High School/College Transitions: A Case Study Examining
The Impact of a Dual Credit Program at Fleming College

By

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The purpose of this study was to explore how Dual Credit (DC) programs at Ontario high schools impacted the persistence of students when they are in college and what specific features of these programs affected the participating students’ academic performance. This study focused on the Dual Credit students enrolled full-time at Sir Sandford Fleming College who successfully completed one full-time semester of academic study. Fleming College is one of the 24 Ontario Colleges of Applied Arts & Technology.

This was a case study based on both qualitative and quantitative data collected by a number of methods including survey questionnaires, audio-recorded phone and face-to-face interviews, and document analysis.

There were a number of findings related to persistence at College. For example, the DC student group persisted at the same rate as did all College students and DC students who enrolled in a College program that was “related” to their DC program were more likely to persist at college. Although there was no attempt to compare the data for the
two groups because of uncontrollable variables, this study found that DC students (as a group) did not achieve academically quite at the same level, as did all Fleming College students. However, considering that the DC target group was “at risk” students, the overall academic achievement (64%) of the DC students (2011) was similar to the academic achievement of all College students (68%).

The participants in this study recommended that the DC program be as much like college as possible. This study supports previous research, which indicates that the DC courses should be delivered at the college campus (rather than in the high school) and DC students should be integrated with other college students.

Although this was a case study of DC students at only one Ontario College and the findings are not generalizable to other sites, the findings of this study will partially address a gap in the research literature and add to the body of knowledge about the impact of DC programs in the areas of student engagement, integration and persistence with respect to DC programs elsewhere.
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Chapter One: Introduction

The purpose of this study was to explore how participating in Dual Credit (DC) programs at high school impacted the persistence of students when they were in college and what the specific features of these programs were (as perceived by the students who participated in this study) that affected their academic performance. This study focused on Dual Credit students enrolled full-time at Fleming College who had successfully completed one full-time semester of academic study in 2010 and 2011. Permission to name the study College was received on August 25th, 2010 from the President of Fleming College, Dr. Tony Tilly (Appendix G).

Sir Sandford Fleming College is one of the 24 Ontario Colleges of Applied Arts & Technology (CAAT). The College has five campuses. The main campus is in Peterborough with satellite campuses in Lindsay, Haliburton and Cobourg. A smaller campus, the McRae campus, is also located in Peterborough and offers a variety of skilled trades and apprenticeship programs. The student population is approximately 6,000 full-time students and over 10,000 part time students (2012). It is a medium-sized college located in Southeastern Ontario. In the 2011/12 academic year, 48% of the full-time student population was female and 52% were males. Fleming College has approximately a 6% visible minority and six percent Aboriginal student population (FDR, 2012).
Problem statement

Ferguson et al (2005, p.3) state, “It is well documented that one of the most critical issues facing the education system in North America and elsewhere is the problem of early school leavers.” Students who do not complete high school face barriers in accessing post-secondary education and often are not able to obtain well-paying jobs/careers that maximize their potential. In 2011, 62% of Ontario residents between the ages of 25 and 64 had earned a post-secondary credential (Norrie et al, 2011), a significant increase from 2002 when Dr. Alan King noted that 50% of students in high schools did not obtain a post-secondary education. In 2000, 25% of high school students did not complete their Ontario Secondary School Diploma (OSSD) and another 24% of the students joined the work force after completing their OSSD. Nationally, Ferguson, Tilleczek, Boydell and Rummens (2005) found in 2001, that approximately 18% of Canadians between 20 and 24 years of age still did not finish high school. One study conducted in 2008 by Raymond for Statistics Canada looked at 20-24-year-olds in Canada from the academic years 1990/1991 to 2004/2005 who had previously dropped out of high school. The study also examined what percentage of dropouts returned to attend post-secondary studies versus secondary studies and found that in December of 2002, 9% of men and 15% of women who had dropped out of high school returned to pursue a post-secondary education (Raymond, cited in Statistics Canada, 2008). Of the students in the Raymond study who returned to either secondary or post-secondary studies, only 50% (excluding those still enrolled) completed their studies. It is reasonable
to conclude that once a student drops out of high school, the rates of pursuing post-secondary are low and completion rates even lower.

Low completion is a concern both socially and economically for Ontario and for Canada. The number of jobs requiring a post-secondary education (PSE) is increasing. Statistics Canada reported that in 1976, 11% of all jobs in Ontario required a college certificate or diploma and by 2001, this increased to 31%. The Canadian statistics for jobs requiring PSE were 12% in 1976 and 34% in 2001 (Statistics Canada). Between 1990 and 2007, the jobs requiring post-secondary education doubled (CCL, 2009). The good news is that the percentage of the workforce in Canada with some PSE also increased from 42.8% in 1993 to 60.3% in 2007 (CCL, 2009).

The Conference Board of Canada estimates that by 2025, Ontario could face a shortage of 364,000 healthcare and skilled trade workers, occupations that all require some post-secondary education (King et al, 2009). The current list of projected employment needs from the Job Futures website (www.jobfutures.ca) shows that most of the jobs posted will require PSE. Miner, retired President of an Ontario college, predicts, on the basis of his research, that “we can assume that by 2031, 66% of the workforce will have a post-secondary credential” (2010, p.9); however, 77% of the Canadian workforce will require a post-secondary credential by 2031 (Miner, 2010). This is consistent with the findings of the Canadian Council on Learning (CCL) 2008 report which states, “To remain competitive, the Canadian labour force may require a greater number of PSE graduates who are more skilled and productive than their predecessors” (Ungerleider 2008, p.11).
Unemployment rates in 2004 for Canadians with only a high school diploma were approximately two percent higher than college certificate or diploma graduates (Statistics Canada labour force survey). In 1998, Canada’s on-time high school completion rates were below all of the countries in the Organization for Economic Co-operation and Development (OECD) except for the U.S. (OECD, 1998). By 2006, Canada placed twentieth out of the 29 countries with an 80% graduation rate, just ahead of the United States (OECD, 2008). In the United States, the percentage of adults with a college degree increased to 41% in 2009 from 34% in 1997. By comparison, approximately 50% of adults in Canada had graduated from college in 2009 (Washington Post July 11, 2012).

According to a Higher Education Quality Council report, in 2011, 31% of adult Canadians had a diploma or certificate and 21% of Canadians had a university degree (Liu et al, 2012). In 2012, the OECD reported that Canada ranked first among the other 34 OECD countries having the highest percentage of 25-64-year olds with a college education at 24% and eighth with respect to university attainment at 26%. When considering overall post-secondary attainment levels of 25-34-years olds, Canada’s ranking falls to fifteenth (OECD, 2012).

With respect to the social impact of increased PSE attainment, CCL found “a strong correlation between post-secondary education and higher levels of volunteerism and charitable giving, as well as lower crime rates and reduced use of the health-care system” (CCL, 2006, p. 3). The environmental scan conducted by the Association of Colleges of Applied Arts and Technology of Ontario (ACAATO) in 2006 identified the following economic and social benefits of a college education:
$9.9 billion in annual earnings enter into the economy of Ontario when students leave the 24 colleges and join or rejoin the workforce. The added skills translate into higher earnings and a more robust economy and $159.6 million per year is saved by the Ontario government through benefits of improved health and reduced welfare, unemployment and crime. (ACAATO, 2006, p.78)

The 2005 Rae Report on the Ontario post-secondary review recommended that government should “mandate colleges to reach out to the fifty percent of high school students not going on to further studies and to lead the formation of K-16 Councils to promote learning and to facilitate the transition to higher education (Rae, 2005, p.36).” More specifically, the report states that “colleges should partner with the Ministry of Education and school boards to make sure that high school students, especially those at risk of not attending postsecondary institutions, have access to relevant and useful information about colleges (Rae, 2005, p.52).” The report went on to say,

More boldly, a pilot program should be established to give selected colleges authority and funding to offer high school credits and diplomas to students who want to complete their high school diploma in a college environment, with a vocational focus and a direct link to further college study. (p.53)

In fact, this recommendation includes a call for strategies such as Dual Credit (DC) programs.

**The Provincial Context**

A new K-12 curriculum was introduced in 1998 by the Conservative Government in Ontario. The curriculum applied to all publicly funded schools and contained specific
outcomes for each grade and subject. This new curriculum introduced the removal of the fifth year of high school (grade 13) and a focus on measurement, including student literacy testing and teacher entry-to-practice certification exams. Thirty credits were required to be completed in four years of study and compulsory credits were required for advancing to the next level of study in that subject. The workplace, college and university streams were part of the new high school curriculum, whereby students selected courses based on their graduate destination. The first students entered this four-year high school program in the fall of 1999, producing the first “double cohort” of graduates in the spring of 2003. The double cohort produced both grade 12 and grade 13 graduates in the same year.

The Ontario Ministry of Education commissioned King to do a longitudinal study to assess the impact of the change and to predict the high school graduation rates and participation rate at post-secondary institutions. King warned of an increase in the drop-out/non-completion rates if students could not progress through each level in each of the four years of high school in the prescribed manner. In 2004, the Liberal government (which had replaced the Conservative government by then) learned that 27% of its grade nine students and 40% of its grade ten students were already “at risk” of not graduating, because they had already missed at least one credit (Zegarac and Franz, 2007).

With the introduction of this new curriculum, the graduation rate dropped from 78% to 68% (Ontario Ministry of Education Backgrounder, 2005). In the first grade nine cohort, only 57% graduated in four years. The second cohort four-year rate increased to 59%. This rate was lower than that of other provinces, for example, Nova Scotia
achieved 82% (King, 2002). King also predicted a decline in the number of students who would be eligible to go to college. One of King’s conclusions was that school-to-college courses were unsuccessful. Since few students were selecting the college stream courses, the high schools could not afford to offer them (King, p. 15).

In 2003-04 and in response to the decline in the graduation rate, the Ontario Liberal government announced the $1.3 billion Student Success Learning to 18 (SS/L18) Strategy. This strategy was designed to ensure that every student would be provided with the tools to complete high school successfully and achieve their post-secondary goals. The goal of this strategy was to increase the secondary school graduation rate with a stated goal of 85% by 2010. On June 25, 2012, Premier McGuinty reported an 82% graduation rate for 2011-12 (Ministry of Education website), an increase from 68% in 2003/04 (CCL, p.58). Ungerleider (2008) noted the following academic-related benefits attributed to the SS/L18 strategy: smoother transitions from secondary to post-secondary education, improvements in test results, increases in graduation rates and decreases in dropout rates (Ungerleider cited in CCL, p. vii). Zegarac and Franz (2007) noted that the “strategy is not only about closing the gap between youth who complete high school and those who do not; it is also about raising the bar for all secondary school students” (p. 2).

One of the SS/L18 strategies was a Dual Credit (DC) program, and there were five goals identified specifically for the DC strategy:

1. to encourage student retention and graduation from secondary school by providing dual credit to disengaged and underachieving students “at risk” of not graduating from high school.
2. to improve credit accumulation through a broader range of engaging learning opportunities
3. to encourage more students to pursue further education or training
4. to allow students to progress along post-secondary education or training pathways
5. to facilitate transitions between secondary school and post-secondary education or training. (Ungerleider, 2008, p.141)

Goals 3, 4 and 5 apply to the link between DC programs and participation in post-secondary education. The goal is to enable students to make better connections between the courses they take in high school and how they relate to post-secondary education and career goals. The goal of the DC initiative is that “formal cooperation will be instituted between schools and postsecondary institutions” (Government of Ontario, 2005, p. 1).

The student success strategy was implemented in three phases. Phase One was launched in 2003 and included a review and revisions to the new high school curriculum with a focus on grades 9 and 10 applied math, the improvement of technology infrastructure for high schools and the creation of Student Success Leaders (one per Board). This first phase also introduced 105 Lighthouse projects which were locally developed initiatives designed for “at risk” students. The Ministry of Education provided seed money for these projects, one of which included linking high schools and colleges by offering DC programs. Other lighthouse projects included credit recovery, co-operative education and apprenticeship training, and overall they reached out to 8,000 students and involved 318 teachers (Government of Ontario, 2005). “At risk” students
were specifically identified as a target group for DC funding by the provincial government in 2007/08 (Ungerleider, 2007).

The second phase of this strategy was introduced in May 2005 and focused on resource and program development. This phase saw the introduction of 800 student success teachers (one per school), the reduction of class size in some courses, and additional funding to pilot projects aimed at reducing the dropout rate.

Phase three of the program began in December of 2005 and included legislation to ensure coordination of education and learning to age 18. This legislation (Bill 52) gave authority to the Minister of Education to set policy and procedures to achieve goals related to student success. The introduction of specialist high skills majors (SHSM), and expanded co-op and DC programs in secondary schools were the highlights of this phase. The government also introduced MISA (Managing Information for Student Achievement), a system that enables School Boards to track student progress. This system enables School Boards and the Ministry of Education to share data. The ability to share data can facilitate research intended to track DC high school student graduates as they apply to register at and graduate from post-secondary institutions.

The SS/L18 strategy was preceded by the Student/College/Work Initiative (SCWI), which was introduced in 1997 as a component of the provincial government’s Secondary School Reform. The goal was to fund projects that would create pathway programs for high school students from secondary education to college and then lead to employment. The SCWI is a partnership between the Council of Ontario Directors of Education (CODE) and the Council of College Presidents (COP) of Colleges Ontario (the
The SCWI is co-managed by representatives from COP, CODE, the Ministry of Education and the Ministry of Training, Colleges and Universities. The SCWI supports 16 regional planning teams (RPT) that have representation from both colleges and secondary school boards. These teams work together to respond annually to requests for project funding by the SCWI co-management team. The Ministries of Education and Training, Colleges and Universities jointly fund the projects. The requests for funding must support the government’s SS/L18 strategies.

For the purposes of this research, the definition of a Dual Credit program is a college course or courses targeted to “at risk” high school students and counting as both a high school and a college credit(s). These courses are taught by college professors or team-taught with high school teachers.

“At risk” students are defined by the Ministry of Education as those students facing the biggest challenges in graduating; this group includes both underachieving and disengaged students and students who have left high school before graduating. These disengaged underachieving students are further defined as having the potential to succeed. “At risk” students are identified by student success team members (counselors and teachers) at each high school by using a checklist of observed behaviours, such as lack of involvement in school activities, absenteeism, lack of confidence and lack of goals beyond high school. This checklist is included in the 2010 Dual Credit policy and implementation procedures document, specifically in Appendix A.

The number of Dual Credit programs in Ontario has increased substantially since 2005 when 14 DC pilot programs were funded and 361 students participated. Ontario
College Application Service (OCAS) data further reveal that 849 DC students were registered across the Ontario college system in 2009. Provincially, 12,202 students were enrolled in DC programs in 2010-11 (SCWI newsletter, 2012, p.2). From September 2006 to December 2009, 697 students participated in Dual Credit courses offered by Fleming College. According to OCAS and Fleming College data, 46 students who had taken a DC program while in secondary school were registered at Fleming as full-time students in semester one during the fall of 2009. In the fall of 2010, 75 full-time students were registered at Fleming College and 195 students in semester one in the fall of 2011.

Whitaker conducted research on DC programs delivered at St. Lawrence College from September to December 2008. The purpose of his study was to “better understand the extent to which dual credit contributes to increased access and participation in college” (Whitaker, p. ii). His research question was: “What is the impact of DC programs in increasing access and participation in College?” It focused on the success that high school students have in completing high school as it relates to DC programs at St. Lawrence College (Whitaker, 2011).

My research interest goes beyond Whitaker’s and examines whether or not the DC program students who graduate from high school are successful when they attend college full-time and what factors contribute to their successful transition. Success is defined in this study as successful completion of one full-time semester of college study (as defined by the Fleming College academic regulations) and the student progresses to semester two. In a report entitled *Transition to College: Perspectives of Secondary School Students*, authored by King and Warren for ACAATO (now Colleges Ontario) in 2006, the authors
explored a number of research questions related to college transition and concluded that “success in the first semester is seen as an indication of a successful transition to college” (King and Warren, p.3).

**Research Questions**

The overall research question for this study was: How does participation in Dual Credit (DC) programs impact the academic performance and persistence of participating students at Fleming College? Specifically, this case study addressed the following questions:

1. What is the relationship between the DC program content and the program of study that participants subsequently took at Fleming College and did the DC program provide insight into the students’ career interest?
2. What factors or features of DC programs are identified by the study participants as assisting them with (a) the transition from high school to college and (b) contributing to their persistence at college?
3. To what extent are factors such as: high school academic performance, type of college program (certificate, diploma) taken, related to college persistence of the participants?
4. How does the frequency with which participants accessed Learning Support Services (LSS) while taking courses at Fleming College compare to other (non-DC) college students in similar college courses and programs?
5. How does the academic performance of DC students in their first semester at Fleming College compare to other (non-DC) Fleming students in first semester?
6. What improvements/enhancements/learning supports need to be made to the DC program to increase college success of Dual Credit students as identified by participating students?

**Personal Interest**

My educational career interest began when I was at Brock University enrolled in the Bachelor of Education program and I elected to take the special education course option. Subsequent to that, I chose to complete one of my block placement experiences in a special education classroom. My strong interest in making a difference in the lives of these students followed me as I began my career in the Ontario college system in 1986. I gained the most satisfaction from seeing young adults change from disengaged and underachieving students to engaged college students and graduates. At that time, I observed the link between engagement of these students, academic achievement and persistence.

In the spring of 2009 I met with nine students who were taking a Basic Shop Practice DC program at the Heavy Equipment Centre at Fleming College. The students were in the final week of the DC program. During my conversation with these students, they revealed that they had not considered themselves to be college-bound students prior to their experience with the DC program. Of the nine students, eight had applied to college for the upcoming fall semester and one student was still considering it. Since that time, and in my role as Dean, I have welcomed and then congratulated numerous DC students as they pursued/completed their DC studies and frequently hear from them about the positive difference that the experience made in their lives. The students refer to the DC
experience as a “new start” that has given them the confidence required to be successful at college. This feedback continues to motivate me to gather evidence in support of strategies that engage and motivate students to pursue post-secondary education.

As a Dean and Campus Principal at Fleming College, PSE participation rates are of professional interest to me. The number of high school DC students attending Fleming has been increasing each year, and in order to sustain or increase the level of participation in DC programs, evidence relative to the success of Dual Credit and return on investment (ROI) needs to be collected. At the start of my PhD journey, a search of the words ‘dual+credit’ and ‘dual+enrolment’ often came up with no search results, compared with 2012 when these key word searches found numerous articles and papers related to this topic. Most recently, I have found newspaper articles in the United States that express the concerns of parents and students over funding cuts to Dual Credit offerings. Funding of the DC programs will be the major challenge in sustaining the current offerings and in any attempt to increase the number of programs.

The success of Dual Credit programs is evidenced by an increase in the number of programs funded by the provincial government and by the increase in participation and retention rates. Students are reporting high levels of satisfaction with their DC program experience. In a Fleming Data Research (FDR) survey conducted in the winter of 2012, 95% of DC students reported that they were satisfied or very satisfied with their DC program. DC programs have been acknowledged as one strategy being used to increase high school completion rates. “Dual credits are lifting many young people … into the
ranks of employable and focused contributors” (SCWI Newsletter, 2012, p. 2). One student from the FDR survey put it this way:

Overall, without this course I would not have been able to graduate this year and probably would have dropped out, which I believe would not have been the best outcome. Based on my experience, I believe this course should definitely be available for future students because there are (is) actually a lot of people that are in my position of being “at risk” of not graduating (Student RPT 13, June 2010).

Rationale/Significance of the Research

Even though they cannot be generalized beyond my case study, the findings of this study will add to the body of knowledge in the areas of student engagement, transition and persistence/retention by examining the impact that Dual Credit programs have on the transition from secondary school to college and the factors that contribute to increased persistence in college. I have found very little research that examined the impact that Dual Credit programs in Ontario have on college success. The findings will be of interest to educational leaders and policy makers who ultimately make decisions related to DC design and delivery, target group and the potential for growth. This topic was identified as an area for further research in the 2005 Rae Review and in the King report entitled, *Who doesn’t go to PSE?* High school completion rates have been identified as a concern, but the question of whether or not Dual Credit programs translate into increased PSE participation rates and student success at college has not been a widely researched topic. This study addressed that gap in a small way by focusing on the experience of DC students at Fleming College. The findings of this study may contribute by informing
policy makers as they relate to the future of DC programs in Ontario. Whether or not DC programs lead to an increase in PSE participation and subsequent success rates, the significance of this study has relevance, as its findings at Fleming College may lead to further research on DC programs in Ontario. Potential beneficiaries of the research are students, high schools, colleges, parents, public and public taxpayers, government, educators and researchers.

The number of careers/jobs requiring the attainment of post-secondary education is increasing and it is vital to our social and economic well-being provincially, nationally and internationally that access to and completion of a post-secondary education also increase.

The youth population (15-24 years) is projected to decline from 2012 to 2021 (Ontario Ministry of Finance Projections, 2012). More specifically, the secondary school age group (14-17) is projected to decline by approximately 9% (Ontario Ministry of Finance, 2005, p.12). The total pool of high school student graduates who are available to enter the colleges will also be declining. Given the decrease in high school graduation rates witnessed in Ontario in the mid-1990s (Statistics Canada, 2004), successful efforts to increase graduation rates will increase the number of people eligible to access post-secondary education. Since the funding formula is based on each college’s market share of student enrolment, enrolment growth is imperative for ensuring the financial viability of the colleges. Strategies that target the “at risk” high school population will contribute to creating a larger number of high school graduates (in a declining secondary school population), who will be eligible to attend college.
It is hoped that this research will be useful to those involved with Dual Credit programs and the potential to influence PSE attainment. Dual Credit programs were introduced as an intervention strategy to increase graduation rates of “at risk” high school students but also to increase PSE participation and graduation rates.

If a link can be made between DC programs and success in PSE, and the features of DC programs contributing to success are identified, these findings will inform other research related to student engagement, transition and persistence/retention. Although the findings of this study cannot be generalized beyond the case study College, the findings will add to the greater understanding of the features of DC programs that students identify as contributing to their success and that will be of interest to other educators. The findings of this study will provide insight that may contribute to making DC programs more effective and perhaps lead to increased college participation rates and success for students at college.

Previous research and theories on the topics of student engagement, student integration (social and academic), student transition and persistence may inform the study of Dual Credit programs and student success at college. This study did not attempt to test any theoretical model. It is hoped that the research itself might generate ideas for a new working model that may apply to this phenomenon. Tinto’s model of institutional departure links academic and social integration to student persistence and success. This model may apply to students who are enrolled in a DC program and to their relative success based on how they integrate into the college experience both socially and academically. Karp, Hughes and O’Gara (2008) have conducted research in the United
States and based on a recent study of college student integration and persistence have concluded that “social networks” are linked to college persistence but not necessarily involvement in social activities such as clubs, sports etc. Astin’s theory of involvement proposes that the greater the interaction that students have with “objects” the more likely that they are to be successful. These “objects” include faculty and staff, social and academic activities. The early interaction with “objects” by way of the DC experience could have an impact on student persistence and success. This interaction is more about what the student does than what the institution does or provides and is relative to the amount of time and motivation exerted by the student. Willms, Friesen and Milton (2009) identify three dimensions of student engagement: social, academic and intellectual. The assumption is that if the majority of students in high school who participate in DC programs are defined as disengaged and therefore “at risk” of not completing high school or continuing to PSE, that some change must occur as a result of the DC experience in order to contribute to their decision to attend college and to the successful transition from high school to college.

This study explored factors/features of DC that contribute to student success as perceived by participating DC students when they attend full-time studies at College. The DC programs were implemented as one strategy to increase high school graduation rates in Ontario, and I explored the features of the DC programs that have improved student transition to college, and student persistence and success at college, as perceived by the DC students themselves. This context can provide insight and may identify opportunities to improve the DC program in Ontario and beyond.
Scope and Limitations

This is a case study that involves only one of 24 Ontario colleges and a select number of students within Fleming College; therefore, the findings of this study are not generalizable. Case studies are not intended to be generalizable, but considered to be useful in building an in-depth understanding of a particular case in an area where there has been very little research done (Grix, 2004).

Summary

I found very little research conducted on the success of DC students when they attend full-time studies at college. Given the relative newness of the DC programs in Ontario coupled with the fact that all colleges in Ontario are participating in DC offerings, it is hoped that the findings will be of interest to other colleges, their high school partners and students and parents. The Ministries of Education and Training, Colleges and Universities will also be very interested in the findings as evidence of the extent of the return on investment of public funding. Finally, the aim of case study research, in part, is to point the way to other further quantitative and qualitative research that might have greater generalizability. Chapter 1 provides the national and provincial context for considering the importance of post-secondary education as it relates to economic and social well-being. It describes the goals and importance of DC programs for “at risk” students and the theoretical framework that grounds this study. It also provides definitions for terms commonly used in this research.

Chapter 2 consists of a review of the literature relevant to this topic. Chapter 3 outlines the methodology used in this study and the procedures that were used to collect,
analyze and interpret the data. Chapter 4 provides the findings based on the data collected, while Chapter 5 provides an analysis of the findings, theory development, conclusions and recommendations for further research on the topic of Dual Credit.

**Terms and Definitions**

**Advanced Placement (AP)** – college level classes offered in high school for which students take a final exam that is aligned with college content and expectations. These may count as college credit or exempt students from entry level college courses as determined by the post-secondary institution. AP was introduced in the 1950’s.

**Credit Based Transition Programs (CBTP)** – this term includes all high school to college transition programs, including, AP, DE/DC and IB

**Dual Credit (DC) Program** – consists of one or more college course(s) that count as both a high school and a college credit and for this study, are further defined by the target group, which is “at risk” high school students

**Dual Enrollment (DE)** – college courses taken during high school for which students receive college credit. They may or may not receive a high school credit for the college course. This term is used in the United States where dual enrolment has been offered for many years to high-achieving students

**International Baccalaureate (IB)** – a two year program of study taken during high school resulting in an International Baccalaureate diploma. College credit may or may not be awarded as determined by the post-secondary institution

**Acronyms**

CCL - Canadian Council of Learning
CODE - Council of Ontario Directors of Education
COP - Council of Presidents
ECHS - Early College High School
MCHS - Middle College High School
OCAS - Ontario College Application System
PSE - Post-Secondary Education
SCWI - School College Work Initiative
SS/L18 - Student Success Learning to 18
SWAC - School Within A College
Chapter Two: Literature Review

The purpose of this study was to explore the impact of Dual Credit programs offered by Ontario high schools and colleges, as perceived by DC students at one Ontario CAAT, on their subsequent performance in college. This chapter focuses on the review of the relevant literature. This review of the literature includes theories related to student transition, including engagement, student integration and persistence. While this study is located in Ontario, the review is broadened to include literature that may not be specific to Ontario but has relevance to the context. In Ontario, the Rae Report of 2005 was the impetus of DC programs, but in the United States dual enrolment has been in place for almost 40 years (Andrews, 2004).

