) an OCC, and 1 (3.7%) an OCAD.

The 168 individuals in the non-dual credit comparison group attended 124 different high schools prior to registering in Humber College postsecondary programs. By the end of the Fall, 2012 semester, 43 (25.6%) of these individuals earned a college credential: 32 (74.5%) were awarded an OCD, five (3.0%) an OCAD, five (3.0%) an OCC, and one (0.6%) a CA.
Student and Faculty Research Participants

Earlier instructor-student relationships existed between me and some of the prospective student participants in the study. Some individuals in the dual credit group were enrolled in dual credit courses that I taught in Winter 2007 and Fall 2008 or in regular non-dual credit college courses that I taught prior to launching the study. A few individuals in the non-dual credit group may also have been enrolled in one of my past courses. Given that pre-existing instructor-student relationships had the potential to introduce bias into the research, I created distance between myself and study participants by having College staff and two Research Assistants (RAs) interact with students during the recruitment and data collection phases of the investigation. I had no direct contact with any of the research participants during the duration of the study.

As a Humber College professor who joined the College in January, 2000, I have built numerous professional and social relationships with faculty colleagues. In order to reduce potential bias in the faculty interviews, I did not participate in the recruitment of faculty interview participants, nor was I involved in collecting faculty interview data. These tasks were performed by College staff and one of my RAs.

The two RAs involved in the study were enrolled in Humber College’s Research Analyst Program, an 11-month postgraduate certificate program that trains students in the theoretical, practical, and ethical aspects of research. Through 12 courses over two semesters followed by a 12 week placement, research analyst students gain knowledge about all aspects of research including qualitative and quantitative research design, data management and analysis, and research ethics. The two research analyst students that I hired to act as my RAs attended training sessions provided by me in which they learned about the Ontario dual credit initiative, became familiar with the research protocol of my study, and acquired the skills related to the positions
that they would occupy. One RA (RA1) was trained to assist in the recruitment of student survey participants while the other RA (RA2) was trained to assume responsibility for the student and faculty interviews. Both RAs signed a Confidentiality Agreement (Appendix H) prior to accessing any of the potential participants.

**Recruitment of student survey participants.**

The recruitment of participants for the online survey was initiated by Humber College’s Director, Planning and Government Relations; the person who oversees the office of Institutional Research. College policy prevented me or my RAs from making first contact with prospective survey participants. On February 26, 2013, students whose academic records were a part of the study were sent an email message (Appendix I) informing them about the research. The message noted the title of the project, verified that it was approved by the College’s Research Ethics Board (REB), and provided students with the name, telephone number, and email address of RA1 who was tasked with coordinating the survey.

A few days after the recruiting message was sent to prospective survey participants, RA1 received 10 responses from students. He subsequently sent each of these individuals a follow up message (Appendix J) that included the *Letter of Invitation and Information to Prospective Survey/Interview Participants* (Appendix K), a link to the online survey, and a unique numerical code for the student to include on his/her survey questionnaire. Of the 10 prospective participants that RA1 contacted, 9 (8 dual credit and 1 non-dual credit) went on to complete the survey.

By the end of the first week of March, 2013, it was clear that the initial recruiting message was not generating any additional interest on the part of students. There are several possible reasons for this poor response. Many of the prospective participants may not have received the recruiting email because they had left the College and did not subsequently updated their
contacted information. Alternatively, individuals who received the message may have decided against responding because they wrongly assumed that the survey was long or that no compensation for participation was involved. Another reason for the poor response may have been that individuals who were still studying at the College simply ignored the message because it came at a time in the semester when academic demands were heightened.

On March 19, 2013, I informed the Director, Planning and Government Relations of the poor survey response rate and requested that another email message be sent to potential survey participants, this time containing information about the length of the survey and the specific incentives provided to participants. A second message (Appendix I) was sent to students later that day but it was identical to the one sent on February 26, 2013, thus lacking information on the length of the survey and compensation. After I learned from RA1 that the subsequent message did not improve the survey response rate, I asked the Director, Planning and Government Relations to release a third email informing students that the study involved an online survey which would take approximately 10 minutes to complete and that survey participants would be eligible to win prizes of $5, $10, $20, and $50 gift cards. The third recruiting message (Appendix I) was sent on May 7, 2013. While it contained the additional information that I requested, it did not garner additional student interest.

With three recruitment emails failing to attract a sufficient number of participants for the online survey, in May, 2013 I implemented additional strategies to increase the survey response rate. For example, I designed a poster (Appendix L), made 300 copies, and attached them to bulletin boards across North, Lakeshore, and Orangeville Campuses. I also asked the Humber Students Federation to put information about the study on its website and to also send it out through Twitter. Regrettably, these approaches did nothing to draw participants to the survey.
Upon reflection, the disappointing results are understandable. I needed to get the attention of a select group of students — those whose academic records were integral to the study — and appealing to the broad student population through bulletin board posters and electronic messages had limited potential to attract this target group. Besides, many of the individuals in my inclusion groups were no longer connected to the College, having graduated or left the institution to pursue other educational opportunities or for the purpose of employment. As for potential participants who were still Humber College students and on campus, while the posters and electronic messages had the potential to get the attention of the dual credit group by specifically mentioning the Dual Credit Program, they did not target individuals in the comparison, non-dual credit group.

During the Fall 2013 term I made a final attempt to increase my survey response rate. Believing that individuals in my inclusion groups who were still at the College might be more willing to participate in the study if they were contacted earlier rather than later in the semester, I asked the administrator who sent out the previous three recruitment emails to contact students again at the beginning of October, 2013. A fourth email was sent but, like the last two, it did not attract additional survey participants. I was subsequently informed by the College’s Director, Planning and Government Relations that due to other pressing priorities, the Institutional Research team could no longer assist me in the recruitment process.

Failure to get a sufficient number of students to complete the online survey is not surprising in light of evidence that students at Ontario colleges tend not to volunteer to participate in research. Unlike university students who have ample opportunity to learn about what it means to be a research participant, college students are rarely introduced to concepts like informed consent
and confidentiality. As a result, college students are often mystified by the research process and intimidated to participate in research studies.

I am not alone in having an insufficient number of participants respond to a dual credit survey. Whitaker (2011) reported a low response rate to the instrument he designed to assess the motivations and expectations of dual credit students at St. Lawrence College. More recently, Philpott-Skilton (2013) reported having to make repeated efforts to recruit participants for her dual credit investigation. She initially focused her study on past dual credit students registered in full-time Fleming College postsecondary programs in Fall 2010, inviting these individuals to complete an online survey. With few surveys completed, Philpott-Skilton decided to have an RA contacted prospective participants by telephone, giving those who responded the option of completing the survey over the phone or electronically. However, this strategy did not increase the survey response rate substantially and it was necessary for her to expand the study to include a new cohort of students registered in Fall 2011. After completing the investigation, Philpott-Skilton concluded: “in my experience, college students do not appear to readily volunteer to participate in research studies. This issue should be examined in further research so that other studies conducted at colleges result in higher participation rates” (p.72).

In the end, a total of nine students completed the online survey. Eight of these participants were from the dual credit study group and one was from the non-dual credit control group.

**Recruitment of student interview participants.**

Student survey participants were asked to indicate at the end of the online survey if they were interested in completing a face-to-face interview. A total of seven students (six dual credit and one non-dual credit) volunteered for an interview. Each of these individuals was sent an email message (Appendix M) by RA2 that included the *Letter of Invitation and Information to*
Prospective Survey/Interview Participants (Appendix K), and the Informed Consent Letter for Student Interview Participants (Appendix N). Participants were given the choice of completing the interview at North, Lakeshore, or Orangeville Campuses. Two face-to-face interviews were completed. RA2 made all efforts to schedule interviews with the remaining five interview volunteers. In some cases, interviews were scheduled but eventually cancelled, some on the morning of the interview. Even when the incentives were increased and students were given the option of completing the interview by phone or online through Skype, RA2 was not successful in gaining the compliance of the remaining survey participants who indicated interest in completing an interview.

**Recruitment of faculty interview participants.**

Humber College professors who communicated inside or outside the classroom with both dual credit and non-dual credit postsecondary students were also recruited as interview participants. The College’s Orangeville and SSOGT Dual Credit Coordinators were involved in the faculty recruitment process. In accordance with Ontario’s Freedom of Information and Protection of Privacy Act, the Coordinators did not provide the names of prospective faculty participants to study personnel. Instead, they sent professors who met the inclusion criteria information about the study in the form of an email message (Appendix O) that included the Letter of Invitation and Information to Prospective Faculty Interview Participants (Appendix P); Informed Consent Letter for Faculty Interview Participants (Appendix Q); and the name, telephone number, and email address of RA2, the person who was responsible for scheduling and conducting the interviews. Professors contacting RA2 were provided with details about the length, format, and anonymity of the interview; copies of the information and consent letters; and an invitation to select a convenient campus location, date, and time for their interview. A total of
five faculty members contacted RA2 to inquire about the study. Four of these individuals went on to complete an interview.

**Data Collection and Recording**

The study used three sources of data to answer the stated research questions: document analysis (college student academic records), students (online survey and face-to-face interview), and faculty (face-to-face interview). Table 2 lists the four research questions, corresponding data collection tools, and specific sub-items associated with each tool.

**Document Analysis of College Student Records**

After gaining Research Ethics Board (REB) approval from both the University of Toronto (Appendix R) and Humber College (Appendix S); administrative consent to conduct the study at Humber from Humber College’s Vice-President, Academic; and permission to disclose the name of the study college from the Humber’s President (Appendix B); on September 5, 2013 I met with administrators in the Institutional Research office to discuss my data needs. At that time, I requested information from the academic records of all Humber College dual credit alumni who were enrolled in Humber postsecondary programs from Winter 2007 to Winter 2012 and equivalent information from the records of a matched group (described on pp. 110-111) of non-dual credit postsecondary students studying at the College during the same period of time. I explained that while the student records released to me would contain no personal identifiers like student name, number, address, telephone number, or email address, I was seeking select demographic information (student’s gender, birth date, and secondary school) and postsecondary information (admission date; admission GPA; academic program; credential type; campus; term of study; number of courses attempted, earned, and failed per term; term and program GPA; term academic standing; and graduation term, program name, credential, and GPA). I also asked
Table 2

*Data Sources and Related Research Questions*

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Collection Tool</th>
<th>Sub-items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) To what extent do dual credit participants and non-dual credit participants differ in college persistence?</td>
<td>Student Records</td>
<td>Six month college dropout rates; one year college dropout rates; total number of terms enrolled; total number of programs enrolled 3,8 2</td>
</tr>
<tr>
<td></td>
<td>Student Interviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Faculty Interviews</td>
<td></td>
</tr>
<tr>
<td>2) To what extent do dual credit participants and non-dual credit participants differ in college engagement?</td>
<td>Student Survey</td>
<td>A1,A2,A3,A4,A5,A6,A7</td>
</tr>
<tr>
<td></td>
<td>Student Interviews</td>
<td>2,5,6</td>
</tr>
<tr>
<td></td>
<td>Faculty Interviews</td>
<td>3,4,5</td>
</tr>
<tr>
<td>3) To what extent do dual credit participants and non-dual credit participants differ in college success?</td>
<td>Student Records</td>
<td>Course completion rate; first term GPA; second term GPA; first term academic standing; second term academic standing; graduation rate; graduation GPA 4 6</td>
</tr>
<tr>
<td></td>
<td>Student Interviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Faculty Interviews</td>
<td></td>
</tr>
<tr>
<td>4) What aspects of a Dual Credit program prepare students for college life as perceived by dual credit participants and college faculty?</td>
<td>Student Survey</td>
<td>B1, B2</td>
</tr>
<tr>
<td></td>
<td>Student Interviews</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Faculty Interviews</td>
<td>7</td>
</tr>
</tbody>
</table>

that in the case of dual credit students the records include Dual Credit Program name and dual credit course particulars (course code, year and term of completion, and final grade).
A set of student records belonging to 205 dual credit and 205 non-dual credit Humber College postsecondary students was released to me on November 29, 2012. Upon examining these student records, I discovered that none of the 205 dual credit students had entered postsecondary programs at the College prior to Fall 2008. Subsequently, I had to change the start time of my study from Fall 2007 to Fall 2008.

Examination of the student records revealed another unanticipated outcome; namely, that many of the records included data corresponded to the Fall 2012 term. Recognizing that expanding the reach of my investigation beyond Winter 2012 would provide me with additional student records to analyze and a larger sample of prospective student survey and interview participants, on December 20, 2013, I asked Institutional Research administrators to provide me with the few pieces of Fall 2012 information (i.e., Fall 2012 grades, academic standing information, etc.) that were missing from the records that I had received. The missing data were released to me on February 25, 2013, after Humber College REB approved (Appendix T) an amendment request that I made to extend my study to Fall 2012.

Before releasing the student records to me, the College’s Manager, Institutional Research removed all identifying student information from the records and assigned each record a unique numerical identification code. She also compiled a list that included the numerical codes and corresponding student names and contact information. The list matching numerical code to student remained in the Institutional Research office at all times and was never released to me. However, a staff member from that office did release select student identifying information from the list to RA1 for recruitment purposes.
Matching dual credit and non-dual credit college student records.

The matching of dual credit (DC) and comparison (COMP) students was completed by the College’s Manager, Institutional Research on the basis of criteria that I provided. I originally requested that students be matched on gender, age, postsecondary admission date, postsecondary program, high school, and high school GPA. However, when the records were released to me, I was informed that students could only be matched on three variables: age, gender, and ‘program similarities’. Although high school GPA was not included as a matching criterion, the student records that I received included a College admission GPA for most students. This allowed me to perform a t test to see if the DC and COMP groups were equivalent in terms of this variable. As indicated earlier, the results of the t test ($t (303) = 1.552, \ p = .121$) showed that DC and COMP groups were not significantly different when it came to average admission GPA.

Matching of DC and COMP students on the basis of program similarities presented some problems for the study. While dual credit students and their matches always shared the same age and gender, some DC/COMP pairs showed troublesome dissimilarities when it came to college admission date and initial academic program. For example, in one pair, the dual credit student first enrolled at the College in Fall 2008 in the Practical Nursing Program, while her non-dual credit match did so in Fall 2006; a full two years earlier and during a term that was not to be included in the study. In the case of another pair, both students where registered in the first semester of the Early Childhood Program in Fall 2011. While the dual credit student was new to the College, her match first enrolled in Fall 2009, in an entirely different program: the Social Service Worker Program. A third example of a poorly matched DC/COMP pair involved two students who both entered Humber College in Fall, 2010. While the dual credit student was enrolled in Business Administration - Accounting, a three-year program that leads to an Ontario
College Advanced Diploma (OCAD), the non-dual credit student was enrolled in Business – Accounting, a two year program that culminates in an Ontario College Diploma (OCD).

In order to circumvent problems resulting from poor matching, ‘impure’ DC/COMP matches that included students who did not both enter Humber College in the same year, term, and program, were identified and eliminated from the study. A total of 35 matches were found to be ‘impure’, leaving 168 ‘pure’ matches on which to perform comparative analyses. Analyses involving only dual credit participants were performed on the entire group of 203 dual credit participants.

**College student records database.**

The anonymous student record data was released to me in the form of four Excel sheets that all included student identification codes and whether the student was in the dual credit group or control group (DC versus COMP). One sheet was labelled *Academic Term Information.* It included the student’s code, type (DC or COMP), gender, birth date, admission GPA, and high school. For each term, it contained the student’s postsecondary program name, program number, and credential type; academic standing; and semester. Another sheet was labelled *Academic Term Standing and GPA.* It noted the student’s identifier and type. For each term it noted the student’s program number, name, campus, and semester; number of courses attempted, earned, and failed; term and cumulative GPA; and academic standing. A third sheet was labelled *Graduates.* It included the student’s identifier and graduation term, program, credential, and GPA. The final sheet, *DC Courses and Grades,* only applied to dual credit students. It listed each student’s identification code along with their Dual Credit Program name, course(s), term(s), and grade(s). In addition to having access to the four Excel sheets containing student record data, I was provided with a document that identified the individual DC/COMP matched pairs.
I created a Statistical Package for the Social Sciences (SPSS) database that included all variables related to my research questions. The data were organized by student case and included each student’s identification code, type (DC or COMP), and demographic information (gender, birth date, and high school). Postsecondary information appeared in the SPSS database in the form of the following variables: admission GPA; initial term; initial program name, number, campus, and credential type; six month dropout status; one year dropout status; total number of terms enrolled; total number of programs enrolled; percent of attempted courses earned; term one and term two GPA; and term one and term two academic standing. Graduation related variables in the database included the student’s graduation status (graduated versus not graduated), along with their graduation date, program name, program number, credential type, and GPA. Finally, the database contained a number of dual credit variables including the student’s initial dual credit program and term; course type (program versus non-program); dual credit grade; and total number of dual credit courses completed.

**Student Survey**

Students who learned about the study from the College’s Director, Planning and Government Relations and were interested in participating in the online survey contacted RA1 who sent them the information letter (Appendix K), survey link, and their personal numerical code. Those who agreed to participate (n=9) were instructed to enter the numerical code on their survey questionnaire. The code came from the list created by the Manager, Institutional Research and linked each student with his/her student record. Upon receiving a message from a prospective survey participant, RA1 contacted a staff member in the Institutional Research office who in turn consulted the numerical code list and provided the RA with the identification number for that student. By having the survey participant include his/her identifier on the survey
questionnaire, I was later able to make connections between the student’s record, survey and interview data.

The College Student Experiences Survey (Appendix U) was informed by the available research and theoretical literature on CBTPs as well as the experience I have gained through working with dual credit students and contributing to Dual Credit Programs. It was developed to gather information on the impact of dual credit on college student outcomes, particularly those related to student preparation and engagement. Efforts were made to align questionnaire items with college impact theory, especially Austin’s (1999) theory of involvement, Tinto’s (1993) integration theory, and Rendón’s (1994) validation theory.

Survey Wizard 2 software was used to produce the online student survey. Supported by the Ontario Institute for Studies in Education (OISE) at the University of Toronto, this software allows investigators to collect data centrally at the University of Toronto and ensures that all data remain protected on the OISE secure server. The online student survey questionnaire (Appendix U) was comprised of a section outlining the goals of the survey, an embedded consent form, the terms of participation, and information on study incentives. The questionnaire was divided into three parts: Part A contained questions directed at both dual credit and non-dual credit students; Part B was comprised of items to be answered only by students in the dual credit group; and Part C asked all participants to note their interest in completing a 30-minute face-to-face interview about their college-related experiences. Prior to completing the survey, participants were reminded that they had the right to decline to answer any survey questions. They also learned that personal identifiers like name, student number, and address would not appear on the survey questionnaire and that they would remain anonymous in any reporting of research findings.
After a participant completed the survey questionnaire, results were immediately available to me. At no time did RAs have access to survey results. Once the survey portion of the study was completed, all survey participants were entered into a draw for prizes involving $5, $10, $20, and $50 gift cards. RA1 conducted the draw and mailed the prizes to the winners. A total of nine surveys were completed: eight by dual credit students and one by a non-dual credit student.

**Student Interviews**

Seven survey participants volunteered to complete a face-to-face interview about their college experiences by answering the last question on the online survey questionnaire. Once I accessed the results of each survey, I noted the numerical code of the participant if he/she agreed to an interview. I sent the numerical code of each interview volunteer to RA2 who used it to get that participant’s contact information from RA1. In turn, RA2 sent each prospective interview participant an email message (Appendix M) that included a copy of the information letter (Appendix K), the *Informed Consent Letter for StudentInterview Participants* (Appendix N), and information about the interview process. Participants were told that the interview would take approximately 30 minutes to complete, be conducted at a convenient time on the Humber College Campus (North, Lakeshore, or Orangeville) of their choice, and earn them a $20 gift card. The second RA also informed participants that the interview would be audio-recorded and transcribed, with their permission, and that they would have a chance to review their interview transcript for errors or omissions. Moreover, RA2 noted that the interview transcript would not contain any personal information like name, contact information, or student number, thus ensuring the anonymity of the participant in the transcript as well as in all published documents and presentations related to the study.
The College Student Experiences Interview Protocol (Appendix V) was developed by me to collect data on college student experience and outcome, including information related to college preparation, persistence, engagement, and success. As with the student survey items, the questions included in the student interview protocol were informed by the CBTP research and theoretical literature and the insights that I gained as a dual credit educator and contributor.

Immediately prior to each interview, RA2 presented the participant with two copies of the interview informed consent form (Appendix N), a document that addressed issues of confidentiality, anonymity and the rights of participants. The consent form was read by the participants and also verbally reviewed by RA2. One copy of the consent form was signed by the participant and given to the RA while the other was kept by the participant. All student interviews were audio-recorded (with the permission of the participant) and transcribed by RA2 who ensured that the transcripts contained the correct participant identification code but no personally identifying information. Participants had the opportunity to review their transcripts within two weeks of the interview date. Verified transcripts were released to me by RA2, while consent forms were taken to the Institutional Research office where they were placed in a secure location. A total of two student interviews were completed.

Faculty Interviews

Beyond document (student records) and student (survey and interview) data sources, interviews with Humber College professors provided a third perspective on the impact of dual credit programs on college students. Prospective faculty interview participants were identified and contacted by one of the College’s two Dual Credit Coordinators. Faculty who fit the inclusion criterion of having contact with both dual credit and non-dual credit postsecondary students were sent an email message (Appendix O) by a Dual Credit Coordinator informing them
about the study and providing them with the contact information of RA2. Having received the *Letter of Invitation and Information to Prospective Faculty Interview Participants* (Appendix P) and the *Informed Consent Letter for Faculty Interview Participants* (Appendix Q) from the Dual Credit Coordinator, the five faculty members who contacted RA1 understood both the aim of the study and their rights and responsibilities as participants. Faculty interviews involved the same consent, audio-recording, transcription, and transcript verification processes as did student interviews. However, faculty participants were not offered a gift card at the completion of their interview. As was the case with the student interviews, RA2 released the verified faculty interview transcripts to me and consent forms to Institutional Research staff. A total of four faculty members completed face-to-face interviews.

When interviewing a faculty member, RA2 was guided by the *Faculty Interview Protocol* (Appendix W), an instrument designed by me to get the faculty point of view on the impact that Dual Credit Programs have on college students. It asked interview participants to compare and contrast dual credit and non-dual credit postsecondary students on the basis of college preparation, persistence, engagement, and success.

**Establishing Credibility**

To ensure the credibility of the research tools, a pilot study was conducted that tested the content and face validity of the *College Student Experiences Survey* (Appendix U), the *College Student Experiences Interview Protocol* (Appendix V), and the *Faculty Interview Protocol* (Appendix W). The content validity of the instruments was established with the help of two individuals with expertise in the dual credit area. These Subject Matter Experts were instructed (Appendix X) to review the instruments and respond to a set of *Content Validity Indexes* (CVIs) (Appendix Y). Inspired by the work of Lawshe (1975), the CVIs for my study were designed to
help assess the relevance of the items of the student survey, student interview, and faculty
interview to the research question being investigated. One expert completed the task on October
15, 2012 and the other on October 24, 2012. Minor changes were made to the instruments on the
basis of feedback provided by the dual credit experts.

The face validity of the student survey and student interview protocol was established with
the benefit of feedback provided by two dual credit and two non-dual credit Humber College
postsecondary students who reviewed the instruments between November 23 and January 25.
The dual credit students learned about the pilot study from the College’s SSOGT Dual Credit
Coordinator, while the non-dual credit students learned about it from their professors. Student
participants in the pilot study were given instructions (Appendix Z) that helped them provide
feedback on the clarity and appropriateness of each question on the survey and interview
instrument. All student pilot participants were given a $10 gift card.

Two Humber College faculty members with dual credit teaching experience helped establish
the face validity of the faculty interview protocol. Both faculty members received information
(Appendix AA) on the goals of the pilot study and the tasks that they would perform. One of the
faculty pilot study participants reviewed the instrument on November 19, 2012 and the other
reviewed it on November 22, 2012. Both participants were made aware of the pilot study by the
SSOGT Dual Credit Coordinator.

Face validity tests resulted in minor revisions being made to student survey, student
interview, and faculty interview instruments. Data collected from student and faculty pilot
participants were not included in the study findings.
Data Analysis

Data analysis was structured to provide multiple sources of information to answer the stated research questions. The analysis of data proceeded at quantitative, qualitative, comparative, and longitudinal levels. A SPSS database was established for the quantitative data. The choice of appropriate statistics required consideration of a number of factors including the scale of measurement of the study variables, the number of samples/groups, the nature of the relationship between groups, the number of variables, and the assumptions of the statistical test under consideration. The analysis of student record data involved both descriptive and inferential statistics. Two types of inferential statistical tests were performed on the student record data: 1) the Chi-square test of independence, a nonparametric test that is suitable for analyzing nominal data; and 2) the t test for independent means, a test used in cases where ordinal data or interval data is involved and where the goal is to determine the extent of the difference between the means of two unrelated groups. The analysis of student record data involved the articulation of two sets of operational questions: one set corresponding to Research Question 1 and the other to Research Question 3. Table 3 lists the subsidiary research questions, operational questions, and inferential statistic related to the student record data source.

While the student survey data were also entered into the SPSS database, the limited number of responses did not permit the computation of inferential statistics. Instead, only descriptive statistics were calculated for these data.