The review of the literature is discussed with consideration given to considering the following research topics: integration (academic and social) and engagement as they relate to persistence and successful transition from high school to college with Dual Credit programs as the vehicle. Theories discussed in this chapter include Tinto’s Longitudinal Model of Institutional Departure, Rendón’s Validation theory, Astin’s theory of Involvement and Merton’s Anticipatory Socialization. The current status of Dual Credit programs in Canada and the United States will be provided within the context of a number of relevant studies and reviews undertaken by Karp, Barnett, Whitaker and Horn and Chen. This chapter concludes by identifying outstanding questions regarding dual credit programs arising from the literature review.
Integration and Persistence

Tinto – Longitudinal Model of Institutional Departure

Tinto’s three stages of student departure, academic and social integration and his longitudinal model of institutional departure (1993) are relevant to community college persistence and related to the impact that dual credit may have on persistence. While his work was in the United States, his findings are relevant to students in the Ontario colleges.

Tinto’s Interactionalist model is the one that is most frequently cited by authors in relation to student integration (Barnett, 2010). Tinto proposed that college students need to integrate both academically and socially. Academic integration related to classroom-based activities was associated with grades, while social integration pertained to activities outside of the classroom such as clubs, intramural activities and so on. Tinto’s model assumes that both social and academic integration influence student success at college. Tinto (1993) asserts that the model “posits that, other things being equal, the lower the degree of one’s social and intellectual integration into the academic and social communities of the college, the greater the likelihood of departure” (pp. 115-16). Tinto notes the importance of peer interactions in college persistence and that the more connected students are with students with similar goals and interests, the more likely they are to succeed.

Tinto (1997), with reference to research by Attinasi in 1989 and his own research withGoodsell in 1994, suggests that during the first few weeks at college, social integration is more important than academic integration.
Tinto’s Model of Institutional Departure below (Figure #1) provides insight into DC research. Students in DC programs are participating in both high school and college at the same time.

**Figure #1 – Model of Institutional Departure**

![Tinto's Model of Institutional Departure](image.png)


In this study, integration, both social and academic, begins during the DC program, prior to full-time college studies and may contribute to reinforcing students’ own intentions, goals and institutional commitment. DC programs may also have an impact on academic performance during the full-time college experience as a result of student involvement in both the informal and formal experiences of college life during the DC experience, as depicted in Tinto’s model labeled as institutional experiences. Specifically, the DC
program provides the opportunity for students to interact with college staff, engage with a college peer group and participate in the academic activities at college.

This “pre-college” experience could increase a student’s goals and commitments and therefore result in an increase in rates of college persistence.

**Karp – Tinto and Student Integration**

Karp has been leading the way in Dual Enrollment related research in the United States and Karp, Hughes and O’Gara (2010) reported on a retention study that explored Tinto’s integration framework in relation to community college students. These authors cite Tinto who stated, “students are more likely to remain enrolled in an institution if they become connected to the social and academic life of that institution” (p. 71). Based on Tinto’s integration framework, Karp et al propose “the underlying assumption is that if colleges provide enough structured opportunities for students to engage with the institution, students will become integrated into the college and persist at higher rates” (p. 72). If this holds true, then students who have participated in DC programs may have higher persistence rates than other students.

Integration is defined by Karp as having a “sense of belonging” on campus, and this study endeavoured to find out if DC students experienced a “sense of belonging” associated with their DC program and subsequently with their first semester college experience.

Karp, Hughes and O’Gara (2010) assert that Tinto’s integration framework applies to two-year colleges and has found that two-year college students do develop attachments to their college. In a study of student persistence conducted by Karp, Hughes and O’Gara in
2005-06, 46 students from two urban colleges were interviewed in their second semester and then again six months later regarding their decision to continue with their studies or not. Karp et al asked questions that were designed to get at the student’s social and academic integration. One theme that arose in this study was referred to as “information networks” as having importance in student integration. Karp defines information networks as “social ties that facilitate the transfer of institutional knowledge and procedures” (p. 76). Students who knew people who could provide them with information about student services, courses, teachers and so on, had a greater sense of belonging and integration with the institution. Karp’s study also concluded that student involvement with clubs and other college activities was not a predictor of college integration and that it was the “information networks” that were attributed to social integration. Tinto’s research found that students who moved away from home and were able to participate more in social activities (clubs, athletics etc.) were more likely to persist at college.

Karp’s more recent findings on persistence may suggest that it is not moving away from home to attend college that increases the likelihood of social integration but rather it is the access to “information networks” that does so.

**Rendón - validation**

Rendón proposed “validation” theory in relation to student success at college and further, that validation is a pre-condition for integration (cited in Barnett, 2011). Rendón defined validation as “interactions with students, initiated by faculty and others in the campus community, that engender feelings of self-worth and a belief in the students’ ability to succeed in the college environment” (p. 196). Interpersonal and academic are
the two types of validation: one pertains to in-class and the other socially, through out-of-
class activities. Validation is especially important to those students who have not felt
validated in the past and have experienced negative messages suggesting that they will
not be able to succeed in school. DC students identified as “at risk” may need to be
validated before they can be engaged and integrated into the college environment.
Students who are invited to participate in Dual Credit programs may experience feelings
of validation and even greater validation with the experience of success during the DC
program. Rendón and Muñoz (2011) noted “that validation should not be viewed as an
end, but rather as a developmental process” and “validation is most critical when
administered early in the college experience, especially during the first few weeks of
class” (p. 18). Barnett’s 2006 study on student persistence explored validation and the
relationship that faculty interaction played in student persistence. Barnett found that
faculty-student interactions play a positive role in college integration and that integration
led to higher levels of persistence. The role that faculty play during the DC experience
could also be a contributing factor to student persistence. Rendón’s validation theory and
Karp’s findings regarding the importance of information networks as it relates to
transition from high school to college and persistence at college are worth exploring in
relation to Dual Credit programs.

Astin – theory of involvement

Astin’s (1999) theory of student involvement focuses on student outcomes that result
from various environmental experiences and argues that student change results from
various institutional experiences. Student involvement “refers to the amount of physical
and psychological energy that a student devotes to the academic experience” (p. 518). This theory focuses on student behaviour (what they do) as opposed to how they feel or think. This student involvement is related to the amount of time that students spend with “objects” and is determined by the student’s own motivation to do that. In a 1995 study of high school dropouts, Astin found that students find it easier to get involved if they can identify with the college environment.

The degree of involvement should lead to an increased likelihood of student integration and therefore an increase in college persistence. Involvement for DC students begins prior to their full-time college experience and provides them with head start on the degree of involvement. Astin gives examples of involvement with “objects” at college, including interaction with faculty, participation with student government, athletics, and academics and so on.

**Merton - Anticipatory Socialization**

In 1957, Merton proposed the Reference Group theory. Merton described the training that civilians go through during their initiation into the military. In their aspirations to be promoted, Merton observed that these new recruits took on behaviours characteristic of their supervisors. Merton referred to this as “anticipatory socialization.” Merton suggested that this helped people to move from one group or situation to another more easily. Merton’s Reference Group theory can be used to apply to students who participate in pre-college experiences, such as DC programs. DC students begin to adopt the behaviours of college students in anticipation of full-time college enrolment. This socialization may have an impact on how students integrate socially and academically at
college. This early start or head start at integration could increase the student’s likelihood of persistence at college and supports Tinto’s theory of student departure. In 1986, Pascarella, Terenzini and Wolfe noted student behaviours consistent with Merton’s anticipatory socialization during summer orientation activities. Pascarella et al described the impact of anticipatory socialization as 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. To the extent that such anticipatory socialization is effective, the individual should become more successfully integrated into the new setting and function effectively in it” (cited in Swanson, L. 2008, p.70). This 1986 study concluded that the pre-college orientation increased persistence by contributing to social integration.

**Student Engagement and Persistence**

The target student group for DC programs is students who are “at risk” of not completing high school. The indicators used to identify these students include those who are disengaged and underachieving and/or who have previously dropped out of high school, as defined by the Ministry of Education. Since the DC program is a strategy aimed at re-engaging this group of students, previous research on this topic is relevant to this study.

Cole et al (2009) noted, “research studies show that high school experiences, engagement, and academic achievement, as well as entering expectations and attitudes, are important predictors of student success” (p.55). Konings, Brand-Gruwel, van Merrienboer, and Broers (2008) conducted a longitudinal study with 1,335 high school
students and found that “expectations affect students’ motivation, engagement, and investment of effort in learning” (p. 536). The authors note that very little research has been done on student expectations of a new learning environment and how these expectations impact student performance. Realistic or unrealistic expectations of college can affect the outcome of the experience. These authors recommend that “more effective approaches are needed to prepare students for large educational changes; such approaches should also take into account differences in individual learning characteristics” (p. 547). The DC programs may have a positive impact by providing “pre-college” students with insight into the expectations of college resulting in higher levels of engagement and success.

Certain institutional practices are known to lead to high levels of student engagement. Perhaps the best-known set of engagement indicators is the “Seven Principles for Good Practice in Undergraduate Education” (Chickering and Gamson, 1987). These principles include student-faculty contact, co-operation among students, active learning, prompt feedback, time on task, high expectations, and respect for diverse talents and ways of learning. These engagement indicators may be relevant to the features associated with DC courses. The National Survey of Student Engagement (NSSE), which is used in both U.S. and Canadian post-secondary institutions, conducted a study with year-one college students on the effect of engagement strategies. The findings revealed that students with lower grades (high school) benefited more from these strategies as compared to students with higher incoming grades (NSSE, 2006). Since the target group for DC programs is “at risk” students, engagement strategies experienced by students
during the DC experience are likely to have a greater impact on the success of these students at college.

Willms, Friesen and Milton (2009) identify three dimensions of student engagement: social engagement (sense of belonging), academic engagement (attendance) and intellectual engagement (stimulated and challenged). “High expectations for student success appear to be the most important factor” related to student attendance and intellectual engagement (Willms et al, p. 24). These three dimensions align with Tinto’s integration theory and may be necessary factors if integration with the college is to occur.

**The Dual Credit (DC) context**

Dual Credit programs are being used as a strategy to increase retention and graduation rates in secondary schools and participation rates in post-secondary institutions. DC programs have been delivered in the United States for over 40 years and in the province of Ontario since 2005. Various studies and research, primarily conducted in the United States, by researchers such as Brake (2003), Karp et al (2008), Swanson (2008), Barnett (2010), Hoffman (2005, 2007) and Whitaker (2011) have questioned whether or not DC programs are successful in achieving academic persistence and success. Research on DC programs is on the increase especially in the United States, but I found very little research completed in Canada and more specifically in Ontario. In light of this fact, areas for future research will be suggested.

In 2003-04, 15 colleges across the United States were selected to participate in the implementation of programs that would enhance the transition from high school to college to the workplace by increasing high school graduation rates and college
participation rates. The College and Career Transitions Initiative (CCTI) coordinated these pilot projects, and career-based Dual Credit programs were included in the delivery of these pilots.

The Ontario college Dual Credit pilot programs were spearheaded by the Ministry of Education and funded under the provincial government’s School/College/Work Initiative (SCWI). For the purpose of this study, a Dual Credit program is defined as a course or courses that are taken by high school students, whereby they earn both high school and post-secondary credits for the same course or courses. The primary goal is to increase high school student persistence and graduation rates, as well as to increase participation rates in post-secondary education. DC proponents suggest that students who participate in DC programs offered at a college campus will become more engaged in learning as they gain insight into career opportunities, interact with a more mature student population and are oriented to college life.

Ferguson et al note that the term “drop out” was first used in the early 1900s but not used predominantly until much later (as cited in Dorn, 1996). Researchers began to explore this issue in the 1960s and 1970s, attempting to find out why students were leaving high school, but not how to retain them (Ferguson, 2005). The term “drop out” evolved to “early leaver” and youth who were unlikely to graduate were described as “at risk”.

In the United States and Canada recent literature suggests an increasing concern about the declining levels of educational achievement as is reflected in a growing number of reports and studies commissioned to investigate the graduation rate and PSE
participation rates issues (e.g., Willms et al, Bridgeland and Kleinman). The question has switched from why are students leaving to how can students be retained. Retention has implications for our overall ability to compete economically with other countries whose workforce is attaining higher levels of education. In *The World is Flat*, Friedman writes, “We cannot hope to fight jobs lost to international competition without a well-trained and well educated work force” (Friedman, 2005, p. 269).

In 2005, the Ontario Ministry of Education commissioned a report called, *Early School Leavers: Understanding the Lived Reality of Student Disengagement from Secondary School*. This report identified several school-related risk factors that have contributed to high school students dropping out. These factors included: negative school climate, limited relevance of curriculum, passive instructional strategies and little regard for students’ learning styles (Ferguson et al 2005, p. 57). The report states that “a specific best practice to address early school leaving does not currently exist, but there are a number of programs that hold promise” (Ferguson et al, p. 15). According to Ferguson, programs that hold promise include mentoring/tutoring, service learning and alternative schooling.

In a May 2009 report titled *What Did You Do In School Today?*, Willms, Friesen and Milton surveyed 32,322 secondary school students from 93 schools in five Canadian provinces to collect their perceptions of their experience in high school. Results of the survey indicate “overall levels of engagement are quite low” (Willms et al, 2009, p.17). Willms et al (2009) report, “Evidence is mounting to show that many problems experienced by students in middle and secondary schools – such as disengagement,
dissatisfaction with their schooling experiences, and dropping out – are significantly linked to the learning environment” (p. 6). This study sought to explore if and how specific features of DC programs (social, academic and intellectual) affect student engagement and persistence.

A report published in March 2006 titled *The Silent Epidemic* cited a number of reasons why students drop out of school. The findings were based on surveys and interviews of 467 students in 25 locations in the United States. Among the reasons cited were “lack of connection to the school environment; a perception that school is boring; feeling unmotivated and academic challenges” (Bridgeland, p. iii). The majority of students (70%) in this study believed that they could have graduated from high school and only 35% reported that they were failing at the time that they dropped out (Bridgeland, 2006).

**The US context and Dual Credit Models in the United States**

The *Community College Survey of Student Engagement* (CCSSE) in the United States is conducted annually. The survey provides insights into the reasons why students are disengaged so that colleges can develop strategies that aim to keep students in school. The 2010 report found that “slightly more than half (52%) of first-time, full-time college students in public community college return for their second year of study” (CCSSE, 2010, p.4).

The League for Innovation released a report in 2006 entitled *Pathways to Student Success – Case Studies from The College and Career Transitions Initiative*. The
following quote was taken from the Pathways report and was made by the United States Secretary of Education, Margaret Spellings, in an address to the Governors:

> Getting every child to graduate high school with a meaningful diploma in their hands is one of the biggest challenges our country faces. Today only 69 out of 100 entering ninth graders will graduate from high school on schedule. Fewer than 20 will graduate on time from college. Meanwhile, 80 percent of the fastest growing jobs will require some postsecondary education.


The number of students entering post-secondary education in the United States (75% of all high school graduates) is increasing, but the number of students who are graduating is decreasing. Kleinman (2001) states that the reason why students are not successful in college is that they are under-prepared when they arrive at college. Researchers such as Tinto, Astin, Rendón and others would propose that persistence is not solely about academic integration, but also related to social integration and validation.

The Dual Credit/dual enrolment strategy in the United States is being used to increase student persistence in post-secondary institutions. For the purposes of this research, Dual Credit (DC) and dual enrolment are used synonymously. The only distinction between the terms is that Dual Credit course always award both high school and college credits and dual enrolment courses do not award college credit in all cases.

“The origin of dual credit (in the US) is debated. When exam-based programs, such as Advanced Placement (AP) and International Baccalaureate (IB), are identified as examples of dual credit programs, the history traces back to the mid 1950’s (Clark, 2001;
Greenberg, 1989). However, if exam-based programs are not considered Dual Credit programs, the beginning point is different” (Kim et al, p.2).

And more recently, in a report published in February of 2013 (Borden, Taylor, Park and Seiler) titled Dual Credit in US Higher Education-A Study of State policy and Quality Assurance, the author notes that there is a lack of clarity with respect to the terminology:

The results of this study reinforce at least two continuing themes from past research on state policy and practice for dual credit: There is still no consensus or standardization regarding the terminology related to what we have been consistently labeling as “dual credit” courses; and there remains great variation among states along many dimensions of state policy for dual credit activity. The concurrent enrollment and dual credit arena would benefit from further efforts to develop consensus on terminology. (Taylor, Park and Seller p. vi)

In the United States there are an increasing number of Dual Credit/dual enrolment credit–based transition programs (CBTP). In 1999, in response to the growing number of DC programs, the National Alliance of Concurrent Enrollment Partnerships (NACEP), a national dual enrolment accrediting body was formed. In 1995-96, approximately 204,790 students were enrolled in DC programs and by 2002-03, it was estimated that 1.3 million students were enrolled (Kim, Kirby and Bragg, 2006). DC programs have been initiated at the institutional and state levels. Syracuse University may have been the first institution to offer a Dual Credit program called Project Advance, in 1972 (Andrews, 2004). In 1985, Minnesota was the first state to pass DC-related legislation called the
Post-secondary Enrollment Options Act (Kim, Kirby and Bragg, 2006). Traditionally these programs were designed for high-achieving students. Three CBTP programs emerged as the most popular: Advanced Placement (AP) in the mid-1950s, the International Baccalaureate (IB) and Dual Enrollment (Gemma, 2004). The notion that many more students, other than high-achieving students, could benefit from Dual Credit programs is a more recent phenomenon. According to Kleiner and Lewis (2005), “only an estimated 5% of institutions with dual enrollment programs serve students at risk of educational failure.” According to the Education Commission of the States, in 2005 all 50 states reported that they offered Dual Credit/dual enrolment programs. (In 2008, of the 46 states that have policy or regulations related to the legislation, 12 states mandate that students must have access to dual enrolment courses/programs (cited in Barnett, 2010). Seventy-one percent of U.S. high schools offer Dual Credit courses (Waits, Setzer and Lewis, 2005)). President George W. Bush earmarked $125 million in support of Dual Credit programs specifically targeted at “high risk” students. This emphasized the national concern over declining graduation rates from college and university. Dual Credit programs are administered differently from state to state as reflected in the policy developed by each state. A report released in 2004 was entitled State Dual Enrollment Policies: Addressing Access and Quality (Karp, Bailey, Hughes and Fermin). The researchers examined how dual enrolment programs are influenced by state policy. The findings demonstrate the variety of policies that establish how Dual Credit is administered by school boards and colleges. Karp et al (2004) found that 40 U.S. states have formal policy regarding Dual Credit programs. It is important to note that U.S. state
policies were developed in relation to dual enrolment as a reach-ahead strategy, and policy in Ontario was created to address programs targeted to “at risk” students. The issues addressed in these policies differ in some cases as a result of this distinction. The following discussions are derived from the scan completed by Karp et al.

The 2004 report identified that 33 of these state policies address student eligibility/admission requirements. Some say that the high school will determine “who gets in” and others delegate this decision to the post-secondary institutions. And, other policies state that this decision will be made collaboratively. Some policies are very limiting and name a specific target group of students, for example, students who are excelling academically. These latter policies exclude opportunities for those students who would likely benefit most from some encouragement/incentive that would lead to enrolling at college. Florida has two stated sets of admission criteria – one for academically excelling students and the other for students in technical/applied courses (Karp et al, 2004). The decision regarding which students can take DC programs and who will make that decision will be a policy consideration for DC programs in Ontario.

Decisions regarding class composition and delivery location differ at the state level as well. Twenty-seven states address location, and four of those specify that courses will take place at the post-secondary campus. Eight states address “mix,” that is, whether dual college and high school students are in the same class or whether the Dual Credit students are in a separate class. As noted in Karp et al (2004), “location and student mix can contribute significantly to the perceived rigor or quality of dual enrollment and sometimes can affect the ability of students to transfer their credit toward a degree at
other institutions” (p.28). Thirteen states have policies regarding who can teach these Dual Credit programs (Karp et al 2004). These policies vary greatly as well. Georgia mandates that they all be taught by professors from the post-secondary institution. Course offerings may be limited by state policy. For example, they may not include physical education courses and/or they may require that the college must approve the course and that the course cannot be normally offered at the high school (Karp et al, 2004). As a note of caution, this strict policy may discourage high schools from participating since the DC courses are both high school and college credits.

Funding for these Dual Credit courses/programs is addressed by 33 states. In some states the student pays tuition for these courses. In other states, the government gives funding to both the high school and to the college. Government funding to support Dual Credit programs may attract more students into these courses and provide a greater degree of accessibility.

Based on their study, Karp et al made a number of recommendations regarding state policy for Dual Credit programs. Firstly, policy should be clear about why Dual Credit programs are being offered and identify which students are being targeted for these. Policy should address funding that benefits the high school, post-secondary institution(s) and the students. Policy should also address student support services in addition to the curriculum. For instance, these students may need more tutoring and counselling. Finally, policy should enable schools to make Dual Credit opportunities available to a wide range of students. These recommendations are consistent with recent findings in the Ontario
Dual Credit experience as noted by Armstrong, Desbiens and Yeo in their 2006 report on Dual Credit programs.

The College and Career Transitions Initiative (CCTI) is a partnership that was established between the U.S. Department of Education and the League for Innovation. The goals of this initiative were to improve student transition from high school to college and to improve academic performance of students in college. Fifteen colleges in the United States were selected in May 2003 to pilot transition programs. In May 2006, third-year research findings showed that college enrolment had increased, that the need for remediation had declined and that high school retention rates had increased. Sample size was noted as a limitation due to small numbers of students who participated in the pilot projects (Lee, 2006).

Recommended next steps from this research included the integration of systems (K-12 and PSE) so that students could be tracked and data could be collected (Lee, 2006). The inability to track students from high school to post-secondary education made it difficult to conduct longitudinal research. The Cal-PASS system in California links the K-12 and post-secondary institutions so that students can be tracked as they move through their educational experiences. Florida developed a K-20 system so that student data could be collected and analyzed. This system has also been linked to Florida’s unemployment data so that studies related to education and employment statistics can be analyzed. The ability to track student data from high school to college enables longitudinal studies to be conducted to evaluate the success of DC programs.
In 30 of the United States, pre-school or pre-kindergarten to four-year college degree completion has been referred to as P-16. P-16 Commissions or Councils have been established to better align and link secondary and post-secondary education. These are similar to the (Kindergarten to 16) K-16 councils that Bob Rae recommended in his review. This trend should be the topic of further inquiry and consideration in Ontario.

Other Dual Credit research in the U.S. has found that students are more successful at college if their high school experience is designed to prepare them for college. A second success factor is that high school students have a clear understanding about what to expect in college. Dual Credit programs address both of these factors. Another Dual Credit program delivered in the United States is AVID (Advancement via Individual Determination). This program targets high school students who have average grades and who state that they do not have an interest in pursuing a college degree. These students enroll in a college preparation course, which includes academic and other learning supports. The students also take shorter duration college level courses taught by college faculty. There are a number of other programs in the United States where students are taking college courses in high school, including Early College High School (ECHS) and Middle College High School (MCHS) programs (Hoffman, 2005).

At Santa Monica College, dual enrolment courses were implemented in 1998, targeted at underrepresented (e.g., low income and minority) student groups. These students would not have qualified for Advanced Placement (AP) or International Baccalaureate (IB) programs. The following observation was made by one of the teachers: “the real benefit is that students are exposed to the rigors of college life and this
instills in them the awareness that they are capable, erudite individuals who can achieve a
great deal… they acquire confidence” (cited in Hugo, p.69).

The Community College Research Center (CCRC) in the United States reported on
research that was conducted by Karp, Calcagno, Hughes Jeong and Bailey (2007) to
analyze post-secondary achievement of Career and Technical Education (CTE) students
in dual enrolment programs. The participants of this study were from the State of Florida
and the City University of New York and the purpose of the study was to determine if
students (graduates 2001/02) who participated in dual enrolment/credit programs in high
school were more successful than their peers who did not participate. Success was
measured by criteria such as high school completion, enrolment in college and the need
for remediation. This research studied the effectiveness of the DC strategy in increasing
student success at college. Karp et al found consistently positive outcomes at college for
students who had participated in DC programs during high school. The Florida students
in this study were 4% more likely to complete one year at college and 5% more likely to
complete two years of college than their CTE peers who did not take a DC course. Based
on the findings of this study, the researchers concluded that DC is an “effective transition
strategy for many students” (p.17).

The American Youth Policy Forum (AYPF) produced a report in 2006 that identified
Secondary Post-secondary Learning Options (SPLOs) including CTE, AVID, Dual
Enrolment with the intent of assessing the impact of these on student success.

Studies done by Eimers and Mullen (2003), O’Brien and Nelson(2003) and Harnish
and Lynch (2005) found that students who have completed DC have higher first-year
college GPA and retention rates than students who did not take DC courses in high school. In another study done by Horn and Chen (1998), they concluded:

that moderate- to high-risk students who participated in high school outreach programs had almost double the odds of enrolling in a 4-year college than their peers who did not participate. Even though relatively few at risk students reported such participation (about 5%), the effect on college enrollment was significant…this study showed that intervention, whether on the part of the parents or the school, played a positive role in helping moderate- to high-risk students make the transition from high school to college. (Horn and Chen, p. 27)

Successful Dual Credit programs are programs that focus on what the students need, are highly collaborative and have sufficient funding for both the high school and the college. Worth noting as an interesting model for DC are Middle College High Schools (MCHS). These schools are located at or near the post-secondary campus. The students attending are “high risk” students who were not engaged in the traditional high school environment. Students earn one semester of college, which prepares them for college and puts them on the path towards completion of a two-year associate degree. There is a Middle College National Consortium that provides professional development, publishes a newsletter and provides resources in support of MCHSs.

Whereas MCHS students earn up to one semester of college credit, Early College High Schools (ECHS) employ an intensive Dual Credit strategy resulting in 56% of the students earning two or more years of college credit, and 93% overall earned some
college credit in 2010-11. In 2010, approximately 78% of graduates from ECHS pursued post-secondary education in the same year as compared to the U.S. National high school average of 69%. The first three ECHSs opened in the U.S. in 2002, and by 2012 there were 230 programs in 28 states with approximately 50,000 “at risk” students (Struhl and Vargas 2012).

The most current DC research that I found was completed in 2011 by Edwards, Hughes and Weisburg. The researchers studied eight high school/college partnerships in California involved with dual enrolment over a three-year period involving 1,157 students. The Concurrent Courses Initiative (CCI) was provided with support by the James Irvine Foundation so that the students were not required to pay tuition. The researchers concluded, “the most successful models have high academic expectations, focus on technical/career-based education, increased student support and work place learning” (Edwards et al 2011, p 2). The students in this study were “at risk” students referred to as “struggling.” Quantitative data, including student demographic information, support services received and GPA, were collected by the Cal-PASS data sharing system. Qualitative data were collected using student surveys that were administered during the spring of 2010. Themes identified included; authenticity (be as much like college as possible) and the need for support services.

Four models of credit-based transition programs (CBTP) have emerged in the United States: singleton (regular DE course), sequenced (several courses that provided a pathway to college such as, IB programs), Early College High Schools (ECHS) and Middle College High Schools (MCHS) and finally, emerging enhanced dual enrolment (include
drop out recovery programs). The emerging enhanced and ECHS/MCHS programs target underserved, middle- to low-achieving students and address the social needs in addition to academic attainment. The MCHS model is similar to the School Within A College model (SWAC) in Ontario, whereby high school students attend all classes at a partner college and students may take more than one Dual Credit course. The findings from the Dual Enrolment research conducted in the United States are not directly comparable to this study, since the dual enrolment programs in those studies did not target “at risk” students until recently and often were used to prepare students for associate degree and other degree programs.

**Canadian Models of DC programs in Manitoba, New Brunswick, British Columbia and Alberta**

“The approach is gaining popularity across Canada. Other than Ontario, dual credit programs are offered in New Brunswick, Manitoba, British Columbia and Alberta” (career.jobboom website). In addition to these provinces, other provinces including Nova Scotia and Newfoundland also offer Dual Credit programs. I found very little detailed information that related to the DC programs outside of the province of Ontario.

In 2000, the Manitoba Education and Training Department introduced DC courses to assist adult learners with the transition from secondary to post-secondary education in an effort to increase both high school graduation and post-secondary participation rates. In 2001, 28.4% of Manitobans between 25 and 64 years of age had not completed high school (Manitoba Advanced Education and Training, 2003). In 2001-02 DC courses were offered through the 55 Adult Learning Centers (ALC) in the province. The ALC in
Brandon, Manitoba surveyed 94 DC learners. These learners reported an increase in self-confidence (67%) and 50% of the students surveyed qualified for college admission. Forty-seven per cent reported that the DC opportunity influenced their decision to pursue a post-secondary education and 38% had enrolled in a post-secondary institution (Manitoba Advanced Education and Training, 2003). The introduction of DCs in Manitoba was deemed to have a “widespread positive impact for learners” and provide a “better opportunity for a smoother transition to the post-secondary level” (Manitoba Advanced Education and Training, p. 18).

Alberta introduced the *High School Completion Strategic Framework* in 2009 (Government of Alberta website, 2012). This framework included five strategies to improve high school graduation rates. The goal was to increase the completion rate from 79.2% in 2009 to 81% by 2012/13. ‘Successful Transitions’ was one of these strategies and included access to Dual Credit programs/courses. DC projects were under development in Alberta in 2010-11. In January 2012, Alberta proposed a 10-point plan that included the introduction of more opportunities for high school students to earn high school and college credits at the same time (Government of Alberta backgrounder, 2012).

The Department of Education in New Brunswick introduced DC programs in a 2007 report entitled *When Kids Come First* and DC pilot programs were subsequently implemented in 2008-09 (Government of New Brunswick, 2008). British Columbia and Newfoundland are offering Advanced Placement and the International Baccalaureate programs to high school students. The Ministry of Education in Nova Scotia introduced the Options and Opportunities program, which provided Dual Credit opportunities for
high school students in partnership with Nova Scotia Community College (Wallen, 2009). The number of Dual Credit programs offered in Canada is increasing and likely will continue to do so as the evidence of DC successes expands. Ontario has adopted a coordinated, system-wide, cross-jurisdictional approach to Dual Credit programs that is not occurring in any other province in Canada.

**Dual Credit programs in Ontario**

The focus of this research was on the Dual Credit programs in Ontario, and in one Ontario CAAT (Fleming College) in particular.

In Ontario, the first nine phases of the SCWI provided funding for a variety of projects, including: college information sessions, high school courses hosted at college campuses, pre-service teacher education and Dual Credit pilot projects. In 2005-06, Phase 9 included funding to pilot Dual Credit programs and courses. Provincially, 14 Dual Credit programs were funded and 361 students participated in these pilot projects (Armstrong et al, 2006). The SCWI co-management team commissioned an Analytical Review of the 14 Dual Credit pilot programs that were approved in Phase 9. The review of the DC pilots began in the spring of 2006 and the draft report was submitted by the review team in June 2006. The team consisted of David Armstrong, retired Director of Education at the Bluewater District School Board; Dr. Brian Desbiens, retired President of Fleming College; and Grant Yeo, retired Director of Education from the Durham District School Board (Armstrong et al, 2006).
This review team visited 11 Regional Planning Teams (RPT) at 14 different sites. During these visits, the team interviewed teachers, students, RPT members, college Presidents, Directors of Education and any staff who were involved with the projects.

The *Analytical Review of the Phase 9 SCWI Dual Credit Program* was released in the fall of 2006. This review included a description of each of the projects, key success factors, issues, insights and recommendations. The report recommended “that dual credit courses and programs should be available to all secondary school students across the province” (Armstrong, Desbiens and Yeo, p.112).

Each of the 14 pilot projects was different in its approach and served a wide range of students. Several of the pilot projects targeted “at risk”, disengaged students (e.g., Mohawk and Confederation Colleges). Others, such as Northern College, targeted drop-out students while others were enrichment programs for students who were excelling academically (e.g., St. Lawrence College).

As an example, Northern College partnered with the two school boards in the Timmins area and delivered their pilot program at the Northern campus in Porcupine. Their project was called “Destination College: Pathways to the Future.” The students were 18-21 years of age and had been out of school for at least one semester. These students were described as disengaged and pessimistic about their future educational opportunities. These students took four courses in each of two semesters and were taught by both high school and college teachers. These students were registered at the College, had College student cards, were members of the student association at the College and had access to all services and activities that Northern College students had. Eleven
students started in the fall of 2005 in their first semester, and all eleven students completed the semester successfully.

The preliminary data that were collected from the 14 pilot projects are very positive. Five of the 14 pilot projects started in the fall of 2005, and of the 107 students who started a Dual Credit program, 94 (88%) successfully completed the first semester (Armstrong, Desbiens and Yeo, 2006). The following common success factors were identified by the reviewers:

- champions from both the College and the Board(s)
- outstanding faculty/teachers
- encouragement and support given when students were invited to participate and the support they were given during the program
- orientation to college life and expectations were given early
- students could learn at their own pace
- students were treated as adult learners
- teacher/faculty attention
- career destination focus
- focus on self-esteem was very important as those pilots targeted “at risk” or drop-out students
- more time spent on the college campus increased their potential to succeed

A key insight of the reviewers regarding delivery of DC programs at the college campus was that “there appears to be a relationship between the amount of time required on a college campus and the re-engagement effect of a dual credit program. Students who are
disengaged, unfocused, out of school or about to leave seem to need a longer period each week of college campus adult learning experience” (Armstrong, Desbiens and Yeo, 2006, p.52). These success factors and insights are consistent with the Karp research findings, that is, that programs delivered at the college campus produced better results in student engagement and persistence. The findings also note the role that faculty play in the success of students, which is consistent with the significance that Rendón places on the role of the faculty in contributing to the student’s self-worth (validation) to their success at college.

The review team identified a number of outstanding questions/issues that need to be addressed if these programs are to be sustained or increased in number. These issues were consistent with the issues identified in the United States research. Some of the issues included: how to track students and measure long-term success and impact; how teacher relationships can be developed and sustained across the two systems; staffing (concern regarding teacher qualifications); and labour relations, scheduling, registration systems, credit tracking and funding. Implemented by the Ontario Ministry of Education in 2009, an identifier code, referred to as an Ontario education number (OEN), allows for the tracking of DC students from secondary school to college. This OEN identifier is randomly assigned to every student in Ontario when they begin primary school and appears on their Ontario Student Record (OSR). This facilitates the tracking of data, including academic grades, attendance and special needs. Long-term funding and labour relations issues are still outstanding.
The review team made a total of 50 recommendations to the co-management team.

These recommendations urge that:

- a variety of types of dual programs be offered at all high schools and be available to a variety of students
- wherever possible, the courses be delivered at the college campus
- programs that are targeted at disengaged/high-risk students be delivered in classes with fewer than 20 students.
- that the success of these programs be evaluated based on longitudinal studies that track graduation rates, increased employment rates, etc.
- team teaching be encouraged in dual programs
- participants have access to all of the services and activities that college students have
- students be registered as college students
- provincial policy be established related to dual programs so that students can receive credit for these courses on their OSSD and their college credential
- each college and Board of Education create policy related to dual diploma based on their respective ministry policy
- funding be available to school boards through the Grants for Student Needs and secondary boards use these funds to purchase seats in courses/programs from the college

Feedback regarding SCWI projects (as well as unfunded high school–college collaborations) was sought during 2005-2006 by the Colleges Ontario Coordinating
Committee of Vice-Presidents Academic (CCVPA). Issues identified in the scan were: funding, system approach and barriers. It was noted that the funding was only for a single year, which discouraged the continuation of pilots. It was difficult to assess the impact of these projects, and CCVPA recommended that data be collected and analyzed to assess the long-term benefits. These projects did not have a coordinated approach, and CCVPA recommended greater collaboration would be necessary between the Ministry of Education and the Ministry of Training Colleges and Universities. Barriers such as inadequate funding, lack of policy and constraints of Collective Agreements were also noted.

Six approaches to DC programs were offered in Ontario in 2007/08: advanced standing (10% of total), apprenticeship advanced standing (1%), team taught courses (17%), apprenticeship team taught courses (6%), apprenticeship college delivered courses (19%) and college delivered courses (47%). A total of 2,865 students participated in 2007/08 (up from 1,142 in 2006-07) in 128 DC programs. Approximately 40% of the 2,865 students who took DC courses in 2007/08 were “at risk” (disengaged, underachieving or had previously dropped out of high school). This percentage was lower than expected, given that the Ministry of Education’s Request for Proposals (RFP) in 2007/08 identified that the target group for DC programs were those students who were facing the greatest challenge of completing high school. Eighty-one per cent of DC students in 2007/08 were 16-18 and the remainder 19 and 20 years of age. Seventy-nine per cent of DC students were full-time high school students (Final SCWI Report, 2009).
In Phase 12 (2008/09), there were 174 DC programs approved to run and 161 of these were delivered. A total of 3,883 students were enrolled in these programs and 51.7% were identified as “at risk” (disengaged, underachieving or had recently dropped out of high school). One hundred and sixty-one DC programs (6 types) were offered in Ontario in 2008/09 and of those, 103 were college courses delivered at a college (approximately 70%). The lowest success rate of the 6 types was noted in the team taught/apprenticeship DC programs. DC programs that were delivered at a college had the highest success rate. The RFP for Dual Credit funding Phase 13 attracted 297 proposals from 24 colleges and 70 school boards wanting to offer Dual Credits. This was projected to increase the number of students in Dual Credit courses to over 9,000 students in 2009/10 (SCWI forum, May 5, 2009 Humber College). The priority for funding of these DC projects remains students most “at risk.” The emphasis in Phase 13 was on target groups such as, aboriginal students, “School Within A College” models and apprenticeship. In 2010/11 the SCWI approved funding for 400 Dual Credit programs in 70 school boards in partnership with 24 colleges and 10,000 secondary students participating in DC programs (Ministry of Education memo, November 8, 2010). In 2011/12 the number of DC programs grew to 455 with over 15,000 students enrolled (SCWI Newsletter, 2012). In approximately six years, student participation in DC programs grew from 361 to 15,000.

In 2010/11, gaining in popularity was the School Within a College (SWAC) delivery model. High school students attend all classes at the partnering college. These students are enrolled in one or more DC college courses taught by college professors and high
school courses taught by secondary school teachers. SWAC is similar to the U.S. Middle College High School model. Participation in SWAC had grown from 832 students in 2009/10 to 1,790 in 2010/11, and in 2010/11, 28% of these students had previously dropped out of high school (SCWI newsletter, spring 2012). In 2011/12, 1,500 SWAC students were invited to respond to a survey and 436 (29%) participated. Students participating in SWAC reported that their attendance had increased as compared to high school, noted an increase in their sense of belonging (26% vs. 65%), reported more realistic expectations of college (84%) and were more confident (84%). Analysis of their involvement in college life showed: 9% were in clubs or on teams, 10% accessed help from a writing/learning centre, 12% accessed counselling and support services, and 37% participated in gym/fitness activities at the college (Dual Credit Student Data Report, 2010-11). These characteristics associated with the learning environment are consistent with Tinto’s integration framework and the work of Willms et al and the three dimensions of student engagement. These theories identify the contribution that both social (sense of belonging) and academic (classroom attendance) integration and engagement have on student persistence. Rendón’s validation theory may also explain the increased level of confidence reported by these students.

Themes identified in the feedback given by DC participants included the fact that DC programs provide students with an opportunity to explore career pathways and “experience college life” (Dual Credit Data Report, 9-10, p.8). The students commented on increased self-esteem, maturity, improved communication skills and the importance of
attendance. The DC experience was identified as “an opportunity for these students to see that they could be successful at the college level” (Dual Credit Data Report 09-10, p.8).

Challenges identified by teachers and administrators in the 2009 DC Report included difficulty for students in keeping up with assigned readings and time management. Previously identified challenges with DC programs were addressed by incorporating an orientation to the college and an emphasis on the importance of attendance.

Themes arising in the student feedback included that they had a better sense of what career they would like to pursue, developed better organizational skills, improved social skills and increased self-esteem. One student is reported to have stated “At one time, college seemed scary, but after attending (the DC program) the thought of college is no longer scary to me” (Dual Credit Report, 09-10, p.9). Challenges identified by these students were “in college you’re on your own,” “higher level and difficulty of tests and projects,” and “getting to college on time” (Dual Credit Data Report, 09-10 p.9).

In July of 2010, Fleming Data Research (FDR) at Fleming College produced a report based on a survey administered to 144 high school DC students. In this report, 95% of the survey respondents said that they were “more confident about my ability to succeed in college,” and 87% said that they were “better prepared academically for college” (Dual Credit course survey summary report, p. 7). With regard to increasing knowledge and awareness of careers in the field, 93% of the respondents agreed (Dual Credit course survey report p. 8). This enhanced awareness of the link between college and career aspiration was also noted as a contributing factor to student engagement and persistence by Armstrong et al (2006) and Edwards et al (2011).
In his Dual Credit research completed in 2010, Whitaker states that:

While it was beyond the scope of the study to track Dual Credit students beyond high school, the evidence suggests that these students are much better positioned to participate and succeed than had they not been involved in dual credit initiatives. (Whitaker, p. 130)

Questions not addressed in the literature

My review of the current literature reveals a number of questions related to DC programs that have not been addressed. Do DC programs in Ontario increase participation and graduation rates in colleges? Is one DC delivery model more successful than others in preparing secondary graduates for success at college? What are the features of DC programs that college students perceive contribute to their success at college? Are DC programs more effective if a student subsequently enrolls at the same college (as opposed to another college) where they took the DC? What are the long-term benefits/successes of Dual Credit programs, and what is the return on investment (ROI)?

Summary

My research questions focused on the impact that the DC experience has on college success as perceived by DC students after they have completed one semester of full-time study. There are three student experiences that provide the framework for my research and the theoretical framework proposed. The first student experience occurs during high school, followed by participation in the DC program and, finally, full-time studies at Fleming College. The target group for Ontario DC programs is “at risk”/disengaged high school students, and the DC experience could be viewed as an “engagement strategy” that
helps students with their transition from high school to college. Karp refers to DC programs as a “social intervention” (Hoffman, p.22) strategy, whereby students learn about the expectations of college. Both of these perspectives were considered in this study, but they are not mutually exclusive.

These three experiences (i.e., high school, the DC program, and college) were considered within the context of previous research in the areas of student engagement, integration and student persistence and how they contribute to successful transition from high school to college. Previous research by Tinto and Karp (integration) Chickering and Willms et al (engagement), Rendón (validation) and others as noted, were reviewed as they are all relevant to this study.

Chapter 2 focused on the specifics of Dual Credit programs in the United States and in Ontario, set within the context of relevant literature and research on the topics of engagement, integration and persistence.

Chapter 3 provides an overview of the research methodology and procedures that were used to collect, analyze, and interpret the data based on the themes that I identified in the literature review.

Chapter 4 presents the findings based on the data collected from student surveys and interviews, transcripts and relevant documentary information. Finally, Chapter 5 provides an analysis of the findings, conclusions and recommendations for further research on the topic of Dual Credit.
Chapter Three: Methodology and Procedures

The purpose of this study was to explore and describe how Dual Credit (DC) programs taken during high school impact the persistence and performance of students when they are in college as perceived by the students who participated in a DC program. What do they think the specific features of the program are that contribute to their persistence in college or how these programs can be enhanced? This is a case study that focused on Dual Credit students who attended one full-time semester of academic study at Sir Sandford Fleming College. With a full-time student enrolment of approximately 6,000, Fleming College is a medium-sized Ontario college located in Southeastern Ontario; the main campus is in Peterborough, another, smaller campus is also in Peterborough and three satellite campuses are located in Cobourg, Haliburton and Lindsay. The participants who participated in this study were registered in programs across these five locations.

Research Questions

The study’s overall research question was: How does participation in a Dual Credit (DC) program impact the academic performance and persistence of participating students at Fleming College? Specifically, this case study addressed the following questions:

1. What is the relationship between the DC program content and the program of study that participants subsequently took at Fleming College, and did the DC program provide insight into the students’ career interest?
2. What factors or features of DC programs are identified by the study participants as assisting them with (a) the transition from high school to college and (b) contributing to their persistence at college?

3. To what extent are factors such as: high school academic performance, type of college program (certificate, diploma) taken, related to college persistence of the participants?

4. How does the frequency with which participants accessed Learning Support Services (LSS) while taking courses at Fleming College compare to other (non-DC) college students in similar college courses and programs?

5. How does the academic performance of participating DC students in their first semester at Fleming College compare to other (non-DC) Fleming students in first semester?

6. What improvements/enhancements/learning supports need to be made to the DC program to increase college success of Dual Credit students as identified by participating students?

**Research Design**

A case study approach, which includes both qualitative and quantitative methods to collect and analyze data, was used in this research. Grix (2004) points out that a single case study, where a particular case is studied in depth, is most applicable for a “unique or not yet understood” area (Grix, p.52). A study done by Whitaker (2011) examined the DC program as it related to success of students while they were in high school and how DC increased their access to post-secondary education. However, I did not find any research studies conducted in Canada on the topic of DC related to college success, which makes
the case study approach an appropriate choice for this study. Yin (1994) defined a case study as “an empirical enquiry that investigates a contemporary phenomenon within its real-life context” (Grix p.51). This also applies to my case study, as the context is the fairly recent introduction of DC programs in Ontario and how one such program impacts students at one Ontario College. As noted by Merriam, the case study is the most often used approach in educational research (cited in Creswell, 1994). Creswell identifies the following characteristics of this approach:

- the analysis consists of making a detailed description on the case and its setting
- the researcher seeks a collection of instances from the data hoping that issue-relevant meanings will emerge…we develop generalizations about the case in terms of patterns and how they compare and contrast with published literature.

(Creswell 1994, pp.153-54)

These are features of this case study.

Also, McMillan and Schumacher (1997) identify the following as features associated with a case study design:

- Qualitative research uses a case study design, meaning that the data analysis focuses on one phenomenon, which the researcher selects to understand in depth regardless of the number of sites, participants, or documents for a study….Sometimes the focus is on different groups in a program such as demographic groups (male/female or black/white) or programmatic groups (dropouts/graduates) or those who do well/those who do poorly), but the purpose is to understand one phenomenon: the educational entity or process. Subunits of
separate individuals or groups are not viewed statistically comparative or as mutually exclusive but as different groups who are likely to be informative about the research foci. (pp.393-394)

Yin (1994) as cited in Grix (2004) on page 50 identifies three types of case study: descriptive, exploratory and explanatory. Descriptive case studies typically deal with a historical perspective, exploratory may point to areas for more research and determining relevant variables and finally the explanatory type seeks to make generalizations. This case study would be further defined as exploratory and to a lesser extent descriptive.

A sequential mixed methodology was used: both qualitative and quantitative data were collected and analyzed. The sequential method was used rather than concurrent data collection, as the data were collected in three phases, and the findings of each informed the data collected in the next phase. The first phase was document analysis, followed by the administration of a survey questionnaire, and finally interviews were conducted. The grades of participating students were reviewed following the completion of those three phases of data collection.

According to Lincoln and Guba (1994), qualitative methodology is a research method in which the research aims to assess, describe, document or inform problems from the stakeholders’ perspective. Qualitative methodology is often used when “not much has been written about the topic or population being studied and the researcher seeks to listen to informants and build a picture based on their ideas” (as cited in Creswell, 1994, p. 21). I found in my review of the literature that research on the impact of DC programs on college success, particularly in Ontario colleges, is limited, which
makes this research methodology very relevant. The purpose of case study and qualitative research methodology is to gain a deep understanding of the phenomenon of interest, rather than generalization of findings to other contexts.

Quantitative methodology was used for some of the data collected in this study, specifically to compare the academic performance of DC student groups to that of the overall student population at Fleming. Quantitative methodology may reduce researcher bias since the data collected “exist apart from the researcher” (Creswell, 2004, p. 116). Specifically, the participants’ academic average (%) in high school and college and demographic data gathered from survey questionnaires, such as age and gender, were collected.

Triangulation is the “use of multiple data sources, data collection methods and theories to validate research findings and also helps eliminate bias” (Anderson, 1998, p. 131). Denzin used the term triangulation to refer to a study that used a combination of methods: “The concept of triangulation was based on the assumption that any bias inherent in particular data sources, investigator and method would be neutralized when used in conjunction with other data sources, investigators and methods” (Denzin as cited in Creswell, 2004, p. 174). Triangulation has been achieved in this study by using both qualitative and quantitative methods and multiple data sources, including transcripts, self-reported perceptions of students and relevant documents relating to DC programs.

Greene et al (1989) identified five reasons that supported the use of combining methods. In summary, the rationale provided by Greene is that with the convergence of results, different aspects of the problem may surface, one method may inform the other,
conflicting information may lead to a different perspective of the problem, and using mixed methods adds breadth to the study (as cited in Creswell, 2004, p. 175).

Finally, based on a literature review on the topic of dual enrolment and research methods for dual enrolment, Allen (2010) recommends, “researchers should pay close attention to pre-existing differences among dual enrollment students and their peers not participating in the program” (Allen, 2012 p. 50). In order to understand more deeply the relatively unknown and under-researched phenomenon of the impact of the Ontario DC program on participating students when they subsequently enroll in college studies, it was useful to do an initial exploration of the performance of the participating sample of DC students and that of their peers who had not participated in a DC program. The study explored and described how the DC students performed, based on the average academic grades achieved, how often they availed themselves of learning support services while studying at Fleming, and their subsequent persistence rates. Similarly, it explored and described the behaviours of their peers who had not participated in DC program in order to gain a broader understanding of any similarities or differences that might be observed. Participation in the DC program was not treated as an intervention strategy, nor was their peer group viewed as a control group. There was no intent to determine the statistical significance of any differences that might be observed.

**Study Context**

The college selected for this case study is Sir Sandford Fleming College. Fleming College is one of the 24 Ontario Colleges of Applied Arts and Technology (CAAT). I selected this College out of my personal interest in the evaluation of the DC program at
my home institution. The President of Fleming College, Dr. Tony Tilly, granted written permission for me to name Fleming College in this study. This request was made by email on January 10, 2011 and approved on January 10, 2011 (Appendix G).

Selection of Participants and Response Rates

(a) Description of Participants

In this case study, data were collected from consenting students who had participated in a high school DC program offered by any Ontario secondary school and then attended full-time studies at Fleming College. All DC students (N=270) who were registered full-time at Fleming in the fall of 2010 and fall of 2011 in semester one were invited to participate in this study. The purpose of this study was to collect and analyze student perceptions of their DC program as they related to their academic performance at Fleming College.

The students who did not return to Fleming College in the following winter were coded by me as B-1 and referred to as the “non-persisters”. The students who progressed to semester two of the same program were coded as “persisters”, B-2. The students were coded B-3 if they persisted at Fleming College during the winter semester, but were repeating semester one of the same program or moved to semester one of a different program in the winter semester.

There were 75 DC students registered at Fleming College in full-time programs, across the five campuses, during the fall of 2010. Of these 75 students, 47 (coded as B-2) progressed to semester two of the same program, and eight students (coded B-3) were
repeating semester one of the *same program* or had moved to *semester one of a different program* at Fleming College in the winter of 2011.

Fifty-five of the 75 DC students were retained by Fleming College from the fall of 2010 to the winter of 2011 and were in either the B-2 (persisters semester 2) or the B-3 (persisters semester 1) group. This represents an overall retention rate of 73.3% as compared to the fall 2010 semester one to the winter 2011 overall College (which includes the DC students) persistence average of 82.5% (FDR, 2012). The College rate excludes the Haliburton Campus because the full-time student numbers are very small and the full-time programs offered at Haliburton are off cycle and compressed in their delivery format. Only one DC student in this study was in full-time studies at that campus.