Student and faculty interview data were subjected to content analysis. Attempts were made to identify themes in each dataset but the low response rates made this difficult, particularly in the case of the student interviews.
Table 3

*College Student Record Data Analysis*

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Operational Question</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) To what extent do dual credit participants and non-dual credit participants</td>
<td>a) Do dual credit and non-dual credit students differ in college enrolment/dropout</td>
<td>Chi-square test</td>
</tr>
<tr>
<td>differ in college persistence?</td>
<td>rates six months after enrolling in college?</td>
<td></td>
</tr>
<tr>
<td>b) Do dual credit and non-dual credit students differ in college enrolment/dropout</td>
<td>one year after enrolling in college?</td>
<td>Chi-square test</td>
</tr>
<tr>
<td>rates one year after enrolling in college?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Do dual credit and non-dual credit students differ in number of terms they</td>
<td>t-test</td>
<td></td>
</tr>
<tr>
<td>enrol in college?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Do dual credit and non-dual credit students differ in the number of college</td>
<td>Chi-square test</td>
<td></td>
</tr>
<tr>
<td>programs that they enrol in?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Does the six month college enrolment/dropout rate of dual credit students</td>
<td>Chi-square test</td>
<td></td>
</tr>
<tr>
<td>differ depending on the number of dual credit courses completed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Does the six month college enrolment/dropout rate of dual credit students</td>
<td>Chi-square test</td>
<td></td>
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<tr>
<td>differ depending on whether or not they completed a dual credit course directly</td>
<td></td>
<td></td>
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<tr>
<td>related to their college program?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g) Does the one year college enrolment/dropout rate of dual credit students</td>
<td>Chi-square test</td>
<td></td>
</tr>
<tr>
<td>differ</td>
<td></td>
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</tbody>
</table>
depending on the number of dual credit courses completed?

| h) Does the one year college enrolment/dropout rate of dual credit students differ depending on whether or not they completed a dual credit course directly related to their college program? | Chi-square test |

3) To what extent do dual credit participants and non-dual credit participants differ in college success?

| a) Do dual credit and non-dual credit students differ in successful course completion? | t-test |
| b) Do dual credit and non-dual credit students differ in first term program GPA? | t-test |
| c) Do dual credit and non-dual credit students differ in first term academic standing? | Chi-square test |
| d) Do dual credit and non-dual credit students differ in second term program GPA? | t-test |
| e) Do dual credit and non-dual credit students differ in second term academic standing? | Chi-square test |
| f) Do dual credit and non-dual credit students differ in graduation rates? | Chi-square test |
| g) Do dual credit and non-dual credit students differ in graduation GPA? | t-test |

**Methodological Assumptions**

The choice of a particular research method reflects unique assumptions about the nature of knowledge (Creswell, 2009). In terms of the quantitative tools and instruments, their use assumes that knowledge is best gained through objective inquiry and findings are only valuable if they
have been verified by others who are monitoring their own biases. This post positivistic version of truth is in some ways antithetical to the assumptions behind qualitative data collection strategies. For example, in the case of the interview strategy, knowledge can be seen as being the product of human interaction and thus involving many levels of interpretation and meaning on the part of researcher and participant. According to Gastaldo (2006), this transactional interpretation of knowledge aligns with the interpretivist or constructivist research paradigm. Alternatively, the interview strategy can involve the underlying assumption that knowledge is mediated by the social or political values of the interviewer and interviewee, an assumption that is consistent with what Gastaldo (2006) refers to as the emancipatory/liberationist research paradigm. This study involved the mixed methods approach, which incorporates both quantitative (academic record, survey) and qualitative (interview) data collection strategies.

**Limitations**

One limitation of the study is that while capable of capturing the complexity of the dual credit experience, the case study method does not permit the generalization of findings beyond study participants and the case study college. The goal of case studies is gaining a deeper understanding of the explored phenomenon rather than attaining generalizability.

A second limitation has to do with the small number of variables used to match DC and COMP students. The Manager, Institutional research only matched students on the basis of gender, age, and “program similarities”. Fortunately, I was able to show that overall DC and COM student groups were equivalent in terms of admission GPA. I was also able to expand the matching criteria to include two more variables: initial postsecondary term and initial postsecondary program. Doing so, however, resulted in fewer DC/COMP pairs on which to base comparative analyses (168 “pure” pairs as opposed to 203 “impure” pairs). Despite efforts to
establish a greater degree of equivalency between DC and COMP groups, using a less than optimal matching procedure leaves the study open to criticism. For example, it can be argued that in cases where the differences between DC and COMP groups are found to be statistically significant, it may not be on account of participating or not participating in dual credit but due to a host of other unidentified and unmeasured variables that differentiate between the two groups. While it is true that longitudinal data and the use of a comparison group provide some measure of control over unknown variables, it can be argued that such variables can influence college persistence, engagement, success, and preparation. Solving this problem and establishing a causal relationship between dual credit participation and program outcomes would require the use of an experimental model as noted by Allen (2010) and Karp et al. (2007) or a quasi-experimental approach as suggested by Speroni (2011).

In designing the study, it was my intention to achieve triangulation through the convergence of data from documents (student records), students (surveys and interviews), and faculty (interviews). A poor response (n=9) to the online survey substantially reduced the quantity of data from the student source. The very low student interview response rate (n=2) was especially limiting as it prevented meaningful conclusions to be drawn on the basis of student interview data.

**Ethical Issues and Considerations**

The study followed ethical protocol as set out by the Tri-Council Policy Statement (TCPS) (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, 2010). In accordance with the most recent version of TPCS guidelines that were introduced in December 2010, neither the pilot nor the main study commenced until REB approval was received from both University
of Toronto and Humber College REBs. The University REB approved the study for one year ending August 19, 2013 (Appendix R) and a second year ending August 19, 2014 (Appendix BB). Humber College REB originally approved the research until June 6, 2013 (Appendix S). This approval was later extended to July 11, 2014 (Appendix CC).

In accordance with ethical guidelines, I requested (Appendix A) and received (Appendix B) written consent from the President of Humber College to name College in the thesis document and in related publications or presentations. I also requested and received consent from the College’s Vice-President, Academic to access anonymized student record data.

In completing the ethical protocol for my study, I disclosed that I had pre-existing relationships with some of the student participants in my capacity as a Humber College professor. I indicated that I would create distance between myself and student participants by having RAs interact with participants during recruitment and data collection (i.e., survey and interviews) phases of the study. This ensured that participants were not exposed to any undue influence or coercion and that their involvement in the research was voluntary. Both REB application forms explained that I would not be involved in the faculty interview process and that a RA would be responsible for this part of the study.

My REB applications detailed the process of gaining consent from survey and interview participants. I indicated that the introduction to the online survey questionnaire informed students that there were no known risks associated with completing the survey, their participation in the survey was strictly voluntary, their responses would not be judged, any personal information they provided would be kept confidential, they would not be identified in any reports of the research findings, they were free to decline to answer any survey questions, and they were free to withdraw from the survey without explanation or penalty of any kind. Students were
asked to tick a box indicating that they agreed to participate in the survey. They were also told that clicking the “submit” button confirmed their willingness to participate, though they had the right to withdraw from the survey after they submitted their answers by emailing their request to the RA overseeing the survey. Participants were assured that should they decide to not complete the survey, any information they provided would be deleted. The consent process for interview participants was also discussed in my REB applications. I stated that student and faculty interview participants would be presented with consent forms before the interview process. As with the consent portion of the survey questionnaire, student and faculty consent forms discuss confidentiality, anonymity and the rights of participants.

Research ethics protocol requires that researchers provide detailed information on the steps that they will take to protect the privacy and confidentiality of participants. In my REB applications I ensured that names and other personally identifying information would not appear on student records, student survey questionnaires, student interview transcripts, or faculty interview transcripts. All student documents were assigned numerical codes that prevent me from identifying individual participants on the basis of their student records, survey questionnaires, or interview transcripts. In the case of student data, an administrator from Institutional Research office was the keeper of the list containing the numerical codes and corresponding student identifying information. The numerical code list was never made available to me, though parts of it were provided to my two RAs during the survey and interview phases of the study. At no time did the RAs have access to student records or survey data.

I explained to the University of Toronto and Humber College REBs that two Humber College students would act as RAs for the study. These individuals were students in the Research Analyst Postgraduate Program offered through Humber College’s School of Liberal Arts and
Sciences. Both research assistants signed a confidentiality statement (Appendix H) before assuming their respective responsibilities.

The secure storage of data was an issue that concerned both University of Toronto and Humber College REBs. I provided assurance that the numerical code list would be stored in a password protected file at Humber College by the Manager, Institutional Research. Consent forms and hardcopies of student record, survey, and interview data were stored in a locked cabinet in my home office that only I had access to. Electronic data were also stored in my home office but on a password-protected file that has no network access. The de-identified data set was made available to others (i.e., thesis supervisor, thesis committee members, research consultant) via the physical transfer of a password-protected file and not over email or the network. Interview audio-recordings were deleted immediately following transcription. All student record, survey, and interview data will be shredded or deleted five years after the study is completed.

Another important ethical issue pertaining to this study involved compensation for participation in the research. I offered each student pilot study participant a $10 gift card. While I did not provide compensation to every participant who completed the online survey, I offered participants the opportunity to have their names entered into a draw for 4 gift cards valued at $5, $10, $20, and $50. All participants who submitted a survey qualified for the gift draw. Given that student interview participants were asked to travel to Humber College and give up a substantial portion of their time, they were each compensated with a $20 gift card. Faculty interview participants were not offered compensation.

Summary

This chapter included a discussion on the research design and methodology of the study. Potential methodological approaches were outlined and details were provided on the research
design that was finally selected. Chapter three also presented a discussion of the particulars of the study including the nature of the research site, study participants, data collection and recording, and data analysis. Finally, the chapter addressed the methodological assumptions and limitations of the research as well as the ethical issues and considerations related to the study.

**Outline of Remaining Chapters**

Chapter four includes a presentation and analyses of the study findings with the research questions providing an organizing framework.

Chapter five, the final chapter of this dissertation, contains the conclusions and implications of the study, information on how the findings will be shared with others, and the overall conclusion of the research.
Chapter Four: Presentation and Analysis of Findings

The purpose of this comparative and longitudinal case study was to investigate the impact of Dual Credit Programs on students who had matriculated to postsecondary education. The research is a case study of dual credit students at Humber Institute of Technology and Advance Learning (Humber College), an Ontario public college located in the Greater Toronto Region (GTA). A full description of the case study college can be found in Chapter three. This chapter presents the findings of the study in relation to the stated research questions.

Response Rate

Humber College administrators provided me with the academic records of all (N=203) dual credit alumni who were enrolled in Humber postsecondary programs from Fall 2008 to Fall 2012 and the records of a comparison group (i.e., control group) of postsecondary students with no dual credit experience. One hundred and sixty eight (83%) of the dual credit records matched 168 of the non-dual credit records on the basis of students’ gender, age, initial postsecondary term at Humber College, and initial postsecondary program at the College. Table 4 shows the gender, year of birth, and postsecondary College entry term of each of the 168 dual credit and non-dual credit student pairs whose records were examined in the study. The initial postsecondary programs of these matched students appear in Appendix G.

The response rate for the online survey and student interviews were very disappointing. Only eight (4.8%) of the 168 dual credit participants and one (0.6%) of the non-dual credit participants responded to the online survey. Face-to-face interviews were completed by two (1.2%) of the 168 dual credit participants and four (80.0%) of the five faculty members who were invited to do so.
Table 4

Gender, Year of Birth, and Initial Humber College Postsecondary Term of 168 Matched Dual Credit and Non-dual Credit Students

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Dual Credit and Non-dual Credit Student Pairs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number</td>
<td>percent</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>91</td>
<td>54.2</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>77</td>
<td>45.8</td>
<td></td>
</tr>
<tr>
<td>Year of Birth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>3</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>9</td>
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<tr>
<td>1990</td>
<td>20</td>
<td>11.9</td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td>25</td>
<td>14.9</td>
<td></td>
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<tr>
<td>1992</td>
<td>40</td>
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</tr>
<tr>
<td>1993</td>
<td>29</td>
<td>17.3</td>
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</tr>
<tr>
<td>1994</td>
<td>42</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Initial Postsecondary Term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2008</td>
<td>14</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Fall 2009</td>
<td>13</td>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td>Winter 2010</td>
<td>2</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Spring 2010</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Fall 2010</td>
<td>32</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td>Winter 2011</td>
<td>9</td>
<td>5.4</td>
<td></td>
</tr>
<tr>
<td>Fall 2011</td>
<td>31</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>Winter 2012</td>
<td>7</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Spring 2012</td>
<td>2</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Fall 2012</td>
<td>57</td>
<td>33.9</td>
<td></td>
</tr>
</tbody>
</table>

Findings

The presentation and analysis of quantitative data appear first under each Research Question, followed by the content description and analysis of qualitative data.

Research Question 1

To what extent do dual credit participants and non-dual credit participants differ in college persistence?
Data to answer the first research question were derived from three data sources: college student records, student interviews, and faculty interviews.

**Quantitative findings relevant to Research Question 1.**

**College student records.**

The following data regarding college persistence were extracted from the student records of the 168 dual credit participants and 168 non-dual credit participants: six month enrolment/dropout status, one year enrolment/dropout status, number of terms enrolled, and number of programs enrolled. The findings are reported in relation to the corresponding operational questions identified in Table 3 (Chapter three, pp. 119-120).

*Do dual credit and non-dual credit students differ in college enrolment/dropout rates six months after enrolling in college?* The findings related to this question are based on 222 (66.1%) of the 336 cases (111 dual credit and 111 non-dual credit). One hundred fourteen cases (33.9% of 336) were not included in the analysis (57 dual credit and 57 non-dual credit) because the students were enrolled in postsecondary education for less than six months.

Of the 111 dual credit participants, 94 (84.7%) remained at the College past the six month period and 17 (15.3%) had dropped out. The corresponding figures for the 111 non-dual credit participants were 95 (85.6%) and 16 (14.4%), respectively. The difference in six month enrolment/dropout rates between dual credit and comparison groups was not statistically significant, based on chi-square analysis ($\chi^2 (1) = .036, p = .850$). Therefore, the two groups did not differ when it came to six month enrolment/dropout rates.

*Do dual credit and non-dual credit students differ in college enrolment/dropout rates one year after enrolling in college?* These findings were based on data from 214 or 63.7% (107 dual credit and 107 non-dual credit) of the 336 student records. The records of 122 students were not
included in the analysis because those students were enrolled in postsecondary programs for less than a year.

Of the 107 individuals with dual credit experience, 75 (70.1%) were still enrolled at the College one year after entering and 32 (29.9%) were not. The numbers for the 107 non-dual credit participants were 84 (78.5%) and 23 (21.5%), respectively. The difference in one year enrolment/dropout rates between dual credit and comparison students was not statistically significant, based on chi-square analysis ($\chi^2 (1) = 1.982, p = .159$), indicating that the groups did not differ in terms of the one year persistence indicator.

Do dual credit and non-dual credit students differ in number of terms they enrol in college?
The answer to this question was based on all 336 cases. After calculating the total number of terms that each student enrolled at the College, I determined that on average the dual credit group enrolled in 2.60 terms compared with 2.61 terms for the non-dual credit group. The difference in average number of enrolment terms between dual credit and comparison samples was not statistically significant, based on t-test analysis ($t (334) = -0.62, p = .951$). Consequently, the groups did not differ when it came to this measure of persistence (i.e., number of terms enrolled).

Do dual credit and non-dual credit students differ in the number of college programs that they enrol in? Data from all 336 student records were analyzed to answer this question. I found that, of the 168 dual credit students, 153 (91.1%) were enrolled in one program during the time period of the study (i.e., Fall 2008 to Fall 2012) while 15 (8.9%) were enrolled in more than one program. The single program and more than one program enrolment numbers (percentages) for the 168 non-dual credit students were 155 (92.3%) and 13 (7.7%), respectively. The difference between dual credit and comparison non-dual credit students regarding the number of
postsecondary programs they enrolled in was not statistically significant, based on chi-square analysis ($\chi^2 (1) = .156, p = .693$). This means that dual credit participants and non-dual credit participants showed similar levels of persistence as measured by the number of programs variable.

All college persistence findings that resulted from the comparison of dual credit and non-dual credit student records are depicted in Table 5.

Table 5

*All College Persistence Findings Based on Operational Questions Involving Student Record Data of Dual Credit and Non-dual Credit Participants*

<table>
<thead>
<tr>
<th>Operational Question</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do dual credit and non-dual credit students differ in college enrolment/dropout rate six months after enrolment in college?</td>
<td>The difference was not statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in college enrolment/dropout rates one year after enrolling in college?</td>
<td>The difference was not statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in number of terms they enrol in college?</td>
<td>The difference was not statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in the number of college programs that they enrol in?</td>
<td>The difference was not statistically significant</td>
</tr>
</tbody>
</table>

*Does the six month college enrolment/dropout rate of dual credit students differ depending on the number of dual credit courses completed?* This question was answered by the data from the records of 136 (66.9%) of the 203 dual credit participants. Data from the remaining 67 records were not included because those students were at the college less than six months.

Of the 136 students whose records were included in the analysis, 114 (83.8%) remained enrolled in postsecondary programs at Humber past the six month mark while 22 (16.2%) dropped out. One hundred and five (92.1%) of the 114 six month persisters completed a single
dual credit course and nine (7.9%) completed two or three such courses. In the case of the 22 six month dropouts, 16 (72.7%) completed one dual credit course and 6 (27.3%) completed two or three courses. The difference in number of dual credit courses completed by six month persisters and dropouts was statistically significant, based on chi-square analysis ($\chi^2 (1) = 7.057$, $p = .008$). Examination of standardized residuals indicated that this statistical significance was related to the difference in the percentages of six month persisters and dropouts who completed more than one dual credit course (7.9% compared with 27.3%). The strength of the statistical difference in number of dual credit courses between six month persisters and dropouts was small, Cramer's $V = .228$. This means that the six month college enrolment/dropout rate of dual credit students did in fact differ depending on the number of dual credit courses completed, with students who complete two or three courses less likely to persist past the six month mark.

**Does the six month college enrolment/dropout rate of dual credit students differ depending on whether or not they completed a dual credit course directly related to their college program?**

As with the previous question, this analysis utilized the records of 136 (66.9%) of the 203 dual credit student. At the 6 month mark, of the 114 persisters, 50 (43.9%) completed a dual credit course directly related to their postsecondary program and 64 (56.1%) did not. The corresponding numbers (percentages) for the 22 dropouts were nine (40.9%) and 13 (59.1%). This difference in completion of a program-related versus non-program-related dual credit course between six month persisters and dropouts was not statistically significant, based on chi-square analysis ($\chi^2 (1) = .065$, $p = .798$). This means that the six month college enrolment/dropout rate of dual credit students did not differ depending on whether or not a program-related course was completed.
Does the one year college enrolment/dropout rate of dual credit students differ depending on the number of dual credit courses completed? Since 72 (35.5%) of the 203 dual credit students in the study were enrolled at the College for less than one year, the data from only 131 students were valid to answer this question. At the one year mark, 90 (68.7%) of these 131 students remained in college while 41 (31.3%) had dropped out. Eighty four (93.3%) of the persisters had completed one dual credit course and 6 (6.7%) had completed two or three dual credit courses. Of the 41 students who dropped out by the one year mark, 32 (78.0%) had completed a single dual credit course whereas nine (22.0%) had completed two or three such courses. This difference in the average number of dual credit courses completed by dual credit students who persisted for one year compared with those who dropped out was statistically significant, based on chi-square analysis ($\chi^2 (1) = 6.490$, $p = .011$). Examination of standardized residuals indicated that this statistical significance was related to the difference in percentages of one year dual credit non-dropouts and dropouts who completed more than one dual credit course (6.7% versus 22.0%). The strength of the statistical difference in number of dual credit courses between one year dropouts and non-dropouts was small, based on Cramer's $V=0.223$. This indicates that the one year college enrolment/dropout rate of dual credit students did in fact differ depending on the number of dual credit courses completed, with students who complete two or three courses less likely to persist past the one year mark.

Does the one year college dropout rate of dual credit students differ depending on whether or not they completed a dual credit course directly related to their college program? The analysis of data related to this question was based on the records of 131 (64.5%) of the 203 dual credit students. Of the identified 90 students who persisted for one year, 44 (48.9%) completed a dual credit course that was directly related to their postsecondary program compared with 46
(51.1%) who completed a course that was not directly related to their future college program. In the case of the 41 one year dropouts, 14 (43.1%) completed a related course and 27 (65.9%) did not. This difference in completion of a program-related or non-program-related dual credit course between one year dual credit college persisters and dropouts was not statistically significant, based on chi-square analysis ( \( \chi^2 (1) = 2.481, p = .115 \)). This means that the one year college enrolment/dropout rate of dual credit students did not differ depending on whether or not a program-related course was completed.

All findings related to college persistence that involved analyses of dual credit student records alone are depicted in Table 6.

Table 6

*All College Persistence Findings Based on Operational Questions Involving Student Record Data of Dual Credit Participants*

<table>
<thead>
<tr>
<th>Operational Question</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the six month college enrolment/dropout rate of dual credit students differ depending on the number of dual credit courses completed?</td>
<td>The difference was statistically significant</td>
</tr>
<tr>
<td>Does the six month college enrolment/dropout rate of dual credit students differ depending on whether or not they completed a dual credit course directly related to their college program?</td>
<td>The difference was not statistically significant</td>
</tr>
<tr>
<td>Does the one year college enrolment/dropout rate of dual credit students differ depending on the number of dual credit courses completed?</td>
<td>The difference was statistically significant</td>
</tr>
<tr>
<td>Does the one year college dropout rate of dual credit students differ depending on whether or not they completed a dual credit course directly related to their college program?</td>
<td>The difference was not statistically significant</td>
</tr>
</tbody>
</table>
Analysis of quantitative findings relevant to Research Question 1.

College student records.

No statistically significant differences in college persistence were found between dual credit participants and non-dual credit participants as measured by the study’s four persistence indicators: six month enrolment/drop-out status, one year enrolment/dropout status, number of terms enrolled, and number of programs enrolled.

This finding is not consistent with the results of related American dual credit/dual enrolment research. Karp et al. (2007) examined the academic records of 2000-2001 and 2001-2002 high school graduates in Florida and found dual enrolment participants, including low-achieving students, significantly more likely than non-participants to persist in college to a second semester and remain enrolled in college two years after high school graduation. Research (Michalowski, 2007) that studied College Now participants and non-participants who entered City University of New York (CUNY) colleges in Fall 2003 showed the College Now group to have a significantly higher rate of persistence to third semester than the direct entry group. A third investigation (Swanson, 2008) that focused on a nationally representative sample of 1992 American high school graduates found persistence through to a second year of college to be significantly higher among dual enrolment students than students with no dual enrolment experience. Finally, research by Struel and Vargus (2012) that examined a state-wide sample of 2004 Texas high school graduates showed dual enrollees to be two times more likely to return for a second year of college than non-dual enrollees.

Although stark, the discrepancy between the college persistence findings of the current study and those of related American research may not be meaningful. That is because the uniqueness of Ontario colleges and Dual Credit Programs limits the applicability of American findings. As
noted in the literature review, American and Ontario postsecondary systems and Dual Credit/Dual Enrolment Programs are far from equivalent. In the United States, there are two-year colleges that offer Associate degree programs and four-year colleges (universities) that offer Bachelor degree programs, with students regularly transferring from two- to four- year programs and institutions. The college and university systems in Ontario show greater bifurcation with universities delivering four-year academic programs that culminate in Bachelor degrees and colleges offering one-, two- and three- year programs that award certificates and diplomas. Admittedly, Ontario colleges have recently added degree programs to their roster but those programs have a strong applied focus and overwhelmingly attract students who wish to immediately enter the labour force after graduation. There are also significant differences between American and Ontario Dual Credit/Dual Enrolment Programs. Most notably, programs in the United States were originally intended for high-achieving students who wished to fast-track their education. To this day, American Dual Credit/Dual Enrolment Programs continue to serve predominately academically capable students. In contrast, the Ontario dual credit initiative was primarily developed to help disengaged and underachieving high school student graduates and set a path to higher education. Dual Credit Programs across the province remain committed to the goal of increasing the educational accomplishments of at-risk students.

Given the differences between Ontario and American colleges and dual credit/dual enrolment models, it is best that the findings of my investigation be compared to relevant research conducted in Ontario. I located only one study that examined college persistence among Ontario dual credit participants and my findings are consistent with that research. Philpott-Skilton (2013) explored the second term retention rates of 195 dual credit participants who entered Fleming College postsecondary programs in Fall 2011 and all students at the College
who entered such programs during the same semester. The retention rate for the dual credit group was found to be 82.1% and for the comparison group it was 81.5%. At first glance it might appear that participation in dual credit courses did not increase persistence into second term. However, Philpott-Skilton pointed out that contrary to the goals of most American dual credit strategies, the Ontario Dual Credit Program primarily targets students who are at risk of not graduating high school. She reasoned that since the dual credit cohort that she studied likely included a high proportion of at-risk students, the retention rate for the dual credit group should have been lower than that of the comparison group. The fact that the two retention rates were very similar suggested to the investigator that dual credit participation may have actually contributed to college persistence in that group of students. However, Philpott-Skilton’s study did not attempt to provide any quantitative data or analysis to support this assumption. Moreover, she reported the second term retention rate of dual credit participants (N=75) entering Fleming College postsecondary programs in Fall 2010 to be only 73.3%, a figure that was markedly lower than the 82.5% second term retention rate of all the College’s Fall 2010 new enrolees. In the end, Philpott-Skilton’s study raises some interesting possibilities but, as the researcher herself acknowledged, it does not provide strong support for the conclusion that dual credit participation had a positive impact on college persistence.

Examination of all (N=203) records of the dual credit participants in my study showed no statistically significant differences in six-month or one-year drop-out rates between students who completed a dual credit course that was directly related to their college program and those who completed a dual credit course that was not directly related to their college program. Philpott-Skilton (2013) concluded that the students in her study were more likely to persist at college when they completed dual credit courses that were related to the postsecondary programs that
they entered. It should be noted, however, that the investigator arrived at this conclusion after examining two small samples of students (13 from the Fall 2010 sample and 45 from the Fall 2011 sample) who were asked to personally determine if their college program was “very much related”, “somewhat related”, or “not related at all” to the dual credit course subject/topic they participated in. A response to either the first or second alternative was taken to mean that dual credit course and postsecondary programs were related. In the current study, it was not left to the participant to decide whether or not a particular dual credit course was related to their college program. Instead, I examined each student record, identified the dual credit course completed, and determined if that course was directly related to the postsecondary program in which they later enrolled.