Twenty (27%) of the students (coded B-1) did not return to Fleming College in the winter of 2011. Three of the 20 students were registered in a 12-week Heavy Equipment Operator program during the fall of 2010. This program is a funded post-secondary program that provides graduates with the skills to operate five types of heavy equipment. The inclusion of these three students in the B-1 (non-persisters) group is consistent with the data collection processes of FDR for the purpose of calculating the college retention rate.

There were 195 DC students registered at Fleming College in full-time programs, across five campuses in the following fall of 2011. Of these 195 students, 140 (71.8%) progressed to *semester two* of the same program and 20 (10.3%) registered in *semester one of the same program or registered in semester one of a different program* at Fleming.
College in the winter of 2012. This represents an overall retention rate of 82.1% for the fall 2011 DC students, which is just slightly higher when compared to the fall semester one 2011 to winter 2012 retention rate of 81.5% (FDR 2012) for all Fleming College students. Thirty-five (17.9%) DC students did not return to Fleming College in the winter 2011 (three of these students were registered in a 12-week post-secondary program in the fall of 2011). In comparing the retention rates of the DC students with the overall student population retention rate, it is important to keep in mind that the overall rate includes the DC students as well.

The participants in this study were divided into 2 groups: the non-persisters (B-1) and persisters. The persisters were sub-divided into 2 groups as well: the persisters who progressed to semester 2 of the same program were coded (B-2) and the persisters who were retained by Fleming College as full-time students but were registered in semester one of the same program (repeating) or semester one of a new program were coded (B-3). There were three B-3 students in the fall 2011 study group. Two of the three students (67%) were academically unsuccessful (as per the academic regulations) in their first semester at College and decided to repeat the first semester and 1 of the 3 (33%) performed well in semester one and enrolled in semester 1 of a new program during the winter.

<table>
<thead>
<tr>
<th>Non-persisters</th>
<th>Persisters</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-1</td>
<td>B-2</td>
</tr>
<tr>
<td></td>
<td>B-3</td>
</tr>
</tbody>
</table>
(b) Recruitment of the Participants

Recruitment of the 2010 Study Group

There were a total of 75 students who were registered full-time in the fall of 2010 and invited to participate in this study. These students were identified by the Registrar’s Office and contacted by staff of the Fleming Data Research (FDR) office on my behalf and invited to participate voluntarily in this study. An email message, including an information letter (Appendix A) and letter of consent (Appendix B), was sent by staff of the FDR office on my behalf to all of these Dual Credit students. This information was sent to the students on March 25, 2011, using the Fleming College email addresses and to any other personal email addresses on file for these students at Fleming College. The email message with instructions can be found in Appendix H. Completed consent forms were to be returned electronically to the attention of the researcher.

Because of the low response rate, a final attempt to reach the DC students by telephone was made during the period from April 27 to November 9, 2010 by a Research Assistant (RA) hired by me who had signed a confidentiality agreement prior to accessing any student information or study data. Once contacted by phone, the students were invited to participate voluntarily and their verbal consent was taken by phone by the RA and documented. The students then had the option to complete the survey over the phone or electronically as a web-based survey.

In addition to the invitations to participate in the on-line survey that were sent to the DC students by the FDR researcher and the RA as described above, the letter of consent (Appendix C) also requested their participation in a follow-up interview if selected. Upon
consent, the students would be contacted by telephone by the RA to arrange for a telephone interview. Because of the small number of students participating in this study and consenting to the interview, I decided that the RA should attempt to contact and interview all students who had consented to be interviewed, rather than a random sample as initially planned.

The semi-structured interview questions (Appendix D) were provided to the RA by me with specific instructions regarding which specific questions required probing for further details and how to do so. The telephone interviews were conducted, audio-recorded with the participants’ consent and transcribed by the RA. The interviews took approximately 20 minutes and were used to follow up on my specific areas of interest based on the review of literature and specific research theory related to engagement, integration and persistence. The interviewee responses were not linked in any way to the interviewees’ previous survey responses. The transcriptions were coded (B2a, B2b and so on) to protect the identity of the student. The RA retained these files in a secure location at her home until all interviews were completed and then forwarded the transcribed documents to me.

**Group B-1 – non-persisters 2010**

In addition to the email invitation sent to the non-persisters, the invitation and consent letters were also sent to these students by Canada Post on March 26, 2010. Included in the mailout was an addressed, postage-paid envelope, and students were asked to return their consent to me by Canada Post. An email reminder was sent by FDR on March 31st, 2010 to the B-1 (non-persisters) students in this 2010 group.
Groups B-2/B-3 – persisters 2010

As with the B-1 non-persister group, FDR followed the same process for inviting all students who did continue at the College the following semester (coded B-2 or B-3 – persisters). But these students were asked to return their signed consent forms to the FDR Office or to the School Office, depending on which campus the students were located, or by email to my attention.

In addition to an email invitation by FDR on my behalf to these students, I sent an email to all Fleming College program coordinators on March 25th, 2011, with information about the study and a request that they make an announcement in their class during the week of March 28, 2011 regarding this study and directing them to the email sent by FDR on my behalf. A script (Appendix M) was provided to the coordinators to ensure that there was a consistent approach to the message and to ensure that students would not identify themselves individually to the coordinator.

In addition to the email correspondence sent to Groups B-2/B-3 (persisters), a hard copy of the information letter and letter of consent were mailed by FDR via Canada Post on April 6 and 7, 2011, to those students who did not respond to the email communication. Fleming Data Research also sent a reminder email message to all participants on my behalf on March 31, 2011.

For those students who had consented to be interviewed, I initially asked the RA to interview five B-2 students who had consented to be interviewed with the intent of determining whether additional interviews would be necessary. After being randomly selected by the RA, five students were called by telephone. But because of the low
response rate the RA telephoned all participants who had agreed to be interviewed, not just the students selected randomly. There were no 2010 B-3 students who agreed to participate in this study.

Recruitment of the 2011 Study Group

The overall participation rate was very low for the B-1, B-2 and B-3 participants in 2010 so that it was necessary to expand the study group to include DC students attending full-time studies during the fall of 2011 (n=195). This amendment in the protocol was formally approved by the University of Toronto and Fleming Research Ethics Boards. All participants in this study (n=195) were invited and had an opportunity to voluntarily participate by way of telephone contact by the RA or by way of email with letters of information and consent attached. These were sent on my behalf by a staff member in the FDR office.

During the winter of 2012, an RA (on my behalf) attempted to contacted all 195 participants (2011 B-1, B-2 and B-3 students) by telephone and requested their voluntary participation in the study. The information letter including consent (Appendix J) was read to each potential participant, and if they consented to participate, they were given the choice of completing the survey electronically or over the phone. The RA documented their verbal consent, noting the date and time of the consent on a form provided by me.

All of the students who agreed to complete the survey chose to complete it over the telephone. The survey was conducted over the phone, and the RA entered responses into an on-line survey document on behalf of each respondent. Each completed survey was coded as B-1, B-2 or B-3 for the purpose of comparative analysis. The survey was
anonymous, but participants who consented to participate in a follow-up interview provided their name and contact information to the RA so that they could be contacted to arrange the interview. The participants who requested a copy of the study upon completion also provided contact information. The RA retained these files in a secure location at her home until completion of all interviews and then forwarded them to me. I also kept all information related to study participants confidential and secure and accessible only to my thesis supervisor and me.

The consent also invited these students to participate in a follow-up interview if they were randomly selected. From the list of those who consented to participate in the interviews, the students were to be randomly selected and contacted by the RA by telephone, requesting a telephone interview. As with the 2010 group, because of the small number of students consenting to participate, I again asked that the RA contact and interview all students who had agreed to be contacted for an interview. The interview questions (Appendix D) were provided to the RA by me with instructions regarding which specific questions required probing for further details. All interviews were audio-recorded with the participants’ consents. After the interviews, the RA transcribed the audio-recordings. The transcripts were coded (B1a, B1b, B2c, B2d and so on) by the RA to protect the identity of the students. The interviews took approximately 20 minutes and were used to follow up on specific areas identified in the survey questionnaire and of interest to me. The interviewee responses were not linked in any way to the interviewees' previous survey responses.
(c) Response Rates

Because of the low response rate of the fall 2010 DC student group, a change to the methodology was proposed by me and approved by the Research Ethics Boards. This change included recruiting the second cohort study group (fall 2011) to participate in the study by way of telephone invitation, as compared to invitation by email and/or Canada Post as in the previous year (fall 2010). This increased the consent to participate rate from 28% (n=21) of 2010 students to 31% in 2011(n=60) and of greater importance to this study, increased the overall number of students participating in this study. The requested amendment to the methodology to increase the student participation rate was approved by the Research Ethics Boards (REB) of both the University of Toronto and Fleming College. The low consent rate of the 2010 students (28%) could be partially attributed to the timing of the invitation to the B-2 and B-3 students (persisters), which occurred in the latter part of the academic semester (March 25) when students typically have many assignment deadlines and tests. In the case of the B-1 students (non-persisters), they had not been Fleming College students for almost three months when they received the invitation to participate in a College-related study. Second, based on general student feedback gathered informally by me through discussions with students, some students were not accessing their College email accounts on a regular basis and if they were, they might have been selective about which emails they read and responded to. Third, 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.
Overall, only 3 of the 20 (15%) B-1 non-persisters 2010 students consented to participate in the study. One student completed the survey on-line and also consented (on the survey) for me to access this student’s high school and college transcripts. Three B-1 (2010) students agreed to be interviewed, but the RA was not able to reach any of these students to schedule an interview despite several attempts to do so.

The B-1 non-persisters 2011 (n=35) participation included 12 students (34%) who consented to participate in the study and nine (26%) completed the survey; 11 (31%) who agreed to be interviewed and 10 students (29%) who permitted me access to their high school and college transcripts. Nine students (26%) completed the survey and two (6%) students were interviewed.

Of the 47 2010 B-2 persisters group (i.e., those who progressed to semester 2), 18 (38%) consented (5 by mail or email and 13 by phone) to participate in the study and complete the survey and 34% (n=16) consented to be randomly selected for an interview. Sixteen (34%) consented to access to their high school and college transcripts (one student’s name could not be read so the transcript could not be accessed), and 12 of 47 completed the survey (26% response rate). Only two B-2 (persisters semester 2) students could be contacted and were interviewed by the RA (16% of the 12 students who completed the survey). There were no 2010 B3 (i.e., students who returned to semester 1) students from the 2010 cohort who consented to participate in any aspect of the study.

Overall, from the 2011 B-2 persisters group (n=140) who progressed to semester two, 43 students (31%) consented to participate in the study, 31 students (22%) consented to be interviewed, 37 students (26%) consented to access to their high school and college
transcripts, and 33 students completed the survey (26% of the total B-2 group). Ten students (30% of those who completed the survey) were interviewed by the RA.

Overall, from the **2011 B-3 persisters group** (n =20) who were retained by Fleming College, either repeating semester one or in semester one of a new program five students (25%) consented to participate in the study; four students (20%) consented to be interviewed; and four consented to give me access to their high school and college transcripts, and three completed the survey (15% of the total). The RA was able to make telephone contact with two students (67% of those who completed the survey) for the purpose of an interview.

Those students who agreed to participate in the study by completing a survey questionnaire were also asked if they agreed to be contacted for an interview and for permission for the researcher to access to their high school and college transcripts. Some of the 81 students who consented to participate in the study did not subsequently participate in any or all aspects of this study.

**Data Collection and Recording**

(a) Document Analysis

Document analysis was used to review the current status of DC programs at Fleming College and the overall performance of Fleming students (which includes the DC student data) for the purpose of comparing both to similar measures for that of DC participants in Ontario. Relevant Fleming College documents were reviewed, including Fleming Data Research reports such as the First Year Student Survey, Retention Reports, Key Performance Indicator (KPI) reports and survey information (not part of the data in this
study) collected by FDR from DC students who attended Fleming College while enrolled
in high school. I reviewed high school and College academic grades data provided to me
by FDR for consenting DC students (n=70). I also reviewed FDR data related to student
registration and program semester length for all Fleming students and specific
information regarding program semester length for DC students only. I reviewed all the
documents related to DC students as well as all Fleming students and identified themes
that were relevant to my research topic. These data are available to all Fleming College
staff on the FDR website or by request to FDR.

Table 1 provides a summary of the number of participants in each of the study groups.

### Table #1 Summary of Number of Participants in each Group

<table>
<thead>
<tr>
<th>Total population of DC students fall 2010 &amp;</th>
<th>2010- B1 (n= 20)</th>
<th>2011 - B1 (n= 35)</th>
<th>2010- B2 (n= 47)</th>
<th>2011 - B2 (n= 140)</th>
<th>2010- B3 (n= 8)</th>
<th>2011 - B3 (n= 20)</th>
<th>TOTAL 270</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consented to participate n= 81</td>
<td>3</td>
<td>12</td>
<td>18</td>
<td>43</td>
<td>0</td>
<td>5</td>
<td>81</td>
</tr>
<tr>
<td>Completed Survey n= 58</td>
<td>1</td>
<td>9</td>
<td>12</td>
<td>33</td>
<td>0</td>
<td>3</td>
<td>58</td>
</tr>
<tr>
<td>Access to Grades permitted n= 70</td>
<td>3</td>
<td>10</td>
<td>16*</td>
<td>37</td>
<td>0</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>Consented to be interviewed n= 65</td>
<td>3</td>
<td>11</td>
<td>16</td>
<td>31</td>
<td>0</td>
<td>4</td>
<td>65</td>
</tr>
<tr>
<td>Interviewed and transcripted n= 16</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Contacted by phone &amp; refused to participate</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>2</td>
<td>13</td>
</tr>
</tbody>
</table>
2010 – Total population of DC students fall 2010 N= 75
2011 – Total population of DC students fall 2011 N= 195

* 16 students agreed to be interviewed but I was unable to find grades for one person - unable to read name properly

B1 – non-persisters
B-2- persisters who progressed to semester two of their program in the winter
B-3 – persisters who progressed to the winter semester but in were registered in semester one of the same program that they were in
during the fall or semester one of a new program – these students were retained by the college but not in the same program

**Instrumentation**

With the participants’ consent, both qualitative and quantitative data were collected from DC students’ high school and college transcripts, a survey questionnaire and through interviews. The quantitative data provided a description of the performance of the students in the study groups and that of all Fleming students, while the qualitative data provided a deeper understanding of the phenomena being explored. The data enabled a description of the experiences and performance of these two groups of students; there was no intent to determine the statistical significance of any similarities or differences related to each of these groups of students. Interpretation of the findings was based on themes identified in the literature review and through my relevant professional experience.

(b) Questionnaire Survey

This study used questionnaire surveys (Appendix C) to gather both quantitative and qualitative data. The questions in the on-line survey (Appendix C) and in the student interview guide (Appendix D) were developed by me based on the themes related to student engagement, integration and persistence that arose from the literature review and from my own experience working with DC students in my role as Dean at Fleming College during the period from 2006 to 2012. The survey questionnaire was administered
by FDR staff. Participating students could complete the survey on-line directly or over the phone facilitated by a research assistant.

The survey sought data that would answer the research questions about the perceptions of the participating DC students. The survey that was distributed to Group B-1 (non-persisters) was also intended to explore the reasons why this group did not continue with their studies at Fleming College and how their perceptions about the DC program compared with the perceptions of the students in Groups B-2 and B-3. The survey administered to Group B-2 (persisters semester 2) and B-3 (persisters semester 1) was intended to explore the perceived relationship of the DC program to success at college and how perceptions of the B-2/B-3 students about the DC program compared to the perceptions of the students in Group B-1 (non-persisters).

(c) Interviews

The questionnaire survey was followed by interviews of participants who agreed to be interviewed (n=65). The students interviewed were intended to be randomly selected, but in fact because of the low response rate, any student who could be contacted by telephone was interviewed by a research assistant (n=16). The intent was to interview all consenting students until saturation was reached. There were two research assistants (RAs) hired to assist me in contacting participants to invite them to participate in the study, and to conduct the survey questionnaire and interviews. The two RAs signed statements of confidentiality (Appendix F) prior to accessing the names and contact information of participants, making any telephone contact with participants to invite them, administering the questionnaire, and conducting the interview. The interviews were
designed to collect additional qualitative data and clarification. The interviews were conducted by one of the two RAs by phone for all groups and all were audio-recorded with the participants’ consents. These interviews permitted the RA, on my behalf, to probe the participants’ responses more deeply if needed and also allowed an opportunity for the respondent to ask for clarification and expand on his/her responses. The interviews were semi-structured (Appendix D). The interview questions were prepared in advance and probes suggested by me were used to clarify issues. The interview questions were sent out in advance to the participants. At the beginning of the interview, participants were identified by an assigned number (coded) to ensure that they would not be identified in any reporting of the findings.

The first RA contacted and interviewed the participants from the fall 2010 study group. The second RA contacted and interviewed the 2011 study group. Transcripts were made available by the RA by email to the participants of the 2010 and 2011 study groups so that they could validate the interview data and ensure accuracy. None of the students requested changes to the transcribed interview provided to them by the RA. Qualitative responses were subjected to deep and constant comparison analysis and coded by me by theme to assist in the analysis of the data.

First, all of the transcripts were reviewed by me and general themes were identified and documented by me. Then the frequency of these themes was noted to determine a short list of the most frequently recurring themes. Keywords were also noted where participants used the same words or those similar in meaning in response to specific questions. These themes were also compared to determine where similarities or
difference existed between the B-1, B-2 and B-3 groups. These themes were then reviewed and considered within the context of the literature related to this study.

(d) Student Academic Records

Academic records of students who consented to make these available to me were also analyzed by me and provided another measure of academic achievement in addition to achievement measures in the student survey questionnaire. In addition to course grades, these student records also provided DC course numbers, which in turn enabled me to determine where (geographically) the course was offered and whether or not it was delivered at the high school or college campus. In previous DC research, the delivery location of the DC program was found to make a difference in student success.

Although the primary goals of the DC program in Ontario were to increase the engagement of “at risk” students, to increase high school completion rates and to facilitate continuance in postsecondary education, it was important to explore as well how participation in the DC program may have impacted the academic performance of participating DC students. This was an exploratory, descriptive case study and not an experimental study to assess the impact of the DC intervention on academic achievement. It was not possible to untangle the multitude of variables in the profile of participating DC students, nor those of the student population of the case study college that would be essential to compare with any level of credibility the academic performance of these two groups. However, as an initial exploration and possible suggestion for further research, it was useful to describe the academic performance of both groups.
Participating DC students had consented to my accessing their academic data and President Tony Tilly gave permission for me to access and to utilize the overall College academic average from semester one students from the fall of 2010 and 2011 (Appendix M). This overall College average (which included the DC student grades) was provided by Fleming Data Research Office at Fleming College. The overall College average was compared to the overall semester one (2010 and 2011) DC student average of those students who agreed to my access to transcripts, which was also provided to me by Fleming Data Research.

**Establishing Credibility (Content and Face Validity)**

**Pilot Testing**

The survey questionnaire and the interview guide were pilot tested by me for face validity in the winter of 2011 with six upper semester Dual Credit students who were attending Fleming College. The six students who participated in the pilot testing of the data collection tools signed consents to participate. The students were asked to review the survey questions and to provide feedback on the clarity and relevance of the questions based on their experience in the DC program. A total of six suggestions were made by the student pilot testing group, including edits to the wording of specific questions and suggestions to provide additional multiple-choice response options on the survey. Based upon input from the pilot group participants, changes were made by me to the final survey questionnaire and three changes were made to the wording of the interview questions used in this study. These students were not part of the research in this study and their responses were not included in the findings.
I also solicited input from a Fleming College staff researcher regarding the wording of my questions and responses to questions on the survey to ensure that questions were neutral and not leading the respondent in anyway. However, I did not pilot test my data collection tools for content validity with an expert on the topic of DC programs, but did have DC content expertise based on my five years of study.

**Data Analysis**

The survey questionnaire and interviews elicited qualitative and quantitative data. Qualitative data were derived from my deep analysis and constant comparison of the content and identification of themes that emerged from the student responses in both the surveys and interviews. The qualitative findings for each group of participants (B-1, B-2/B-3) were compared in this study.

Quantitative data included a calculation of per cent responses and the academic average of students in groups B-1 and B-2/B-3 compared to the academic average of all College students during this time period. With the current data acquisition method, the overall College data includes the DC student data. Quantitative data (as compared to qualitative data) reduces the potential for researcher bias since the data collected “exist apart from the researcher” (Creswell, 2004, p. 116).

The following table (Table 2) illustrates the link between the specific research questions, the various data sources used and the specific survey and interview questions.
Table #2 - Research questions and specific data collection questions

<table>
<thead>
<tr>
<th>Overall research question: How does participation in Dual Credit (DC) programs impact the academic performance and persistence of participating students at Fleming College?</th>
<th>Source</th>
<th>Tool</th>
<th>Specific Questions that generate the data</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) What is the relationship between the DC program content and the program of study that participants subsequently took at Fleming College and did the DC program provide insight into the students’ career interest?</td>
<td>Students</td>
<td>Survey</td>
<td>Q. 9, 12, 13, 26</td>
</tr>
<tr>
<td>(2) What factors or features of DC programs are identified by the study participants as assisting them with (a) the transition from high school to college and (b) contributing to their persistence at college?</td>
<td>Students</td>
<td>Survey</td>
<td>Q. 4, 18, 20, 21, 25, 26</td>
</tr>
<tr>
<td>(3) To what extent are factors such as: high school academic performance, type of college program (certificate, diploma) taken, related to college persistence of the participants?</td>
<td>Students</td>
<td>Survey</td>
<td>Q. 1, 2, 6, 10, 17</td>
</tr>
<tr>
<td>(4) How does the frequency with which participants accessed Learning Support Services (LSS) while taking courses at Fleming College compare to other (non-DC) college students in similar college courses and programs?</td>
<td>Students</td>
<td>Survey</td>
<td>Q. 24</td>
</tr>
<tr>
<td>(5) How does the academic performance of participating DC students in their first semester at Fleming College compare to other (non-DC) Fleming students in first semester?</td>
<td>Students</td>
<td>Transcripts</td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All college students</td>
<td>FDR data</td>
</tr>
<tr>
<td>(6) What improvements, enhancements, learning supports need to be made to the DC program to increase college success of dual credit students as identified by participating students?</td>
<td>Students</td>
<td>Survey</td>
<td>Q. 22, 23, 26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interview</td>
<td>Q. 6, 7, 8</td>
</tr>
</tbody>
</table>
Assumptions

Since participants were well informed in the information letter (Appendix A) and the consent letter (Appendix B) that the findings would not impact them in any way and that they had nothing to gain or lose by agreeing to participate, it is reasonable to assume that their responses were accurate reflections of their perceptions. Data recorded in transcripts and College data bases in the FDR are also deemed to be accurate since they were not open to any interpretation.

Limitations

Since this is a single case study and the participants are not randomly selected, the findings cannot be generalized to other post-secondary institutions. But then, generalizability is not the goal of case studies; understanding more deeply a relatively unknown phenomenon is (Grix 2004, Creswell, 1994). In order to begin to understand the impact of the Ontario DC program on students, this study explored and described the performance of participating DC students and that of their peers who had not participated in DC programs. But there are limitations to the findings of this exploration.

All of the DC student participants had completed a DC program prior to entry into full-time college programs at Fleming College. However, the participants came from many different high schools and may have had very different academic experiences prior to enrolling in the College programs at Fleming. Other pre-existing variables that the literature identifies as impacting academic performance (such as socio-economic status, age, gender and motivation) could not be controlled for in this study. Nor was it possible to identify these variables in their peers who had not participated in DC programs. This is
an acknowledged limitation of this study. This study explored how the DC students performed in college, based on their average academic grades, use of learning support services available to all Fleming students, and persistence rates. It also explored the performance of their peers who had not participated in DC programs in these same areas to identify into any similarities or differences that might be observed. Because of the inability to control for pre-existing variables within and among the two groups, any comparisons made are interesting and informative but cannot be concluded to exist or be statistically significant. Further research with rigorous control for intervening variables is needed.

Furthermore, in spite of a specific list of indicators of “at risk” and disengaged students, there are a variety of interpretations of “at risk” students from one high school to another and subject to the selection of students by teaching and counselling staff. The Dual Credit student experience in college likely varies from program to program or college to college; therefore, the findings cannot be predictive for other colleges. Although the DC target group was “at risk” students, some participants in this study who have taken a DC program during high school may not have been “at risk” students as defined by the Ministry of Education and it is not possible to identify which students in this study were not “at risk”.

The students in the provincial Dual Credit projects (which included the Fleming program) were volunteers and they may have specific characteristics that non-volunteer students might not have. Conclusions may not be transferable then to non-volunteer type Dual Credit students as the DC program becomes available to a broader spectrum of high
school students or on a prescriptive basis. Those DC students who responded to the survey may hold a different view than those who did not respond, resulting in a potential bias in the data/results (Grix, 2004, 129).

I found very few studies conducted on DC students in Ontario, and there are few comparative data available to either support or refute findings. There has been recent research completed in the United States on Dual Enrollment students who are registered full-time at two- and four-year colleges, but these are different post-secondary institutions than the Ontario colleges.

Another limitation is that the students who chose to participate in this study may not be representative of all DC students even at Fleming College. The number of students who consented to participate and subsequently completed the survey in 2010 was 13 (17%) and in 2011 was 45 (23%) and neither would be representative of the majority of DC students at Fleming.

The total number of B-3 students (persisters who returned to Fleming but were in semester one) who consented (n=0 in 2010 and n=5 in 2011) to participate in this study was low. This group of students might have provided responses that were different from the B-2 (persisters semester 2) student group and given a larger sample, these could have been analyzed and compared. Overall participation rate in any aspect of this study (n=4; 14%) in 2010 and 2011 and sample size could constitute limitations. This is especially true where a limited number of interviews were conducted.

Based on my review of the literature, sample size is not as important in case study research design which focuses on the richness of the data collected and analyzed.
Saturation is a better way to determine sample size than a hard number of responses or percentage of the study group. Mason (2010) reviewed 179 case studies that used interviews to collect data and found that the number of interviewees ranged from 1 to 95. Guest et al (2006) found that “for most research enterprises … in which the aim is to understand common perceptions and experiences among a group of relatively homogeneous individuals, twelve interviews should suffice” (p.79). Based on the interview responses and the evidence of recurring themes, I was satisfied that saturation had been reached. The question of sample size and the challenges the researcher encountered getting students to agree to participate will be further addressed in Chapter 5.

The comparison of self-reported grades (questions 6, 10 and 17) in 2010 and 2011 based on the students’ ability to recall their overall average is not reliable. For example, for B-1 (non-persisters) respondents, 33% (n=3) of the 2011 group did not remember their final marks at high school, 44% (n=4) did not remember their DC course grade and 78% (n=7) did not respond regarding their overall college semester 1 GPA. The grades that were reported could not be compared to actual grades from transcripts since the data sources were not linked. These data based on recall and their memory may not always be accurate and this constitutes another limitation.

There may also be a gender-related bias since female participation was over-represented based on the overall ratio of females/males in the study population. The survey was completed only by females 100% (n=13) in the 2010 study group as compared to 53% (n=40) who were invited to participate and females represented 69%
(n=31) of the 2011 study group as compared to 57% (n=111) who were invited to participate in this study. Only one male student (2011) was interviewed in this study.

The element of researcher bias needs to be considered since it was my expectation that DC students would be equally or more successful at college than non-DC students. This bias was minimized by the pilot study where I sought input from a sample of DC students and a staff researcher into the wording of survey and interview questions. I also hired RAs to interview and transcribe the audio-recordings.

I met with the RAs prior to any contact with the participants. During the meeting I provided an overview of this study, reviewed the telephone invitation script and consent form, reviewed the questionnaire and interview questions. A FDR staff researcher also provided guidance to the research assistants regarding appropriate telephone survey research methods. In spite of the preparation, the interviews conducted by the RAs did not include as much detail as I expected they would, and additional probing of the students would have yielded more valuable data for this study.

While I was confident that the survey and interview questions were relevant and important to the topic of interest, no pilot testing for content validity was done by a content expert.

While it is not possible to generalize the findings to other DC programs or contexts, the findings will nonetheless provide meaningful and valuable information on how the DC program was perceived by these students and will be beneficial to a variety of groups, including faculty, administrators and government officials involved in the Dual Credit programs.
Ethical issues

I acknowledge that, given my position as Dean and Principal of the Frost Campus at Fleming College, there is a slight possibility that there may have been a real or perceived imbalanced power relationship between the participants in this study and me as the researcher and administrator. In my role as Dean at the Frost Campus, I make final decisions regarding student academic appeals and would only be involved in student appeals at other campuses in an acting capacity (i.e., Acting Dean for another academic school or Acting Vice President Academic). This role could potentially have influenced the voluntary nature of participation in the study and potentially influenced the survey questionnaire and interview responses of the participants. However, I took all reasonable precautions to minimize the influence that my institutional relationship to the study’s students might have had.

Participants were assured that participation or non-participation in this research would not affect the participants’ College grades, their progress in the program or future applications to the College. Participation in any part of this research was voluntary; participants were free to refrain from submitting the questionnaire and from responding to any question(s) that they did not wish to answer and could withdraw from the study at any time without explanation or penalty by letting the RA know. Participants were also informed that, since the on-line survey was anonymous it would not be possible to withdraw any of their data after the participants submitted their responses. Similarly, after interview data were aggregated, it would not possible to remove the data submitted by any one participant. This information was stated in the information letter (Appendix A),
consent letter (Appendix B), at the beginning of the survey questionnaire (Appendix C), and verbally before the beginning of any interview as per the script (Appendix J) provided by me in advance of the interviews conducted by the RAs. None of the students who agreed to participate in the study withdrew from the study. That said, after consenting to participate in the study, 23 students from both the groups (2010 and 2011) failed to complete the survey and/or could not be contacted for a telephone interview.

Participants were also advised on the consent letter that there was a slight chance, since the questionnaire was located on the Fleming College server, that the web master might be able to identify the student email address, but that the information would not be accessible to anyone else. Participation in any aspect of the study did not cause or result in any known physical or psychological harm.

Fleming Data Research staff was utilized to make the initial contact with the 2010 study group on my behalf, minimizing the influence that the researcher might have on the participants. A RA made the initial contact with the 2011 study group on my behalf. The use of RAs to request student participation and to interview the participants in this study minimized the influence that I could otherwise have had in their decision to participate in the study and in their specific responses to questions. The FDR staff and the participants had nothing to gain or lose by participating in this study.

The written approval of the Research Ethics Boards at the University of Toronto and at Fleming College was obtained prior to beginning any research activities. Approval for an amendment to recruit students by telephone and thereby increase the data base was
sought and granted after the response rate from the fall 2010 study group was deemed to be too low for this study.

The reporting of all statistical data derived from the questionnaires was anonymous. Reporting of qualitative information (from questionnaire submissions and audio-recorded interviews) was referenced in non-identifiable terms such as “a B-2 student from 2010 stated that …” and for each interview, by a code such as B-1a, B-1b etc. based on the order in which each student was interviewed.

Some of the students (an estimated maximum of 45) participating in this study were registered in programs and/or courses that were delivered at the Frost Campus where I am Dean. I had never taught these students and I was not in a position to influence the grades of these students, except in the case of a formal appeal of a final grade. If a formal appeal were initiated by any of the student participants in this study, an appeals committee (as required by academic regulations) would have been formed and would have heard that appeal. During the time of this study, no appeals relevant to this study were received.

All data collected were kept confidential and secure by me and are accessible only to my faculty advisor and me and will be fully destroyed five years after the completion of the thesis. The study’s two research assistants, who contacted the participants to seek their consent, administered the questionnaire and conducted telephone interviews signed confidentiality agreements (Appendix F) before access to any student information. This agreement stated that the RA agreed to keep all information secure and confidential and further agreed not to discuss the student information or responses
to anyone other than me. Audio-recorded interviews began with a student code identifier that was also noted on the transcribed notes.

The list linking the student identity to the codes (B-1a, B-2a and so on) was created by the research assistants and not shared with me or any other person. I have securely kept these hard-copy consent forms in a home file only accessible to me in a locked filing cabinet in my home office. All hard-copy documents generated by the RA and all audio-recordings of the interviews are secured in my possession. These files did not include any information that would identify students participating in this study. Electronic data related to this study have been encrypted consistent with University of Toronto Policy and saved in electronic files and folders on a password protected computer accessible only to me. Fleming Data Research (FDR) has data related to this study which is stored in a manner consistent with the authority of the Ministry of Training, Colleges and Universities, regulation 34/03 under the Ontario Colleges of Applied Arts and Technology Act, 2002.

Summary

This chapter has explained the research design and methodology used in this study. The purpose of this study was to explore and describe how DC programs at high school impact the performance of students when they are in college as perceived by the students who participated in a DC program and as evidenced by academic records of consenting participants. A case study approach was used for this study since it was deemed most applicable for an under-researched area such as DC student performance (Grix, 2004, p.52). Mixed methods, based on both qualitative and quantitative data are often used
when “not much has been written about the topic or population being studied and the researcher seeks to listen to informants and build a picture based on their ideas” (Creswell, 1994, p. 21). In my review of the literature on DC programs and student success specifically in Ontario colleges, I found very limited research on this topic. Thus this study addresses an important gap in the research literature.

Triangulation is the “use of multiple data sources, data collection methods and theories to validate research findings and also helps eliminate bias” (Anderson, 1998, p.131). Triangulation has been achieved in this study by using both qualitative and quantitative methods and multiple data sources including transcripts, self-reported perceptions of students and relevant documents relating to the DC program.

Given the stated limitations for this study, the findings to be presented in Chapter 4 are not generalizable. The purpose of this study, however, was to gain a deeper understanding of how DC programs in high school impact student performance at one College and the findings are suggestive for other colleges.

Chapter 3 provided an overview of the research methodology and procedures that were used to collect, analyze, and interpret the data based on the themes that emerged from the literature review.

Chapter 4 presents the findings based on the data collected from student surveys and interviews, transcripts and relevant documentary information. Finally, Chapter 5 provides an analysis of the findings, conclusions and recommendations for further research on the topic of DC.
Chapter Four: Presentation and Analysis of Findings

The purpose of this case study was to explore and describe how Dual Credit (DC) programs at high school impact the performance of students when they are in college, as perceived by the students who participated in a DC program and as demonstrated in their academic records. What do they see are the specific features of these programs that contribute to their success and how can these programs be enhanced?

This is a case study that focused on DC students who had completed one full-time semester of academic study at Fleming College during the fall of 2010 or fall 2011. Fleming College is a medium-sized Ontario College of Arts and Technology, located in a mid-sized urban centre in Southeastern Ontario; it is one of 24 colleges in the province. This case study used a mixed methodology: both qualitative and quantitative data were collected. Survey questionnaires, interviews, grades/transcripts and document analysis informed the research questions that drove this study.

The overall research question that drove this study was: How does participation in Dual Credit (DC) programs impact the academic performance and persistence of participating students at Fleming College? Specifically, this case study addressed the following questions:

1. What is the relationship between the DC program content and the program of study that participants subsequently took at Fleming College and did the DC program provide insight into the students’ career interest?
2. What factors or features of DC programs are identified by the study participants as assisting them with (a) the transition from high school to college and (b) contributing to their persistence at college?

3. To what extent are factors such as high school academic performance, type of college program (certificate, diploma) taken, related to college persistence of the participants?

4. How does the frequency with which participants accessed Learning Support Services (LSS) while taking courses at Fleming College compare to other (non-DC) College students in similar College courses and programs?

5. How does the academic performance of DC students in their first semester at Fleming College compare to other (non-DC) Fleming students in first semester?

6. What improvements/enhancements/learning supports need to be made to the DC program to increase college success of DC students as identified by participating students?

**Description of the Case Study College**

Fleming is a medium-sized college with five campuses located in Southeastern Ontario and a student population of over 6,000 full-time students, 10,000 part-time students and more than 50,000 alumni. There are two campuses, including the main campus (Sutherland Campus), located in the city of Peterborough, which has a population of approximately 70,000. The smaller campus is the McRae campus, which houses the majority of Fleming’s skilled trades programs, apprenticeship and part-time studies. In partnership with the Kawartha Pine Ridge District School Board, a School Within a College (SWAC) program is offered at this campus.
The Frost Campus is located in the town of Lindsay, Ontario, which had a population of approximately 17,000 at the time of this study. The majority of the programs delivered at the Frost campus are Environmental and Natural Resource Science programs. The Haliburton School of the Arts is located in the village of Haliburton with a population of approximately 15,000. There were approximately 100 full-time students in Haliburton during the fall and winter and 3,500 students during the summer months enrolled in approximately 350 (1 day -1 week) art courses. The Cobourg campus is situated in the city of Cobourg, Ontario, with a population of approximately 18,500 at the time of this study. The campus has one full-time program and offers upgrading and continuing education courses. In 2013, Fleming College was offering more than 90 full-time programs in business, community development, environmental and natural resource sciences, fine arts, education, health and wellness, law, technology and skilled trades. The programs were a mix of apprenticeship, one-year certificates, two-year diplomas, three-year advanced diplomas, graduate certificates and joint university/college programs. The language of instruction in all of Fleming’s programs is English.

Fleming College has three school boards located in the regional catchment area, and a number of pathway initiatives, including DC programs have been developed in partnership with each of the boards. Fleming College, in partnership with Loyalist and Durham Colleges and six district school boards comprised the SCWI Regional Planning Team #6.

Fleming College differs from the provincial student demographic in, for example, visible minority population (6% for Fleming compared to 28% for the college system)
and where the students came from (20% from population areas over 100,000 at Fleming compared to 43% in the college system).

The student mix, as reported by students at Fleming College who responded to the Fleming College 2011-12 first-year student survey (N=1,094), 48% (n=525) said that they had been out of high school for less than one year (direct), 2% (n=29) said that they were not born in Canada, 6% (n=66) said that they were a visible minority, 6% (n=66) said that they were Aboriginal and 20% (n=219) came from areas where the population was 100,000 or more. During the same period (2011-12) and based on first semester College data (N=3,945), 48% of students (n=1894) were female and 52% (n=2051) male, 52% (n= 2051) were less than 20 years of age, and 38% (n= 1499) were first-generation students, that is, they were the first in their immediate family to attend a post-secondary institution. These data exclude students from the Haliburton Campus (because the full-time student numbers are very small and the full-time programs offered at Haliburton are off-cycle and compressed in their delivery format) and students registered in graduate certificate programs (2011-12 First Year Student Survey, FDR). As compared to Fleming’s student body, in the overall college system in Ontario in 2011-2012 (N=181,471)(Ontario government, 2012), 34% of students (n=61,700) came directly from high school, 18% (n=32,644) were not born in Canada, 72% (n=130,659) were Caucasian/white, 28% (n=50,811) visible minority. There were more females than males with a 53% (n= 96,180) female and 47% (n=85,291) male gender mix in 2011, 39% (n=70,774) were 20 years or less in age, 32% (n= 58,070) were first-generation students.
In 2011, 43% (n=78,033) came from population areas of 100,000 or more (Colleges Ontario, 2012).

**Demographic Profile of Participants**

The students invited to participate in this study had all taken a DC program at high school prior to attending Fleming College as full-time students. The students were attending semester one during the fall of 2010 (N=75) or the fall of 2011 (N=195). Eighty-one (30%) of these students agreed to participate in this study; 58 (21.4%) actually did participate by completing the survey questionnaire.

The participants completed their DC program while attending a variety of high schools in Ontario and enrolled in a variety of courses as reported by participants who completed the survey questionnaire. In 2010, 69% (n=9) had taken the DC course from a “local” high school (i.e., a high school belonging to Regional Planning Team 6 - which includes Fleming College) and in 2011, 82% (n=37) took the DC courses from a local RPT high school. The majority of these students in this study took a Fleming College dual credit course. In 2010, 54% (n=7) of students took a Fleming College DC course and 62% (n=28) in 2011 took a Fleming DC course. As reported by students who completed the survey in 2011 (n=45), 44% (n=20) had to move away from home to come to Fleming College. In comparison, 42% of first-year students come from within Fleming’s local geographic area, and 58% come from outside the area (FDR, August 2012).

Based on information supplied by the participants who completed the survey questionnaire (n=58), the following demographic information was identified: in 2010, 100% (n=13) of all participants were female and in 2011 69% (n=31) were female and
31% (n=14) were male. In 2010, of the 75 total students invited to participate in the study, 40 (53%) were female and 35 (47%) were male. In 2011, 195 students were invited to participate and 111 (57%) of those were female and 84 (43%) male. Females (as compared to males) who participated in this study are over-represented as a percentage compared to the total number of female DC students in this study group. The over-representation may have an impact on the overall survey data and findings.

The provincial data for the 2009/10 reporting year revealed that 48% of the students who were enrolled in a DC program in high school were female and 52% male (09/10 DC Report). The provincial data for 2010/11 revealed a similar gender split (i.e., 47% female and 53% male (2010-11 DC Report). Although male students participated in high school DC programs in greater numbers provincially, more female than male DC students as a percentage registered for full-time college studies at Fleming College.

With regard to age, 62% (n=8) students from the 2010 participant group were 19 years old and 38% (n=5) were over 19 years of age. In the 2011 group, 27 (60%) were 18 years of age, nine (20%) students were 19 years of age, and nine (20%) students were over 19 years old.

Regarding status during high school, 56 (97%) the 2010 and 2011 students who completed the survey identified themselves as full-time students during high school when they were enrolled in the DC course and two (3%) (B-2, 2011) students identified themselves as part-time students. In response to survey question #14, 100% (n=58) of the students reported that they were full-time students during semester one at Fleming College.
Findings

The research findings were based on data collected from students through a questionnaire survey, interviews and high school and college transcripts. Additional data were provided to me by Fleming Data Research (FDR), with permission from President Tilly, so that performance of the study participants could be compared to overall College data, recognizing that such data includes the DC students.

The findings are reported according to the specific research questions. Collectively, the answers to these questions will form an aggregated answer to the over-arching question: How does participation in Dual Credit (DC) programs impact the academic performance and persistence of participating students at Fleming College as perceived by those DC students?

Research Question 1: What is the relationship between the DC program content and the program of study that participants subsequently took at Fleming College and did the DC program provide insight into the students’ career interest?

The DC courses/subject(s) taken in high school and the program of study taken by DC students at college could have a relationship to student performance at the College. The findings were derived specifically from survey question #13 and from interview question #2 (Did the DC course(s) give you insight into career?). Survey question #13 (Was the Fleming College program that you were enrolled in during semester 1 Fall 2011 related to the Dual Credit course subject/topic that you participated in prior to attending Fleming College?) gave the respondents three choices: very much related, somewhat
related and not related at all. Appendices K and L list the programs that these students were registered in during the fall of 2010 or 2011.

Responses to survey question #13 found that the 2011 B-2 students (persisters semester 2) were more likely to indicate a relationship between the DC course and the program that they were enrolled in during semester one at Fleming College than the B-1 (non-persisters) and B-3 (persisters semester 1) groups. Of the 33 B-2 students (2011), 30% (n=10) said that the DC course was very much related, 30% (n=10) said that it was somewhat related, 36% (n=12) said that it was not related at all, and one student (3%) did not respond to that survey question. Of the B-1 students (non-persisters), 22% (n=2) reported that the DC course was very much related, and 78% (n=7) said that it was not related at all. The B-3 students (persisters semester 1) (n=3) reported that the DC course was not related at all. Since the B-1 and B-3 students groups either did not persist (B-1) or had to repeat their first semester or changed programs (B-3), these results suggest that if a student took a DC course that was related to their college program of study that they were more likely to persist (B-2) at college and progress to semester 2 of their program. Figure 2 depicts these findings.

In 2010, the single B-1 student reported that the DC course was very much related and there were no B-3 students that completed the survey. The responses by the B-2 (persisters semester 2) group in 2010 were similar to the responses of the B-2 group in 2011; that is, 25% (n=3) said that the DC course was very much related, 42% (n=5) reported that it was somewhat related, and 33% (n=4) said that it was not related at all.
The interview questions permitted participative DC students to elaborate on their experience in the DC program and allowed me to further explore the relationship between the DC course and their program of study at the College. Interview question #2 asked the students if the DC course gave them insight into their career and if it helped to decide what type of employment/job the student wanted? The interview question was more broadly worded than the survey question and permitted students to expand on this question. Both of the two B-1 (non-persisters) students (2011) reported “yes” to this question and the two B-2 (persisters semester 2) students (2010) reported “yes.”

Comments from the B-2 students from 2011 included: “Ya it did. It helped me realize that I don’t want to go into the chef area and that I am more suited for paramedic in the
medical field”; “Definitely, completely, I had a whole other idea before I took it,” and, “I originally wanted to go through another program but the dual credit changed my mind.”

Only 3 of 10 (30%) of the B-2 (persisters 2011) students reported that the DC program did not provide them with any insight into their career or employment even if that insight was that they did not want to pursue the career that the DC was related to. This finding is consistent with the findings of the Analytical Review conducted by Armstrong et al (2006) on the 14 DC/SCWI pilot sites, that is, that students are more successful if the DC course is related to the career interests of the student. This is also consistent with the DC program research conducted in California, which concluded, “the most successful models have high academic expectations, (and) focus on technical/career-based education” (Edwards et al 2011, p.2).

**Research Question 2:** What factors or features of DC programs are identified by the study participants as assisting them with (a) the transition from high school to college and (b) contributing to their persistence at college?

The findings of this research include the factors or features of DC the program that DC students attribute to helping them with the transition from high school to college. Various themes associated with transition were identified. Respondents frequently reported that the DC program assisted with the transition by giving them insight into the expectations of college life and that the DC program helped to prepare them for college.

**(a) Factors and features assisting with transition from high school to college**

The responses to Research Question 2 (a) were derived from survey questions #20, #21 and interview questions #3 and #4. Question #20 required a “yes” or “no” response
to the question “Did the Dual Credit course help you with your transition to Fleming College?” The interview questions permitted participating DC students to elaborate on their DC experience and allowed me to further explore themes that I identified in the literature.

The responses to survey question #21 (How did the DC course help with your transition to college?) were reviewed and coded for predominant themes identified in the responses. These themes were then related to the research questions. Survey question #21 was answered by the respondents who answered “yes” to question #20, “Did the Dual Credit course help you with your transition to Fleming College?” Twelve of 13 (92%) students from the fall 2010 groups replied that it did, and 26 of 45 (58%) respondents from the fall 2011 responded that it did, 12 of 45 (27%) selected “no,” and seven of 45 (15%) were not sure. The “no” and “unsure” responses of the fall 2011 were surprising to me and could have been influenced by the respondent’s interpretation of the word “transition” used in the survey question. Interview questions #3 and #4 were designed to delve deeper into survey question #20. Based on a review of the literature and relevant studies, researchers (Barnett, 2010 and Rodríguez et al, 2012) found that DC programs did help students with their transition to college. If the response was “yes,” the respondents were asked to comment on how the DC course helped with their transition. There were three themes that I identified from the analysis of the student responses (survey and interviews) in relation to transition to college: expectations, preparation and the role of the teacher.
Theme 1- Expectations

The DC program helped the students to know what to expect at College. Twenty-eight out of 58 (48%) survey respondents used the word “expect” or a similar word/phrase. They commented that they were familiar with the college environment, got to know what the teachers expected and got to know who the teachers were. They became familiar with procedures and processes such as class scheduling, the delivery format and assessment. All of this made them more comfortable and confident when they began their college programs. This theme was evident in the comments made by both of the B-1 (non-persisters), B-2 (persisters semester 2) and B-3 (persisters semester 1) students. For example, participants in the B-2 (persisters semester 2) group commented: “I was able to gain experience in the college lifestyle and felt less nervous and stressed about attending a post secondary school full-time” (B-2 persisters semester 2 student, 2010), and “(it) made me know what to expect and made me feel more comfortable” (B-2 persisters semester 2 student, 2011).

Interview question #3 asked, “Did the DC course provide you with an understanding of what college would be like? If so, what did you learn about college from your DC experience?” and question #4, “Did the DC course(s) provide you with an overview of the expectations for course work and demand at college?” reaffirmed this theme. The two participants from the 2010 group responded that the DC course did not really help, compared to the 2011 group (11 of 14 students) that said it did help. Both of the B-1 (non-persisters), 8 of 10 B-2 (persisters semester 2), and 1 of 2 B-3 (persisters semester 1) 79% in total, said “yes” to both questions and made the following comments: “It showed
me what the college life is like and it showed me how the teachers are on the student and everything and how much work I have to do” (B-1- non-persisters student, 2011), and “Ya, it (the DC) really did because I got to know the college before I went there so that was really helpful” (B-3 persisters semester 1 student, 2011).

The findings in this study are consistent with previous DC research conducted in the United States by the Center for Evaluation and Education Policy in 2006, which found that one success factor for DC courses is that they provide high school students with a clear understanding of what to expect in college. Cole et al (2009) also noted “entering expectations and attitudes are important predictors of student success” (p.55).

**Theme 2 – Prepared Me for College**

“Prepared me for college” was another recurring theme identified. These comments were more specific and tactical. Students mentioned they became better at time management, learned organizational skills and saw the benefits of hands-on work. This finding is consistent with previous research by Karp et al (2010), which concluded that students in DC courses learn how to be college students. Responses that demonstrate these findings included: “It helped (me) adjust to the work part of school, but not the experience” (B-2 – persisters semester 2 student, 2010), and “It had me prepared for what I was going to face in college, that there were going to be studies and lot of homework” (B-2 – persisters semester 2 student, 2010).

Responses to interview questions #3 and #4, “Did the DC course provide you with an understanding of what college would be like? If so, what did you learn about college from your DC experience?” (Question #3) and “Did the DC course(s) provide you with
an overview of the expectations for course work and demand at college?” (Question #4), reaffirmed the theme “prepared me for college.” Students made the following comments: “I got to understand the procedures and how things were carried out.” (B-1 non-persisters student, 2011), “You really had to do stuff on your own (during the DC course). You had one reminder and then it was due the next week... you really had to organize your time to do it yourself” (B-2 persisters semester 2 student, 2011), “(I) got small assignments and case studies which were similar to actual college” (B-2 persisters semester 2 student, 2010), and “The difference between grading was a major thing I found, and different styles of work” (B-2 persisters semester 2 student, 2011).

**Theme 3 – The Teacher**

Noteworthy is the number of times that students mentioned the college teacher in relation to their DC experience. The importance of their teacher/student interaction was noted as well in Barnett’s 2006 study on student persistence. Barnett found that these interactions contribute to a students’ integration to college.

Participants in this study commented: “Class size and the way teachers taught and interacted really helped” (B-2 – persisters semester 2- student 2011), “(It) helped to have an idea of (how to) deal with college professors” (B2 persisters semester 2 student, 2011), and “(I knew) a lot of the faculty before starting with Fleming” (B-2 persisters semester 2 student, 2011).

The interviews reaffirmed that the teacher - whether through the expectations set or interaction with the students - was important to the DC experience. Barnett (2006) found that faculty-student interaction played a positive role in integration into college and that
integration led to higher student retention/persistence. Astin’s theory of involvement, noted in Chapter 2, concluded that early and frequent student interaction with “objects” (including faculty), increase their success and persistence. The importance of the role of the teacher was also identified in the Analytical Review conducted by Armstrong et al (2006) of the DC pilot programs in Ontario. Sample participant comments under this theme included: “Teachers won’t hold your hand but they care” (B-2 persisters semester 2 student, 2011), “A College professor came to our high school and we got to feel the classroom atmosphere, the teacher was relaxed and we could eat in class” (B-2 persisters semester 2 student, 2011), and, “The teacher was really understanding and she guided us but did not help too much” (B-2 persisters semester 2 student, 2011).

Also relevant to the issue of transition to college are the comments made by participants regarding their engagement during their final year of high school when they were enrolled in the DC program. Survey question #4 asked the respondents to describe their “engagement” during their final year at high school. Since the target for DC programs is “at risk” students, and by definition these students are disengaged (Ministry of Education, 2010), my assumption was that the respondents would report higher levels of disengagement than they did. The intent of the DC program is to re-engage these high school students so that they graduate from high school; this is assumed, based on previous research. The intent is also to contribute to their performance success at college.