One of the most surprising findings of my research was that participants who completed two or three dual credit courses were significantly more likely to drop out of college at the six-month and one-year marks, compared to those who completed a single dual credit course. To my knowledge, no other Ontario study has compared the college persistence outcomes of dual credit students who completed varying numbers of dual credit courses. I found one American study by Bragg and Kim (2008) that revealed a significant negative relationship between number of academic dual credit hours and total college credit hours in Tech Prep students from Texas and Florida. The researchers concluded that “academic dual credit hours earned was a significant negative predictor of college retention in both [Texas and Florida] consortia” (p. 16). They explained this unexpected outcome by suggesting that the students who completed more academic dual credit courses may have spent less time in a two-year college because they had enough credits to transfer to a four-year institution in pursuit of a Bachelor degree. Since Ontario
students do not normally accumulate college credits for the purpose of transferring to university programs, the Bragg and Kim explanation does not apply to my findings.

In other American research, McCormick (2010) examined 389 dual enrollees who graduated high school in Tennessee in 2005 and initially found no relationship between the number of dual credits that students earned and the number of terms they remained in college. However, a significant positive relationship between these two variables emerged when number of dual credits was paired with dual enrolment Grade Point Average (GPA). In other words, the investigator discovered that the highly persistent students did not only complete multiple dual enrolment courses, they also achieved exceptionally high grades in those many courses. Perhaps the college persistence of the participants in my study who dropped out of Humber College at the six-month or one year mark would have been enhanced if they completed a greater number of dual credit courses while at the same time excelling in those courses.

It is not readily apparent why the one-course-completing dual credit group showed higher rates of six-month and one-year college persistence than the two- and three-course-completing group. These differences in college persistence would make sense if the students who enrolled in more than one dual credit course were found to be academically weaker than the students who enrolled in a single dual credit course. This was not the case, at least in terms of one indicator of academic ability: college admission GPA. I conducted a t-test that showed that the difference in average college admission GPA between the two groups was not statistically significant (t (180) = -.264, p = .792).

One possible explanation for this outcome might be that a significant number of students who extended their involvement in the Dual Credit Program beyond one course and one semester may have done so for non-academic reasons like joining friends who enrolled in dual credit,
leaving the more controlling high school environment, or having the opportunity to socially
interact with college students. Consistent with the last point, Philpott-Skilton (2013) found that
dual credit participants appreciated the social environment that college afforded them.

Another possibility is that students who took multiple dual credit courses may have become
over-confident upon entering higher education. They may have mistakenly concluded that their
ability to complete two or three college-level courses while still in high school indicated that
they could easily handle postsecondary work. Upon entering full-time college programs that may
have proven to be more challenging than anticipated, these initially overconfident students may
have questioned their academic preparedness and concluded that college was not for them. By
entering higher education with more moderate levels of confidence, participants who completed
a single dual credit course may have been better prepared to meet the challenges that full-time
college studies presented.

In the end, the relationship between number of dual credit courses and college persistence as
it applies to Ontario students is unclear. Given that the differences between Ontario and
American Dual Credit/Dual Enrolment Programs and postsecondary systems limit the
applicability of American findings, more research is required to answer the question on whether
dual credit students benefit at the postsecondary level as a result of taking one or more than one
dual credit course in high school.

**Qualitative findings relevant to Research Question 1.**

**Student interviews.**

The two students who completed face-to-face interviews were both females of
approximately the same age (one born in 1993, the other in 1994). They had participated in the
Secondary Schools of Greater Toronto Dual Credit Program in Winter 2012 and had begun
postsecondary studies at Humber College in Fall 2012. Student A registered in the Police Foundations Program and Student B in the Child and Youth Worker Program.

Both interviewees required the assistance of disability services and admitted to struggling as new postsecondary students. Student A said that she found college life to be “quite challenging at first” and Student B claimed that there was “a lot to adjust to, with the work, social life and everything else”. Yet, they persevered and both completed their first semester successfully. During the interview, participants were asked the question: What aspects of college life motivated you to remain in college? In response, Student A indicated that her motivation to persevere in the face of adversity was enhanced by three main factors: 1) commitment to her education because it was paid for by her financially struggling parents, 2) a sense of gratitude for gaining early admittance to a popular college program that had a sizeable waiting list, and 3) having supportive relationships with College faculty and staff. Referring to her professors, Student A said that they helped her both manage her coursework and set a trajectory for a future career in her field of study. She also attributed her college persistence to the support she received from staff at the Writing Centre and Disability Services office.

For Student B, the motivation to remain in college was largely the result of having supportive peers. She discussed the academic camaraderie that existed in her program. “If there is an assignment, there are so many people doing it together. It’s motivating seeing other people doing it well, so that’s what I think motivated me to just keep going”. Student B also gave credit to her professors, disability services staff and counselling services staff for helping her continue with her studies.

Interview participants were then asked to respond to a question related to college persistence: What are your future goals as they relate to college? Student A answered that she
was aiming to obtain a high GPA and to explore other learning options available to her at Humber College, including postgraduate and Bachelor programs. Student B identified the short term goal of maintaining a balance between her academic and social life and the long term goal of completing the Child and Youth Worker Program and securing a position in her field of study. She also looked forward to continuing her education once she secured a job, perhaps by enrolling in an appropriate degree program on a part-time basis.

**Faculty interviews.**

Of the four faculty interview participants, three (Professors A, B, & C) were female and one (Professor D) was male. Professor A taught mainly at the Orangeville Campus while the others were employed at the North Campus. With the exception of Professor C, all interview participants had a history of teaching in a Dual Credit Program. Having never delivered a dual credit course, Professor C could only draw on the experiences she had with former dual credit student who had entered postsecondary college programs. Professor D interacted with the greatest number of dual credit alumni. He taught a popular dual credit course linked to a postsecondary program that many participants later entered. It was through that program that Professor D continued his relationships with dual credit participants. Relative to Professor D, Professors A, B, and C interacted with few postsecondary students with dual credit experience.

The interview participants were asked to respond to the following question on college persistence among secondary students with and without dual credit experience: Are dual credit and non-dual credit students just as motivated to remain in college or are there differences between the two groups when it comes to college persistence? Professors A, B, and C reported that they did not see major differences in the motivational levels of their dual credit and non-dual credit students. However, two faculty provided examples of individual dual credit students who
 persisted in college which these faculty attributed to the students’ dual credit background.

Professor B recalled a student who managed to gain entry into her chosen postsecondary courses because she knew which administrator to approach for help; information that she gained through the Dual Credit Program. The same professor also remembered another student who demonstrated a high level of college persistence. Having missed a test, this individual was comfortable approaching the professor, who previously taught him as a dual credit student, to explain his absence and arrange a future test date. In the words of Professor B:

…some students don’t come and talk to me afterwards and tell me that they need to retake the test. So he took responsibility for that….If I imagine him having come to [postsecondary] program without [dual credit] experience, based on his personality, I think he would have been very disengaged. I think that he would have been, you know, very overwhelmed by the experience.

Professor C spoke about an ex-dual credit student who had difficulty completing an essay assignment. When the professor recommended visiting the Writing Centre for help, the student did not hesitate to do so because she had used that facility in the past while enrolled in the Dual Credit Program. The student did well in the course, attaining a grade that was considerably higher than the class average. Although encountering a number of challenges, “She was determined to finish the course and to finish it well” (Professor C). Professor D, the individual who interacted with the greatest number of past dual credit students, said that in his view dual credit alumni demonstrated higher levels of college persistence than their non-dual credit counterparts.

I noticed that the dual credit students that I teach in [the postsecondary program] seemed to have developed a commitment and motivation toward their classes….an interest in
continuing their education… I could give you examples of [non-dual credit postsecondary] students who miss classes, show up for half the class and then they’re gone, show up late with their assignments, don’t ask questions, are surprised when their marks are poor…try to scramble towards the end to pass, but demonstrate no real commitment in class.

(Professor D)

**Analysis of qualitative findings relevant to Research Question 1.**

Qualitative data obtained through student interviews and faculty interviews suggest that dual credit involvement had a positive impact on college persistence. According to the American (Hughes et al., 2005; Smith, 2007) and Canadian (Harrison, 2011; Ontario Ministry of Education, 2009b, 2011b, 2011c, 2012b, 2013c; Philpott-Skilton, 2013; Whitaker, 2011) literature that I reviewed, completing college-level courses while still in high school increases the academic confidence and educational aspirations of students.

**Student interviews.**

The two student interview participants involved in my study showed evidence of benefitting from dual credit involvement. Student A completed a dual credit course entitled The Canadian Criminal Justice System in which she earned an 80% grade which helped her gain entry into one of Humber College’s more popular postsecondary programs: the Police Foundations Program. Student B completed a Social Psychology course while in the Dual Credit Program. She obtained an 81% grade in that course and went on to have the course credited toward the Child and Youth Worker Program which she entered as a postsecondary student. Dual credit involvement also allowed both Student A and Student B to forge beneficial on campus relationships that helped them successfully complete their dual credit course. Both participants said that as dual credit students they experienced positive interactions with faculty, college administrative personnel,
and college students. They also had contact with staff that provided services to students, particularly staff at the Disabilities Services and counselling offices.

Furthermore, these two students reported that being involved in a dual credit course and interacting with a wide range of college personnel allowed them to learn the values, norms, and behaviour associated with the college student role prior to fully taking on that role. The persistence that both participants demonstrated once they entered higher education can be understood in view of Merton’s (1957) concept of anticipatory socialization. The findings of two other studies, one conducted in Ontario (Philpott-Skilton’s, 2013) and the other in the United States (Swanson, 2008), support the conclusion that anticipatory socialization contributes to college persistence.

Despite their success in the Dual Credit Program and familiarity with Humber College campus and personnel, Student A and Student B reported having had some difficulty initially adjusting to the social and academic demands of college life. Student A said that she persisted to second semester with the help of family, college faculty, and college staff, especially staff at the Writing Centre and Disabilities Services. According to Student B, it was mainly supportive peers who helped her get through her first semester at the College, although she also gave credit to her professors, Disability Services staff, and Counselling staff. The fact that these students benefitted from the attention of significant others is in keeping with Rendón’s (1994) Theory of Validation. Both participants reported needing and receiving academic validation from their professors and other college staff, particularly staff who delivered services to students with disabilities. Student A’s academic validation was further enhanced by having supportive parents. In the case of Student B, the attention provided by a cohesive college peer group increased her academic confidence and convinced her that she was capable of succeeding in college. Both of the
interview participants also reported having received interpersonal validation: Student A from her parents and Student B from college peers.

Data from the student interview portion of my study also support Tinto’s (1993) theory that students who are academically and socially integrated in college are more likely to persist. Contrary to the widespread assumption noted by Karp et al. (2008) that college students show low levels of integration, both interview participants spoke of their strong connections to their postsecondary programs and a strong sense that they belonged in college. Student A appeared to be more integrated academically than socially in that most of the positive experiences she conveyed were related to academic endeavours and learning outcomes. In the case of Student B, the camaraderie that she described within her student peer group reflected academic and social integration in equal measure. Although Tinto believed that college persistence was especially likely in students who were both academically and socially integrated, he acknowledged that either type of integration could result in the decision to remain in college.

Faculty interviews.

When asked to compare dual credit and non-dual credit groups in terms of motivation to remain in college, three (Professors A, B, & C) of the four faculty interviewed reported that they did not see a major difference in the two groups. Yet, Professor B and C went on to describe students who demonstrated high levels of persistence that the professors attributed to dual credit involvement. All the individuals they described showed evidence of having acquired information and resources from dual credit relationships which the students later used to benefit them at the postsecondary level. One student was able to gain entry into a desired postsecondary course because as a dual credit student she became acquainted with the administrator who enrolled students in such courses. Another student managed to obtain a re-write of a missed test because
he knew the professor and her test policy through the Dual Credit Program. A third student relied on her dual credit connections with staff at the Writing Centre when difficulties arouse regarding a postsecondary program essay assignment. These examples are consistent with the discovery made by Karp et al (2008) that students who persist in the community college setting often participate in information networks, defined as campus relationships that allow students to acquire information that helps them meet their educational goals. Philpott-Skilton’s (2013) findings extended the concept of information networks to include dual credit students.

In Professor D’s opinion, students with dual credit backgrounds were far more likely to persist in college than direct entry postsecondary students. Although his was the lone voice regarding group differences in college persistence, Professor D’s feedback should be given considerable weight because he had much more experience working with dual credit participants than the three other faculty interviewed. It is likely that Professor D was able to identify strong persistence outcomes in the dual credit group because he was instrumental in bringing about those outcomes. His interview transcript contained evidence of faculty-initiated actions that, according to Rendón (1994, 2002), contribute to the academic validation of students. These included: demonstrating genuine concern toward students, being personable and approachable, treating students in an equitable manner, exposing students to educational experiences that increases their sense of academic proficiency, working individually with students needing extra help, and providing meaningful feedback to students. Professor D’s interview responses also indicated that he provided students with interpersonal validation that fostered their personal and social adjustment.

Professor D taught in a postsecondary program with a high dropout rate. The dual credit students whom he taught may have benefitted from his validating actions, especially since
validation has been shown by Barnett (2010) to be a precondition for integration and to contribute to a student’s intent to persist. In the case of dual credit participants who enter challenging postsecondary programs, academic and social validation may be especially beneficial.

**Summary of findings and analyses relevant to Research Question 1.**

The quantitative findings derived from college student record data showed dual credit participants and non-dual credit participants to not be significantly different from one another in terms of six month enrolment/dropout status, one year enrolment/dropout status, number of terms enrolled, and number of programs enrolled. These findings are consistent with the only other study that I found (Philpott-Skilton, 2013) that investigated the college persistence of Ontario dual credit participants. The findings are not consistent with related American research (Karp et al., 2007; Michalowski, 2007; Strual & Vargus, 2012; Swanson, 2008).

Examination of the college student records of all (n=203) of the dual credit participants showed no significant differences in the college persistence between students who completed dual credit courses that were and were not directly related to their postsecondary programs. While Philpott-Skilton (2013) found students who completed program-related dual credit courses to be more persistent at college than peers who completed non-program-related dual credit courses, her findings may not be reliable due to low sample sizes and the approach used to determine if a dual credit course was or was not program-related.

An unexpected finding of the study was that students who completed two or three dual credit courses showed less college persistence than those who completed a single dual credit course. Since I could not locate any literature on the relationship between number of dual credit courses
and college persistence in Ontario students, I looked to American studies to help interpret these findings but doing so did not provide me with clear answers.

The qualitative findings derived from student and faculty interview data sources suggest that both groups perceived dual credit participants to be more likely to persist in college than peers with no dual credit experience. The student and faculty interview responses having to do with college persistence gave support to two college impact theories: Tinto’s (1993) Theory of Integration and Rendón’s (1994) Validation Theory. These qualitative data also suggest the existence of anticipatory socialization and information networks among dual credit participants.

**Research Question 2**

To what extent do dual credit participants and non-dual credit participants differ in college engagement?

Data derived from the student survey, student interviews, and faculty interviews were relevant to the second research question.

**Quantitative findings relevant to Research Question 2.**

**Student survey.**

Since only eight members of the dual credit group and one member of the control group completed the online student survey, the findings that emerged from this data collection tool were limited. Regrettably, the proposed comparative analyses could not be conducted because of the low survey response rate. Nevertheless, data obtained through the student surveys provided some insight into the level of college engagement of dual credit students.

The lone non-dual credit survey participant was a male who was 19 years old when he enrolled as a postsecondary student at the College in Fall 2008 in the Business Administration
Program. He graduated in the Summer of 2010, earning a Ontario College Advanced Diploma (OCAD).

The dual credit group that completed the survey was comprised of five females and three males who participated in dual credit courses during the following terms: one each in Winter 2007, Winter 2008, Winter 2009, Fall 2009, Winter 2010, and three in Winter 2012. These dual credit participants ranged in age from 18 to 24 when they entered postsecondary programs at Humber College in Fall 2010 (one student), Winter 2011 (one student) and Fall 2012 (six students). One of the dual credit students graduated, earning an OCAD in Police Foundations in December, 2012.

In Part A of the survey questionnaire (Appendix O), both dual credit and non-dual credit participants were asked to recall the college-related experiences they had during their last postsecondary semester at Humber College and then to answer a series of questions designed to assess aspects of college engagement. The first question was: Overall, how would you rate your class attendance? Three of the dual credit students answered “excellent”, as did the lone non-dual credit students. The remaining five individuals in the dual credit group noted that their attendance was “good”.

Three subsequent survey questions asked participants to estimate how many hours per week on average they spent 1) on campus outside of class time, 2) engaged in out-of-class college academic and program-related activities (e.g., completing course assignments, preparing for tests or presentations, completing program-related work placements, etc.) both on and off campus, and 3) engaged in out-of-class non-academic and non-program-related college activities (e.g., athletic activities, student clubs, campus jobs, etc.) both on and off campus. The non-dual credit participant and three of the eight dual credit participants reported spending only 1-5 hours per
week outside of class time on campus while the majority (five or 63%) of the dual credit group reported anywhere from 11 to above 25 hours. Regarding time spent on academic and program-related activities, the responses ranged from 1-5 hours to above 25 hours per week with the non-dual credit respondent reporting 11-15 hours. Most (five or 62.5%) of the dual credit students answered that they spent zero to five hours per week on non-academic and non-program related college activities. The corresponding number of hours for the non-dual credit participant was 6-10 hours per week. Table 7 depicts the responses of all participants.

Table 7

Hours Per Week Dual Credit and Non-dual Credit Participants Spent Engaging in General College Activities (n=8 dual credit; n=1 non-dual credit responses)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours Per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Being on campus outside of class time</td>
<td>3 (1)*</td>
</tr>
<tr>
<td>Engaging in out-of-class college academic and program-related activities on or off campus</td>
<td>2</td>
</tr>
<tr>
<td>Engaging in out-of-class non-academic and non-program college activities on or off campus</td>
<td>1</td>
</tr>
</tbody>
</table>

* brackets contain the responses of the lone non-dual credit students

The fifth question on the survey asked participants to indicate how often they engaged in a number of specific college-related activities including asking questions or contributing to discussions in class, working with classmates on course material outside of class (either face-to-face or through electronic media), communicating with professors about course material outside of class (either face-to-face or through electronic media), working with faculty or staff on non-
course material (special projects, peer mentoring, peer tutoring program orientation, etc.) outside of class, attending campus academic events (lectures, presentations, or other learning opportunities) that were not course requirements, participating in co-curricular activities (school clubs, student government, intercollegiate or intermural sports, etc.), and holding an on-campus paid position. The majority of survey participants, including the non-dual credit student, said that they “sometimes”, “often”, or “very often” were verbally engaged during class (eight of nine), worked with classmates on course material outside of class (eight of nine), and communicated with professors about course material outside of class (seven of nine). The activities that students tended not to engage in included attending non-course related campus events, participating in co-curricular activities, attending college social events, and holding an on-campus paid position. Table 8 presents the responses that all participants gave to question five.

The sixth question of the survey asked participants to report how often they used the following facilities or services over the course of the semester: cafeteria, library, athletic facilities (gym, pool, weight room, etc.), computer lab, social areas (other than cafeteria, library, athletic facilities, and computer lab), program-related facilities (studios, labs, etc.), Writing Centre, Math Centre, counselling services, peer tutoring, and peer mentoring. The facilities or services that the majority of survey participants reported using at least “sometimes” were the cafeteria, library, computer lab, social areas, and program areas. The Writing Centre, Math Centre, counselling, peer tutoring, and peer mentoring facilities or services were reported as used “never” or “seldom” by all participants. Two participants included Disability Services under “other” college services that they used. Table 9 contains the responses of all participants.
Table 8

*Frequency of Engagement in Specific College-Related Activities by Dual Credit and Non-dual Credit Participants (n=8 dual credit; n=1 non-dual credit responses)*

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Asked questions or contributed to discussions in class</td>
<td>1</td>
</tr>
<tr>
<td>Worked with classmates on course material outside of class</td>
<td>1</td>
</tr>
<tr>
<td>Communicated with professors about course material outside of class</td>
<td>1</td>
</tr>
<tr>
<td>Worked with faculty or staff on non-course material outside of class</td>
<td>3</td>
</tr>
<tr>
<td>Attended campus academic events that were not course requirements</td>
<td>5</td>
</tr>
<tr>
<td>Participated in co-curricular activities</td>
<td>6</td>
</tr>
<tr>
<td>Attended college social events</td>
<td>4</td>
</tr>
<tr>
<td>Held an on campus paid position</td>
<td>8</td>
</tr>
</tbody>
</table>

* brackets contain the responses of the lone non-dual credit student
Table 9

Frequency of Use of Campus Facilities and Services by Dual Credit and Non-dual Credit Participants (n=8 dual credit; n=1 non-dual credit responses)

<table>
<thead>
<tr>
<th>Facility/Service</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Cafeteria</td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>1</td>
</tr>
<tr>
<td>Athletic Facilities</td>
<td>2</td>
</tr>
<tr>
<td>Computer Lab</td>
<td>1</td>
</tr>
<tr>
<td>Social Areas</td>
<td>2</td>
</tr>
<tr>
<td>Program Areas</td>
<td>2</td>
</tr>
<tr>
<td>Writing Centre</td>
<td>5 (1)</td>
</tr>
<tr>
<td>Math Centre</td>
<td>8 (1)</td>
</tr>
<tr>
<td>Counselling</td>
<td>6 (1)</td>
</tr>
<tr>
<td>Peer Tutoring</td>
<td>8 (1)</td>
</tr>
<tr>
<td>Peer Mentoring</td>
<td>7 (1)</td>
</tr>
<tr>
<td>Disability Services</td>
<td></td>
</tr>
</tbody>
</table>

* brackets contain the responses of the lone non-dual credit student  
** an additional service reported by two students

In the final question of Part A of the survey, participants were asked how often they experienced positive relationships with members of three college groups: other students, faculty, and non-faculty college staff. The non-dual credit student said that he “very often” experienced positive relationships with each of these groups. All dual credit students answered “often” or “very often” when asked about the frequency of their positive interactions with other students. Regarding interactions with faculty or non-faculty college staff, most (six of eight) students in the dual credit group reported experiencing positive relationships “often” or “very often. The responses of all participants are presented in Table 10.
Table 10

*Frequency of Experiencing Positive Relationships with Key College Groups by Dual Credit and Non-dual Credit Participants (n=8 dual credit; n=1 non-dual credit responses)*

<table>
<thead>
<tr>
<th>College Groups</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Other students</td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
</tr>
<tr>
<td>Non-faculty staff</td>
<td></td>
</tr>
</tbody>
</table>

*brackets contain the responses of the lone non-dual credit student*

**Analysis of quantitative findings relevant to Research Question 2.**

**Student survey.**

All nine survey participants reported “good” or “excellent” class attendance but few spent a significant amount of time on campus outside of class time. Moreover, when asked to document their involvement in specific college-related activities, participants reported the highest frequency of engagement in course-related activities like asking questions in class, working with classmates on course material outside of class, and communicating with professors about course material outside of class. Most participants reported “never” or “seldom” engaging in the following non-course-related activities: attending campus academic events that were not course requirements, participating in co-curricular activities, attending college social events, and holding an on campus paid position. According to Astin (1999), in order to persist and be successful in college, students must embrace college life. This means not only completing coursework but also participating in the social life of the institution through things like extracurricular activities, sports teams, and social events.

Astin developed his Theory of Involvement to explain the college outcomes of traditional students attending four-year institutions and he has argued that community college students typically show low levels of involvement. While a number of investigators (Kim and Bragg,
2008, Philpott-Skilton, 2013, Whitaker, 2011) have used Astin’s theory to explain how Dual Credit /Dual Enrolment Programs enhance student engagement, the findings of my survey suggest that dual credit participants attending postsecondary college programs tend to restrict their involvement to activities having to do with coursework. This outcome is understandable in view of the commuter status of most Ontario college students.

Ontario colleges offer an array of facilities and services meant to help students meet their academic and personal goals. Philpott-Skilton (2013) examined the extent to which Learning Support Services (LSS) at Fleming College were used by postsecondary students with dual credit experience as opposed to all postsecondary students at the College. The investigator found higher use of counselling, tutoring, advising, and note-taking services among Fall 2010 dual credit participants compared to all of the College’s 2010 students. However, she questioned the validity of these results on account of the small sample size (n=13). When examining the Fall 2011 dual credit sample (n=45), the investigator found lower use of counselling, tutoring, and advising but higher use of note-taking compared to all Fleming College 2011 students. In my study, the dual credit participants who responded to the survey revealed low use of the following support services: Writing Centre, Math Centre, Counselling, peer tutoring, peer mentoring, Disability Services.

Despite showing low involvement in out-of-class activities and low use of college support services, survey participants reported having positive relationships with others at the College. The majority of participants reported experiencing positive relationships with fellow students and faculty “very often”, and with college staff “often” or “very often. These positive connections with others might have helped participants to feel a part of the college community and therefore more socially integrated; experiences that Tinto (1993) associated with better college outcomes.
These findings also suggest that participants experienced some degree social involvement. According to Astin (1999), a student who socially engages with others in the college environment is more likely to remain in college.

**Qualitative findings relevant to Research Question 2.**

**Student interviews.**

When asked the question: What aspects of college life were you involved in?, both interview participants indicated that they were highly involved in their respective programs and enjoyed positive relationships with their classmates, professors, and other College staff. Student A said that she visited the Writing Centre to get help with her essays, used College athletic facilities for fitness purposes, and held program-related volunteer positions both on and off campus. She also said that she communicated with staff in the Disability Services office that helped her secure academic accommodation for her learning disability. Student B, who lived on campus, reported attending many college social events, using the library often, and visiting staff in both the Disabilities Services and counselling offices for academic and personal support.

Interview participants were asked a second question designed to assess college engagement: In what capacity and to what extent did you interact with your professors? In responding to this question, the two students said that they interacted with their professors both in class and outside of class. Student A said that when not in class, she communicated with her professors either directly or through the course website to discuss course material, investigate career options, and gain the academic accommodations she was entitled to. When asked about interacting with her professors, Student B said that she did so frequently; in person and electronically. She also mentioned that she met the coordinator of her program prior to becoming a postsecondary student and has since been consulting with him on occasion.
In addition to gaining information about the relationships that students had with their professors, the study sought to learn about the nature of their interactions with their peers. To this end, interview participants were asked: In what capacity and to what extent did you interact with your fellow students outside the classroom? As reported in her interview transcript, Student A experienced positive social relationships with all of her classmates but few of these relationships extended beyond the classroom. Student B, on the other hand, reported an active campus social life. She attended frosh activities, special functions for resident students, pub nights, and other student organized events. When asked whether she interacted with her classmates socially outside of class time Student B admitted that she did and that she continued to enjoy those relationships at the time of the interview. “We’ll go out for dinner, hang out, go to the pub, a bar; we’ve been doing that since first semester and we’ve been in touch”.