Very few students, only five of the 58 (9%) total respondents (2010 and 2011), indicated that they were “disengaged” or “very disengaged” during their final year at high school, 23 (40%) reported that they were “somewhat engaged”, and perhaps surprisingly,
29 (50%) reported that they were “very engaged” during their final year of high school. One respondent (1%) selected “neither” in response to this question. These are lower than expected percentages of “disengagement” since these students were selected for the DC program because they had been identified as “disengaged” by the student success team members (counsellors and teachers) at each high school (Ministry of Education, 2010). This result may be partially attributed to the DC program, which students took during grade 11 or 12 and may not be typical of their high school experience prior to taking the Dual Credit course(s). My findings suggest that the DC program may have contributed to student re-engagement. This is consistent with the findings of Whitaker (2011) in the responses by his DC high school student participants to the statement, “I am more motivated to finish high school as a result of this course” where “2/3 of overall student responses were in agreement with most strongly agreeing with statement” (p.90). Figure 3 presents the findings from this study with respect to engagement during high school.

**Figure # 3 - B1/ B/2/B3 by reporting years 2010/2011 responses regarding engagement in HS in response to Q#13 “How would you best describe yourself during your final year of high school?”**
(b) Factors and features contributing to persistence at college

The survey and interview questions were developed following a review of the literature relevant to student success and persistence. Based on the responses of the participants to the relevant questions, the following findings related to research question #2(b), that is, to the factors or features related to student persistence at college.

Persistence is related to high levels of student engagement and can in part be demonstrated by involvement in extra-curricular activities, orientation and attendance, for instance. Willms, Friesen and Milton (2009) identified three dimensions of student engagement: social (sense of belonging), academic (attendance) and intellectual (stimulated and challenged). These three dimensions align with Tinto’s integration theory and may be necessary factors if integration and persistence at college is to occur.

Extra – curricular activities

Engagement and integration research proposes that social engagement, described by Tinto as involvement in college-related out-of-class activities such as intramural, clubs, orientation, contributes to overall student integration, performance and persistence. Survey question #18 asked students to report on out-of-classroom activities of this nature.

Fifty-eight (21.4 %) participants in all (2010 and 2011) completed the survey questionnaire. The B-1 (non-persisters) from 2010 and 2011 (10 of 58) did not report any engagement in extra-curricular activities and responded “no” to question #18. In the persisters groups; 33% (n=4) of the 2010 B-2 (persisters semester 2) group and 15% (n=5) of the 2011 B-2 (persisters semester 2) group reported that they did participate in extra-curricular activities for an overall percentage of 15% who responded “yes” to
question #18. One of the B-2 (persisters semester 2) students did not respond to this question on the survey. Of the 2011 B-3 group (persisters semester 1), only one of three (33%) reported participation in extra-curricular activities. There were no B-3 (persisters semester 1) who completed the survey in 2010. The B-2 and B-3 student groups who remained at Fleming College in the winter semester reported higher participation rates in extra-curricular than the less successful B-1 (non-persisters) study group. This finding supports the findings of Tinto and others, which suggest that social (out-of-classroom activities), contribute positively to engagement and student persistence.

A recent study by Karp et al (2010) that suggested that college student involvement with activities outside of the classroom was not necessarily a predictor of integration to college but “information networks” were. Figure #4 presents these findings.

Figure # 4 – B1/B2/B3 (2010/11) regarding Q#18 “At Fleming College have you been involved in any extra-curricular activities such as clubs, sports and so on?”
Orientation activities

Survey question #25 asked “Did you attend the college orientation activities in week 1?” Of the 2011 students, 20 of 33 (61%) of the B-2 (persisters semester 2) students (2011) reported that they had attended orientation activities, as compared to 44% (n=5) of B-1 (non-persisters) and 33% (n=1) of B-3 (persisters semester 1) students. Sixty-seven percent (n= 8) of the 2010 B-2 (persisters semester 2) students attended orientation activities. There was only one B-1 (non-persisters) student who completed the survey and no B-3 (persisters semester 1) students. Overall, the participation rate in orientation activities is higher for the B-2 (persisters semester 2) students than the non-persisters (B-1) and B-3 (persisters semester 1) students in 2010 and 2011. This finding suggests that DC students who participate in social activities such as orientation were more likely to persist and be successful in College.

Attendance

Attendance is a dimension of academic engagement. Generally, participants who completed the survey reported better attendance in the Dual Credit program as compared to overall high school attendance and full-time college attendance. The responses from the 2010 participants are not illustrated here since the sample size in each of the three (B-1/B-2/B-3) groups was so small. The 2011 B-1 (non-persisters) group reported better attendance in the DC program and at College than at high school. See figure 5 below.
A surprising finding is that of the 2011B-2 (persisters semester 2) students (n=33), 36% (n=12) reported that they “seldom attended classes” during semester one at Fleming. Figure 6 presents these findings.

In response to interview question #1(a) which asked “How was your attendance during your DC course(s)?” and “How was your attendance in your classes during semester one at college?”, the 2011 B-2 (persisters semester 2) students (n=10) described their attendance during the DC program using words such as “really good”, “did not miss a day,” “excellent,” and “perfect.” They described their attendance in semester one at
College using similar words and phrases and four students (40%) noted that they did not miss any classes. These responses are not consistent with the survey responses where 36% indicated that they “seldom” attended classes during first semester at college. The RA was unaware of this inconsistency and therefore did not do additional probing regarding student responses to this question.

The 2011 B-3 (persisters semester 1) students reported better attendance in the DC program and at high school than at College. It is also important to note that the importance of attendance in DC classes was stressed by the high school teachers and students were advised that if they did not attend classes they would be removed from the DC course. Note that the number of B-3 respondents is only three students. These findings are in figure 7 below.

**Figure # 7 – 2011 B-3 Attendance HS/DC/College**

<table>
<thead>
<tr>
<th></th>
<th>High School</th>
<th>Dual Credit</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seldom attended classes</td>
<td>20</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Attended about 50%</td>
<td>40</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Attended most of my classes</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Attended all</td>
<td>40</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

**Sense of belonging**

Interview question #1b asked students to comment on their “sense of belonging” during HS, the DC program and their first semester of college. This “sense of belonging” has been identified as key to social integration into academic institutions and success. Student comments (2011 B-2 students – persisters semester 2) regarding the DC program
included, “felt like a family,” “it was really easy to get into,” “most people in the DC were like-minded,” “everyone was accepting of us,” and “everyone was going through the same thing.” Nine of 10 B-2 (persisters semester 2- 2011) students answered this question in the affirmative. One of the 10 students was not asked this question because the RA inadvertently missed asking this student the question during the interview. This student’s perspective is therefore not known. The two B-1 (non-persisters- 2011) students also said that they felt they “belonged” during the DC program as did the two B-3 (persisters semester 1 -2011) students. The two B-2 students (persisters semester 2- 2010) also commented that they “felt a sense of belonging.”

Intellectual Engagement

Intellectual engagement has also been linked to student success. Willms (2009) noted that higher expectations of students lead to increased intellectual engagement. Tinto’s model of institutional departure also supports this. Interview question #1c asked the students to comment on the academic challenge in their DC program and during semester one at the College.

A common theme was that in many cases DC courses were not academically challenging enough and that full-time college was more challenging than what they experienced in the DC program.

Research Question 3: To what extent are factors such as: high school academic performance, type of college program (certificate, diploma) taken, related to college persistence of the participants?
Seventy (26% response rate) of the 2010/2011 students consented to allow me access to their transcripts. The transcripts revealed that the 70 students participated in a total of 76 different DC courses while in high school. The transcripts included DC course codes that were used to determine the delivery site of these courses. Of these 76 courses, only 3 (4%) were delivered at the high school.

On the survey questionnaire (questions #6, #10 and #17), students were asked to select their academic average in HS final semester and DC courses from a list of ranges of academic grades provided and their GPA in semester 1 in College. The comparison of these self-reported grades in 2010 and 2011 is not reliable given the students’ stated inability to recall their overall average or to provide a response to questions #6, #10 and #17. For example, as stated by the B-1 (non-persisters) respondents (n=9), 33% (n=3) of the 2011 group did not remember their final marks at high school, 44% (n=4) did not remember their DC course grade, and 78% (n=7) did not respond regarding their overall college semester one GPA.

Based on a review of high school and College transcripts of the 70 students who gave me permission to do so, comparisons were made between the B-1 (non-persisters), B-2 (persisters semester 2) and B-3 (persisters semester 1) groups in each of 2010 and 2011. These were also compared to the College overall percent average to the findings related to research question #5 (academic performance of DC students in semester one compared to overall Fleming College).

The high school grade 12 academic averages, as reported on transcripts, showed only a 1% difference between the B-1 (non-persisters) and B-2 (persisters semester 2) groups.
The B-1 (non-persisters) student average was actually 1% higher (75%) than that of the B-2 (persisters semester 2) student average which was 74%. There weren’t any B-3 (persisters semester 1) students who participated in this study. The sample size for this participant group, and notably the B-1 (non-persisters) group was very small (n=3) as noted on the Table 3 below.

**Table # 3 Grade 12 academic average 2010 DC students based on transcripts of consenting participants**

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Count</th>
<th>Average % Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>B-1 (non-persisters)</td>
<td>3</td>
<td>75%</td>
</tr>
<tr>
<td>2010</td>
<td>B2 (persisters semester 2)</td>
<td>15</td>
<td>74%</td>
</tr>
</tbody>
</table>

However, the high school academic averages for the 2011 DC group as reported on the student transcripts showed notable differences (5% or more) between the B-1 (non-persisters), B-2 (persisters semester 2) and B-3 (persisters semester 1). The B-1 (non-persisters) student average in grade 12 was 71%, the B-2 (persisters semester 2) student average was 76% and the B-3 (persisters semester 1) average was 69%. These data, when compared to the College grades of each of these three groups, suggest that the academic performance of participating DC students in high school may be related to academic success at college.

Somewhat surprising is the overall academic average of students in both 2010 and 2011 in all groups (B-1, B-2 and B-3), given the fact that the DC target group was “at
risk” students. Hughes et al (2012) made an interesting observation related to high school performance of students in their final year as reported in the findings of the Concurrent Courses Initiative (CCI) study. The authors note that enrolment in a DC program might positively affect students’ academic average. “Students may enjoy high school more, they may learn content or academic strategies in their college courses that support their learning … or they may become more motivated as their expectations of attending college increase” (p. 20). Grades are displayed in Table 4 as follows.

**Table #4 Grade 12 academic average 2011 DC students based on transcripts of consenting participants**

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Count</th>
<th>Average % Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>B-1 (non-persisters)</td>
<td>10</td>
<td>71%</td>
</tr>
<tr>
<td>2011</td>
<td>B2 (persisters semester 2)</td>
<td>37</td>
<td>76%</td>
</tr>
<tr>
<td>2011</td>
<td>B3 (persisters semester 1)</td>
<td>4</td>
<td>69%</td>
</tr>
</tbody>
</table>

Semester length enrolment was only identified in the College database for 172 of the 195 total 2011 DC program students at Fleming. The 2010 data were not used for comparison due to the small number of participants. A review of the 2011 overall College enrolment data by program semester length as compared to the 2011 enrolment data for DC program students in the study group, revealed that there was no major difference in the percentage of students enrolled in two semester programs as compared to the College
overall. In the fall of 2011, 26% full-time students (N=3,128) were registered in a two-semester program and 27% of the DC students (n=45) were registered in a two-semester program. This was not anticipated, based on the fact that the target group for DC programs is “at risk” students. It was anticipated that a greater percentage of the DC students would have enrolled in certificate/two-semester programs since the admission requirement was lower and students had a desire to “try” a one-year experience at college. The percentage of DC students enrolled in a four-semester program was higher (55%) than the overall College percentage (52%) and in six-semester programs, the number of DC students (as a percentage) was lower (12%) than College average (13%). When College students are compared to DC program students who attended full-time studies during the fall of 2011, the percentage of their enrolment by program semester length shows very little difference in the enrolment pattern. The difference in enrolment in four-semester programs, 55% for participating DC students and 60% for all DC students as compared to 52% overall College, could be attributed to the higher representation of females who agreed to participate (69%) and who were in this study (57%). College enrolment data by gender confirm that females at Fleming are more likely (as a percentage) to enroll in four-, five- and six-semester programs and that males at Fleming were more likely to enroll in two-semester programs. Table 5, presents the credential semester-length enrolment for College overall (N=3,182), compared to 2011 DC students who completed the survey questionnaire (n=45) and DC students at Fleming (n=172) as follows.
Table # 5 Program Duration – for all Fleming and DC students - Fall 2011

<table>
<thead>
<tr>
<th>Program Duration</th>
<th># Fleming students all</th>
<th>%Fleming students - all</th>
<th># DC all *</th>
<th>% DC all</th>
<th># DC Study Group</th>
<th>%DC Study group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 semester</td>
<td>67</td>
<td>2%</td>
<td>6</td>
<td>3%</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>2 semesters</td>
<td>831</td>
<td>26%</td>
<td>47</td>
<td>27%</td>
<td>12</td>
<td>27%</td>
</tr>
<tr>
<td>3 semesters</td>
<td>121</td>
<td>4%</td>
<td>3</td>
<td>2%</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>4 semesters</td>
<td>1646</td>
<td>52%</td>
<td>94</td>
<td>55%</td>
<td>27</td>
<td>60%</td>
</tr>
<tr>
<td>5 semesters</td>
<td>74</td>
<td>2%</td>
<td>1</td>
<td>&lt;1%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>6 semesters</td>
<td>421</td>
<td>13%</td>
<td>21</td>
<td>12%</td>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>No length specified</td>
<td>22</td>
<td>1%</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>N=3,182</td>
<td>n=172*</td>
<td>100%</td>
<td>100%</td>
<td>n=45</td>
<td>100%</td>
</tr>
</tbody>
</table>

*program information was not available for 23 students (n=195)

Research Question 4: How does the frequency with which participants accessed Learning Support Services (LSS) while taking courses at Fleming College compare to other (non-DC) College students in similar College courses and programs?

The frequency of access by DC program students of Learning Support Services (LSS) is another factor to consider with respect to academic performance at college. Fleming College’s Key Performance Indicator (KPI) data collected by the Ministry of Training, Colleges and Universities regarding student use of college services can be compared to DC student reported use of LSS at Fleming College. The specific services on the KPI survey that can be compared to the DC survey question #24 are counselling and
tutoring. The data cannot be compared at the program or course level. Question #24 of the survey specifically addressed this question and students were asked to indicate which support services (list provided) they had accessed during semester one of their full-time studies at Fleming. Semester one students’ use of counselling, tutoring, advising and note-taking services during the fall of 2010 and the fall of 2011 can be compared to Fleming College students’ overall use of these services from data provided to me by the student services department at Fleming. The 2010 DC students report a higher use of these four services, but the sample size is small. Use of counselling was 38% (n=5) for DC students, as compared to 18.7% (n=580) overall College use, tutoring was 31% (n=4) DC as compared to 11% (n=341) overall College use, advising was 31% (n=4) DC as compared to 3% (n=93) overall College use, and finally, use of note-taking services 7% (n=217) for DC as compared to the overall College use of 3.2% (n=99).

On the other hand, the 2011 DC students reported use lower than the College average use for three of the four services, but in the case of use of a note-taker DC program students reported a higher use of the service. Use of counselling services was 4% (n=2) for DC students as compared to 16% (n=509) overall College use, tutoring was 4% (n=2) for DC as compared to 8% (n=254) overall College use, and advising was 6% (n=3) as compared to 10.6% (n=337) overall College use. DC students in 2011 reported an 8% (n=4) use of note-taking services as compared to the 3% (n=95) overall college. The notable differences between the 2010 and 2011 DC study group responses and between the 2010 DC group and all College students’ use may be attributed to the small sample size of the 2010 study group. The increase in the usage of advising services for all
Fleming College from 2010 to 2011 was a result of a change in the way that advising data was collected at Fleming College. Students who volunteer to participate in a research study may not be typical of all DC program students, and there is no way to determine whether or not the DC program students who did not volunteer for this study accessed services at all or did so to a greater or lesser extent, nor what services they accessed.

Table 6 presents these findings.

**Table # 6 - Percent usage of Learning Support Services by DC program students and overall College students**

<table>
<thead>
<tr>
<th>Service</th>
<th>2010 DC B-1/B-2 (n=13)</th>
<th>2011 DC B-1/B-2/B-3 (n=45)</th>
<th>2010 all Fleming (N=3,100)</th>
<th>2011 all Fleming (N=3,179)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counseling</td>
<td>38%</td>
<td>4%</td>
<td>18.7%</td>
<td>16%</td>
</tr>
<tr>
<td>Tutoring</td>
<td>31%</td>
<td>4%</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td>Advising</td>
<td>31%</td>
<td>6%</td>
<td>3%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Note taking</td>
<td>7%</td>
<td>8%</td>
<td>3.2%</td>
<td>3%</td>
</tr>
</tbody>
</table>

**Research Question 5:** How does the academic performance of Dual Credit students in their first semester at Fleming College compare to other (non-DC) Fleming students in first semester?

In 2010, the College average grade for semester one for the B-1 (non-persisters) was 42% (n=3) and for the B-2 (persisters semester 2) was 70% (n=15). The Fleming College average grade for semester one was 67% (N=3,100). There were no B-3 (persisters semester 1) participants in the 2010 study group. The 2010 DC group (those who
participated) performed at the same level of academic achievement as all Fleming College students after the completion of one full semester of study. The academic average is 67% in each case. In describing the overall DC student group (n=75) who were attending semester one at Fleming College in the fall of 2010, and the overall Fleming College average grade, the DC student average is 7% less than the overall College average grade (60% versus 67%). As expected, the B-2 (persisters semester 2) had a higher academic average at the end of semester one, as compared to the B-1 (non-persisters) study group, 70% (n=15) as compared to 42% (n=3). The B-2 (persisters semester 2) students also had a higher average (70%) while the overall Fleming College average (67%). Table 7 presents these data.

Table # 7 - College academic grade average 2010 – DC students and Fleming College students based on transcripts of consenting participants and Fleming College database

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Number</th>
<th>Average % Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>B-1 (non-persisters)</td>
<td>3</td>
<td>42%</td>
</tr>
<tr>
<td>2010</td>
<td>B-2 (persisters semester 2)</td>
<td>15</td>
<td>70%</td>
</tr>
<tr>
<td>2010</td>
<td>B-1/B-2 (study group)</td>
<td>18</td>
<td>67%</td>
</tr>
<tr>
<td>2010</td>
<td>B-1/B-2/B-3 (ALL)</td>
<td>72*</td>
<td>60%</td>
</tr>
<tr>
<td>2010</td>
<td>Fleming College</td>
<td>3,100</td>
<td>67%</td>
</tr>
</tbody>
</table>

* grades for three students could not be found
In 2011, the semester one College academic grade average for the B-1 (non-persisters) was 47% (n=10), for the B-2 (persisters semester 2) was 74% (n=37) and for the B-3 (persisters semester 1) was 46% (n=4). The Fleming College average grade for semester one was 68% (N=3,179). The DC group who participated in this study performed at almost the same level as all Fleming College students after the completion of one full semester of study. The 2011 DC study group (n=51) had an overall academic average of 67% and all students at Fleming College had an overall academic average of 68% at the end of semester one, which is only a 1% difference. When comparing the overall performance of the DC student group (n=195) who were attending semester one at Fleming College in the fall of 2011 to the overall Fleming College average grade that semester, the DC student average is 4% less than the College overall average grade (64% and 68% respectively). The 2011 data are consistent with the data from the 2010 DC cohort. The 2010 DC study group (n=18) had the same overall average to all Fleming students (67%) and the same (67%) as the 2011 study group (n=51). All DC students in this study, in both 2010 and 2011 had lower overall academic averages than all Fleming College students. These data show that semester one DC students on average did not perform as well academically as all semester one College students. These findings are inconsistent with studies in the U.S. that found that DC students performed better academically than other college students who did not take DC programs. This requires further study and analysis provincially. Table 8 presents these 2011 data.
Table # 8 - Academic grade average 2011 – of DC students and of all Fleming students in same semester

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Count</th>
<th>Average % Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>B-1 (non-persisters)</td>
<td>10</td>
<td>47%</td>
</tr>
<tr>
<td>2011</td>
<td>B-2 (persisters sem 2)</td>
<td>37</td>
<td>74%</td>
</tr>
<tr>
<td>2011</td>
<td>B-3 (persisters sem 1)</td>
<td>4</td>
<td>46%</td>
</tr>
<tr>
<td>2011</td>
<td>B-1/B-2/B-3 (study group)</td>
<td>51</td>
<td>67%</td>
</tr>
<tr>
<td>2011</td>
<td>B-1/B-2/B-3 (ALL)</td>
<td>195</td>
<td>64%</td>
</tr>
<tr>
<td>2011</td>
<td>Fleming College</td>
<td>3,179</td>
<td>68%</td>
</tr>
</tbody>
</table>

Source: Based on transcripts of consenting DC participants and the Fleming College database.

The College semester one retention rate for the 2010 DC students who participated in this study was 73.3% (n= 55), which was notably lower than the College average of 82.5% (N= 3,100). The College semester one retention rate in 2011 for the DC students was 82% (n=160) compared to the 81.5% (N=3,179) overall College rate (FDR, 2012). The difference noted in the retention rates of the 2010 DC study group as compared to the overall College could be attributed to the small sample size. Table 9 presents these findings.
Table #9 – Retention rates of DC students and overall college retention (Source: FDR)

<table>
<thead>
<tr>
<th>Year</th>
<th>B-2/B-3 DC</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010/2011</td>
<td>73.3 %</td>
<td>82.5 %</td>
</tr>
<tr>
<td>2011/2012</td>
<td>82 %</td>
<td>81.5 %</td>
</tr>
</tbody>
</table>

Unfortunately, with respect to research question #3 (the comparison of self-reported grades in 2010 and 2011), most of the students were unable to recall their overall average. This meant that the overall data available to me were the grades reported on the transcripts of those participants who consented to my accessing these documents.

**Research Question 6**: What improvements, enhancements, learning supports need to be made to the DC program to increase college success of Dual Credit students as identified by participating students?

The participants also provided suggestions for improvement/enhancements to the DC program to increase the potential for success of DC students at college.

The findings to answer this question were derived from survey questions #22 (How could DC experience be improved?), #23 (Why did you leave Fleming?), and #26 (Other comments related to DC experience) and from interview questions #6 (Why did you leave Fleming?), #7 (What enhancements could be made to DC) and #8 (Other comments related to DC experience). The majority of the responses were based on open-ended survey questions. The interview questions permitted participating DC students to elaborate on their DC experience and allowed me to further explore themes arising from
the literature review, such as student engagement, integration, transition and persistence. The responses to survey question #22 and interview question #7 regarding improvement to the DC program included increase expectations, expand DC course offerings and deliver the DC program at the college campus.

Survey question #23 and interview question #6 were only asked of the B-1 (non-persisters) students to find out why they did not continue with their studies in the subsequent semester (winter 2010 or 2011). These questions were included to provide additional insight into possible improvements/enhancements for DC programs. Of the 10 B-1 (non-persisters) students who completed the survey (2010 - one of 20 and 2011- nine of 35), two students reported that they had completed their program (less than one year in duration). Of the remaining eight B-1 students that did not return in the winter, four students reported that it was not the right program for them and only one student reported that it was because of poor grades. My review of the transcripts for the B-1 (non-persisters) students revealed the following: 2010, all B-1 students (3) had academic averages of less than 50% and 6 of 10 (60%) and B-1 students in 2011 had academic averages of less than 50%. In contrast, all of the B-2 (persisters semester 2) students (2010 and 2011) who had allowed access to their grades had academic averages of over 50% (n=53). Perhaps the poor grades were a result of students not being in the right program. This is supported by comments made by the B-1 (2011) students in response to survey question #23. In response to question #23, two students (22%) indicated that they had graduated (program less than one year) and four of the seven remaining (57%) who left Fleming without graduating or returning to Fleming in the winter of 2012 (did not
persist) attributed it to not choosing the right program. This suggests that an improvement to DC programs might be to provide more career-related DC advisement and expanding DC program options to students during high school and/or career awareness information sessions at the college for DC high school students.

The survey responses to question #22, regarding DC program enhancements that students suggested were reviewed and coded and predominant themes were identified. Question #22 asked students to “Suggest how the DC course experience could be improved to help students with the transition from high school to college.” There were three predominant themes identified: increase the expectations, expand DC course offerings, and deliver the DC at the college campus. The students wanted the DC experience to be as authentic a college experience as possible.

**Theme #1 – Higher Expectations**

Students suggested that teachers increase their expectations of the DC students in order to better prepare them for the demands of the full-time college program. Suggestions the respondents made under this theme included: “Make the program a little harder with a bit more homework, it will show students the reality of college” (B-2 persisters-semester 2 student, 2010), “I found that my professor was not particularly hard on the students in comparison to my professors at Fleming” (B-2 persisters-semester 2 student, 2011), and the recommendation to “Have more assignments” (B-1 non-persisters student, 2011).