**Faculty interviews.**

Three interview questions were designed to explore faculty views on the college engagement of dual credit participants compared with non-dual credit participants. The first question asked if postsecondary students with dual credit backgrounds were involved in similar or different aspects of college life than those without such backgrounds.

Professor A, who taught mainly at the Orangeville Campus, found this question difficult to answer because that small campus did not afford students opportunities to engage in many college activities. She commented:

Well, it’s hard [to answer that question] because Orangeville is not really college life. It’s not much different than high school, other than you have more freedoms…It’s a small school….so I think you’d get different answers from other campuses. (Professor A)
Professors B and C admitted to knowing little about the aspects of college life that their students were involved in beyond the classroom. However, in the context of the courses that they taught, both professors viewed dual credit participants as being somewhat more engaged than their non-dual credit college peers. Drawing from his many interactions with both types of students, Professor D indicated that, in contrast to other postsecondary students, dual credit alumni “seem to embrace college life to its fullest”.

In order to gain insight into the social engagement of the two target groups, the study asked each faculty interview participant the question: What observations can you share about the involvement of dual credit and non-dual credit students in social aspects of college? Focusing on the social interactions that they observed in class, all participants said that it appeared to them that dual credit students tended to be more comfortable interacting with professors than non-dual credit students. Regarding social relationships among classmates, Professor B commented on a particular dual credit student who blossomed after transitioning to higher education. The professor remembered that while in the Dual Credit Program the student appeared shy and did not interact much with his classmates. However, Professor B noticed that upon entering postsecondary education that student established social relationships with many of his peers. The professor suggested that the student’s earlier exposure to the college environment helped him better connect with his postsecondary peers.

Insight into the academic engagement of the two student groups was sought by asking faculty the question, What observations can you share about the involvement of dual credit and non-dual credit students in the academic aspects of college? Reflecting on the dual credit students that she encountered in her postsecondary courses, Professor B concluded “….it seems to me that they are engaged. It seems that they have a foot in the door in college, they feel more
comfortable with it than their [non-dual credit] peers [do].” Specifically focusing on one dual credit participant who she first met through the Dual Credit Program, the same professor stated:

I can see that he participates more than the average student. He is ready to give answers, partially because he is comfortable with me as an instructor…he knows what college is about and he knew what to expect when he was coming into it. (Professor B)

Professor C noted the high degree of academic engagement demonstrated by one of her students who was a dual credit participant. She said that the student “was a very good vocal participant and really enthusiastic”. The superior academic engagement of dual credit participants was clear to Professor D who stated:

Shoulders above other students, [dual credit students] are leaders in class participation, are leaders in group presentations….I don’t have to worry, these students know why they are here, they’re prepared to work hard, they’ve got goals in life, they know what they want, and they’re going to achieve it.

Professor D had this to say about the academic engagement of some of his non-dual credit postsecondary students:

I see a lot of [non-dual credit] students in [the postsecondary program in which I teach]….that frankly I don’t know why they’re there, and I don’t know if they know why they’re there. They don’t seem to have any focus and they don’t seem to have any commitment to working.

Taken together, the responses of the four faculty interview participants suggest that postsecondary students with dual credit backgrounds tend to be more socially and academically involved in college life than their direct-entry peers.


Analysis of qualitative findings relevant to Research Question 2.

Student interviews.

The two dual credit student interview participants were highly engaged in college life both inside and outside the classroom. Consistent with Astin’s (1999) theory of involvement, they invested a great deal of physical and psychological energy in college-related activities and relationships. Both individuals reported being very involved in their respective college programs and having positive relationships with members of key college groups including other students, faculty, and non-faculty staff. They were comfortable communicating with faculty, either face-to-face or electronically. Student A’s interactions with her professors did not only involve coursework, she also communicated with them about possible career options. In addition to connecting often with faculty, Student B established a relationship with the coordinator of her program. While both students reported having positive relationships with peers, Student A tended to restrict her social interactions to classmates. Student B, on the other hand, experienced a full social life on campus, probably because she lived in residence.

The two interview participants engaged in more extracurricular activities and used more on-campus facilities and services than the other student who completed the survey. Student A’s interview and survey responses indicated that she held program-related volunteer positions on and off campus and used the cafeteria, library, athletic facilities, computer lab, Writing Centre, counselling services, peer mentoring, and disability services. Student B reported attending campus academic events that were not course requirements, participating in college social events and using the cafeteria, library, athletic facilities, computer lab, college social areas, counselling services, and disability services. Tinto (1993) predicted that students who are both academically
and socially integrated in college experience connection and a sense of belonging that heightens persistence. This appeared to be the case for Students A and Student B.

Interestingly, out of the over 400 past and present Humber College students who were eligible to participate in my study, Student A and Student B were the only individuals who completed both the online survey and a face-to-face interview. The reluctance of Ontario college students to contribute to research as participants has been demonstrated in previous dual credit studies (Philpott-Skilton, 2013; Whitaker, 2010). What encouraged these two students to get involved? It may be that the many positive relationships with faculty and other College staff that they experienced as dual credit students helped them feel comfortable interacting with college agents in general. That included the research personnel associated with the current study. At least initially, the students’ need for disability services may have encouraged them to forge relationships within the educational context.

**Faculty interviews.**

Data obtained through the face-to-face faculty interviews in this study supported Astin’s (1994, 1999) Theory of Involvement. All faculty interview participants perceived higher levels of social involvement among dual credit participants than non-dual credit participants. The dual credit group was also perceived to be more academically involved. Within the context of the classroom, faculty reported that dual credit students were more likely to share their views and express enthusiasm about learning.

One faculty member provided evidence of anticipatory socialization among the dual credit participants that she knew. Professor B recalled a student who was shy and socially withdrawn while completing the Dual Credit Program. The same student became quite comfortable interacting with classmates upon entering higher education. The professor suggested that the
student’s ability to connect with postsecondary peers grew out of his earlier exposure to college through dual credit participation. In Professor B’s view, the dual credit students had “a foot in the door in college” that allowed them to feel more comfortable upon entering full-time college programs. Consistent with the concept of anticipatory socialization, the dual credit experience permitted these students to better understand the values, norms, and behaviour of college students, so occupying the college student role was easier when it was time to do so. Pascarella et al. (1986) found evidence of anticipatory socialization among students who participated in college orientation programs. Swanson (2008) showed that students who entered postsecondary education with no intention to pursue a Bachelor degree were more likely to change their aspirations in that direction if they had dual enrolment experience. The investigator believed that the anticipatory socialization they received prior to attending college permitted the students to make that change.

**Summary of findings and analyses relevant to Research Question 2.**

The quantitative survey data collected to answer Research Question 2 showed that the dual credit group engaged in course-related college activities more frequently than in non-course-related college activities. This outcome supported Astin’s (1999) view that community college students typically demonstrate low levels of college involvement. My survey data also revealed that dual credit participants reported low use of student support services, a finding consistent with Philpott-Skilton (2013) research on LSS use among Fleming College Fall 2011 postsecondary students with dual credit backgrounds. Finally, the majority of survey participants in my study reported having positive relationships with key college groups including fellow students, faculty, and college staff. Both Astin (1999) and Tinto (1993) hypothesized that socially engaged students are more likely to persist in college.
The qualitative data addressing Research Question 2 point to the greater college involvement of student with dual credit backgrounds. The two dual credit students who were interviewed reported high involvement in their college programs. They also admitted to using many college services and supports. Both students showed evidence of participating in information networks of the kind described by Karp et al., (2008). The majority of faculty interviewees viewed dual credit participants as being more socially and academically engaged than non-dual credit participants within the context of the classroom. All interviewees noted the greater comfort that dual credit participants demonstrated when interacting with professors.

**Research Question 3**

To what extent do dual credit participants and non-dual credit participants differ in college success?

Data to answer the third research question were derived from college student records, student interviews, and faculty interviews.

**Quantitative findings relevant to Research Question 3.**

**College student records.**

A number of college success indicators appeared in the student records including course completion rate, first term GPA, second term GPA, first term academic standing, second term academic standing, graduation rate, and graduation GPA. Seven operational questions (Table 3) were developed that compared dual credit and non-dual credit participants on these college success variables.

The student record data that answer Research Question 3 are presented below following each operational question.
Do dual credit and non-dual credit students differ in successful course completion? Based on data from each of the 336 (168 dual credit, 168 non-dual credit) student records, it was found that the average course completion rate for the dual credit sample was 75.70% and for the non-dual credit sample it was 83.19%. The difference in average course completion rate between dual credit and comparison group members was statistically significant, based on t-test analysis ($t(334) = -2.365$, $p = .019$). It can therefore be conclude that the two groups were different in terms of this measure of college success with the dual credit sample showing less success than the non-dual credit sample.

Do dual credit and non-dual credit students differ in first term program GPA? All 336 (168 dual credit, 168 non-dual credit) student records provided data to answer this question. The average first term GPA in the dual credit sample was 63.55% while in the control group sample it was 68.43%. The difference in average first term GPA between dual credit and comparison groups was statistically significant, based on t-test analysis ($t(334) = -2.841$, $p = .005$). This suggests that the two groups were different when it came to first term GPA with the dual credit group scoring lower on this college success indicator than the non-dual credit group.

Do dual credit and non-dual credit students differ in first term academic standing? This analysis was based on the 322 (161 dual credit, 161 non-dual credit) student records that contained information on first term academic standing. Four academic standing categories were represented in the records: “required to withdraw”, “on probation”, “in good standing”, and “on honours standing”. Of the 161 students in the dual credit group, 17 (10.6%) were required to withdraw, 30 (18.6%) were on probation, 101 (61.7%) were in good standing, and 13 (8.1%) had honours standing. The frequencies (percentages) for the 161 students in the control group were 13 (8.1%), 12 (7.5%), 117 (72.7%), and 19 (11.8), respectively. The difference in first term
academic standing between dual credit and non-dual participants was statistically significant, based on chi-square test analysis ($\chi^2 (3) = 10.547$, $p = .014$). Examination of standardized residuals indicated that this statistical significance was related to the difference in percentages of dual credit and comparison students who were on probation (18.6% versus 7.5%). The strength of the statistical difference in academic standing between the two types of students is small, Cramer’s $V=.181$. This means that dual credit and non-dual credit students differed in first term academic standing, with dual credit students more likely to be on probation.

Do dual credit and non-dual credit students differ in second term program GPA? Second term GPAs appeared on the records of 187 students (93 dual credit, 94 non-dual credit). The average second term GPA in the dual credit sample was 64.17% and in the comparison sample it was 69.92%. The difference in average second term GPA between the two samples was statistically significant, based on t-test analysis ($t (185) = -2.600$, $p = .010$). It can therefore be concluded that the two groups were different in terms of their second term GPA with the dual credit participants scoring lower on that college success indicator than the non-dual credit participants.

Do dual credit and non-dual credit students differ in second term academic standing? This analysis was based on 180 (89 dual credit, 91 non-dual credit) students whose records contained information on second term academic standing. The 156 students who were not included had not yet completed second term, dropped out of college, or did not have second term academic standing information on file. Out of 89 dual credit students, 5 (5.6%) were required to withdraw, 20 (22.5%) were on probation, 51 (57.3%) were in good standing, and 13 (14.6%) had honours standing. For the 91 comparison students, the corresponding numbers were 5 (5.5%), 9 (9.9%), 63 (69.2%), and 14 (15.4%), respectively. The difference in second term academic standing
between dual credit and non-dual credit students was not statistically significant, based on chi-square analysis ($\chi^2 (3) = 5.451, p = .142$). However, examination of standardized residuals indicated a large difference in the percentages of dual credit and comparison students who were on probation (22.5% versus 9.9%). This means that a higher proportion of dual credit participants than non-participants were on probation at the end of second term but this difference was not statistically significant.

**Do dual credit and non-dual credit students differ in graduation rates?** The resultant analysis was based on a full set of 336 student records. Out of the 168 dual credit students, 27 (16.1%) graduated and 141 (83.9%) did not graduate during the period of the study. The figures for the 168 non-dual credit students were 43 (25.6%) graduates and 125 (74.4%) non-graduates. The difference in graduation rates between the two groups of students was statistically significant, based on chi-square analysis ($\chi^2 (1) = 4.620, p = .032$) suggesting that the dual credit group graduated with less frequency than the non-dual credit group. The strength of the statistical difference in graduation rates between dual credit and comparison students is small, Cramer's V=.117.

**Do dual credit and non-dual credit students differ in graduation GPA?** Data to answer this question came from the academic records of 70 students (27 dual credit, 43 non-dual credit). The average graduation GPA in the dual credit sample was 75.49% and in the non-dual credit sample it was 73.90%. The difference in average graduation GPA between the samples was not statistically significant, based on t-test analysis ($t (68) = 1.409, p = .201$). Therefore, the two groups were similar in terms of their graduation GPA.

All findings related to college success that involved operational questions having to do with the comparison of dual credit and non-dual credit student records are depicted in Table 11.
Table 11

All College Success Findings Based on Operational Questions Involving Student Record Data of Dual Credit and Non-dual Credit Participants

<table>
<thead>
<tr>
<th>Operational Question</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do dual credit and non-dual credit students differ in successful course completion?</td>
<td>The difference was statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in first term program GPA?</td>
<td>The difference was statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in first term academic standing?</td>
<td>The difference was statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in second term program GPA?</td>
<td>The difference was statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in second term academic standing?</td>
<td>The difference was not statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in graduation rate?</td>
<td>The difference was statistically significant</td>
</tr>
<tr>
<td>Do dual credit and non-dual credit students differ in graduation GPA?</td>
<td>The difference was not statistically significant</td>
</tr>
</tbody>
</table>

Analysis of quantitative findings relevant to Research Question 3.

College student records.

Analysis of data contained in the college student records revealed that the dual credit group did not perform as well academically as the comparison group. Statistically significant differences were found between the two groups in successful course completion, first term GPA, first term academic standing, second term GPA, and graduation rates. Examination of second term academic standing data revealed that a higher proportion of dual credit participants than non-participants were on probation but this difference was not statistically significant. The dual credit group also showed a lower average graduation GPA than the comparison group but this difference also proved to not be statistically significant.

According to the conceptual model developed by Karp and Hughes (2008), CBTPs, including Dual Credit/Dual Enrolment Programs, enhance college success through a combination
of college course work and support services that improve students’ academic skills, academic confidence, college aspirations, and understanding of college life. The Karp and Hughes model is supported by empirical research out of the United States. At the high school level, American dual credit/dual enrolment students have been shown to have higher rates of graduation, (Finch, 1997), higher academic confidence (Hughes et al., 2005), higher educational aspirations (Hughes et al., 2005, Smith, 2007), and a better understanding of college life (Karp et al., 2007) compared to high school peers who were not involved in college-level learning. There is also ample evidence that the academic success of dual credit/dual enrolment students continues at the postsecondary level. Compared to direct entry college students, college students with dual credit/dual enrolment experience attained higher GPAs (Florida Department of Education, 2006; Karp et al., 2007; Michalowski, 2007; Washington State Board for Community and Technical Colleges, 2008; Wintermeyer, 2012), completed more of the courses that they attempted (Washington State Board for Community and Technical Colleges, 2008), earned more postsecondary credits (Karp et al, 2007; Michalowski, 2007; Wintermeyer, 2012), completed a degree in less time (Swanson, 1992), showed higher graduation rates (Struel & Vargus, 2012), and earned higher level college credentials (Swanson, 1992).

As in the United States, Dual Credit Programs in Ontario have been associated with positive outcomes in the case of high school students. As noted in the literature review, the programs have been found to help secondary school students achieve higher levels of engagement (Armstrong et al., 2006; Rogers, 2009; Ungerleider, 2008), become academically prepared for higher education (Fleming Data Research, 2010; Whitaker, 2011), attain the OSSD (Ontario Ministry of Education, 2013b) and earn credits that could later be used toward a college credential (Ontario Ministry of Education, 2009a, 2009b, 2011a, 2012a, 2013b, 2014a).
However, unlike in the United States, Dual Credit Programs in Ontario have not been shown to benefit participants once they transition to full-time college programs. Philpott-Skilton (2013) compared the average first term college GPAs of former dual credit participants and all students enrolled in postsecondary programs at Fleming College in Fall 2010 and found the average GPA of the dual credit group to be lower (60% compared to 67%). A similar comparison that the investigator conducted involving Fall 2011 students also showed the dual credit group to have a lower average GPA, although only by one percentage point (67% compared to 68%). On the basis of these findings, Philpott-Skilton concluded that the academic performance of the dual credit group was lower than that of all semester one Fleming College students. My findings support this conclusion and I have been able to substantiate the statistical significance of the differences in GPA.

More research is needed to determine the extent to which Ontario Dual Credit Programs contribute to the academic success of postsecondary students. However, it is useful at this juncture to consider why the dual credit participants in my study tended to perform less well academically than comparison students who never completed dual credit courses or activities. One reason for the discrepancy might be that the college courses students completed for dual credit were not equivalent to the “real” college courses that they later enrolled in as postsecondary students. Most dual credit courses at Humber College are delivered through the congregated model that has secondary school students placed together in one class for the purpose of completing the college-level course. Given that such classes contain only high school students, it is possible for professors to make adjustments in order to accommodate the lower academic skills and abilities of high school learners. The strategy of providing “watered down” college courses to dual credit participants might benefit students in the short term but would
disadvantage them once they transition to a regular higher education program where courses are more challenging.

I am not aware of any research that has tested the equivalency of Ontario college courses aimed at dual credit versus regular college students but there is evidence that both American and Canadian college professors tend to be less rigid and more accommodating when interacting with high school as opposed to college learners. In a qualitative study (Robinson, 2011) of African American students in Tennessee who completed dual enrolment courses and went on to postsecondary studies, students reported experiencing greater leniency from college faculty while dual enrolled than when pursuing full-time college studies. Students said that professors teaching dual enrolment courses showed more flexibility when it came to deadlines, took more time to explain difficult concepts, and allowed students to make up missed work. Many students believed that the leniency that they received as dual enrolees “gave them a false sense of what ‘real’ college would be like” (Robinson, 2011, p. 102). The differential treatment by professors of dual credit compared to non-dual credit students was also reported by Ontario dual credit participants who concluded that professors demonstrated lower expectations when interacting with the dual credit group (Philpott-Skilton, 2013).

Qualitative findings relevant to Research Question 3.

Student interviews.

The two students interviewed were asked to respond to the following item related to college success: Describe what you see as your major accomplishments as a college student. Student A described a presentation that she delivered to her class in the form of a painting she created depicting a particular social issue relevant to her culture. She expressed pride that the presentation was very well-received by her classmates. Student A was also pleased that she
managed to complete the first semester of her program and earn good grades in the process. Student B said that one of her major accomplishments while at college was living in residence and being able to balance her social and academic life, especially during stressful times. She was proud of completing all six of her courses, even though personal issues threatened to overwhelm her at times.

**Faculty interviews.**

Faculty interview participants were asked, *What are your observations regarding student success as it relates to dual credit and non-dual credit students?* Professor A did not say if dual credit and non-dual credit postsecondary students had the same or varying degrees of success while at college. She did, however, point out that dual credit students were ahead when it came to credits upon entering higher education, having earned some through the Dual Credit Program. Professor B also mentioned the advantage that dual credit postsecondary students have over their peers when it comes to college credits. Professor B added that her limited interactions with college students who completed Dual Credit Programs did not allow her to make conclusions on the college success of the two target groups. Nevertheless, she observed that students who “[have the benefit of the dual credit experience] understand what’s happening in college and [are] less confused”.

When asked for her observations regarding the success of dual credit and non-dual credit students, Professor C said:

I assume that as a dual credit student, that gives you a wonderful perspective on how to succeed in [a] classroom setting in College because you have that experience, so you might be a little more confident going into your [college] courses, as opposed to [new college students with no dual credit experience].
She went on to identify a past dual credit student who excel in the professor’s course on account of the experience and skills that the student gained through the Dual Credit Program.

Professor D remembered a student in his dual credit course who struggled at the start but then went on to achieve success both in that course and in subsequent postsecondary programs. According to Professor D,

There was a turnaround from the midterm mark with that student. He became a class leader; very engaged in class, asking questions, answering questions. [He] put great effort into his paper, wrote a great final exam, graduated from the dual credit course with honours… I’ve seen him since in a number of my classes, exhibiting the same behaviour…. That student went on to [the University of] Guelph-Humber and to me he is one of those people that you would call a student leader.

Professor D was careful to point out that not all dual credit students go on to excel in higher education. He recalled one individual who did fairly well in the dual credit course but floundered when she became a full-time college student, mainly because she expected to be treated “with the same kid gloves” that he treated her with in the dual credit course.

**Analysis of qualitative findings relevant to Research Question 3.**

**Student interviews.**

According to data contained in their academic records and interview transcripts, Student A and Student B were successful college students. Yet, both individuals initially questioned their ability to do college work. Consistent with Rendón’s (1994) Validation Theory, the acknowledgement and external validation provided by significant others may have contributed to the social and academic growth of these students. Student A appreciated the validation she received from peers following a presentation that she delivered in class. She also attributed her
success in college to the support provided by family members, college faculty, and college staff, particularly staff in the Disabilities Services office. For Student B, success came in the form of achieving a balanced academic and social life while in college. The affirmation provided by a supportive network of college agents including peers, professors, counselors, and disabilities services staff appears to have contributed to that positive outcome.

The college success of the two interview participants can also be explained by the college impact theories proposed by Aston’s (1999) and Tinto’s (1993). In line with Aston’s theory, both students were highly involved in college life. Student A demonstrated a high degree of academic involvement and some social involvement. As a residence student, Student B established and maintained many on-campus relationships but she also showed academic involvement in equal measure. That both of these students were socially and academically integrated into the college environment gives support to Tinto’s college impact theory.

The college integration of Student A and Student B may have been enhanced because they participated in information networks (Karp et al., 2008). Each student cultivated and maintained a web of on-campus relationships through which they accessed valuable information and resources. As users of information networks, Student A and Student B may have believed, as Karp et al. (2008) have suggested, that there were people at the College who wanted them to succeed and who were willing to help them do so.

*Faculty interviews.*

The four faculty interviewees provided insight into aspects of the Dual Credit Program that might contribute to college success. Half of these faculty mentioned that in their view dual credit participants had an advantage over direct entry college students because they earned credits that they later used toward a college credential. This allowed participants to save money when they
got to college. It also allowed them to save time since they had fewer courses to complete than students without the benefit of dual credits.

Three of the four faculty interview participants observed that the Dual Credit Program helped students succeed at the postsecondary level because it allowed them to “test drive” college. In their view, the dual credit participants entered higher education knowing what to expect and having the tools to succeed. Consistent with the concept of anticipatory socialization, the professors implied that dual credit involvement allowed high school students to learn what it meant to be a college student before they actually occupied the college student role.

It stands to reason that for high school students to learn aspects of the student role through anticipatory socialization they have to spend a sufficient amount of time in the college setting and while there be treated like college learners. While convinced that the Dual Credit Program helped students succeed in college, Professor D admitted to treating students in his dual credit class more leniently than students enrolled in his postsecondary program courses. His description of the individual who did not do well in college because she expected to be treated “with the same kid gloves”, supports the notion that exposure to inauthentic college courses impedes the success of students who transition to higher education.

**Summary of findings and analyses relevant to Research Question 3.**

The quantitative data from college student records revealed statistically significant differences between dual credit and non-dual credit group related to course completion rate, first term GPA, second term GPA, first term academic standing, and graduation rate. For all five of these indices, the dual credit group was less successful. No statistically significant differences were found between the groups in second term academic standing and graduation GPA. The poorer academic performance at college of dual credit students compared to their non-dual credit
peers is not consistent with research out of the United States (Florida Department of Education, 2006; Karp et al., 2007; Michalowski, 2007; Swanson, 1992; Struel & Vargus, 2012; Washington State Board for Community and Technical Colleges, 2008; Wintermeyer, 2012). However, my findings are consistent with those of the only other Ontario study (Philpott-Skilton, 2013) that compared dual credit participants and non-dual credit participants on postsecondary college success. The possible leniency shown toward high school students completing college courses may account for the academic challenges that these students experience upon entering postsecondary education.

Data derived from student and faculty interviews suggest that dual credit students performed well once they got to college. Consistent with Astin’s (1999) college impact theory, the student interviewees reported being socially and academically involved in college. They also revealed that they were well integrated into the college environment, thus providing support for the college impact theory proposed by Tinto (1993). Finally, in line with Rendón’s theory of validation, both interviewees made a connection between the success they experienced as postsecondary students and the support and affirmation they received from specific college groups, including other students, faculty, and college staff.

The faculty interviewed observed that dual credit involvement enhanced college student success by providing high school learners with the opportunity to acclimatize to the college student role in advance of entering full-time college programs. In other words, they viewed the college success of dual credit participants as a product of what Merton (1957) referred to as anticipatory socialization. However, when judging the academic success of dual credit students, it is important to keep in mind the responses of the two faculty who admitted to treating dual credit high school students more leniently than postsecondary students.
Research Question 4

What aspects of a dual credit program prepare students for college life as perceived by dual credit participants and college faculty?

Three data sources were relevant to the fourth research question: the student survey, student interviews, and faculty interviews.

Quantitative findings relevant to Research Question 4.

Student survey.

In Part B of the survey questionnaire (Appendix U), the eight former dual credit students were asked to recall experiences that they had in the Dual Credit Programs and to report the extent to which those experiences prepared them for college life. They were to focus on the people that they interacted with in the program as well as on the services and facilities that the program gave them access to.

Participants were asked to indicate the extent to which their relationships with the following individuals helped prepare them for postsecondary education: Humber College dual credit professor(s), high school dual credit teacher(s), College dual credit staff (other than dual credit professors), dual credit peers, and non-dual credit College students. The majority of participants said that dual credit professors, dual credit high school teachers, and dual credit peers helped them prepare for college anywhere from “a moderate amount”, to “a great deal”. According to most participants, interactions with non-dual credit college students offered them no or “a little” assistance when it came to their college preparation. One student added that interactions with Disability Services staff helped her “a great deal” to prepare for college life. Table 12 depicts the findings related to this question.
Table 12

Amount of College Preparation Help from Specific Interactions as Perceived by Dual Credit Participants (n=8 dual credit responses)

<table>
<thead>
<tr>
<th>Interaction with</th>
<th>Perceived College Preparation Help</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at All</td>
</tr>
<tr>
<td>Dual credit professor(s)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12.5%</td>
</tr>
<tr>
<td>Dual credit high school teacher(s)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12.5%</td>
</tr>
<tr>
<td>College dual credit staff</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>25.0%</td>
</tr>
<tr>
<td>Dual credit peers</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>12.5%</td>
</tr>
<tr>
<td>Non-dual credit college students</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
</tr>
<tr>
<td>Disability Services staff*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* additional interaction included by one participant

The final questions in Part B of the survey asked the former dual credit students to consider a list of services and facilities that Dual Credit Programs often make available to participants and to indicate for each service 1) if it was available to them, 2) how often they used it, and 3) how well it prepared them for college life. The services and facilities that students were asked to consider were: library, Writing Centre, Math Centre, counselling services, athletic facilities, information technology, peer mentoring, and peer tutoring. In considering the following results, it should be noted that one respondent completed the Orangeville Dual Credit Program which did not offer any of the listed facilities and services. Having attended the Secondary Schools of Greater Toronto (SSOGT) program, the remaining respondents had access to library, Writing Centre, Math Centre, counselling, athletic, information technology, and peer tutoring supports. Peer mentoring was first made available to SSOGT students in Winter 2010. As a result, four survey respondents had access to this service.
The majority (n=5) of participants acknowledged that library facilities were available to them. Four students used the library two or more times. Two of these students reported that it prepared them for college “a moderate amount” and two said “quite a bit”. Fifty percent (n=4) of participants indicated that they were aware of the athletic facilities provided at the College and two students said that they made use of those facilities. When asked the extent to which athletic facilities prepared them for college, one student said “a moderate amount” and the other said “quite a bit”. Many participants were unclear about the availability of the following facilities and services: Writing Centre, Math Centre, counselling, information technology, peer mentoring, and peer tutoring. The one student who visited the writing center reported that it prepared her for college “quite a bit” and another who used information technology services said “a great deal”. Counselling services were used by two students who both agreed that these services prepared them for college “a great deal”. One participant specifically identified disability services as being available to him. This individual also stated that he used these services “two or more times” and that they prepared him for college life “a great deal”. Table 13 includes the responses of all participants regarding availability, use, and college preparation value of select facilities and services.

**Analysis of quantitative findings relevant to Research Question 4.**

**Student survey.**

Several college impact theories (Astin, 1993,1999; Karp et al., 2008; Rendón, 1994; Tinto, 1993) have proposed that favourable student outcomes occur when learners experience positive relationships within the college setting. In the case of dual credit participants, positive interactions with college agents can enhance college preparation. Survey participants perceived their interactions with dual credit professors to be the most helpful when it came to getting
Table 13
Dual Credit Participants Perceptions on Availability, Use of, and College Preparatory Value of Specific Dual Credit Program Facilities and Services (n=8 dual credit responses)

<table>
<thead>
<tr>
<th>Facility/Service</th>
<th>Available to student</th>
<th>Used by student</th>
<th>Prepared student for college*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Don't know</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Library</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Writing Centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Math Centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Counselling services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Athletic facilities</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Information technology</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Peer mentoring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Peer tutoring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Disability Services*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* only includes responses of students who used facility/service
** additional service included by one participant

ready for college. These were followed, in descending order of helpfulness, by the interactions participants had with dual credit high school teachers, dual credit peers, college dual credit staff, and non-dual credit college students. Half of the survey participants said that they received at least “a moderate amount” of college preparation help from College dual credit staff. The majority of participants perceived their relationships with non-dual credit students to be “not at all” or “a little helpful”.

That survey participants perceived their relationships with non-dual credit college student to be least helpful to their college preparation is understandable in view of the fact that dual credit students and regular college students at Humber College rarely interact. This is especially true
for non-SWAC students who are only on campus for a few hours a week and during most of that time tend to participate in classes that exclude regular college students. The lack of connection between dual enrolees and the wider college student population emerged as an issue in a qualitative study by Robinson’s (2011) that investigated dual enrolment students in Tennessee. In interviews and focus groups, students expressed feeling isolated when on campus because they had limited interactions with college students who were not dual enrolees. Like the majority of students participating in dual credit courses and activities at Humber College, Robinson’s participants tended not to have regular college students in their college classes nor did they have enough time on campus to connect with non-dual enrolees. The lack of contact between dual credit participants and postsecondary college students was also reported by former Ontario dual credit students (Philpott-Skilton, 2013).

In order to show positive student outcomes, Dual Credit/Dual Enrolment Programs, particularly those targeting at-risk learners, must do more than simply involve participants in college coursework. According to the conceptual model developed and tested by Karp and Hughes (2008), CBTPs enhance the college success of middle- and low-achieving learners by providing participants with a combination of coursework and support services. It stands to reason that coursework and support services are complementary features that help Ontario dual credit students prepare for postsecondary education.

Dual Credit/Dual Enrolment Programs vary widely in terms of the support services and facilities that students have access to. Focusing on American CBTPs, Baily and Karp (2003) claimed that the quantity and quality of supports increase as programs become more intense; with singleton programs offering few supports, comprehensive programs a moderate number of supports, and enhanced comprehensive many supports. In the view of Barnett and Stamm (2010),
singleton programs “are not likely to be a good option for academically underprepared students” (p. 3) because they offer participants few supports beyond those available to college students in general. As noted in the literature review, with the exception of SWAC Programs, Ontario Dual Credit Programs tend to be of the singleton variety. Consistent with this classification, relatively few supports are provided to students as part of the program.

All students enrolled in dual credit courses at Humber College are informed during orientation about the supports and opportunities available outside the classroom. Despite being provided with this information, at least half of the survey participants reported that while in the Dual Credit Program they were unaware of having access to a number of college services and facilities, including the Writing Centre, the Math Centre, counselling services, information technology services, and peer tutoring services. The majority of participants said that they were aware of the availability of the library and half knew about the College athletic facilities. Participants’ lack of knowledge regarding several College supports was unfortunate because use of supports might have better prepared the students for postsecondary education. As expected, survey participants who knew of a particular services or facilities and used it at least once saw it as contributing anywhere from “a moderate amount” to “a great deal” to their college preparation.

In my experience, even when dual credit students are fully aware of campus supports, they tend not to make use of them unless college agents facilitate student involvement. I recall teaching a dual credit class in which several students were having trouble completing the course essay assignment. Having attended the College’s Dual Credit Program orientation a few weeks earlier, I knew that those students were given information about the services provided by the Writing Centre so I advised them to visit that facility in order to get help with their essays. I was
surprised to later learn that none of the students took my advice. Since a substantial portion of the class needed help with grammar, punctuation, and other writing issues, I decided to take the entire class to the Writing Centre. After meeting with the Centre’s director and staff and learning more about available services, a number of students returned to the facility on their own for help.

Some of the students who responded to my survey had access to the Group Peer Mentoring Program which was launched in Winter 2010. One of the few support services developed especially for dual credit participants, the program connects small groups of participants to postsecondary student mentors who shared their experiences about college life, engaged participants in campus activities, and supported participants academically. Barnett and Stamm (2010) identified mentoring, including peer mentoring, as a source of academic and social support for dual enrolment student. Unfortunately, none of the survey participants reported using the peer mentoring service.

Qualitative findings relevant to Research Question 4.

Student interviews.

When asked to describe aspects of the dual credit program that best prepared her for college life, Student A answered:

It’s hard to say because for the time I went to the Dual Credit Program I think everything, every aspect of it, really helped me. Because when I went inside the class, it felt like a real college class. I felt like I wasn’t a high school student anymore. I felt like I somewhat grew up and matured a bit….they opened my eyes basically and told me what was going to be expected of me after dual credit.
Student A went on to say that a combination of factors helped her feel more mature including the course content and the approach of the professors and other College staff including counsellors. She admitted to feeling a bit intimidated when first arriving on campus, especially when she realized that she was surrounded by college students. As the time went on, however, she found herself easing into classes and making a pretty smooth transition. She completed a dual credit course tied to her postsecondary program for which she later received an exemption. This pleased her because it resulted in saving money on the course and having a spare on her college timetable.

Student B found the Dual Credit Program beneficial for a number of reasons. Through the program, she was introduced to disability services and counseling staff whose support she could count on after enrolling in postsecondary education. She had this to say about the dual credit experience:

It was really, really helpful….we got the feel for how an actual class is, how they mark, how the lectures are run. And also, outside the class, just the campus life, being able to use the gym, and all the other facilities. It prepared me well because when I came in September, I kind of had a feel for things.

Student B also saw the economic benefits of having participated in the Dual Credit Program. She appreciated not having to pay for a college course and accumulating postsecondary credits prior to entering postsecondary education.

*Faculty interviews.*

When asked the question, Can you identify aspects of the dual credit program that help dual credit students prepare for college?, all four faculty interview participants acknowledged that in their view, attending college classes on a college campus helped dual credit students make a
smoother transition to higher education. Professor A said that the students in her dual credit courses acquired higher levels of maturity and confidence. “You see these students and they are really excited and they really take it on. They love the responsibility of [being in a postsecondary setting]…. [and] being treated like adults.” Professor B, believed that the dual credit model benefited students because it allowed them to experience some of the freedoms and responsibilities associated with college life. She stressed, however, that while her dual credit students were quick to embrace the independence that a postsecondary environment afforded them, they were less prepared to handle the accompanying academic demands. That is why they benefited from the supports and services meant to get them “college ready”. Professor B mentioned that her dual credit students completed workshops that taught them how to use Blackboard, the course website platform. She also saw promise in the peer mentoring program that connected interested dual credit students with college students trained to provide academic and other supports. Having sat in on a mentoring session, Professor B concluded that “there was this casualness about it that made students comfortable”. Professor D encouraged his dual credit students to participate in the Peer Mentoring Program but claimed that few were interested in doing so.

The three professors who taught in the Dual Credit Program were clearly committed to their students and worked hard to prepare them for postsecondary studies. “I tell them from the beginning that I’m happy to help them, to assist them with anything….I’m eager to …. hold their hand through the process”, said Professor B. In Professor D’s view,

You can’t just get up there and give a lecture and go home. You try spending as much time getting to know the students, getting them interested in college life, and getting them interested in setting and reaching goals for themselves….I encourage them to use the gym…. 
I encourage them to use the library.

These professors cared about their dual credit students. Professor D expressed his concern in the following way:

I see these young people and some of them have difficult backgrounds….some of them are holding down several jobs, some of them even have kids so it’s not easy for a lot of them. Some of them….they seem, I don’t want to say aimless, they are just drifting….just haven’t focused on anything yet.

All of the dual credit professors wanted their students to succeed and were unhappy when they struggled. Professor A used phrases like “it kind of breaks my heart” and “it’s a little heart wrenching” when describing students who were attentive in class but did not have the academic ability to pass her dual credit course.

In addition to identifying aspects of the Dual Credit Program that helped students prepare for college, faculty interview participants also conveyed their thoughts about strategies that could help these students at the postsecondary level. In Professor B’s view, students should continue getting support after they complete the Dual Credit Program and enrol in postsecondary education.

I think that sometimes [the College should] hold their hand a little bit more….I have the suspicion that [dual credit alumni] will find that they are a little surprised that they are completely on their own once they go to college. (Professor B)

Professor B suggested that dual credit students have access to peer mentors throughout their first year of college. She said that a comprehensive peer mentoring program should be developed; one with the capacity to match student to mentor on characteristics such as gender
and age. Professor D also identified the College’s peer mentoring program as needing improvement to better serve dual credit students.

Analysis of qualitative findings relevant to Research Question 4.

Student interviews.

Consistent with Karp and Hughes’ (2008) conceptual model, Student A and Student B indicated that a combination of coursework and student support services prepared them for college life. Additionally, both participants reported that their dual credit class felt like a real college class and that they entered postsecondary education knowing what to expect. Student A added that the authenticity of her dual credit class contributed to her maturity; the class made her feel less like a high school student and more like a college student. The responses of these students suggest that they benefitted from anticipatory socialization and the validating actions of college agents including faculty, counsellors, and disability services staff.

Both interview participants acknowledged the financial and time-saving benefits of dual credit involvement. They appreciated not having to pay for the college course that they completed as dual credit students and later having that course count toward their college credential. They also liked that they had free time on their college timetable due to the early completion of one of their postsecondary program courses.

Faculty interviews.

Data from the faculty interviews reinforced Karp and Hughes’ (2008) proposition that college coursework and student support services work together to help concurrently enrolled students prepare for college. Faculty said that attending college-level classes in a college setting allowed dual credit participants to acquire higher levels of maturity and confidence and experience the freedoms and responsibilities of college life. This is consistent with Burn and
Lewis’s (2000) finding that students who completed dual credit courses on a college campus showed greater maturity and independence than students who completed similar courses at a high school location.

While recognizing that involvement in college-level courses facilitated the development of dual credit students, the faculty interview participants who taught dual credit courses acknowledged that some of the students in those courses demonstrated low academic skills. The professors assisted these challenged learners by “holding their hand through the process” (Professor B) and “getting them interested in setting and reaching goals” (Professor D). They also connected students to support services and facilities available outside the classroom. The supportive actions that these professors directed toward their dual credit students are in line Rendón’s (1994) Validation Theory.

In the end, all four of the faculty participants perceived the Dual Credit Program to be useful in preparing students for college. However, one professor voiced the concern that dual credit students were not provided with sufficient support once they left the program and transitioned to full-time college studies. She believed that former dual credit students should be provided with support services through their first year of postsecondary education.

**Summary of findings relevant to Research Question 4.**

The theoretical literature (Astin, 1993; Karp et al., 2008; Rendón, 1994; Tinto, 1993) on college student outcomes proposes that positive relationships within the college setting are integral to student success. The survey respondents in my study reported that when they were in the Dual Credit Program, the interactions they had with dual credit professors were most helpful in preparing them for college, followed by (in descending order) the relationships they had with dual credit high school teachers, college dual credit staff, dual credit peers, and non-dual credit
college students. The perception on the part of dual credit participants that “regular” college students offered them the least amount of college preparation help is consistent with research conducted by Robinson (2011) and Philpott-Skilton (2013) that showed little contact between the two groups of students.

With the exception of the library, the majority of survey participants reported that as dual credit students they made no or little use of the college facilities and services that they had access to. Interestingly, the minority of participants who did make use of these supports, found them to be at least moderately helpful in preparing them for college. The conceptual model conceived by Karp and Hughes (2008) proposes that support services combine with dual credit coursework to enhance the college preparation of high school students.

The qualitative data obtained through student and faculty interviews support Karp and Hughes’ (2008) proposition that coursework and student supports combine to prepare dual credit students for college. The interview responses of students and faculty also suggested that the process of anticipatory socialization assisted dual credit participants as they transitioned to college, as did the validating actions of college agents.

**Outline of Remaining Chapter**

Chapter five provides the conclusions of the study, discusses the implications of the research, and delivers information on how study findings will be disseminated. This chapter ends with the overall conclusion of the research.
Chapter Five: Conclusions and Implications

This case study focused on dual credit participants and non-dual credit students who attended postsecondary programs at Humber Institute of Technology and Advanced Learning (Humber College) in Toronto, Ontario from Fall 2008 to Fall 2012. Data derived from college student records, an online student survey, student interviews, and faculty interviews were used to explore the relationship between dual credit participation and college persistence, engagement, success, and preparation, on the other. One overarching research question drove this study: What impact does participation in Dual Credit Programs have on college student experience and outcome?

This final chapter includes the conclusions of the study, a discussion of the implications of the research findings, and information on the dissemination of study findings. An overall conclusion is presented at the close of the chapter.

Conclusions

The Ontario dual credit initiative has expanded tremendously since its inception in 2005-2006 (see Table 1, p. 37) but I found little research regarding the college student outcomes of Ontario dual credit participation. The findings of this study provide insight into the capacity of dual credit courses and activities to prepare students for postsecondary education. Specifically, study findings contribute to a better understanding of the impact that dual credit participation has on college student engagement, persistence, and success.

College Preparation through Dual Credit Involvement

The conceptual model developed by Karp and Hughes (2008) proposes that Dual Credit Programs prepare students for college by exposing them to a combination of coursework and support services that increase students’ academic skills, facilitate their understanding of the
social aspects of college, and increase their college-going motivation. The findings of my study echo earlier American (Barnett and Stamm 2010; Edward, Hughes, & Weisberg, 2011; Finch, 1997; Hughes et al., 2005; Smith, 2007) and Ontario (Armstrong et al., 2006; Fleming Data Research, 2010; Harrison, 2011; Ontario Ministry of Education, 2011b, 2011c, 2012b, 2013c; Philpott-Skilton, 2013; Rogers, 2009; Ungerleader, 2008; Whitaker, 2011) research in support of Karp and Hughes’ model. There was high agreement among my student survey, student interview, and faculty interview participants that college coursework and interactions with college faculty prepared dual credit students for postsecondary education. Moreover, survey participants acknowledged the college preparation help they received from dual credit high school teachers, college staff, and other dual credit students. Of all the college groups considered, non-dual credit college students were perceived by survey participants as being least helpful when it came to contributing to their college readiness. This is not surprising in light of the fact that the college courses taught to dual credit students on Humber College campuses tended to rely on the congregated delivery model that excluded non-dual credit college students. Yet, it has been shown that high school students make smoother college transitions when involved in Dual Credit Programs that offer an authentic college experience, including opportunities to connect academically and socially with full-time college students (Edward, Hughes, & Weisberg, 2011; Robinson, 2011; Pilpott-Skilton, 2013).

In line with Karp and Hughes’ (2008) conceptual model, Barnett and Stamm (2010) found that dual credit participants, particularly those with an at-risk profile, benefit from having access to ample student support services. In contrast to this finding, most of the dual credit participants who completed my College Student Experiences Survey reported never using the following Humber College facilities or services while in the Dual Credit Program: the Writing Centre, the
Math Centre, counselling services, information technology (IT) services, peer mentoring services, peer tutoring services, or disability services. Consistent with the Karp and Hughes model and Barnett and Stamm’s findings, the few participants who accessed these services perceived them to be valuable in helping students become college ready. Peer mentors were identified by Barnett and Stamm as especially good sources of academic and social support for dual enrolees but not one survey participant reported interacting with a peer mentor while engaged in dual credit courses and activities. Consistent with Barnett and Stamm, two of the four faculty interview participants saw merit in using peer mentors to help dual credit students acclimatize to college life.

Philpott-Skilton (2013) concluded that for dual credit students the “process of anticipatory socialization occurs concurrently with the process of validation and both contribute to a student’s successful integration into college life” (p. 145). My findings support the idea that Dual Credit Programs help participants prepare for college by allowing them to practice the college student role in advance of becoming full-time college students. In addition to suggesting the involvement of anticipatory socialization, my findings, particularly those derived from student and faculty interview data, suggest that Dual Credit Programs contribute to the validation of students in advance of their entering college.

The Impact of Dual Credit Involvement on Key College Student Outcomes

With some notable exceptions, the findings of this study indicate that dual credit involvement has either a positive or neutral influence on particular aspects of college student engagement, persistence, and success. The exceptions involved college success, particularly findings linking dual credit participants to lower rates of academic performance in postsecondary programs compared to their non-dual credit peers.
College engagement.

In his Theory of Involvement, Astin (1993, 1999) hypothesized that students who are more involved in college life (e.g., spend a lot of time on campus; frequently interact with faculty, college staff, and other students; participate in extracurricular activities; make use of campus services and facilities, hold down on-campus jobs, etc.) are more likely to persist at postsecondary education than those who are less involved. From the perspective of Tinto’s (1993) Integration Theory, college students who do not experience a sense of being academically and/or socially connected to their educational institutions are more likely to drop out of college than their better integrated peers. Ontario Dual Credit Programs seek to connect high school students to college life, both academically and socially, in order to facilitate future college-going and college-completing. My research revealed several examples of college engagement among dual credit alumni enrolled in Humber College postsecondary programs. Moreover, data from the student and faculty interviews showed college students with dual credit experience to be just as engaged or more engaged compared to similar students who were never dual credit participants.

The former dual credit students who completed this study’s online survey revealed themselves to be academically engaged while attending college postsecondary programs. In addition to reporting high levels of class attendance, most of these participants said that they frequently contributed to class discussions, worked with classmates on course material outside of class time, and communicated with professors about course material outside of class time. However, the academic engagement of the dual credit participants tended to not extend beyond their coursework. For example, relatively few participants admitted to attending campus academic events that were not course requirements. The two survey participants who completed
interviews were very engaged in their postsecondary courses and programs but they too showed little interest in extracurricular academic activities.

According to the results of the student survey, dual credit participants continued to use few student support services after they entered postsecondary college programs. This is cause for concern because other findings of this study revealed former dual credit students to be less academically successful at college compared to their non-dual credit counterparts. Given their lower academic performance, the dual credit group could have benefitted from accessing the supports available to them as postsecondary students at the College. In accordance with my findings, Philpott-Skilton (2013) discovered that dual credit alumni in their first semester at Fleming College used fewer student support services and performed less well academically compared to all Fanshaw College first semester students.

The majority of dual credit participants who responded to my survey said that they frequently experienced positive relationships with other students, faculty, and non-faculty college staff. Both interview participants were socially active within the context of their courses and programs, but the participant who lived on campus enjoyed a social network that extended well beyond the classroom. Given that students who experience positive social connections tend to be persistent at college (Astin, 1999; Barnett, 2012; Karp et al., 2008; Rendón, 1994; Tinto, 1993), it follows that in order to contribute to the college persistence of participants, Dual Credit Programs should encourage students to establish and build relationships with different campus groups.

**College persistence.**

Dual credit participants and non-dual credit participants did not differ significantly in college persistence according to the persistence measures examined in this study. This finding is
inconsistent with research out of the United States showing former dual credit/dual enrolment students to be more persistent at college compared to peers who were never dual enrolled (Karp et al., 2007; Michalowski, 2007; Struel & Vargus, 2012; Swanson, 2008). However, the uniqueness of Ontario Dual Credit Programs and colleges make it difficult to compare the findings of this study to American research. One thing is clear though: the Credit-Based Transition Programs (CBTPs) in the United States that have been successful in increasing college persistence among at-risk learners have tended to be enhanced comprehensive type programs that connect participants to a wide spectrum of support services. This suggests that the college persistence of the dual credit participants in my study might have been enhanced if more supports were integrated into the Dual Credit Programs that they attended.

The former dual credit students in Philpott-Skilton’s (2013) study had second term persistence rates that more or less matched those of a comparison group comprised mainly of college students who never engaged in dual credit courses or activities. The investigator took these similar persistence rates to mean that dual credit participation contributed to college persistence because the at-risk nature of the dual credit group should have resulted in that group having a lower, not an equivalent, second term persistence rate. While this interpretation might have merit, the weight of Philpott-Skilton’s evidence did not provide strong support for the argument that involvement in the Dual Credit Program contributes to college persistence.

The interesting finding that the dual credit participants in my study who completed two or three dual credit courses had lower six-month and one-year college persistence rates than similar students who completed a single dual credit course is difficult to interpret because I have found no other Ontario study that has explored the relationship between college persistence and number of dual credit courses a student completes. It is possible that the students who enrolled in more
than one dual credit course did so for social rather than academic reasons. The tendency to
primarily associate college with social benefits may have continued in these students after they
entered postsecondary programs, leading them to give up on college life when academic
demands predominated. It is also conceivable that students who completed two or three dual
credit courses as opposed to one course might have become overconfident about their ability to
handle college work. Upon entering full-time college programs, these overconfident students
might have exerted less than optimal effort and as a result shown less persistence. Another
explanation for the lower college persistence rates of students who completed a higher number of
dual credit courses is that these individuals may have simply left Humber College in order to
enrol in other postsecondary institutions.

**College success.**

The findings of this study regarding college success were unexpected in view of American
research showing former dual credit/dual enrolment students to be more academically successful
at college compared to peers who were never dual enrollees (Florida Department of Education,
2006; Karp et al., 2007; Michalowski, 2007; Struel & Vargus, 2012; Swanson, 1992;
Although my findings were inconsistent with the American literature, they were in accordance
with research out of Ontario. Specifically, Philpott-Skilton (2013) found the academic
performance of dual credit alumni enrolled in postsecondary programs at Fleming College to be
lower than that of all Fleming College students enrolled in such programs.

It is not clear why the dual credit participants in my study showed lower academic
performance at the postsecondary level than their non-dual credit peers. It may be that the dual
credit group contained a higher proportion of students who were low-achievers. A problem with
this explanation is that I compared the average admission Grade Point Averages (GPAs) of the
dual credit and non-dual credit groups and found them to be more or less the same. Of course,
that does not mean that the achievement levels of the two groups were in fact equivalent. Student
success teams, dual credit teachers, and dual credit college faculty are highly motivated to help
disengaged and underachieving students to complete high school and matriculate to higher
education. At times this help can result in grade inflation. If that were the case, the dual credit
participants in my study would have entered college being less academically prepared than their
non-dual credit peers who attained similar admission GPAs.