Related to their expectations, interview question #1c asked the students to comment on the academic challenge in their DC program and during semester one at College.
One of the findings related to research question #2 was that the DC program in many cases was not academically challenging enough when compared to their experience as full-time college students. College courses were more challenging than those experienced in the DC program. Increasing the expectations of the DC program was suggested by students as an enhancement to DC programs in response to interview question #7. Since DC course(s) are college-level courses, the level of academic challenge should be the same, and the difference noted by students might have been related to a full-time college course load at Fleming as compared to one or two DC courses during the final year of high school. Question #7 asked students “What enhancements could have been made to your DC experience to contribute to success at college?” Responses to interview question #7 reaffirmed that DC students, after attending college full-time for one semester, suggested that that DC experience would be enhanced by increasing the expectations. Responses included “Give more assignments” (B-2 –persisters semester 2 student, 2011), “More assignments and different from the high school ones” (B-2 persisters semester 2 student, 2011), “Just make it a bit harder” (B-2 persisters semester 2 student, 2011), and I know that every kid in high school is going to hate me for this, but more homework. When you get to college it’s like you go back to your house and you’re sitting in your room and you’re just like, “oh my God”, this is nothing like high school, and you’re just sitting there freaking out cause you have ten assignments due by the end of the week and you’re just like “oh, God”. In high school it would be like one assignment for the next two weeks. (B-2 –persisters semester 2 student, 2010)
**Theme #2 – Expand DC Course Offerings**

Respondents recommended that more options for DC courses be provided; especially courses related to career aspirations, and that DC courses be available to more students in high school. Their recommendations under this theme included: “Offer more than one college credit while doing them” (B-2 persisters semester 2 student, 2010), “(Offer) more dual credit courses in different subjects” (B-2 persisters semester 2 student, 2011), and there should be more options for courses to take. When I took the course there were (was) only three that I could choose from. If this were the case, there would be a better likelihood that the dual credit course would be related to the program I ended up taking at college. (B-2 persisters semester 2 student, 2010)

Responses to interview questions #7 and #8 (other comments) reaffirmed that DC students, after attending college full-time for one semester, felt that the DC experience would be enhanced by giving students more DC course choices and making DC available to more students. For example, in response to these questions, they recommended the following: “A little more focus on the college part” (B-1-non-persisters student, 2011), “If there were more classes instead of just one a week, it would be better.” (B-2 persisters semester 2 student, 2011), “Make it more like college, bigger classroom and like have more people in it … so you would get the idea of what it was going to be like … I figured that we would be, like in an actual classroom with college students” (B-2persisters student, 2010), and

(I) just hope that everyone can have an opportunity to get into their field that way. They can go out into a college or a university or something like that or a
trade, so they know that this is what they actually want to do. (B-2 persisters semester 2 student, 2011)

**Theme #3 – delivery site**

Students who did not take the Dual Credit course(s) at a college campus stated that they would have preferred that location. In this study, only three of 79 (4%) DC courses were delivered at the high school. Provincially, the overall percentage of high school students who took a DC program during the 2009/10 academic year at a college campus was 76% as opposed to at a high school (DC report, 2012). Respondents in this study suggested a “change in setting. My course was held at my high school. Would have been better if at the college” (B-2 persisters semester 2 student, 2011), and, “Have more of the classes in the college setting” (B-2 persisters semester 2 student, 2011).

The comments made by interviewees reaffirmed that the DC course(s) be delivered at the college campus or at least more of the experiences take place at the college. Comments of those interviewed included recommendations that DC students spend “More time in the college setting, not just in high school” (B-2 persisters semester 2 student, 2011), “It could be more like at the college versus being at your high school just so you can know the atmosphere and the teachers there instead of them coming to you. It felt more like college if you went there” (B-2 persisters semester 2 student, 2011).

**Summary**

Chapter 4 presented the findings based on the data collected from student surveys and interviews, transcripts and relevant documentary information. Finally, Chapter 5
provides an analysis of the findings, conclusions and recommendations for further research on the topic of DC programs.
Chapter Five: Conclusions and Recommendations

This chapter provides a discussion of the key findings of this study and key implications of the findings and provides comments arising regarding the over-arching question: How does participation in Dual Credit (DC) programs impact the academic performance and persistence of participating students at Fleming College? It will conclude with recommendations for further research, the practice related to DC programs, and comments about relevant theoretical frameworks.

This case study focused on Dual Credit students who attended one full-time semester of academic study at Sir Sandford Fleming College in 2010 and 2011. Fleming College is located in Southeastern Ontario. The main campus is in Peterborough; another smaller campus is also in Peterborough and three satellite campuses are located in Cobourg, Haliburton and Lindsay. The participants who consented to participate in this study were registered in programs across these five locations.

Conclusions

The findings of this study provide insight into the impact that DC programs had on the participants’ college achievement, student engagement and persistence, program selection, usage of learning supports and features that would enhance the DC program.

Academic Achievement

Somewhat surprisingly, this study found that the average grade achieved by DC students (as a group) was almost the same as that of all Fleming College students. Considering that the DC target group was initially selected for participation in the DC program because they were deemed to be “at risk” students, the academic achievement of the 2011
DC students wasn’t expected to be comparable to that of all College students with only a 4% difference in semester one grade average. This suggests that the DC program did have a positive impact on academic achievement.

The findings of this study also suggested that the academic performance of DC program students in high school was a predictor of their academic success at college. As a group, the B-2 (persisters semester 2) had a higher high school academic average than the less successful B-1 non-persister students who did not return to Fleming after one semester of study, and higher than the B-3 students who were repeating semester one or taking semester one of a new program. Based on this finding, the provision of additional learning supports during high school may be required to ensure greater success for all DC students when they come to college. The DC student group (B-2) who achieved the highest academic average at College after one semester of study, also achieved the highest academic average as a group in high school.

**Engagement and Persistence**

The most substantial impact of the DC program was that it engaged students who were identified as “disengaged” students. The DC experience validated these students and gave them the confidence to succeed at college. The DC program is primarily an engagement strategy that led to an increase in academic achievement.

The B-2 (persisters) reported higher participation rates in social activities (orientation and extra-curricular) during semester one at College than did the less successful B-1 and B-3 participants. Consistent with the literature (e.g., Tinto1993, Willms et al 2009), social engagement appears to have contributed to an increase in college persistence rates.
Persistence/retention rates are also relevant to academic achievement. The retention rate for the fall 2011 DC students, from semester one to semester two, was 82% compared with the overall College rate of 81.5%. As a group, the 2011 DC students, many who were identified as “at risk” during high school, persisted at College at the same rate as did all College students. This supports the finding that the DC program did have an impact on the overall success of DC students during their first semester of full-time college studies.

Program Selection and Program Fit

DC program student enrolment patterns are similar to all College students with respect to program duration/credential choice. The DC program provided high school students with the opportunity to “try” college and this experience appears to have given them confidence that they can be successful at college. The inclination to take a program of shorter duration to “try” college does not appear to be a necessary for DC program students. Program choice with respect to the duration and type of credential was NOT different for DC students as compared to other students.

DC students who enrolled in a College program that was “related” to their DC program were more likely to persist at College. The percentage of B-2 (persisters) in 2011 who reported that the DC course was related or somewhat related was 60%, as compared to just 22% (B-1 non-persisters) and none of the B-3 students (n=3).

Learning Support Usage

With regard to the use of learning supports, fewer DC students (2011) used counselling, tutoring and advising services than did the College students overall, but
more accessed note-taking services than all College students. This could be related to the learning supports provided to them during their final year at high school by the student success teacher and a reduced need for support during semester one at College. The lower rates of support use could also be related to an increase in their overall confidence at College as a result of their success in the DC program. The 2010 study group is not referenced here given the small sample size.

**Authenticity of DC experience**

The participants in this study recommended that the DC program be as much like college as possible. Increasing the academic expectations of the DC program to reflect the expectation of college courses would enhance the DC experience and better prepare students for college.

Consistent with previous research, the DC courses should be delivered at the college campus and DC students should be integrated with college students.

Based on the analysis of the data collected in this study and previous studies on DC programs, there are a number of recommendations that may lead to improvement in the success of DC programs and thereby lead to an increase in the success/retention of these students when they attend college.

**Recommendations for DC Programs**

Based on the findings of this study, the following five recommendations are offered:

**Recommendation 1:** Participants in this study suggested that the expectations of DC programs in high school should be increased to better reflect the expectations of college.
The DC program students in this study perceived that this would better prepare students for full-time studies at college. Students in this study perceived that courses were more difficult at College than those taken during the DC program at high school. This perception may be associated with the fact that students took only one or two DC courses at high school as compared to taking six to eight courses during full-time studies at college. The majority of DC courses that the students in this study took during high school were vocational/applied courses (carpentry, culinary etc.) and were not typically courses that were theoretical (psychology, environmental science etc.).

Since the DC program engages “at risk” students, courses that are career-related and applied should comprise the majority of DC course offerings. To address the suggestion made by participants of this study (i.e., to increase the expectations of the DC program), the number of DC courses that high school students take during their final year should be increased. While the notion of changing DC course selection to include more courses that are academically more challenging should be explored, this may in fact defeat the intent of the program by discouraging these high-risk students

**Recommendation 2:** The DC program/course(s) should be as much like college as possible, including the delivery of the DC program at the college campus whenever possible.

Two current challenges to delivering DC courses at the college campus are the distance between the high school and the college and course-scheduling issues. These challenges could be addressed by offering DC courses over a two- or three-week timeframe or offering more SWAC programs at the college campuses. DC students
should be integrated with full-time college students in at least one DC course so that they begin to “socialize” with full-time college students. The DC experience has to be an authentic college experience. DC participants in this study noted the importance of DC courses in giving them insight into what to expect at college (e.g., the culture and the networks). With respect to anticipatory socialization, Swanson (2008) concluded that “all things considered, I believe that dual enrolment courses may assist students to anticipate the norms and behaviours expected by college professors and campus routines, and ease the transition from high school to college” (p.72). This is also consistent with the findings of Edwards et al in 2011, that the preferred DC location is the college campus, course selection is important and that there should be a mix of students (college and HS together) in DC courses (Edwards et al, p.4). Specifically, Edwards et al (2011) noted, “CCRC research suggests that the mix of students in dual enrolment courses influences the perceived authenticity of the experience” (p. 19).

High school teachers involved with the delivery of DC courses in Ontario in 2010 - 2011 noted that there was the need to make high school students aware of the differences between high school and college and a need to give them the skills to succeed in college (DC data report, August 2012). Both were also deemed necessary by the study participants in order to make the DC program a successful transition strategy. This recommendation is also consistent with the findings of the study done by Konings et al (2008). The researchers found that students’ expectations of a new learning environment are not automatically in line with later perceptions and even more important, expectations strongly
influence the way they perceive the environment after it has been implemented. Perceptions are likely to determine students’ learning behaviours and consequently the effectiveness of the learning environment. (Konings et al., 2008 p.547)

High schools should do as much as possible to prepare all students for the changes associated with curriculum, delivery methods and new learning environments to align students’ expectations about DC with student perceptions of it. While it would be helpful for all students to be oriented to college, DC students participating in DC programs should certainly be required to take a college orientation module/course that goes beyond a tour and welcome session.

Given that the majority of high school teachers have not experienced the college environment first hand, since they have not experienced college education, DC programs help to fill this gap and to assist students to prepare for the transition from high school to college. Strategies that increase high school teacher awareness of college (and college teacher awareness of high school) should be increased including auditing college classes, frequent dialogue and professional development opportunities.

**Recommendation 3:** The DC course offerings should be a core pathway accessible to all students in high school.

DC participants in this study suggested that DC courses that were related to their career interests would be beneficial. Karp (2005) recommended that U.S. state policy should address which students can enrol in DC courses and that that access be available to a broad array of students. Regarding the Concurrent Courses Initiative
(CCI) in California in 2008, which included eight DC program pilots for “at risk” high school students, Rodríguez et al (July 2012) concluded that “policymakers should consider including dual enrolment as an important part of any college readiness strategy” (p. 40). The CCI study also found that career-related courses that were hands-on appealed most to students.

My recommendation is that all high school, college-bound students be required to take at least one DC course in grades 11 or 12 and ideally, that the course be related to their career interest. The DC program should be a core activity at high school as opposed to an ancillary activity that requires an annual approval for funding.

**Recommendation 4:** Ensure that the DC experience includes a career awareness course that helps high school students in the selection of the right program when they apply to college. A study skills module/course should also be mandatory for DC students.

This course could expand on the career course that is currently required in Grade 10. Participants in this study who did not persist (B-1) stated that the program they were in during semester one at college was not the right program for them. This recommendation, if implemented, would assist students with the selection of the most appropriate, career-related DC course and lead to an increase in college persistence.

**Recommendation 5:** Expand the number of DC courses permitted and implement the U.S. model of Middle College High School (MCHS) in Ontario as a pilot.

This would expand the School Within A College (SWAC) model currently offered in Ontario. This would provide students the opportunity of earning more college course
credit during high school and the equivalent of at least one semester of advanced standing at college. The current Ontario policy allows a maximum of four DC course credits per student. Given the increasing costs of college tuition and the potential savings associated with a “free” semester of college during high school, MCHS has been viewed by researchers, students and parents in the United States as a means to provide greater access to college for under-represented populations. This recommendation would also partially address the K-16 question and lead to more alignment between secondary and post-secondary institutions.

**Policy considerations**

The Rae report (2005) recommended the creation of a K-16 Council that would assist students with the transition from high school to college. The call for alignment, pathways, seamlessness between high schools and post-secondary institutions is a recurring theme that needs to be addressed in future public policy in Ontario. This alignment should be a serious consideration in Ontario, whereby the transition from high school to college is more seamless and students do not experience two distinct institutional environments.

Hoffman (2005) offers some interesting insights into DC programs: “Currently the assumption of most dual enrolment advocates is that dual enrolment is attractive because it is an escape from high school, rather than an enhancement of the high school experience” (p.11). The alternative assumption proposed is that “dual enrolment is a mechanism for aligning high school and post secondary education, not just a way to move bored or advanced students out of high school” (p. 11). Hoffman posed this
question; “should States use dual enrolment to restructure the last years of high school to provide greater choices and the option to accelerate for all young people? And, more broadly, should public education extend through grade 14 or its equivalent so that every young person can attain a free post secondary credential?” (p.25). Hoffman’s observation and recommendations are relevant questions for policymakers in Ontario.

Policy should also address the future of DC program funding to ensure that the current model (funding to both high school and colleges) is sustained. The Regional Planning Teams should be retained so that there a structure in place that will ensure that secondary and post-secondary teachers meet to design and enhance transition strategies. The government should consider moving from envelope funding to funding for a permanent core pathway of DC programs. The question of continued funding for DC programs has become an issue in the United States in light of public sector budget reductions. In the Daily Commercial newspaper, an article written by Greg Jones in July 2012 entitled “Dual Enrolment in Danger” noted that Lake Summer Community College is losing $1.27 M per year on DE enrolment since by law, the school cannot charge tuition, and as a result, the school might have to limit enrolment in DE courses.

The decision regarding which students can enroll in DC programs and who will make that decision will be a policy consideration for DC programs in Ontario. Should DC courses be available to all high school students, only ”at risk” students, high-achieving students, or students who are college-bound? Making DC programs available to all high school students would not negate the benefits that DC programs have intended for “at risk” students. Participating in a DC program would still “validate” and
“socialize” those students and result in an overall increase in achievement by those students when they attend college.

In summary, policy should be developed that addresses three key areas: funding, participation and the relationship between secondary and post-secondary education provincially.

**Theoretical Framework Considerations**

The framework that I have developed (Figure 8) reflects my interpretation of the relationship among the findings of this study based on the data analysis and the literature review on the topics of engagement, integration and persistence. The target group for DC programs is currently “at risk,” disengaged high school students. Based on DC student responses to questions regarding engagement during their final year of high school, I would conclude that the DC program increased the level of engagement and DC programs are an effective strategy to increase student engagement, which in turn should enhance retention and secondary and post-secondary success.

Validation should also be considered within the context of student engagement, especially when the target group is “at risk” students and this is a pre-condition for integration into college. Rendón proposed that validation was necessary before integration could occur. Rendón defined validation as “interactions with students, initiated by faculty and others in the campus community, that engender feelings of self-worth and a belief in the students’ ability to succeed in the college environment” (p. 196).
Figure # 8 Dual Credit program framework based in the findings in this study

A survey (not part of this study) was administered by Fleming College to high school DC students at Fleming during the winter semester of 2011 (FDR, 2010). A total of 233 DC students responded to the survey and 97% of the students agreed or strongly agreed that the DC course made them “more confident about (their) ability to succeed.” Perhaps similar to the well-known Hawthorne Effect, validation is experienced by DC “at risk” students as a result of first, being selected to enroll in a DC course, and then, their success during the DC program. This validation contributed to increases in both engagement in the DC program and integration into college life.
Feedback from the Regional Planning Teams (RPT) regarding the School Within A College (SWAC) program was solicited in April 2012. The SWAC model was exclusive to students who had been identified as disengaged, underachieving or had already dropped out of high school, and it included DC courses delivered at a college campus. A comment from a SWAC teacher from Regional Planning Team #6 (Durham College, Whitby) supports the theory of validation as necessary within my proposed conceptual framework as evidenced by the following statement:

I think the selection process plays an important role in ensuring student engagement and motivation. Students who understand that they were selected because someone believes in them – someone thinks they are academically capable, someone believes they possess they maturity level - seem to have a real boost to their confidence and self-esteem, and seem determined to prove that they have the qualities that someone saw in them. It’s this selection rather than application process that seems to make a positive impact on our students and sets them up for success in the program. (p.11, SCWI symposium 2012)

Validation begins at the time that a student is invited to enroll 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. It is reasonable to assume that validation would occur with other students who were not necessarily identified as “at risk” if they were also selected for the DC program.

Anticipatory socialization (Merton) is described by Pascarella et al as 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” (cited in Swanson, 2008, p.70). Pascarella et al proposed, if students can anticipate the new social setting (i.e., college) and see themselves in the role of a college student, they will be more successful integrating into college life. Based on responses to survey question #21 of this study (How did the DC program help with your transition to college?) and on the theme of “expectations” noted in the responses of participants, this would suggest that students are successfully socializing into the college setting. This process of anticipatory socialization occurs concurrently with the process of validation and both contribute to a student’s successful integration into college life. Anticipatory socialization begins during high school and throughout the DC program.

The framework also suggests that students who were “at risk” in high school change from being disengaged to being engaged during the timeframe associated with the DC experience and begin the process of social and academic integration in advance of attending college as full-time students. This engagement and integration contributes to student persistence and retention during college. The DC program is the vehicle that facilitates the transition from one educational setting to the other. It is worth noting that the B-2 (persisters semester 2) had higher levels of participation in both intramural and orientation activities as compared to the non–persisters (B-1) and B-3 (persisters semester 1) students. This suggests that social integration may play a role in retention/persistence for DC students when they come to college. This should be the topic of further research given the findings of Karp et al (2010), who concluded that students who were actively involved in extra-curricular activities did not integrate at
high levels, but those students who had formed ‘information networks’ did and were consequently more successful.

My conclusion and response to the overall research question “How does participation in Dual Credit programs impact the academic performance and persistence of participating students at Fleming College?” is that the findings of this study suggest that the DC program prepared students for the transition into college life by exposing them to the culture and expectations of the institution. It was an intervention targeted for academically “at risk” students, but based on the findings of this case study the perceived benefit to students was not academic preparation, but rather their orientation to college life. While a cause and effect relationship cannot be determined from this study, the academic performance of these “at risk” students may have improved as well as a result of the DC program; this is an area that needs further research.

The DC program is a pre-college experience that teaches students how to navigate their way through the college’s complex network by gaining key institutional knowledge and developing networks to assist them with their college experience. The factors and features of DC programs identified by DC students in this study that contribute to their success at college are chiefly two: giving them insight into expectations of college life and preparation with respect to self-management skills. The DC students commented that the experience gave them insight into what the college classroom was like, how the teachers delivered courses, the physical layout of the college and how they would be treated as students. There were very few comments related to academic preparedness. Responses to the survey and interview questions by participants in this study, and the
themes arising from the data, are less about academic preparation for college and much more about social integration into the college environment. In Karp’s (2010) recent study on student persistence, “information networks” defined as “social ties that facilitated the transfer of institutional knowledge and procedures” (p. 76), were found to be a key factor in facilitating integration. Information networks were related to student integration – they assisted students with navigating the new college environment such as, the new processes, procedures. The experience helped students to see themselves in the role of a college student (anticipatory socialization) in their transition from high school to college.

Tinto’s model of institutional departure posits that institutional experiences both inside (academic) and outside (social) of the classroom contribute to integration and both are necessary contributors to student persistence. This integration takes place from the time that a student arrives at college and continues during their transition to college. My conclusion is that the DC programs provide high school students with a head start down the path of integration into college prior to full-time college studies and therefore increase the opportunity for integration and ultimately lead to an increase in individual student persistence.

**Recommendations for Further Research**

Since, to the best of my knowledge, this was the first study in Ontario that examined the impact of DC programs on college success, this study should be replicated at another college or other colleges. I only found one other study (Whitaker) on the topic of DC programs in Ontario and there is a need for much more research that answers questions related to the DC program. This research will inform the future of DC and other transition
programs in Ontario and nationally. The limitations noted in this study should be addressed in subsequent studies.

**(a) Conduct Longitudinal Studies**

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 with *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.

**(b) Explore the impact of gender and other student characteristics**

In this study I was not able to assess if gender was a factor in DC program retention rates (i.e., persistence from semester one to semester two). Females (as compared to males) who participated in this study were over-represented as a percentage compared to the total number of all female DC students in the College and this may have an impact on the overall survey data and findings. A future study should explore whether gender is a factor in DC student enrolment in full-time studies at college and whether it is a factor in persistence rates at college. Although male students participated in high school DC programs in greater numbers provincially, more female than male DC students as a percentage registered for full-time college studies at Fleming College. This requires
further research provincially to determine if this is a pattern and why fewer male DC students (as a percentage) enroll at college.

Other student variables should be studied as well, such as age, language and first generation to determine the impact of these factors on the success of DC students at college.

The data in this study revealed that DC students do not use College Learning Support Services as frequently as do all College students. This was a surprising finding, given that DC programs target “at risk” students. Additional research should be conducted to confirm or refute and explore the reasons for this finding.

(c) Conduct Provincial Studies involving many partners

A province-wide study should examine if participation in DC programs in Ontario increases post-secondary participation rates generally. DC programs were one of the SS/L18 strategies implemented in the province of Ontario to increase high school graduation rates and those rates have steadily increased since 2003/04 from 68% to 82% in 2011/12 (Ministry of Education website). Higher graduation rates have increased the number of students eligible to apply to college, but we do not know if DC students participate at higher rates than do non-DC students, or if DC students would have participated in post-secondary education had they not completed a DC course. Rodriguez et al (July 2012), in their review of the Concurrent Courses Initiative (CCI), concluded that “there is no consistent evidence that CCI dual enrollment participation had any apparent effect on enrollment in one of the partner institutions (colleges)” (p30).
Additional research should be initiated to determine if one DC program delivery model is more successful in preparing secondary school graduates for success at college than other models. The SCWI has been collecting data on the various DC models, and Whitaker completed his study on two DC models, but additional research should be conducted. For example, a study is required comparing student perceptions of success at College under two distinct types of DC program delivery models: DC courses where DC students were mixed with full-time college students, and to those programs where high school DC students are segregated from full-time college students. Other research findings (in the U.S.) consistently recommend that DC high school students be mixed with full-time college students.

**d) Compare the impact of Career related and other courses**

Future research could also include an analysis of career-related DC courses as compared to non-career-related courses to the success/persistence rates of DC students when they attend college full-time. And, are DC programs more effective if a student subsequently enrolls at the same college (as opposed to another college) where they took the DC course(s)?

**e) Explore how to increase the participation of DC students in research studies**

Finally, a significant challenge conducting this research was getting students to voluntarily participate in this study. The ethical considerations and research methodology may have limited the number of students who participated. College students and programs do not have a culture of academic research and, students may fail to recognize the importance of participating in research. Further research should be done to investigate
why college students are reluctant to volunteer and what methods might be used that would lead to an increase in the participation rates of college students in research studies.

**Overall Conclusion**

The over-arching question for this study was: How does participation in Dual Credit (DC) programs impact the academic performance and persistence of participating students at Fleming College? The findings of this study provide insights into how participation in DC programs impacted participating students during full-time studies, following their first semester at Fleming College.

Factors and features of DC programs that assisted these students with their transition to college were identified. DC courses provided “at risk” high school students with the opportunity to pursue a college education. The DC courses helped these students to graduate from high school who might otherwise not have done so. Based on the findings of this study, I have made several recommendations for relevant future practice, policy, and research. I have proposed a framework that illustrates the role of the DC program within a broad theoretical context. Further DC research will provide additional data and analysis to inform the future of DC programs (practice and policy) in Ontario. With the increasing number of careers requiring post-secondary education and the continuing economic and social benefits associated with higher educational attainment, DC programs are an important strategy to increase the likelihood that students, whether “at risk” or not, complete a post-secondary education.
References


Center for Community College Student Engagement. (2010). *The heart of student success: Teaching, learning, and college completion.* Community College Leadership Program, University of Texas at Austin.


School College Work Initiative Forum. (2009, May 5) [Presentation]


Appendix A

Information to Students re Participation in the Research Project

Date: __________________

Title of Study: What is the impact of the Dual Credit program on student success? A Case Study in one Ontario College of Applied Arts and Technology
Researcher: Linda Skilton
Supervisor: Dr. Charles Pascal

Hello,

I am a doctoral student at the Ontario Institute for Studies in Education (OISE) and the University of Toronto. This study is being conducted as part of my doctoral program under the supervision of Dr. Charles Pascal. As one of the students who participated in a Dual Credit program prior to attending Fleming College, your views and perspectives on the experience of taking a college course prior to attending full-time studies at college are essential to this study. You will be contributing to a NEW area of research that is very important to the future success of students in both high school and college. The purpose of this study is to explore the impact of Dual Credit (DC) programs at high school on the academic performance of students when they are in college. This study will focus on the DC students who enrolled full-time at Fleming College in September 2010. There will be 2 groups in this study, students who are no longer at Fleming College (Group A) and those who are currently at Fleming College in semester 2 (Group B). The findings of this study will increase our understanding of
what features of DC programs contribute to student success at college and what enhancements should be made to DC programs to increase student success.

Participation in any part of this research is completely voluntary. Participation or non-participation in this research will not affect your course grades or progress in college program in any way, now or in the future. You are free to not answer any question(s) that you do not wish to answer, and you may withdraw from the study at any time without explanation or penalty. Data collected from students who withdraw from the study at anytime will be destroyed and not included in the study’s findings. If I choose to withdraw and not complete AND submit the on line questionnaire none of the information will be used in the study. Participation will not cause or result in any known physical or psychological harm.

If you agree to participate, you will be asked to sign a consent form that includes your agreement to:

(a) participate in an internet based questionnaire survey which will take not more than 30 minutes to complete – all responses will be identified only by a code number known only to the researcher and her supervisor. Since the questionnaire is located on a server, there is a very slight chance that the webmaster could identify participants.