The lower college academic performance of former dual credit students could also have
stemmed from the lack of equivalency between dual credit and non-dual credit college courses.
There is evidence in the American and Ontario literature that dual enrollees are exposed to less
rigorous college courses than postsecondary college students. In a study by Robinson (2011),
full-time college students who completed the Dual Enrolment Program between River Charter
Academy and St. Aquinas University in Tennessee reported being involved in less challenging
college courses when they were dual enrollees than when they attended college full-time. James,
one of the students interviewed in the Robinson study recalled, “When I was at St. Aquinas, we
had a lot of help. Sometimes, teachers would kind of baby us” (p. 98). Commenting on the
content of her dual enrolment course, Rachel said, “We didn’t have the resources and the real
college experience in class for us to prepare for school – for college. We were being prepared but
we weren’t getting prepared because the class was still kind of easy” (p. 100). Beverly described the very different experiences she had as a dual enrollee and as a
postsecondary student in this way:

I’m not gonna lie, it was more like a family at River Charter Academy, and more of your
teachers wanted you to learn and wanted you to succeed. In college [as a postsecondary student], they could care less whether you do or don’t. In college, they don’t care if you comprehend something. They are going to say it once and that’s it. But at River Charter Academy and St. Aquinas University, those teachers were very lenient about things like that. You needed them to repeat something or break something down, so then you could better understand, they would. (p. 102)

According to Philpott-Skilton’s (2013), the former dual credit students in her study “perceived that courses were more difficult at College than those taken during the DC program at high school” (p. 136). Consistent with this view, two of the faculty members who were interviewed in my study admitted to treating their high school students more leniently than their postsecondary students, even though both types of learners were enrolled in courses that were intended to be equivalent.

It is well documented in the theoretical (Astin, 1999; Rendón, 1994; Tinto, 1996) and empirical (Barnett, 2010, 2011; Karp et al., 2008; Pascarella et al., 1996; Rendón, 2002) literature that students who are socially connected to others in the college setting are more successful than those who are socially isolated. The responses of student and faculty interview participants in my study provided insight into the campus social lives of postsecondary students who were and were not involved in dual credit education. By and large, faculty interview participants perceived students with dual credit backgrounds to be more socially connected than those without such backgrounds. Interview data obtained from dual credit participants reinforced this view in that participants reported having good relations with faculty, peers, and college staff.
Implications

The findings of this study have implications for Ontario Dual Credit Programs in the areas of policy and practice, theory development, and future research.

Policy and Practice

Implications for policy considerations by the Ministries

Ontario Dual Credit Programs require the investment of substantial financial and other resources. Given that such resources are limited, it is important for the province’s two education Ministries to be clear on which students should and should not be admitted into the program. The program was originally designed to increase high school completion rates which it appears to have accomplished. While disengaged and underachieving students are purported to be the main targeted group, over the years, middle- and even high-achieving students have gained entry. This presents challenges for its intended benefits, program evaluation and improvement, and requires clarification on the part of Ministry policies that govern Dual Credit Programs.

Suggestions for improving Ontario Dual Credit Programs.

My findings suggest that Ontario Dual Credit Programs can better prepare high school students for postsecondary studies if policy better reflected the need to expose dual credit participants to both a “real” version of college through which they can try on the college student role and a system of learning supports. After analyzing eight California Dual Enrolment Programs aimed at at-risk students, Edward et al., (2011) concluded that programs offering students an authentic college experience coupled with formal learning supports increase student engagement and college readiness.

The two students interviewed in this study reported experiencing considerable challenges when they transitioned to postsecondary education, even though they previously spent a semester
on campus enrolled in a college course. While adapting to a full-time college schedule is difficult for most first-time postsecondary students, the college transitions of the former dual enrolees in my study might have been smoother if, while in the Dual Credit Program, they acquired a clearer understanding of the college student role and were better connected to student support services.

**Providing participants with an authentic college experience.**

One sure way to offer dual credit participants a college experience that feels genuine is to include them in classes with regular college students. Edward et al., (2011) found that college classes that contained a mix of dual enrolees and non-dual enrolees were perceived by members of the former group as being more authentic than classes consisted exclusively of high school learners. Several of the former dual enrolment participants interviewed in the Robinson (2011) study regretted not having regular college students in their classes and implied that interacting only with high school peers took away from their college experience. Latoya, stated, “It was really just us in the class, so it just felt like being in our high school, really” (p. 77). According to Danielle,

It felt like it would have been a better experience if we were allowed to engage in classes with other college students, then we could actually get the essence of the campus. Get the essence of actually being on a college campus and taking those classes actively instead of basically being transferred from one campus to the next. Because if that was the case, we could have just taken the course on our high school campus. (p. 77)

Another student, Cedric, had a few college students in his class and appreciated their presence, “Being in an environment with other college kids actually helps to uplift the classroom, so to speak, instead of it being just us high school students” (p.77). After questioning a sample of Ontario former dual credit participants, Philpott-Skilton (2013) concluded that dual credit
students should attend courses on a college campus and be integrated with postsecondary learners while doing so.

While some Ontario dual credit students participate in integrated type college courses that contain a mix of dual credit and traditional college students, the majority find themselves in classes comprised exclusively of high school learners. In order for dual credit participants to have an authentic college experience, both pedagogically and with respect to the learning environment, they should be placed in classes that allow them to interact with traditional college students. Moreover, while in those classes, dual credit students should be held to the same academic standards as their postsecondary peers. For this to happen, policy changes are needed at the Ministry and college level.

Dual Credit Programs can also provide students with a genuine college experience by facilitating out-of-class interactions between program participants and non-dual credit college students; for example, through joint extracurricular social and academic activities. This would not only help dual credit students get a better sense of the college student role. It would also assist them in broadening their information networks, a practice said by Karp et al. (2008) to facilitating academic and social integration, and, in turn, college persistence.

Connecting participants to a system of learning supports.

The findings of this study and my personal experiences as a dual credit professor indicate that it is not enough to simply make dual credit students aware of the student support services and facilities that a college has to offer. When given the responsibility of connecting to supports, students usually avoid doing so, even if those supports have the potential to dramatically increase their academic success. It is well documented that at-risk dual credit/dual enrolment students benefit from using learning supports (Barnett & Stamm, 2010; Edward et al., 2011; Karp &
Hughes, 2008; Philpott-Skilton, 2013). Some of the most successful Dual Credit/Dual Enrolment Programs in the US that target underachieving youth (e.g., Middle College High Schools (MCHSs), Early College High Schools (ECHS), College Now) are enhanced comprehensive type programs that formally link participants to a range of supports and services. In Ontario, the success of School Within a College (SWAC) Programs attests to the wisdom of connecting at-risk students to learning supports.

The results of this study’s student survey (completed by non-SWAC students) confirmed that participants tended to not make use of college support services and facilities while in the Dual Credit Program. At the same time, my analysis of student record data demonstrated that college students with dual credit backgrounds had lower rates of academic success than similar students who never completed dual credit courses or activities. This evidence suggests that Ontario Dual Credit Programs can be improved through policies that create a system of formal student supports for all dual credit students. Such a system might include college readiness courses; scheduled visits to college facilities that help students improve writing, math, research, and information technology skills; and peer mentoring. Including a peer mentoring component in the student support package is sensible because peer mentors have been found to be an excellent source of academic and social support for dual enrolees (Barnett & Stamm, 2010). The opportunity to interact, face-to-face and electronically, with full-time college students who are trained to provide information, support, and validation, could benefit dual credit students across Ontario. There are many potential supports with the capacity to improve the college outcomes of dual credit participants. In the end, school boards and colleges should work collaboratively, under the direction of SCWI, to make evidence-informed decisions on which support services to bundle together and how to best deliver these services to students.
**Supporting dual credit participants in postsecondary education.**

In the United States some Dual Credit/Dual Enrolment Programs designed for underrepresented and underachieving youth continue to provide participants with learning support services after they matriculate to postsecondary education. For example, many MCHSs offer students uninterrupted supports after they enter full-time programs at the partnered college. According to the student survey data collected in this study, dual credit participants who transition to postsecondary education often failed to access the support services capable of enhancing their college persistence and academic success. This is unfortunate because information gathered from student and faculty interviews confirmed that participants made academic gains as a result of accessing help provided by the Writing Centre, Counselling Services, Disability Services, and the Peer Mentoring Program. Considering these findings and the quantitative evidence in my study showing dual credit participants to be less academically successful at college than non-dual credit peers, there is reason to believe that dual credit participants would gain from having access to a system of student supports that extends to the end of their first year of postsecondary education.

Professor B, a faculty member who interacted with dual credit participants both while they were in the Dual Credit Program and after they transitioned to higher education, expressed concern that dual credit alumni were not getting the support that they needed at the postsecondary level. Referring to services that Humber College makes available to all students, Professor B noted, “There are still support services, systems that are available, but they [former dual credit student] have to seek them out themselves….perhaps it would be beneficial to have a little more hand holding”. The findings of this study, coupled with my experience with dual
credit students have led me to agree with Professor B and propose that dual credit participants continue to be supported after they transition to higher education.

**Theory Development**

Researchers exploring the student outcomes of Dual Credit/Dual Enrolment Programs have drawn on a number of theories and conceptual models. Chief among these are two college impact theories: Astin’s (1993) Theory of Involvement and Tinto’s (1993) Longitudinal Model of Institutional Departure. Originally intended to explain student change in traditional learners attending four-year postsecondary institutions (i.e., universities), these two frameworks have since been adapted and expanded by scholars seeking to describe the impact of various types of postsecondary institutions – including community colleges – on non-traditional learners such as at-risk students and dual enrolees.

Focusing on Astin’s (1993) work, Rendón (1994) developed a theory proposing that the retention and success of minority, low-income, and other non-traditional students depends less on being involved in college life and more on receiving academic and social validation from various college agents (i.e., other students, professors, college staff), as well as from family, friends, and community members. Citing both Astin’s and Tinto’s (1993) work, Barnett (2011) concluded that “validation may be a more important influence on student success than integration or involvement” (p. 101). Tinto’s framework has also been expanded on by Karp et al. (2008) in their effort to explain integration and persistence among community college students. The investigators proposed that the integration of such students stems from their capacity to establish information-getting social ties with peers, faculty, and campus staff; in other words, from their developing information networks. Karp et al. also suggested that the attachment that community college students develop toward their institutions has a positive
effect on their college persistence. Pascarella et al. (1986) are other scholars who have built on Tinto’s model. They postulated that students become integrated into college before even beginning their postsecondary programs, particularly during orientation, through the process of anticipatory socialization. Swanson (2008) has since proposed that “dual enrolment course participation may impact the anticipatory socialization patterns of students, especially in regards to anticipating oneself in the role of college student” (p. 7). She also stated that “positive experiences in a dual enrolment class may….reinforce retention rather than departure from college, as noted in Tinto’s model of student departure” (p. 7).

Until very recently, the theoretical literature contained only one conceptual model explicitly focusing on the capacity of CBTPs to improve the college access and persistence of participants. That model, by Karp and Hughes (2008), was predicated on the findings of five qualitative case studies of American CBTPs, including an International Baccalaureate (IB) Program that attracted high-achieving students. Although the Karp and Hughes framework provided valuable insight into how participation in college coursework and use of support services promote student matriculation and college persistence, the reliance on American data – especially data linked to high-achieving students – limited its applicability with regards to Ontario Dual Credit Programs and students.

Philpott-Skilton (2013) has recently advanced a theoretical framework (refer to Chapter 2, p. 56) that is more suitable for explaining the influence that Ontario Dual Credit programs have on participants. The model reflects the findings of Philpott-Skilton’s own research as well as information she accessed in the literature. It incorporates Rendón’s (1994) Theory of Validation, Tinto’s (1993) Integration Theory, and the concept of anticipatory socialization to explain how
Ontario programs engage at-risk high school students, integrate them into college life, and contribute to their college persistence.

The framework advanced by Philpott-Skilton (2013) is a promising first step to constructing a comprehensive conceptual model hypothesizing why and how Ontario Dual Credit Programs result in desired student outcomes. In an attempt to contribute to this process, below I present an evaluation of the framework in light of my findings, interpretation of the available literature, and experience as a dual credit practitioner. I also offer for consideration, a revised version of the Philpott-Skilton model.

**Evaluation and revision of Philpott-Skilton’s Dual Credit Program framework.**

The knowledge that I have gained from conducting this study, reviewing the relevant literature, and interacting with dual credit participants supports Philpott-Skilton’s (2013) representation of Dual Credit Programs as bridges between high school and college experiences that engage secondary school students and help them transition to higher education. I also agree with the investigator’s decision to included anticipatory socialization and validation processes in the model and her conclusion that these processes in combination “contribute to a student’s successful integration into college life” (p. 143). Philpott-Skilton’s claim that at-risk high school students are validated simply by being invited to enrol in dual credit courses and continue to be validated as they engage in the program makes sense to me, as does her assertion that the dual credit experience helps participants see themselves in the college student role. Something that is not indicated in the model but should be, given Rendón’s (1994) evidence, is that the validation of dual credit participants should continue throughout the first year of college.

The findings of my study are not consistent with the part of the Philpott-Skilton (2013) model that shows social and academic integration to be, on one hand, a product of engagement,
and on the other hand, a stimulus for persistence. My research and the practical experiences that I have had with dual credit students suggest that a more complex relationship exists between engagement, integration, and persistence. For one thing, in order to persist in college, students must experience both engagement and integration from the point that they enter the Dual Credit Program to well beyond the time they matriculate to postsecondary education. Also, if Karp et al. (2008) are correct – and the responses of my interview participants suggest that they are – a student’s capacity to create broad information networks facilitates his or her college integration and persistence.

Another revision that can be made to the Pilpott-Skilton (2013) framework involves the proposition by Karp and Hughes (2008), supported by Barnett and Stamm (2010), that college coursework and student support services work in concert to increase the abilities and college-going motivation of dual enrolees, and in turn their college persistence. The low use of supports among the dual credit participants in my study and the lower college success rates of these participants, compared to peers with no dual credit experience, suggest that use of learning support services also impacts the college success of dual enrolees. Moreover, the positive college student outcomes achieved by Dual Credit/Dual Enrolment Programs that continue connecting at-risk students to supports after they graduate high school and enter postsecondary programs suggest yet another component that can be included in the revised Dual Credit Program framework. The revised model is presented in Figure 2.
Future Research

This study contributes to the research literature on Ontario Dual Credit Programs by building on two previous investigations: 1) a case study by Whitaker (2011) that focused on high school students who were participating in dual credit courses and activities at St. Lawrence College, and 2) a case study by Philpott-Skilton (2013) that examined former dual credit participants enrolled in postsecondary programs at Fleming College. As with Philpott-Skilton’s work, this investigation explored the college student outcomes of dual credit participation. The study expanded on that research by focusing on Humber College, one of the largest institutions in the Ontario college system; examining postsecondary student outcomes over a four year time frame;
including college academic records, students, and faculty as data sources; and by comparing the student records of dual credit participants and non-dual credit participants who were individually matched on the basis of selected demographic and college program variables. It also went beyond the Philpott-Skilton study by extending the conceptual model presented by the investigator.

If evidence-informed policy decisions are to be made regarding Ontario Dual Credit Programs, it is necessary to build on the current research base. The insights that I have gained from conducting this study and participating in Ontario’s dual credit initiative can contribute to this endeavour. Specifically, my work can inform future research by suggesting methodological approaches, identifying areas requiring further study, and exposing obstacles to progress.

**Methodologies for future research.**

This investigation has taken the form of a case study as has recent research by Whitaker (2011) and Philpott-Skilton (2013). While the case study approach is ideal for gaining detailed information about the experiences and outcomes of the dual credit participants, it does not allow findings to be generalized beyond the population examined at the case study college. There are 24 colleges in the Ontario college system. Together, they deliver hundreds of Dual Credit Programs to thousands of students. It is time to design and implement studies that generate findings applicable to this wider population of participants.

Philpott-Skilton recommended that province-wide research be conducted to determine the postsecondary participation rates of dual credit students compared to high school graduates without dual credit experience. I support this recommendation and would like to extend it to include research that explores how dual credit participants across the province compare to their
non-dual credit peers in terms of other long-term outcomes like college engagement, persistence, and success, as well as post-college employment factors.

For years the inability to track Ontario students beyond secondary school was a barrier to conducting province-wide research on the post-program outcomes of dual credit participation. Recent changes executed by the Ontario Ministry of Education (MEDU) have removed this barrier. Each Ontario student is now assigned a numerical identifier called an Ontario Education Number (OEN) that appears on his or her student record and stays with the student from kindergarten (K) until the end of postsecondary education (16). The OEN is a part of the Managing Information for Student Achievement (MISA) initiative that MEDU has implemented in order to facilitate the collection and analysis of student data for the purpose of informing provincial education policy and decision making. In addition to the OEN component, MISA includes the Ontario School Information System (OnSIS), a web-based system that collects data from the educational sector, and the Elementary/Secondary Data Warehouse (ESDW), a storehouse that contains depersonalized and integrated ESDW data. With a comprehensive record system in place, Ontario researchers now have the capacity to collect data on students before, during, and after their involvement in Dual Credit Programs, including the period they spend in postsecondary education. Data can also be obtained on comparison students who were never dual credit participants. One of the implications of my findings is that research is needed that compares at-risk students who do and do not take dual credit courses in order to see how these two groups compare in high school completion and postsecondary education continuation.

The very first evaluative report on Ontario Dual Credit Programs (Armstrong et al., 2006) made the following recommendation regarding future research: “Dual credits/dual program success should be based on longitudinal studies that track credit accumulation, increased
secondary school graduation rates, increased college/skilled trades participation and success rates, and increased employment” (p. 54). More recently, Philpott-Skilton (2013) made a similar recommendation:

A longitudinal study should be conducted to track one or more cohorts of “at-risk” DC students and/or students in programs such as SWAC from entry into the program to graduation or withdrawal and beyond, if they re-enter education. This would provide insight into the relative persistence rates and academic achievement of “at-risk” DC students compared to all college students. More broadly, the question of how the graduation/persistence rate of all DC students compares to the average graduation rate of all students at college is also worthy of additional and longitudinal study to identify the long term impact of these programs. (p. 148)

In the US, informative longitudinal studies on the college student outcomes of Dual Credit/Dual Enrolment Programs have been conducted in states like Florida (Florida Department of Education, 2006; Karp et al., 2007), California (Wintermeyer, 2012), and Texas (Struel & Vargus, 2012) that maintain record systems permitting the tracking of students from high school to postsecondary education. The introduction of the OEN and related systems now make it possible to conduct such studies in Ontario. Moreover, School College Work Initiative (SCWI), the administrative structure that manages the province’s Dual Credit Programs, has the capacity to facilitate and support this type of research.

**Areas requiring further study.**

This case study found evidence in the form of faculty interview data that dual credit participants were more engaged at the postsecondary level than non-dual credit participants. Regarding college persistence, the two groups were found to be similar, according to student
record data. Finally, examination of student success indicators in the student records showed the dual credit group to be less academically successful at college than the non-dual credit group. Further research in the form of province-wide longitudinal studies are needed to determine if these findings hold true for Ontario dual credit participants in general. Fortunately, future researchers will be able to use the OEN to track students from high school to postsecondary education and beyond.

Analyses of the student record data of the dual credit participants in this study showed them to differ in college persistence depending on the number of dual credit courses that they took. Surprisingly, the study found that students who participated in two or three dual credit courses showed less persistence in college than those involved in only one course. Because this outcome has significant financial and policy implications, more research is needed to assess its validity.

In addition to examining the impact that varying quantities of college courses have on dual credit participants, future research should explore the influence of course quality on these learners. Studies should be conducted to determine if the college courses delivered to dual credit students are equivalent to those aimed at postsecondary college students. It is assumed that high school students participating in Dual Credit Programs are being exposed to college courses that are just as rigorous as comparable courses taken by postsecondary students but the evidence provided by this and other studies (Philpott-Skilton, 2013; Robinson; 2011) suggests that the dual credit course are less demanding. While providing dual credit students with “easy” college courses might benefit them in the short term by allowing students to accumulate credits and increase their college admission GPA, the practice likely has a negative impact on college preparedness, persistence, and success.
Another possible area of study involves the comparison of the congregated and integrated approach to dual credit course delivery to determine the model that better enhances the performance of dual credit participants.

Finally, Ontario-wide studies are needed to examine if and to what extent learning support services enhance the engagement, persistence, and success of dual credit participants both at the secondary and postsecondary level. Ideally, the culmination of this work will lead to identifying a package of support services that can be delivered to students across the province both while they are enrolled in Dual Credit Programs and after they transition to postsecondary education.

**Obstacles to research progress.**

If dual credit research is to grow and thrive in the province of Ontario, the barriers to progress must be acknowledged and removed. The experiences that I had in conducting this study helped me identify three obstacles that stand in the way of future research: insufficient data and participants, restrictive college Research Ethics Board (REB) practices, and inadequate funding and resources.

**Insufficient data and participants.**

This research required that I be given access to data contained in the college student records of two groups of students enrolled in Humber College postsecondary programs from Fall 2008 to Fall 2012: student who previously participated in dual credit at the College and students with no dual credit experiences. I asked Institutional Research staff to match the record of each dual credit participant with that of a non-dual credit comparator on the basis of six variables (noted on p. 110). This was to control for factors other than dual credit participation that had the capacity to exert influence on the student outcome variables of interest. Unfortunately, the records were
matched on only three variables (noted on p. 110). This happened because the Institutional Research team could not commit sufficient time to meeting my data needs.

The team also limited the amount of time they spent on recruiting student participants for the study. The College recruitment process consisted of sending four email messages to the former and current students associated with the academic record data that were released to me. Given that some of these individuals had left the college without updating their contact information, the recruitment messages where received by far fewer students than anticipated. This contributed to the study’s very low student survey response rates (4.8% of the 168 dual credit participants and 0.6% of the 168 non-dual credit participants) and student interview response rates (1.2% of the 168 dual credit participants and none of the non-dual credit participants). In order to be successful, research projects on the college student outcomes of Dual Credit Programs must have access to sufficient student data. This requires that Ontario colleges dedicate sufficient staff time and resources to providing that data.

The tendency of college students to avoid becoming involved in research as participants also contributed to the low student survey and interview response rates. Interestingly, even increasing incentives failed to encourage students to participate in the current study. With two other Ontario dual credit investigators (Philpott-Skilton, 2013; Whitaker, 2011) showing evidence of college students who were reluctant to participate in research, steps should to be taken to educate students at the college level about the purpose of research and the role that they can play as participants.

Another data-related impediment to research growth involves Government, particularly the education Ministry responsible for Dual Credit Programs. Each year School College Work Initiative (SCWI) oversees the collection of dual credit student data and arranges for that data to
be compiled into an annual report which is later released by MEDU. Over the years, I have waited for the release of each report knowing that it would contain information that was integral to my work. Too often, the report would be released long after the academic year that it involved. It would benefit researchers if in the future MEDU made relevant material available to independent researchers in a timely manner.

**College Research Ethics Board practices.**

One of my greatest challenges in conducting this research involved the college REB-process. In contrast to what I experienced at the university level, ethics review at the college level was lengthy, confusing, and marked by unexpected delays. At one point, I was required to submit an amendment to my ethics protocol on account of the REBs narrow reading of the Tri-Council Policy Statement 2 (TCPS2). This resulted in a long delay to my project. When I requested that an expedited (i.e., delegated) review be conducted, I was told that the College did not do such reviews. Apparently, the problems I encountered are not unique to the case study college. Ontario College REBs in general are unclear about aspects of TCPS2, as evidenced by a recent presentation designed to help REB members better understand the obligations, accountability, and liability of REBs (Janzen, 2014). The inexperience of College REBs is to be expected given that research has only recently taken root in Ontario colleges and REBs have been in place there for a short period of time. Still, the tendency of college REBs to narrowly interpret Tri-Council policy and to extend review periods well beyond what is typical at universities, are barriers that must be removed. Research involving Ontario colleges, including studies investigating Dual Credit Programs, would benefit from a system-wide evaluation of college REB practices.
Inadequate funding and resources.

Research is needed to inform Ontario Dual Credit Programs but projects require adequate funding and resources. My experiences have shown me that colleges are limited when it comes to the funding and resources that they can dedicate to dual credit projects. I also learned that while SCWI encourages independent researchers and appreciates their efforts, it does not make adequate funding available to them. With the introduction of the OEN and related systems that enable researchers to conduct province-wide longitudinal studies on dual credit phenomena, it is important that funding sources be available that will sustain that work.

Dissemination of Findings

In order for this study to help generate new research and influence policy, the findings must be shared with researchers, practitioners, and policy makers in the dual credit area. I began the process of disseminating my findings on May 13, 2014 when I delivered a presentation on the study findings in progress at the SCWI Spring Symposium in Toronto. The SCWI symposium is an annual event involving school board and college staff, faculty, and administrators, as well government personnel from the two provincial education ministries: MEDU and the Ministry of Training, Colleges and Universities (MTCU). Focusing on dual credit and other initiatives, the symposium provides participants with presentations, workshops, and networking opportunity sessions meant to increase and improve the transitions of secondary school students to college.

In the future, I look forward to sharing my findings at other conferences. In 2008, I attended the annual Association of Canadian Community College Conference (ACCC) to discuss my work as a dual credit professor and found it to be an excellent forum for exchanging information on Canadian dual credit practices and research. I have submitted a proposal to present the findings of this dissertation at the 2015 annual Colleges and Institutes of Canada (CICan,
previously ACCC) conference. Another conference that I have applied to present at is the 2015 National Institute for Staff and Organizational Development (NISOD) Annual International Conference on Teaching and Learning Excellence. Held in Austin, Texas, the NISOD conference brings together educators and scholars from around the world to discuss best practices designed to improve the success of students at community and technical college. I led a round table session at the conference in 2009 where I discussed Ontario’s approach to dual credit education. I welcome the opportunity to return in 2015 to share the findings of this study and learn about recent work in the dual credit area.

I also plan to submit papers based on my research for publication in scholarly journals. Given that my study centers on Ontario Dual Credit Programs, I would like to have my work appear in journals like *The College Quarterly* that are accessed by Ontario dual credit researchers, practitioners, and policy makers. Other Journals that I am considering include the *Canadian Journal of Higher Education*, and *Higher Education in Review*.

**Overall Conclusion**

The overarching research question that drove this study was: What impact does participation in Dual Credit Programs have on college student experience and outcome? The case study explored the extent of college preparation, engagement, persistence, and success among dual credit participants and non-dual credit participants. Study findings suggested that dual credit involvement helped prepare students for college but the college preparation of these students might have been enhanced if they were better connected to learning support services. Regarding college engagement, evidence from this study revealed that students with dual credit backgrounds were more engaged than non-dual credit comparators but the engagement mainly involved course-related academic activities. While the dual credit and non-dual credit groups
were not found to be different in college persistence, they did show differences in college success with the former group displaying lower levels of academic performance.

This research was informed by the Theory of Involvement (Astin, 1993), the Theory of Integration (Tinto, 1993), Validation Theory (Rendón, 1994), the concept of information networks (Karp et al., 2008), and the concept of anticipatory socialization (Merton, 1957). It also drew from one implicit (Bailey & Karp, 2008) and two explicit (Karp & Hughes, 2008; Philpott-Skilton, 2013) dual credit conceptual models. The explicit framework introduced by Philpott-Skilton was revised and extended based on the findings of the study.

In addition to contributing to a conceptual model that explains Ontario Dual Credit Programs, this research has the capacity to influence dual credit policy and practice, especially through the suggestion that Dual Credit Programs provide participants with a more authentic college experience before they transition to postsecondary education and better learning supports pre- and post-college transition. The findings of this study can also guide future research in the dual credit area. My suggestion is that upcoming projects take the form of province-wide longitudinal studies capable of exploring how and to what extent Dual Credit Programs impact the long-term outcomes of participants in general, not just those at select colleges. Such projects should compare dual credit participants and non-dual credit participants on college preparation, engagement, persistence and success, as well as on post-college outcomes related to employment. They should also explore how dual credit participants are impacted by the quantity and quality of the dual credit courses they take and by the learning supports and services they are connected to. Finally, it is important for future dual credit investigators to be aware of the barriers to research, in the form of insufficient data and participants, restrictive college REB
practices, and insufficient funding and resources. The recognition and removing these obstacles will allow dual credit research to flourish in Ontario.
References


Appendix A

Letter Requesting Consent to Name Study College

OISE
ONTARIO INSTITUTE FOR STUDIES IN EDUCATION
UNIVERSITY OF TORONTO

Thursday, August 30, 2012

Dr. Chris Whitaker, President
Humber Institute of Technology and Advanced Learning
205 Humber College Blvd.
Toronto, Ontario

Dear Dr. Whitaker,

I am a doctoral student at the Ontario Institute for Studies in Education at the University of Toronto and a professor at Humber College in the School of Liberal Arts and Sciences. I will soon conduct a research project under the supervision of Dr. Peter Dietsche entitled *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual credit Participants in One Ontario College*. As the project involves Humber College students and faculty, I require your written consent to name the college in my thesis and in any journal articles or conference presentations. The research has received ethical clearance from Humber College and the University of Toronto and administrative consent from Dr. Michael Hatton, Humber’s Vice-President, Academic.

As you know, dual credit programs are offered across Ontario and are meant to help students, especially those who are classified as “disengaged and underachieving”, complete high school and prepare for postsecondary education. The purpose of my research is to investigate the impact that dual credit participation has on college student experience and outcome. Taking the form of a case study, the research will evaluate and compare dual credit and non-dual credit students enrolled in Humber College postsecondary programs from Winter 2007 to Winter 2012. Data will come from three main sources: student records, a survey and interviews involving students, and interviews with college faculty who have worked with both dual credit participants and non-participants.

My involvement in dual credit dates back to Winter 2007 when I launched the province’s first academic dual credit course, Social Psychology. Since that time, I have interacted with hundreds of dual credit students, participated in several School College Work Initiative (SCWI) symposia, forums, and projects, and presented on dual credit at national and international conferences. I also have experience in dual credit research, having conducted a study in Fall 2010 with Humber College colleagues that examined and tracked students who were enrolled in dual credit courses at the College from Winter 2007 to Fall 2009.
The dual credit initiative has grown tremendously over the years and more research is needed to test program effectiveness. Humber College has made important contributions to this endeavor and I hope that, through my research, I can help the collage maintain its leadership role in dual credit education.

Thank you in advance for your cooperation and support.

Sincerely, 

Rena Borovilos  
Ph.D. Candidate, Department of Leadership,  
Higher and Adult Education, OISE, University of Toronto/Professor, School of Liberal Arts and Sciences,  
Humber College
Appendix B

Letter Granting Consent to Name Study College

Chris Whitaker,
President & CEO
Humber Institute of Technology
& Advanced Learning
205 Humber College Boulevard
Toronto, Ontario, Canada  M9W 5L7
Tel: 416.675.6622 ext. 4853 Fax: 416.675.3154
chris.whitaker@humber.ca

September 5, 2012

Re:  OISE Community College Leadership PhD Program

I am pleased to grant my consent to use Humber College's name in your thesis research project entitled - The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-Dual Credit Participants in the One Ontario College and in any other related publications and conference presentations.

Continued research that supports the positive impact on participation in dual credit programs helps raise the profile and value of these innovative programs.

Yours truly,

Chris Whitaker
Appendix C

School College Work Initiative (SCWI) Organizational Chart

Ministry of Education (EDU) and Ministry of Training Colleges and Universities (MTCU)

Council of Ontario Directors of Education (CODE)

SCWI Project Manager ↔ Co-Management Team (CMT)

SCWI Project Officer ↔ Liaison Team (LT)

16 Regional Planning Teams (RPTs)

RPT Chair
RPT Coordinator
Financial Services Coordinator

EDU Rep
MTCU Apprentice-
College Reps
District School Board Reps
Industry Partner Reps
Appendix D

School College Work Initiative Regional Planning Team Partners

Regional Planning Team 1: Cambrian

Sudbury Catholic District School Board; Rainbow District School Board; Cambria College

Regional Planning Team 2: Greater Toronto Area

Dufferin Peel Catholic District School Board; Halton Catholic District School Board; Halton District School Board; Peel District School Board; Toronto District School Board; Toronto Catholic District School Board; Upper Grand District School Board; York Region District School Board; York Catholic District School Board; Centennial College, Georgian College; George Brown College; Humber Institute of Technology and Advanced Learning; Seneca College; Sheridan Institute of Technology and Advanced Learning

Regional Planning Team 3: Inter Ontario (langue Française)

Conseil scolaire catholique Franco-Nord; Conseil scolaire de district catholique des Aurores boréales; Conseil scolaire catholique de district des Grandes Rivières; Conseil scolaire catholique du Nouvel-Ontario; Conseil scolaire public du Grand-Nord de l’Ontario; Conseil scolaire public du Nord-Est de l’Ontario; Collège Boréal

Regional Planning Team 4: Northeastern Ontario

District School Board Ontario North East; Northeastern Catholic District School Board; Northern Lights Secondary School Board; Northern College of Applied Art and Technology; Moose Cree Education Authority

Regional Planning Team 5: Grand River

Brant Haldimand Norfolk Catholic District School Board; Grand Erie District School Board; Fanshawe College, James N. Allen Campus; Mohawk College, Brantford Campus

Regional Planning Team 6: Eastern Lakeshore

Durham Catholic District School Board; Durham District School Board; Kawartha Pine Ridge District School Board; Peterborough, Victoria, Northumberland and Clarington Catholic District School Board; Trillium
Regional Planning Team 7: Grand Connections

Avon Maitland District School Board; Huron Perth Catholic District School Board; Thames Valley District School Board; Upper Grand District School Board; Waterloo Catholic District School Board; Waterloo Region District School Board; Wellington Catholic District School Board; Conestoga College Institute of Technology and Advanced Learning; London District Catholic School Board

Regional Planning Team 8: Nipissing Perry Sound

Conseil scolaire public du Nord-Est de l’Ontario; Conseil scolaire Catholique Franco-Nord; Near North District School Board; Nipissing-Parry Sound Catholic District School Board; Nipissing Secondary School; Canadore College; Sault College; Modern College; Labour Market Group; Nipissing University; Yes! Employment

Regional Planning Team 9: Partnering to Achieve Student Success

Algonquin & Lakeshore Catholic District School Board; Catholic District School Board of Eastern Ontario; Hastings and Prince Edward District School Board; Limestone District School Board; Ottawa Catholic District School Board; Ottawa-Carleton District School Board; Renfrew County District School Board; Renfrew County Catholic District School Board; Upper Canada District School Board; Algonquin College - Pembroke, Perth, Woodroffe Campuses; Loyalist College; St. Lawrence College - Brockville, Cornwall, Kingston Campuses; Ottawa Network for Education; Vitesse Re-Skilling Canada Inc.

Regional Planning Team 10: South Western Ontario

Lambton Kent District School Board; Thames Valley District School Board; St. Clair Catholic District School Board; Huron Perth Catholic District School Board; Avon Maitland District School Board; London Catholic District School Board; Kenora Catholic District School Board; Greater Essex District School Board; Windsor Essex Catholic District School Board; Lambton College; Fanshawe College; St. Clair College

Regional Planning Team 11: Northwestern Ontario

Keewatin-Patricia District School Board; Kenora Catholic District School Board; Lakehead District School Board; Northwest Catholic District School Board; Rainy River District School Board; Superior North Catholic District
School Board; Superior Greenstone District School Board; Thunder Bay Catholic District School Board; Confederation College

Regional Planning Team 12: L’Est Ontarien

Conseil des écoles catholiques du Centre-Est; Conseil des écoles publiques de l’Est de l’Ontario; Conseil scolaire de district catholique de l’Est ontarien; Centre Jules-Léger; La Cité collégiale; Collège Boréal

Regional Planning Team 13: Central Lakes

Bluewater District School Board; Bruce-Grey Catholic District School Board; Simcoe County District School Board; Simcoe Muskoka Catholic District School Board; Trillium Lakelands District School Board; Georgian College

Regional Planning Team 14: Golden Horseshoe

Business Education Council of Niagara; District School Board of Niagara; Grand Erie District School Board; Halton Catholic District School Board; Halton District School Board; Halton Industry Education Council; Hamilton Wentworth Catholic District School Board; Hamilton-Wentworth District School Board; Industry Education Council of Hamilton; Mohawk College; Niagara Catholic District School Board; Niagara College; Niagara Workforce Planning Board; Sheridan College

Regional Planning Team 15: Algoma

Algoma District School Board; Huron-Superior Catholic District School Board; Sault College of Applied Arts and Technology

Regional Planning Team 16: Centre Sud-Ouest de l’Ontario

Conseil scolaire de district catholique du Centre-Sud; Conseil scolaire Viamonde; Conseil scolaire de district des écoles catholiques du Sud-Ouest; Collège Boréal; La Cité collégiale
Appendix E

Selection Criteria for Admission to Dual Credit Programs: Disengaged and Underachieving Students

Suitability is determined on the basis of one or more of the following:

- student application
- review of student’s OSR and credit counselling summary
- interview with the student
- recommendation of teachers
- discussion among members of the Student Success team regarding the options that provide the best fit with the student’s interests, strengths, and needs

The Student Success team may find the following helpful in determining which students are most likely to benefit from the program.

Evidence that a student is disengaged

The student:

- has had numerous absences;
- has previously dropped out or is at risk of dropping out;
- is out of school but reluctant to return to secondary school for non-academic reasons;
- displays a lack of involvement or engagement in school or community activities;
- sees little connection between secondary school and his or her preferred future;
- lacks confidence in his or her ability to succeed;
- is unsure of his or her pathway beyond secondary school;
- is in need of career clarification.

Evidence that a student is underachieving

The student:

- has fewer credits than average for his or her grade and is therefore not on track to graduate on time;
- is older than other students in his or her grade;
- was making progress earlier, but progress has slowed;
- is demonstrating a decline in achievement or marks over time.

Evidence that a student has the potential to succeed

The student:

- has completed most or all compulsory credits;
can potentially graduate within one year (e.g., already has 22 or more credits) if provided with support;
- demonstrates that issues that were previously preventing success have been or are being addressed;
- demonstrates interest in and commitment to the dual credit program;
- is motivated to improve skills and work habits;
- demonstrates evidence of independent earning skills;
- demonstrates an appropriate maturity level;
- if he or she previously left high school and has since returned, demonstrates progress in courses in the first semester, which will enable him or her to start a dual credit program in the second semester;
- demonstrates progress, maturity, motivation, or skills in activities outside the school setting.

For success in dual credit college courses, the student should:

- have had some success in college preparation courses.

For success in Level 1 apprenticeship in-school programs, the student should:

- have a strong interest in a specific trade;
- have related work or volunteer experience;
- have had success in a cooperative education program.

(Ontario Ministry of Education, 2013a, pp. 24-26)
## Appendix F

### Initial College Postsecondary Programs of 203 Dual Credit Participants

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<tr>
<th>Program</th>
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### Appendix G

Initial College Postsecondary Programs of Matched 168 Dual Credit Participants and 168 Non-dual Credit Participants

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Appendix H

Confidentiality Agreement between Principle Investigator and Research Assistant

OISE
ONTARIO INSTITUTE FOR STUDIES IN EDUCATION
UNIVERSITY OF TORONTO

Project Title: The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College

Investigator: Rena Borovilos

Research Assistant: [RESEARCH ASSISTANT’s NAME]

I, [RESEARCH ASSISTANT’s NAME], agree to:

1. keep all information shared with me by the participants in this project confidential;

2. keep all research information secure while it is in my possession;

3. release (to the Investigator or Manager, Institutional Research), erase, or destroy all research information, under the direction of the Investigator, when I have completed the research tasks.

I, [RESEARCH ASSISTANT’s NAME], understand the confidentiality expectations associated with this study and agree to adhere to those expectations.

Research Assistant:

(print name)   (signature)   (date)

Investigator:

(print name)   (signature)   (date)
Appendix I

Email Messages to Prospective Student Survey Participants

First Date Sent: February 26, 2013
Email Subject: A research project that may be of interest to you

Dear Student,

Humber has been advised of a research project that may be of interest to you. The project is entitled *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College* and has been approved by Humber's Research Ethics Board. If you would like to find out more about this project, including an estimate of the time commitment required and information on incentives offered for participants, please contact the Research Assistant affiliated with the study, XXX, at [email address] or [phone number].

Regards,

Ruth Mackay
Director, Planning and Government Relations at Humber College
Humber Institute of Technology and Advanced Learning

Second Date Sent: March 19, 2013
Email Subject: It’s not too late to participate! - A research project that may be of interest to you

Dear Student,

Humber has been advised of a research project that may be of interest to you. The project is entitled *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College* and has been approved by Humber’s Research Ethics Board. If you would like to find out more about this project, including an estimate of the time commitment required and information on incentives offered for participants, please contact the Research Assistant affiliated with the study, XXX, at [email address] or [phone number].

Regards,

Ruth MacKay
Director, Planning and Government Relations
Humber Institute of Technology and Advanced Learning
Dear Student,

Humber has been advised of a research project that may be of interest to you. The project is entitled *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College* and has been approved by Humber’s Research Ethics Board. Participants will complete an online survey that takes approximately 10 minutes and are eligible for a draw of $5, $10, $20 or $50 Tim Hortons gift cards. For more information, please contact the Research Assistant affiliated with the study, XXX, at [email address] or [phone number].

Regards,

Ruth MacKay
Director, Planning and Government Relations
Humber Institute of Technology and Advanced Learning
Appendix J

Email Response to Prospective Survey Participants

Hi [NAME OF PROSPECTIVE STUDENT SURVEY PARTICIPANT],

Thank you for showing interest in our research project on the impact of Dual Credit programs on college students. My name is XXX and I am a Research Assistant to Rena Borovilos, the study’s primary investigator. Rena is interested in comparing the college experiences of past and present Humber postsecondary students who were and were not involved in dual credit programs during their high school years. The attached Letter of Invitation and Information will provide you with more information about the research and the short online survey that we would like you to complete.

If you chose to participate in the College Student Experiences Survey, please read the following before clicking on the survey link appearing below.

1) It will take you about 10 minutes to answer all the questions.

2) Your ASSIGNED NUMERICAL CODE is XXX. Be sure to enter this code when prompted as it assures your anonymity and qualifies you for the prize draw of $5, $10, $20, and $50 gift cards.

3) If you do not answer all the questions (including the “other” alternative) on a page of the survey, a response box will appear telling you “You didn’t answer all the questions. Are you sure you want to continue?”. Clicking “cancel” will keep you on the same page and allow you to complete the unanswered question(s), while clicking “OK” will move you to the next page. You can also go back to earlier parts of the survey by clicking the arrow on the top left part of the page.

4) In addition to the survey, our study also involves face-to-face interviews with some of our survey participants. Your answer to the last question of the survey will let us know if you are interested in volunteering for an interview.

Here is the link to the College Student Experiences Survey. Remember, your

ASSIGNED NUMERICAL CODE is XXX:

Please feel free to get in touch if you have any questions about the study.

Kind Regards,

XXX

Research Assistant, Impact of Dual Credit Research Project

Humber Institute of Technology and Advanced Learning

205 Humber College Blvd.

Toronto, Ontario M9W 5L7

[phone number]
Appendix K

Letter of Invitation and Information to Prospective Student Survey/Interview Participants

OISE
ONTARIO INSTITUTE FOR STUDIES IN EDUCATION
UNIVERSITY OF TORONTO

LETTER OF INVITATION AND INFORMATION TO PROSPECTIVE SURVEY/INTERVIEW PARTICIPANTS

The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College

Dear Prospective Participant,

I am a doctoral student at the Ontario Institute for Studies in Education at the University of Toronto and a professor at Humber College in the School of Liberal Arts and Sciences who is conducting a research study under the supervision of Professor Peter Dietsche in order to better understand the college experiences and outcomes of students who have previously completed dual credit programs. Dual credit programs are offered to high school students across Ontario and are meant to help students prepare for college.

The purpose of the study is to explore and compare the academic and social experiences of Humber College postsecondary students who were and were not previously involved in dual credit programs.

Findings from the research, to be reported in a doctoral thesis and presented in educational journals and/or at conferences, will be used to strengthen programs that prepare students for college.

If you choose to participate in this study, you will be asked to complete an online survey questionnaire that will take approximately 10 minutes of your time and ask about your experiences at Humber College. The questionnaire will not ask you to include any information that can personally identify you, such as your name, student number, or contact information. A
password and link to the survey questionnaire will be provided by XXX, my research assistant. Once you complete the questionnaire, your name will be entered in a draw for $5, $10, $20, and $50 gift certificates.

We will also be conducting face-to-face interviews with a few of our survey participants. Interviews will be conducted by a research assistant at Humber College, take approximately 30 minutes to complete, and be audio-taped and transcribed with the permission of the participant. Interview transcripts will not contain any personally identifying information. Survey participants who would like to volunteer for an interview can let us know by answering the final question of the survey questionnaire. All interview participants will receive a $20 gift certificate.

In order to fully assess the college experiences and outcomes of the participants involved in the study, Humber College will provide access to student records but only by a numerical code. Student record information will be linked to survey and interview responses for the purpose of analysis. Please note that the student records provided to me by Humber College will contain no student names, student numbers, or any other personally identifying information. I will therefore not be able to match any student to their student record.

Participation in this study is completely voluntary. If you choose to participate, please be assured that no value judgements will be placed on your responses. Moreover, while the name of the college may be identified in the final report, all information that you provide will be made anonymous so as to not identify you in any way. As a participant in this research, you may withdraw at any time without any penalty whatsoever. Data collected from participants who choose to withdraw will be destroyed and not be part of the results of the study.

All data from this study will be stored in a secure way at Humber College. Hardcopies of anonymized survey questionnaires, interview transcripts, and student records will be locked in a cabinet in my Humber College office that only I have access to. Consent forms completed by interview participants will be stored under lock and key in the office of the College’s Manager, Institutional Research. Electronic survey, transcript, and student record will be secured on a
password-protected file in an encrypted hard-drive in my office. The hard-drive will have no network access.

The results of the study can be obtained upon completion of the final report which will be located in the OISE/UT thesis collection and which can be accessed electronically in the University of Toronto Research Repository (T Space) at https://tspace.library.utoronto.ca/handle/1807/9944.

If you have any questions about this study please contact my research assistant XXX, [email address], [phone number] or thesis supervisor (Peter Dietsche, peter.dietsche@utoronto.ca, 416-978-1217) at any time. If you have questions about your rights as a participant in this study, please contact the Office of Research Ethics at the University of Toronto (ethics.review@utoronto.ca, 416-946-3273) or the Research Ethics Board at Humber College (reb@humber.ca).

Thank you for your consideration to participate in the research.

Sincerely,

Rena Borovilos
Ph.D. Candidate, Department of Leadership, Higher and Adult Education
OISE/University of Toronto
E-mail: rena.borovilos@utoronto.ca
Telephone: 675-6622

Dr. Peter Dietsche
William G. Davis Chair in Community College Leadership/
Department of Leadership, Higher and Adult Education
OISE/University of Toronto
E-mail: peter.dietsche@utoronto.ca
Telephone: 416-978-1217
Appendix L

Student Survey Recruitment Poster

Have you completed a

DUAL CREDIT PROGRAM

at Humber?

If so, we invite you to participate
in a 10-minute online survey

As a participant, you will qualify for a
prize draw of $5, $10, $20, & $50 gift cards

Please contact XXX at
[email address]
or 416-675-6622, Ext. XXX
Appendix M

Email Response to Prospective Student Interview Participants

Hi [NAME OF PROSPECTIVE STUDENT INTERVIEW PARTICIPANT],

Thank you for volunteering to be an interview participant in the Impact of Dual Credit Research Project. My name is XXX and I am the Research Assistant who will be conducting your interview. As stated in the Letter of Invitation and Information (attached) that you initially received from XXX, the face-to-face interview will take approximately 30 minutes to complete, be conducted at a convenient time on a Humber College Campus (North, Lakeshore, Orangeville) of your choice, and earn you a $20 gift card.

The interview will be audio taped and transcribed, with your permission, and you will have a chance to review your interview transcript for errors or omissions. It is important to note that your interview transcript will not contain any personal information like name, contact information, or student number. This will ensure that your anonymity will be maintained in your transcript as well as in all published documents and presentations that result from the study.

You are welcome to consult the attached Informed Consent Letter for more information about the interview process and your rights as a participant. I will review the consent letter with you prior to the interview and provide you with a copy of the completed form for your records.

Please let me know on which Humber Campus you prefer to meet for the interview and the best dates and times for us to get together.

If you have any questions about the study, please do not hesitate to ask.

Kind Regards,

XXX
Research Assistant, Impact of Dual Credit Research Project
Humber Institute of Technology and Advanced Learning
205 Humber College Blvd.
Toronto, Ontario M9W 5L7
[phone number]
Appendix N

Informed Consent Letter for Student Interview Participants

OISE
ONTARIO INSTITUTE FOR STUDIES IN EDUCATION
UNIVERSITY OF TORONTO

Informed Consent Letter for Student Interview Participants

I understand the nature and purpose of the research study which has been outlined in the information letter. I have read this letter and am aware of the conditions under which I will participate in this study.

My signature below also indicates that:

I am voluntarily deciding to participate in this study and am free to withdraw at any time without penalty or explanation. If I decide to withdraw, I understand that any information collected from me will not be used in the study's findings. I also have the right to refuse to respond to questions that I am uncomfortable with.

I understand that at no time will I be judged, evaluated, or at risk of harm.

I understand that the responses that I provide during the interview will be treated as confidential.

I understand that my student record information will be linked to my interview responses but because the records provided to the investigator by Humber College contain only a numerical code and no personal identifiers, the investigator and her affiliates will not be able to match my interview responses to my student record.

I understand that the interview will be audio taped and transcribed, with my permission. I will have an opportunity to review my interview transcript for errors or omissions. My transcript will be sent to me by e-mail within two weeks of the interview and I will return it in no more than two weeks with any comments that I might have.

I understand that interview transcripts will not contain any personally identifying information. This will ensure that the investigator and her supervisor will not be able to identify me on the basis of my transcript. My identity will also remain confidential in all published documents and presentations based on the research.

I understand that data in which there is identifying information, including this interview consent form and the list of participant names and numerical codes, will be stored in a secure manner under lock and key or on a password-protected file in an encrypted hard drive (with no network access) in the office of Humber College’s Manager, Institutional Research. The numerical codes list, consent forms, and interview transcripts will be destroyed upon completion of the investigator’s thesis.
I am aware that I can obtain the results of the study upon completion of the final report which will be located in the OISE/UT thesis collection and which can be accessed electronically in the University of Toronto Research Repository (T Space) at https://tspace.library.utoronto.ca/handle/1807/9944

I understand that the interview will be held in a private room at the Humber College campus of my choosing.

I am aware that I will receive a $20 gift card for participating in the interview.

With this knowledge,

☐ I agree to participate in an interview.

☐ I agree to have my interview taped and transcribed.

☐ I do not agree to participate in an interview.

______________________________
Name of Participant

______________________________         _______________________________        Signature
of Participant                                               Date

If you have any questions or concerns about this study, please contact XXX [email address], [phone number].

Please keep a copy of this consent form for your records.
Appendix O

Email Message to Prospective Faculty Interview Participants

Hello [NAME OF PROSPECTIVE FACULTY INTERVIEW PARTICIPANT],

I am contacting you at the request of LAS faculty member Rena Borovilos who is conducting a research project entitled *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College*. Approved by both Humber College and the University of Toronto Research Ethics Boards and supported by Humber President Chris Whitaker, this study seeks to explore and compare the academic and social experiences of postsecondary students who previously completed a dual credit program and postsecondary students who were never dual credit participants. The research involves an online student survey, student interviews, and interviews with faculty members.

Please consider volunteering for the faculty interview portion of this study. As someone who has interacted (in class or otherwise) with both dual credit and non-dual credit postsecondary students, you have valuable insights that the researcher would like to know about. The face-to-face faculty interview will take approximately 30 minutes of your time and be conducted by XXX, Rena’s Research Assistant, on a Humber College Campus and at a time that is convenient for you.

Note that all interview participants will remain anonymous as no personal identifiers will be included in interview transcripts or subsequent research reports.

The attached *Letter of Invitation and Information* and *Informed Consent Letter* will provide you with additional information about the study. If you have any questions or would like to arrange an interview, please contact XXX at [email address] or [phone number].

On Rena’s behalf, I thank you for considering participating in this research project.

Best Regards, [NAME OF DUAL CREDIT COORDINATOR]
Appendix P

Letter of Invitation and Information to Prospective Faculty Interview Participants

OISE
ONTARIO INSTITUTE FOR STUDIES IN EDUCATION
UNIVERSITY OF TORONTO

LETTER OF INVITATION AND INFORMATION TO PROSPECTIVE FACULTY INTERVIEW PARTICIPANTS

The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College

Dear Prospective Participant,

I am a doctoral student at the Ontario Institute for Studies in Education at the University of Toronto and a professor at Humber College in the School of Liberal Arts and Sciences who is conducting a research study under the supervision of Professor Peter Dietsche in order to better understand the college experiences and outcomes of students who previously completed dual credit programs. Dual credit programs are offered to high school students across Ontario and are meant to help students prepare for college.

The purpose of the study is to explore and compare the academic and social experiences of Humber College postsecondary students who were and were not previously involved in dual credit programs. The study will involve an online student survey, student interviews, and interviews with faculty who have knowingly worked with postsecondary students with and without dual credit experience. Findings from the research, to be reported in a doctoral thesis and presented in educational journals and/or at conferences, will be used to strengthen programs that prepare students for college.

If you choose to participate in this study, you will be asked to complete a face-to-face interview on Humber College campus and asked to compare dual credit and non-dual credit postsecondary students. The interview will be conducted by my research assistant, take approximately 30 minutes to complete, and be audio taped and transcribed, with your permission.

Participation in this study is completely voluntary. If you choose to participate, please be assured that no value judgements will be placed on your responses. Moreover, while the college may be identified in the final report, all information that you provide will be made anonymous so as to not identify you in any way. As a participant in this research, you may withdraw at any time without any penalty whatsoever. Data collected from participants who choose to withdraw will be destroyed and will not be part of the results of the study.

All data from this study will be stored in a secure way at Humber College. Hardcopies of interview transcripts will be locked in a cabinet in my Humber College office that only I have access to. Consent letters will be stored under lock and key in the office of the College’s
Manager, Institutional Research. Electronic data will be secured on a password-protected file in an encrypted hard-drive in my office. The hard-drive will have no network access.

The results of the study can be obtained upon completion of the final report which will be located in the OISE/UT thesis collection and which can be accessed electronically in the University of Toronto Research Repository (T Space) at https://tspace.library.utoronto.ca/handle/1807/9944

If you have any questions about this study please contact my research assistant (XXX [email address], [phone number]) or thesis supervisor (Peter Dietsche, peter.dietsche@utoronto.ca, 416-978-1217) at any time. If you have questions about your rights as a participant in this study, please contact the Office of Research Ethics at the University of Toronto (ethics.review@utoronto.ca, 416-946-3273) or the Research Ethics Board at Humber College (reb@humber.ca).

Thank you for your consideration to participate in the research.

Sincerely,

Rena Borovilos
Ph.D. Candidate, Department of Leadership, Higher and Adult Education
OISE/University of Toronto
E-mail: rena.borovilos@utoronto.ca
Telephone: 675-6622

Dr. Peter Dietsche
William G. Davis Chair in Community College Leadership/
Department of Leadership,
Higher and Adult Education
OISE/University of Toronto
E-mail: peter.dietsche@utoronto.ca
Telephone: 416-978-1217
Informed Consent Letter for Faculty Interview Participants

I understand the nature and purpose of the research study which has been outlined in the information letter. I have read this letter and am aware of the conditions under which I will participate in this study.

My signature below also indicates that:

I am voluntarily deciding to participate in this study and am free to withdraw at any time without penalty or explanation. If I decide to withdraw, I understand that any information collected from me will not be used in the study's findings. I also have the right to refuse to respond to questions that I am uncomfortable with.

I understand that at no time will I be judged, evaluated, or at risk of harm.

I understand that the responses that I provide during the interview will be treated as confidential.

I understand that the interview will be audio taped and transcribed, with my permission. I will have an opportunity to review my interview transcript for errors or omissions. My transcript will be sent to me by e-mail within two weeks of the interview and I will return it in no more than two weeks with any comments that I might have.

I understand that interview transcripts will not contain any personally identifying information. This will ensure that the investigator and her supervisor will not be able to identify me on the basis of my transcript. My identity will also remain confidential in all published documents and presentations based on the research. I understand that because they contain identifying information, all letters of consent will be stored in a secure manner under lock and key in the office of Humber College’s Manager, Institutional Research. Hard copies of interview transcripts will be stored in a locked cabinet in the investigator’s Humber College office. All electronic data will be stored on a password-protected file in an encrypted hard drive, with no network access, in the investigator’s College office. The consent forms and interview transcripts will be destroyed upon completion of the investigator’s thesis.

I am aware that I can obtain the results of the study upon completion of the final report which will be located in the OISE/UT thesis collection and which can be accessed electronically in the University of Toronto Research Repository (T Space) at
I understand that the interview will be conducted in a private room at the Humber College campus of my choosing.

With this knowledge,

☐ I agree to participate in an interview.

☐ I agree to have my interview taped and transcribed.

☐ I do not agree to participate in an interview.

__________________________________________
Name of Participant

__________________________________________   ____________________________
Signature of Participant                                               Date

If you have any questions or concerns about this study, please contact XXX ([email address], [phone number]).

Please keep a copy of this consent form for your records.
Appendix R

Approval Letter from University of Toronto Research Ethics Board

PROTOCOL REFERENCE # 28024
August 20, 2012

Dr. Peter Dietsche                                             Ms. Rena Borovilos
OISE/UT: DEPT. OF THEORY & POLICY STUDIES IN EDUC.         OISE/UT: DEPT. OF THEORY & POLICY IN EDUC.
OISE/UT                                                   OISE/UT

Dear Dr. Dietsche and Ms. Rena Borovilos,

Re: Your research protocol entitled, "The impact of dual credit programs on college students: A comparative study of dual credit participants and non-dual credit participants in one Ontario college"

ETHICS APPROVAL

Original Approval Date: August 20, 2012
Expiry Date: August 19, 2013
Continuing Review Level: 1

We are writing to advise you that the Social Sciences and Humanities Research Ethics Board (REB) has granted approval to the above-named research protocol under the REB's delegated review process. Your protocol has been approved for a period of one year and ongoing research under this protocol must be renewed prior to the expiry date.

Any changes to the approved protocol or consent materials must be reviewed and approved through the amendment process prior to its implementation. Any adverse or unanticipated events in the research should be reported to the Office of Research Ethics as soon as possible. Please ensure that you submit an Annual Renewal Form or a Study Completion Report 15 to 30 days prior to the expiry date of your current ethics approval. Note that annual renewals for studies cannot be accepted more than 30 days prior to the date of expiry.
If your research is funded by a third party, please contact the assigned Research Funding Officer in Research Services to ensure that your funds are released.

Best wishes for the successful completion of your research.

Yours sincerely,

Margaret Schneider, Ph.D.       Sarah Wakefield, Ph.D.       Dean Sharp
C.Psych                                     REB Co-Chair                        REB Manager
REB Co-Chair

OFFICE OF RESEARCH ETHICS
McMurrich Building, 12 Queen's Park Crescent West, 2nd Floor, Toronto, ON M5S 1S8 Canada
Tel: +1 416 946-3273 • Fax: +1 416 946-5763 • ethics.review@utoronto.ca • http://www.research.utoronto.ca/for-researchers-administrators/ethics/
Appendix S

Approval Letter from Humber College Research Ethics Board

July 11, 2012

Rena Borovilos
School of Liberal Arts and Sciences

At the June 6 meeting of the Humber Research Ethics Board, your project, *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College*, was approved pending revisions. These revisions are now complete.

Your protocol number is 0186. Please use this number for any application for amendment or continuation.

Your project has been approved for one calendar year from the date of approval, until June 6, 2013. If you require an extension, or you revise your research methodology, please visit www.humber.ca/research to locate the appropriate form.

When you complete your project, please submit a copy of the Completion Report for the project, along with a copy of the document, paper or other artifact that results from your research. The form for this report can also be found on the Humber research website.

Congratulations and best wishes as you pursue your research interests.

Sincerely,

Patricia Morgan
Chair, Humber REB

cc. Jason Galea
Paula Gouveia
Appendix T

Letter from Humber College Research Ethics Board Approving Amendment Request

19 February 2013

Rena Borovilos
School of Liberal Arts and Sciences

Dear Rena,

Your request for amendment of project 0186, *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-Dual Credit Participants in One Ontario College*, was reviewed at the February 14th meeting of the Research Ethics Board. The amendment has been approved.

Please note that approval from the Humber REB is a prerequisite for data release but is **not a guarantee** that Institutional Research will be able to provide the specific data requested.

Sincerely,

Elaine Popp, PhD
Chair, Humber Research Ethics Board

cc: Paula Gouveia, Patricia VanHorne
Appendix U

College Student Experiences Survey

Survey Goals

This survey invites you to answer some questions about your experiences as a Humber College student. Please be assured that at no time will value judgments be placed on your responses. Also, the information you give will contain no personal identifiers like name, student number, or address and you will remain anonymous in any reports of research findings.

In order to fully assess the college experiences and outcomes of individuals completing this survey, Humber College will provide the investigator with student record information but only by numerical code and not by name, student number, or any other personal identifiers. While student record information will be linked to survey responses, at no time will the investigator or her affiliates be able to match individual participants to their student records.

Your responses, and those of others completing this survey, will be used to strengthen programs that prepare students for college. Findings will be reported in a doctoral thesis and presented in educational journals and/or at conferences.

The results of the study can be obtained upon completion of the final report which will be located in the OISE/UT thesis collection and which can be accessed electronically in the University of Toronto Research Repository (T Space) at https://tspace.library.utoronto.ca/handle/1807/9944

Informed Consent

Participation in this survey is strictly voluntary and you are under no obligation to respond to the survey questionnaire. You are free to decline to answer any questions and withdraw from the survey at any point, without explanation or penalty of any kind. You can also withdraw from the study after submitting your questionnaire, by e-mailing your request to XXX at [email address]. The survey data of participants who withdraw from the study will be deleted.

Submitting the survey will confirm your willingness to participate.
Terms of Participation

By clicking on “I Agree” below you are accepting the following terms: 1. You will answer the questionnaire items in an honest and genuine manner. 2. You have read the description of this survey and understand its goals and methods. 3. You understand that there are no known risks to those who participate in the survey.

Prize Eligibility Criteria

Participants in this survey will be entered into a draw for prizes including gift certificates valued at $5, $10, $20, and $50.

Remember, participation in this survey is strictly voluntary.
- I have read the above and agree to participate.
- I do not agree to participate.

Please enter your assigned numerical code below.
Correctly entering your numerical code will qualify you for the prize draw.

PART A (To be completed by all participants)

The following questions require that you recall the college-related experiences you had during your last semester at Humber College. Please answer each question as accurately and thoughtfully as you can. There are no right or wrong answers to the questions.

1. Overall, how would you rate your class attendance?
   - Excellent
   - Good
   - Fair
   - Poor
   - Very Poor
2. On average, how many hours per week, outside of class time, did you spend on campus?
  - 0
  - 1-5
  - 6-10
  - 11-15
  - 16-20
  - 21-25
  - above 25

3. On average, how many hours per week, outside of class time (both on and off campus) did you spend on college academic and program-related activities (e.g., completing course assignments, preparing for tests or presentations, completing program-related work placements, etc.)?
  - 0
  - 1-5
  - 6-10
  - 11-15
  - 16-20
  - 21-25
  - above 25

4. On average, how many hours per week, outside of class time (both on and off campus), did you spend on non-academic and non-program-related college activities (e.g., athletic activities, student clubs, campus jobs, etc.)?
  - 0
  - 1-5
  - 6-10
  - 11-15
  - 16-20
  - 21-25
  - above 25
5. Over the course of the semester, about how often did you engage in the following activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Asked questions in class or contributed to class discussion.</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>b) Worked with classmates on course material outside of class time</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>either face-to-face or through electronic media.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Communicated with professors about course material outside of class</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>time either face-to-face or through electronic media.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Worked with faculty members or college staff on activities other than</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>course work (special projects, peer mentoring or tutoring programs,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>program orientation, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Attended campus lectures, presentations, or other learning</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>opportunities that were not course requirements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Participated in co-curricular activities (school clubs, student</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>government, intercollegiate or intramural sports, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g) Attended college social events (sports events, pub nights, dances,</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Held a paid position on campus</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
</tbody>
</table>
6. Over the course of the semester, about how often did you use the following campus facilities and services?

<table>
<thead>
<tr>
<th>Service</th>
<th>Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Cafeteria</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>b) Library</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>c) Athletic facilities (gym, pool, weight room, etc.)</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>d) Computer lab</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>e) Social areas (other than cafeteria, library, athletic facilities, and computer lab)</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>f) Program-related facilities (studios, labs, etc.)</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>g) Writing centre</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>h) Math centre</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>i) Counselling services</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>j) Peer tutoring</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>k) Peer mentoring</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
</tbody>
</table>
7. Over the course of the semester, how often did you experience positive relationships with the following people?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) other students</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>b) faculty members</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>c) college staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part B (To be completed by dual credit participants)**

The following two questions require that you recall the experiences you had during your time as a dual credit student, back when you were still in high school. Please answer each question as accurately and thoughtfully as possible. There are no right or wrong answers to the questions.

1. When you were a student in the dual credit program, how much did your interactions with the following people help you prepare for college life?

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>A moderate amount</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Humber College dual credit professor(s)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>b) High School dual credit teacher(s)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>c) Humber College dual credit staff (other than dual credit professors)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>d) Other dual credit students</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>e) Non-dual credit Humber College students</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>f) Other? (Specify in text box below)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Text box


2. When you were a student in the dual credit program, how much did the following college services and facilities help you prepare for college life?

*When considering each college service or facility, please indicate*
   a) if it was available to you
   b) how often you used it
   c) how well it prepared you for college life

a) Available?

<table>
<thead>
<tr>
<th>Service</th>
<th>Don't Know</th>
<th>Not Available</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Library</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>ii) Writing Centre</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>iii) Math Centre</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>iv) Counselling Services</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>v) Athletic Facilities</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>vi) Information Technology</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>vii) Peer Mentoring</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>viii) Peer Tutoring</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>ix) Other? (Specify in Text Box below)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
</tbody>
</table>

Text Box
b) Used it?

<table>
<thead>
<tr>
<th>Service</th>
<th>Never</th>
<th>Once</th>
<th>Two or more times</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Library</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>ii) Writing Centre</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>iii) Math Centre</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>iv) Counselling Services</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>v) Athletic Facilities</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>vi) Information Technology</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>vii) Peer Mentoring</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>viii) Peer Tutoring</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>iv) Other? (Specify in Text Box below)</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
</tbody>
</table>

Text Box

[Blank space]
c) Prepared You?

<table>
<thead>
<tr>
<th>Service</th>
<th>Not at all</th>
<th>A little amount</th>
<th>A moderate amount</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Library</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii) Writing Centre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii) Math Centre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv) Counselling Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>v) Athletic Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vi) Information Technology</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vii) Peer Mentoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viii) Peer Tutoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv) Other? (Specify in Text Box below)</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Text Box
PART C (All Participants)

Are you interested in participating in an interview about your college-related experiences?

The in-person interview will only take about 30 minutes and be conducted on the Humber College campus of your choice during a date and time that is convenient to you.

All interview participants will receive a $20 gift certificate for their time.

Please indicate below if you are or are not interested in participating in an interview.

- Yes, I am interested in being interviewed
- No, I am not interested in being interviewed

If you would like to go back and change any of your answers or complete parts of the survey you left blank, please do so now.

If you are satisfied with your responses, thank you for your time.
Appendix V

College Student Experiences Interview Protocol

Participant Numerical Code ________________

I am going to ask you a few questions about your college experiences. In answering them, recall the experiences that you had during your last semester at Humber College.

1. What was it like being a college student?
2. What aspects of college life were you involved in?
3. What aspects of college life motivated you to remain in college?
4. Describe what you see as your major accomplishments as a college student.
5. In what capacity and to what extent did you interact with your professors?
6. In what capacity and to what extent did you interact with fellow students outside the classroom?
7. When you were still a high school student, what experiences and/or programs best prepared you for college life. (Dual credit participants will be asked to describe aspects of the dual credit program that best prepared them for postsecondary college life).
8. What are your future goals as they relate to college?
Appendix W

Faculty Interview Protocol

Participant # and Campus _________________

I am going to ask you a few questions about your experiences with dual credit and non-dual credit postsecondary students. In answering them, think of the dual credit and non-dual credit postsecondary students that you have worked with at Humber College.

1. How long have you worked with dual credit students and in what capacity?

2. Are dual credit and non-dual credit students just as motivated to remain in college or are there differences between the two groups when it comes to college persistence?

3. What about college engagement? Are dual credit students involved in similar or different aspects of college life?

4. What observations can you share about the involvement of dual credit and non-dual credit students in the social aspects of college life?

5. What observations can you share about the involvement of dual credit and non-dual credit students in the academic aspects of college?

6. What are your observations regarding student success as it relates to dual credit and non-dual credit students?

7. Can you identify aspects of the dual credit program that helped dual credit students prepare for college life?
Appendix X

Instructions to Pilot Study Subject Matter Experts Testing the Content Validity of Study Instruments

Pilot Study: Content Validity Indexes

Instructions to Subject Matter Expert Raters

Originally developed by Lawshe (1975), the CVI helps researchers validate their research instruments by having subject matter experts rate the relevance of each item included in the instrument to the research question being investigated.

Three research instruments appear below: the College Student Experiences Questionnaire, the College Student Experiences Interview Protocol, and the Faculty Interview Protocol. Please review each instrument and respond to the Content Validity Index (CVI) that follows.

Thank you for your time.

Rena Borovilos
Ph.D. Candidate, Department of Leadership,
Higher and Adult Education, OISE, University of Toronto/Professor, School of Liberal Arts and Sciences,
Humber College
## Appendix Y

**Content Validity Indexes for Study Instruments**

1) **Content Validity Index – College Student Experiences Questionnaire**

<table>
<thead>
<tr>
<th>Item</th>
<th>Research Question 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>To what extent do dual credit participants and non-dual credit participants differ in college engagement?</em></td>
</tr>
<tr>
<td>A1</td>
<td>✓</td>
</tr>
<tr>
<td>A2</td>
<td>✓</td>
</tr>
<tr>
<td>A3</td>
<td>✓</td>
</tr>
<tr>
<td>A4</td>
<td>✓</td>
</tr>
<tr>
<td>A5</td>
<td>✓</td>
</tr>
<tr>
<td>A6</td>
<td>✓</td>
</tr>
<tr>
<td>A7</td>
<td>✓</td>
</tr>
<tr>
<td>B1</td>
<td>✓</td>
</tr>
<tr>
<td>B2</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Research Question 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>What aspects of a Dual Credit Program prepare students for college life as perceived by dual credit participants and college faculty?</em></td>
</tr>
<tr>
<td>A1</td>
<td>1 2 3</td>
</tr>
<tr>
<td>A2</td>
<td>1 2 3</td>
</tr>
<tr>
<td>A3</td>
<td>1 2 3</td>
</tr>
<tr>
<td>A4</td>
<td>1 2 3</td>
</tr>
<tr>
<td>A5</td>
<td>1 2 3</td>
</tr>
<tr>
<td>A6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>A7</td>
<td>1 2 3</td>
</tr>
<tr>
<td>B1</td>
<td>1 2 3</td>
</tr>
<tr>
<td>B2</td>
<td>1 2 3</td>
</tr>
</tbody>
</table>

**Subject Matter Expert’s Rating**

1 = essential
2 = useful but not essential
3 = not necessary
2) **Content Validity Index – College Student Experiences Interview Protocol**

| Item | Research Question 1 | Research Question 2 | Research Question 3 | Research Question 4 | Relevance of Question to  
|------|---------------------|---------------------|---------------------|---------------------|---------------------|  
|      | *To what extent do dual credit participants and non-dual credit participants differ in college persistence?* | *To what extent do dual credit participants and non-dual credit participants differ in college engagement?* | *To what extent do dual credit participants and non-dual credit participants differ in college persistence?* | *What aspects of a Dual Credit Program prepare students for college life as perceived by dual credit participants and college faculty?* | 1 = essential  
2 = useful but not essential  
3 = not necessary  

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>✔</td>
<td></td>
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<td></td>
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</tbody>
</table>

3) Content Validity Index – Faculty Interview Protocol

<table>
<thead>
<tr>
<th>Item</th>
<th>Research Question 1</th>
<th>Research Question 2</th>
<th>Research Question 3</th>
<th>Research Question 4</th>
<th>Relevance of Question to</th>
</tr>
</thead>
</table>
|      | **To what extent do dual credit participants and non-dual credit participants differ in college persistence?** | **To what extent do dual credit participants and non-dual credit participants differ in college engagement?** | **To what extent do dual credit participants and non-dual credit participants differ in college success?** | **What aspects of a Dual Credit Program prepare students for college life as perceived by dual credit participants and college faculty?** | 1 = essential  
2 = useful but not essential  
3 = not necessary |
| 2   | ✓                   |                     |                     |                     | 1 2 3                  |
| 3   | ✓                   | ✓                   |                     |                     | 1 2 3                  |
| 4   | ✓                   |                     | ✓                   |                     | 1 2 3                  |
| 5   | ✓                   |                     |                     | ✓                   | 1 2 3                  |
| 6   | ✓                   |                     | ✓                   |                     | 1 2 3                  |
| 7   |                     | ✓                   |                     | ✓                   | 1 2 3                  |
Appendix Z

Instructions to Pilot Study Participants Testing Face Validity of Student Survey and Interview Instruments

Pilot Study: Face Validity Testing of College Student Experiences Questionnaire and College Student Experiences Interview Protocol

Instructions to Student Pilot Study Participants

I have developed the following *College Student Experiences Questionnaire* and *College Student Experiences Interview Protocol* for use in a research project that I will soon be conducting at Humber College entitled *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College*. The study will test the assumption that the benefits of participating in a dual credit program extend beyond high school graduation to postsecondary education. It will focus on students who completed dual credit programs at Humber College and then went on to enrol in the College’s postsecondary programs from Winter 2007 to Winter 2012. By investigating these students and comparing them with their non-dual credit peers, I hope to provide useful data on the impact of dual credit programs on college students.

To test the validity of the *College Student Experiences Questionnaire* and *College Student Experiences Interview Protocol*, I am asking you to review the instruments and identify for me any questions that are unclear to you or that appear to be leading you to answer in a certain way either by their wording or the sequencing of the questions?

Please note that the data you share with me will NOT be part of the study findings.

Thank you for taking the time to respond to the instrument.

Rena Borovilos
Ph.D. Candidate, Department of Leadership,
Higher and Adult Education, OISE, University of Toronto/Professor, School of Liberal Arts and Sciences,
Humber College
Appendix AA

Instructions to Pilot Study Participants Testing Face Validity of Faculty Interview Instrument

Pilot Study: Face Validity Testing of Faculty Interview Protocol

Instructions to Faculty Pilot Study Participants

I have developed the following Faculty Interview Protocol for use in a research project that I will soon be conducting at Humber College entitled The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-dual Credit Participants in One Ontario College. The study will test the assumption that the benefits of participating in a dual credit program extend beyond high school graduation to postsecondary education. It will focus on students who completed dual credit programs at Humber College and then went on to enrol in the College’s postsecondary programs from Winter 2007 to Winter 2012. By investigating these students and comparing them with their non-dual credit peers, I hope to provide useful data on the impact of dual credit programs on college students.

To test the validity of the Faculty Interview Protocol, I am asking you to review the instrument and identify for me any questions that are unclear to you or that appear to be leading you to answer in a certain way either by their wording or the sequencing of the questions?

Please note that the data you share with me will NOT be part of the study findings.

Thank you for taking the time to respond to the instrument.

Rena Borovilos
Ph.D. Candidate, Department of Leadership, Higher and Adult Education, OISE, University of Toronto/Professor, School of Liberal Arts and Sciences, Humber College
Appendix BB

Approval Letter for Extension of Project from the University of Toronto Research Ethics Board

PROTOCOL REFERENCE # 28024

August 9, 2013
Dr. Peter Dietsche
OISE/UT: LEADERSHIP, HIGHER AND ADULT EDUCATION

Ms. Rena Borovilos
OISE/UT: LEADERSHIP, HIGHER AND ADULT EDUCATION

Dear Dr. Dietsche and Ms. Rena Borovilos,

Re: Your research protocol entitled, “The impact of dual credit programs on college students: A comparative study of dual credit participants and non-dual credit participants in one Ontario college”

ETHICS APPROVAL

Original Approval Date: August 20, 2012
Expiry Date: August 19, 2014
Continuing Review Level: 1
Renewal: 1 of 4

We are writing to advise you that you have been granted annual renewal of ethics approval to the above-referenced research protocol through the Research Ethics Board (REB) delegated process. Please note that all protocols involving ongoing data collection or interaction with human participants are subject to re-evaluation after 5 years. Ongoing research under this protocol must be renewed prior to the expiry date.

Please ensure that you submit an Annual Renewal Form or a Study Completion Report 15 to 30 days prior to the expiry date of your protocol. Note that annual renewals for protocols cannot be accepted more than 30 days prior to the date of expiry as per our guidelines.

Any changes to the approved protocol or consent materials must be reviewed and approved through the amendment process prior to its implementation. Any adverse or unanticipated events should be reported to the Office of Research Ethics as soon as possible. If your research is funded by a third party, please contact the assigned Research Funding Officer in Research Services to ensure that your funds are released.
Best wishes for the successful completion of your research.

Yours sincerely,

Sarah Wakefield,  
Ph.D. REB Chair  

Dean Sharpe  
REB Manager

OFFICE OF RESEARCH ETHICS  
McMurrich Building, 12 Queen's Park Crescent West, 2nd Floor, Toronto, ON M5S 1S8 Canada  
Tel: + 1 416946-327; Fax: + 1 416946-5763; ethics.review@utoronto.ca  
http://www.research.utoronto.ca/for-researchers-administrators/ethics/
Appendix CC

Approval Letter for Extension of Project from Humber College Research Ethics Board

May 24, 2013

Rena Borovilos
School of Liberal Arts & Sciences

Dear Rena,

Your request for continuation of project 0186, *The Impact of Dual Credit Programs on College Students: A Comparative Study of Dual Credit Participants and Non-Dual Credit Participants in One Ontario College*, was reviewed at the May 23rd meeting of the Research Ethics Board. The continuation has been approved. Your new project end date is July 11, 2014.

Sincerely,

Elaine Popp, PhD
Chair, Humber Research Ethics Board