(b) participate in an digitally recorded telephone interview or audio-taped face to face interview, if selected – we will select a sample of students based on information collected from the on line questionnaire survey - the purpose of the interview is to seek further clarification on responses.

(c) to allow the researcher to access the following college documents: your high school transcript and your official college transcript to ascertain courses taken, and grades achieved. All information will be kept strictly confidential.

Students who agree to participate will be provided with the URL address for the questionnaire sometime after April 13th and before April 20th.

All data collected will be kept in strict confidence and secure and accessible only to the researcher and her faculty supervisor. Any other persons who may assist with the
interviews or transcribe interviews will be required to sign confidentiality agreements before they access any information. Digitally recorded interviews will begin with a code identifier. The researcher will keep confidential and secure the list linking the codes to names; it will be destroyed at the end of the project.

A summary of the findings of this study will be made available to student participants upon written request to the researcher, Linda Skilton (*lskilton@flemingc.on.ca*) or by phone at 705-324-9144.

If you have any questions about the research study, please contact Linda Skilton at *lskilton@flemingc.on.ca* or her faculty supervisor, Dr. Charles Pascal at *charles.pascal@utoronto.ca*.

This study has been approved by the University of Toronto Research Ethics Board (file # 26133); if you have ethical questions please contact the REB Office at ethics.review@utoronto.ca General Phone: 1-416-978-4649. This study has also been approved by the Fleming Research Ethics Board (file # 20110321-Skilton) at Sir Sandford Fleming College if you have any ethical or security questions please contact the REB at 1-705-324-9144 and ask to speak to Mary Lou McLean.

If you agree to participate, please read and return the attached Informed Consent Form and return it to Linda Skilton by email (signature not required) at *lskilton@flemingc.on.ca* OR drop off in a sealed envelope to Office 289 (School Office) at the Frost Campus or room 320 (FDR office) at the Peterborough Campus or Office # 306 at the Cobourg Campus or at the Frost desk at the Haliburton Campus by April 12th, 2011.

Sincerely,

Linda Skilton, Researcher
Fleming College
200 Albert Street
Lindsay, ON
K9V 5E6
1-705-324-9144 (ext. 3216)
lskilton@flemingc.on.ca
Dr. Charles Pascal (Supervisor)
OISE/UT
252 Bloor Street West,
Toronto, ON
M5S 1V6
416 716-7245
charles.pascal@utoronto.ca
Appendix B
Consent Form

Date: ________________

Title of Study: **What is the impact of the Dual Credit program on student success?**
A Case Study in one Ontario College of Applied Arts and Technology
Researcher: Linda Skilton
Committee supervisor: Dr. Charles Pascal

I understand the nature and purpose of the research study indicated in the title above and described in the Information Letter. I understand that I am free to participate or not participate in all or some of the parts of this study as I have indicated below. This study is being conducted as a doctoral requirement under the supervision of Dr. Charles Pascal.

I understand that my participation in any part of this study is voluntary; I am free to not answer any question(s) that I do not wish to answer and I may withdraw from the study at any time without explanation or penalty. If I do withdraw, data collected from me will be destroyed and will not be included in any reporting of the study findings. If I choose to withdraw and not complete AND submit the on line questionnaire none of the information will be used in the study. Participation or non-participation will not affect my course grade or progress in the program in any way now or in the future. No physical or psychological harm of any kind is expected.
I understand that all data collected will be kept in confidence and secure and accessible only to the researcher and her faculty supervisor. All data will be destroyed in five years and all data collected will be locked and encrypted.

If any persons assist with the questionnaire survey, interviews or transcription of the interviews they will be required to sign confidentiality agreements before they do so.

I understand that while the name of the college will be used, no individual will be identified or identifiable in any publication or conference presentation of the research findings. A copy of the findings will be made available to me upon request. The findings of this research may be used in presentations to Fleming College staff, Secondary School staff and to Ministry of Education and Ministry of Training, College and University staff.

**Section (a):**

I agree to participate in this study and understand that I will be asked to complete an online **questionnaire survey** regarding my experiences and perceptions as a student in the Dual Credit program at high school and the Fleming college program that I was enrolled in starting in September of 2010. There will be 2 groups in this study, students who are no longer at Fleming College (Group A) and those who are currently at Fleming College in semester2 (Group B). The questionnaire should take not more than 30 minutes of my time. All questionnaire responses will be identified by a code number known only to the researcher and her supervisor. I understand that since the questionnaire is located on the Fleming College server there is a slight chance that the web master may be able to identify my email address but that information will not be accessible to anyone else.

I understand that I will be provided with the URL address for the questionnaire during the week of April 4th and agree to complete the survey by April 13th.

☐ I hereby **AGREE** to participate in the questionnaire survey as described above.

☐ I do **NOT** wish to participate in the questionnaire survey.
Section (b):
I understand that I MAY be asked to be part of a sample of respondents who are interviewed by telephone (Group A – students no longer at Fleming) or face to face (Group B – students still attending Fleming) and that the interview will be digitally recorded. Participants contacted for an interview will be randomly selected by the researcher or a research assistant. If you do not wish to be interviewed, the results of the survey questionnaire will still be included in this study.

☐ If I am chosen as described above, I AGREE to participate in a telephone interview or face to face interview.

☐ I agree to have my interview digitally recorded (audio-taped).

☐ I do NOT wish to be interviewed.

Section (c):
I give my permission for the researcher to access my high school transcript (from my Fleming College file) and my official college transcript to review my courses taken and grades achieved at high school and at Fleming College. If you do not wish to provide access to your grades, the results of the survey questionnaire and/or interview will still be included in this study.

☐ I hereby AGREE to permit the researcher to access my high school transcript from my Fleming College file.

☐ I hereby AGREE to permit the researcher to access my official Fleming college transcript.

☐ I do NOT give permission for the researcher to access my transcripts.

________________________________________  ________________________________
Signature                                      Date

☐ I am 18 years of age or older.

Cell Phone Number _________________________________
Home Phone Number ___________________________________________

Email address(s): ______________________________________________

Home Address: ______________________________________________

If you have any questions or concerns about this research study or the consent form, please contact the researcher, Linda Skilton (lskilton@flemingc.on.ca) or her faculty supervisor, Dr. Charles Pascal by email at (charles.pascal@utoronto.ca)

This study has been approved by the University of Toronto Research Ethics Board (file # 26133); if you have any ethical or security questions please contact the REB Office at ethics.review@utoronto.ca General Phone: 1-416-978-4649. This study has also been approved by the Review Ethics Board (file # 20110321-Skilton) at Sir Sandford Fleming College; if you have any ethical or security questions please contact the REB at 1-705-324-9144 and ask to speak to Mary Lou McLean. I would like a summary of the report of research findings sent to me at:

______________________________________________________________________

** PLEASE RETURN YOUR COMPLETED LETTER OF CONSENT BY EMAIL TO lskilton@flemingc.on.ca (original signature is not required on this form if returned by email)

OR in a sealed ENVELOPE TO THE ATTENTION OF LINDA SKILTON by April 4th

at the following locations;

Frost Campus Lindsay – office 289 (School Office)
Sutherland Campus Peterborough – office 320 (FDR office)
Cobourg Campus – 306
Haliburton Campus – Front desk

Please retain a copy of this letter for your own records.
Appendix C

Survey Questionnaire

[located at Fleming Data Research]

As one of the students who have participated in the Dual (DC) program while attending your high school and subsequently attended semester 1 at Fleming College during the fall of 2010, you are invited to participate in this on-line survey. It is anticipated that the questionnaire will take no more than 30 minutes to complete.

As described in the information letter that you have received, the purpose of this study is to find out whether or not Dual Credit programs contribute to the success of students when they attend college. The findings of this study will increase our understanding of the relationship between the Dual Credit program and success at college.

Participation in any part of this research is completely voluntary. **You must be 18 years of age or older to participate in this study.** Participation or non-participation in this research will not affect the students’ course grades or progress in college program in any way, now or in the future. Participants are free to not answer any question(s) that they do not wish to answer, and they may withdraw from the study at any time without explanation or penalty. Data collected from students who withdraw from the survey at anytime will be destroyed and not included in the study’s findings.

Participation will not cause or result in any known physical or psychological harm.

If you have any questions or concerns about this research study or the consent form, please contact the researcher, Linda Skilton (lskilton@flemingc.on.ca) or her faculty supervisor, Dr. Charles Pascal at charles.pascal@utoronto.ca. This study has been approved by the University of Toronto Research Ethics Board (file #26133); if you have any ethical or security questions please contact the U of T REB Office at ethics.review@utoronto.ca General Phone: 1-416-978-4649. This study has also been approved by the Research Ethics Board (file # 20110321-Skilton) at Sir Sandford
Fleming College; if you have any ethical or security questions please contact the REB at 1-705-324-9144 and ask to speak to Mary Lou McLean.

If you agree to participate in this study, please click here to begin the survey.

Part A. Demographics

Gender:
Male [1]
Female [2]

Age group (now/current age)
18 [1]
19 [2]

3. What was your status at high school at the time that you enrolled in the Dual Credit program?
   Full time student [1]
   Part time student [2]
   had dropped out /not attending high school [3]

4. How would you best describe yourself during your final year at high school?
   Very Engaged [1]
   Somewhat engaged [2]
   Neither [3]
   Disengaged [4]
   Very Disengaged [5]
   Other (please explain) ________________________________

5. How would you describe your attendance at high school?
   Seldom attended classes [1]
   Attended about 50% of my classes [2]
   Attended most of my classes [3]
Attended all of my classes [4]

6. What was your overall average in your final semester at high school?
   Below 50% [1]
   50% - 59% [2]
   60% - 69% [3]
   70% - 79% [4]
   80% - 89% [5]
   90% or more [6]
   don’t remember [7]

Part B. Information about the Dual Credit Program

7. What high school (or other educational institution) were you attending when you participated in the Dual Credit course or courses?

   ____________________________________________________________

8. What was the name of the college that delivered that Dual Credit course or courses?

   ____________________________________________________________

9. What was the name of the Dual Credit course or courses?

   ____________________________________________________________

10. What final grade/mark did you achieve in the dual credit course? (If you took more than one Dual Credit course, please provide an average of the group of courses.)
   Below 50% [1]
50 % - 59% [2]
60% - 69% [3]
70% - 79% [4]
80% - 89% [5]
90% or more [6]
don’t remember [7]

11. How would you describe your attendance in the Dual Credit course?
Seldom attended classes [1]
Attended about 50% of my classes [2]
Attended most of my classes [3]
Attended all of my classes [4]

Part D. Information about semester 1 Fall 2011 at Fleming College

12. What program were you enrolled in during semester 1 Fall 2011 at Fleming College?

_________________________________________________

13. Was the Fleming College program that you were enrolled in during semester 1 Fall 2011 related to the dual credit course subject/topic that you participated in prior to attending Fleming College? For example, you took a construction skills course as your dual credit high school course and you are now in a college trades program.
Very much related [1]
Somewhat related [2]
Not related at all [3]

14. How many courses did you take in semester 1 Fall 2011 at Fleming College?
4 or fewer [1]
5 [2]
6 [3]
15. How many of your courses taken in semester 1 Fall 2011 at Fleming College did you pass?
   none [1]
   fewer than half of my courses [2]
   more than half of my courses [3]
   all of my courses [4]

16. How would you describe your attendance in semester 1 Fall 2011 at College?
   Attended about 50% of my classes [1]
   Attended most of my classes [2]
   Attended all of my classes [3]
   Seldom attended classes [4]

17. What was your overall GPA at the end of semester 1 Fall 2011 at Fleming College?
   3.6 – 4.0 [1]
   3.0 – 3.5 [2]
   2.6 – 2.9 [3]
   2.0 – 2.5 [4]
   1.6 – 1.9 [5]
   1.0 – 1.5 [6]
   less than 1.0 [7]

18. At Fleming College have you been involved in any extra-curricular activities such as clubs, sports and so on?
   YES [1]
   NO [2]
19. Did you have to move away from your residence to attend Fleming College in the Fall of 2011?

YES [1]
NO [2]

Part E. Perceptions of the Dual Credit Program to college achievement

20. Did the Dual Credit course help you with your transition to Fleming College?

YES [1]
NO [2]
NOT SURE [3]
If you responded YES, go to number 21, if you responded NO or not sure go directly to question 22

21. If YES, how did the Dual Credit course help with your transition from high school to Fleming College?

___________________________________________________________________________

___________________________________________________________________________

22. How could the Dual Credit course experience be improved to help students with the transition from high school to college?

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________
23. If you are no longer a student at Fleming College, what factors contributed to your decision to leave Fleming College during or at the end of semester 1?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

24. Which of the following student support services did you access at Fleming College in semester 1 Fall 2011 (choose all that apply)?
   Note taking [Q24 (Note taking)]
   Tutoring [Q24 (Tutoring)]
   Student Advisor [Q24 (Student Advisor)]
   Counseling [Q24 (Counseling)]
   None [Q24 (None)]
   Other [(Other)]______________________________

25. Did you attend the college orientation activities in Week 1?
   YES [1]
   NO [2]
   NOT SURE [3]

26. Please feel free to add any other comments related to your Dual Credit experience as it relates to your college experience

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________
27. A random sample of participants will be contacted for an interview by telephone or face to face (interviews will be digitally recorded).

O I AGREE to be interviewed by telephone or face to face (if chosen from the list of student participants)

28. Please provide contact information including telephone number(s) and email address(s)

  Telephone number(s)

  __________________________________________

  Email address(s)

  __________________________________________
Appendix D
Semi-structured interview guide

What is the impact of the Dual Credit program on student success? A Case Study in one Ontario College of Applied Arts and Technology

(By telephone and face to face semi-structured interview questions). Note: other questions may emerge during the interview that will solicit clarification or expansion of comments made.

Opening comments:
The purpose of this study is to discover the impact of Dual Credit (DC) programs at high school on the academic performance of students when they are in college. The findings of this study will increase our understanding of what features of DC programs contribute to student success at college and what enhancements should be made to DC programs to increase student success. As one of the students who participated in a Dual Credit program prior to attending Fleming College, your views and perspectives on the experience of taking a college course prior to attending full time studies at college are essential to this study. You will be contributing to a NEW area of research that is very important to the future success of students in both high school and college.
Reminder: your participation in this interview is voluntary and you are free to withdraw from participating at anytime or for any part of this interview. Just tell me anytime if you wish to stop the interview – no explanation will be asked for. Before we begin, do you have any questions?
Questions:

1. With respect to your DC course(s) at high school AND your college courses in the fall of 2010 comment on the following:

   a) How was your attendance during your DC course(s)? How was your attendance in your classes during semester one at college?

   b) Please comment on your ‘sense of belonging’ while you were in high school? During your DC experience at college/high school?
   Did you feel a ‘sense of belonging’ at the college during semester one in the fall of 2010? (i.e. did you feel comfortable at the college? Did you enjoy your time at the college?)

   c) Intellectual challenge (DC course(s) and college?) Was the DC course(s) that you took during high school academically challenging? Was semester one at Fleming College intellectually challenging?

2. Did the DC course(s) give you insight into career? Did it help you to decide what type of employment/job you want (ed)

3. Did the DC course(s) provide you with an understanding of what college would be like? If so, what did you learn about college from your DC experience?

4. Did the DC course(s) provide you with an overview of the expectations for course work and demand at college? If so, how and if not, please explain.

5. Were you confident as a student in high school? Are you a confident student at college?
   (if the responses are different – probe why?)
6. Why did you decide not to continue with your education at Fleming College in the winter of 2010? Only ask of the non-persist group A

7. What enhancements could have been made to your DC experience to contribute to success at college?

8. Is there anything else that you would like to add? Any other comments that you would like to make as it relates to your DC experience?
Appendix E
Fleming College REB approval request form

March 21, 2011

Linda Skilton,
Dean/Principal
School of Environmental and Natural Resource Sciences Fleming College
200 Albert St.,
Lindsay, ON, K9V 5E6

Re: Submission to Research Ethics Board for Approval of Research Protocol

Dear Ms. Skilton,
The Fleming Research Ethics Board (REB) received your submission on February 18, 2011 for approval of your research protocol. On March 15, 2011, the REB received a revised submission from you.
The REB met on March 15, 2011 and determined that your request met the requirements for an expedited review (Policy 2-216). This review concluded on March 21, 2011 with a decision of Approved as Submitted. Approval #20110321-Skilton.
You may proceed with your research as documented in the revised submission submitted March 15, 2011 and pending approval by the University of Toronto.
Please note your responsibilities under section 6 of Policy 2-216 including that you are required to report any changes from your research protocol, any adverse events, any unforeseen harm, or any unanticipated risks or problems.

Sincerely,

Brent Wootton, Ph.D.
Chair, Research Ethics Board
Appendix F
Confidentiality statement

Confidentiality Agreement between

Linda Skilton, Principal Investigator (PI)
And
XXXXXX

Re: What is the impact of the Dual Credit program on student success? A Case Study in one Ontario College of Applied Arts and Technology

1. Confidential information means, without limitation, any information including: participant contact information, the data on the audio taped (conversations), the contents of the audio conversations, transcriptions of those data and any information to which the recipient XXXX gains access from Linda Skilton PI, or participants in this project during this project.

2. XXX will use the confidential information provided only for the purposes of contacting the participants to increase the number of participants in this study or who have provided consent to participate in an interview and for validation of the transcribed audio-taped conversations. He will treat the information as confidential and will provide the same degree of care in protecting the confidential information as he would use in protecting her own confidential information. XXXX will not discuss or disclose the confidential information to any third-party. XXXXX will not copy the confidential information except, as necessary, to complete the transcription and will keep all data secure at all times and accessible only to Dr. Charles Pascal and Linda Skilton.
3. Throughout the project and upon completion of the interviews and transcriptions all the information will be submitted to Linda Skilton (Fleming College, Office # 289A; lskilton@flemingc.on.ca; 705-324-9144). XXX agrees to destroy completely all his copies of confidential information made and all data pertaining to the confidential information including, but not limited to, all her electronic versions of the data. He will destroy completely all data copied from the original sources within 48 hours of completion of the transcription.

4. This Agreement is governed by the laws of the Province of Ontario and any applicable Federal laws and may be amended only by mutual agreement in writing.

Signed: ________________________________

Print Name: ________________________________

Witness: ________________________________

Print Name of Witness: ________________________________

Date: ________________________________

I have received the contact information of participants in this study and will have audiotapes of conversations and transcription of the interviews for the following participants:
Appendix G

President Tilly consent to name Fleming

Appendix G

Email communication from President Tilly - permission to name Fleming College:

>>> Tony Tilly 1/10/2011 10:04 am >>>
Linda --

I have no objection to naming Fleming College in this research. Please take this as my approval of the request to do so.

Tony Tilly, Ph.D.
President
Sir Sandford Fleming College
tilly@flemingc.on.ca
Phone (705) 749-5535
Fax (705) 749-5559

>>> Linda Skilton 1/10/2011 9:29 am >>>
Hello Tony
I am still working on my PhD research at OISE/UT. My research question is around the topic of the success of dual credit (DC) students once they have left high school and come to college. I am only using Fleming DC students in my research. I have been using a pseudonym for Fleming College in my thesis and referring to it as EOC (Eastern Ontario College). Would you have any objection to my naming Fleming College in my study rather than referring to it as EOC?
Thanks
Linda

Linda Skilton
Dean/Campus Principal, School of Environmental & Natural Resource Sciences, Frost Campus
Fleming College
200 Albert St.
Lindsay, Ontario
K9V 5E6
1-866-FLEMING (x3216)
lskilton@flemingc.on.ca
Appendix H
Email body letter

Email letter to Dual Credit Students with appendices A and B attached to the email correspondence.

Subject: Research Study regarding Dual Credit programs

Hello,
My name is Linda Skilton and I am a doctoral student at the Ontario Institute for Studies in Education (OISE) and the University of Toronto. Under the supervision of Dr. Charles Pascal, I am doing a study related to Dual Credit. The title of the study is:

What is the impact of the Dual Credit program on student success? A Case Study in one Ontario College of Applied Arts and Technology

As one of the students who participated in a Dual Credit program prior to attending Fleming College in the fall of 2010, your views and perspectives on the experience of taking a college course prior to attending full time studies at college are essential to this study. You will be contributing to an area of research that is very important to the future success of students in both high school and college.

Please find an information letter and letter of consent attached to this email. If you agree to participate in this study, please return your consent form by April 4th. After consenting, you will be sent an email with a link to complete an on line questionnaire survey sometime during the week of April 4th. Completion of this survey will take no more than 30 minutes. You will also be asked to agree to a possible phone or face-to-face interview and access to your academic records at Fleming.
If you have any questions, you can contact the researcher by email at lskilton@flemingc.on.ca or by telephone at 1-866-FLEMING (ext 3216) or Dr. Charles Pascal by email at charles.pascal@utoronto.ca

Linda Skilton
Fleming College
200 Albert Street
Lindsay, ON
K9V 5E6

Charles Pascal
OISE/UT
252 Bloor Street West
Toronto, ON
M5S 1V6
charles.pascal@utoronto.ca
Appendix I
Invitation to interview (2011)

Script to recruit interview participants (by phone or by email)

Hello,
Thank you for your recent participation in the study that I am conducting with Dual Credit students and completing the online questionnaire.

You have signed consent to be contacted to participate in an interview (by phone for Group A and face to face for Group B).

Are you still in agreement with participating in an interview?

If so, do the following times and locations work for you?

How can I contact you to provide you with the room number at the college?

I would like to send you the questions in advance. What email address would you like me to send these to?

The interview will take approximately 30 minutes. The interview will be taped to ensure accuracy. Your name will not be used in this study. The tapes and transcripts will be kept in a secure location to ensure confidentiality and will be destroyed in 5 years after the completion of the study.

Do you have any questions or concerns?

If you have any questions prior to the interview, you can contact me at YOUR EMAIL ADDRESS or by phone at XXXX

Thank you very much.
Appendix J

Phone script for RA (combined invitation and consent)

Phone script for Research assistant – Dual Credit Study

Hello

“May I speak to XXXX “

If you get the ex-student on the phone, proceed with the script below

If not, do not say anything – ask when you can call back - if asked who is calling, respond that you are calling on behalf of a researcher to invite that person to participate in a study related to education. Under NO circumstances tell anyone but the ex-student that you are inviting them to participate in a study on dual credits or from Fleming College.

Name of the person who took the call if they have told you but do NOT ask for it:
_______________________

Is you are sure you are speaking to the student:

I am calling on behalf of Linda Skilton who is conducting important research for her Ph.D. thesis about dual credit courses. You are in this study because we believe you took a dual credit college course while you were in high school and then attended Fleming College in the fall of 2010. I hope you received our email about this study and a letter in the mail approx 2 weeks ago. We are inviting you to participate in this important study – your input is vital to our understanding of important education issues.
The study consists of completion of a survey that will take no more than 30 minutes and in some cases (if randomly selected) a phone interview.

You are free to participate or not participate in all or some of the parts of this study.

Your participation in the questionnaire survey and/or interview is voluntary. You are free to not answer any questions you do not wish to answer and you may withdraw from the study at any time without explanation or penalty. If you do wish to withdraw, your information will not be included in the study.

The information collected will be kept in confidence and secure and accessible only to the researcher and her faculty supervisor.

You will not be identifiable in any reporting of the findings.

As an assistant to the researcher, I have signed a confidentiality agreement with the researcher.

All information will be destroyed five years after the study is completed

Do you have any questions about what I have just told you?

Do you agree to consent to participate in this study? ______________

By completing the survey? ______________

Would you like to do that now over the phone? _____________

Or by email? __________________________
If by email, I will send the link to your email account within the next 2 days.

What is your email address? __________________________

Would you agree to a phone interview if you are randomly selected? ____________

What phone number could you be contacted at? ________________

Would you give your permission for Linda Skilton to access your high school transcript (from your Fleming College file) and your official college transcript to review your courses taken and grades achieved at high school and at Fleming College?

This information will not be associated with your name or identity in anyway in the reporting of the findings of this research. Do you agree to allow her to do this?

Would you like a copy of the study when completed? ________________

How would you like this to be sent to you? _______________________

Do you have any questions? _____________________________

Thank you very much for your time.
Time of call: _________________________

Date of call: _________________________

Name of participant: _________________________
Appendix K

Fleming programs that DC students were registered in during fall 2010

Number of students registered in semester one in post-secondary programs at Fleming in Fall 2010 who previously took a dual credit course.

<table>
<thead>
<tr>
<th>Program Code</th>
<th>Program Name</th>
<th># Reg</th>
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<tr>
<td>BAA</td>
<td>Business Admin-Marketing</td>
<td>3</td>
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<tr>
<td>BO</td>
<td>Fish and Wildlife Technician</td>
<td>1</td>
</tr>
<tr>
<td>CBS</td>
<td>L&amp; S Admin-Customs Border Serv</td>
<td>1</td>
</tr>
<tr>
<td>CHT</td>
<td>Chef Training</td>
<td>1</td>
</tr>
<tr>
<td>CJS</td>
<td>Community and Justice Services</td>
<td>1</td>
</tr>
<tr>
<td>CM</td>
<td>Culinary Management</td>
<td>4</td>
</tr>
<tr>
<td>CNS</td>
<td>Construction Skills</td>
<td>4</td>
</tr>
<tr>
<td>CSI</td>
<td>Comp Security &amp; Investigations</td>
<td>2</td>
</tr>
<tr>
<td>DA</td>
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<td>EMP</td>
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<td>ERJ</td>
<td>Ecological Restoration</td>
<td>1</td>
</tr>
<tr>
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<td>2</td>
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<td>2</td>
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<td>FT</td>
<td>Forestry Technician</td>
<td>2</td>
</tr>
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<td>Program Name</td>
<td># Reg</td>
</tr>
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<td>GSC</td>
<td>Gen Arts and Science</td>
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<td>HEO</td>
<td>Heavy Equipment Operator</td>
<td>3</td>
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<tr>
<td>INT</td>
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<tr>
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<td>Massage Therapy</td>
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<td>OAG</td>
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<td>PN</td>
<td>Practical Nursing</td>
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<td>RDB</td>
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<td>SBL</td>
<td>Blasting Techniques</td>
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<tr>
<td>TV</td>
<td>Tourism and Travel</td>
<td>3</td>
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<tr>
<td>UF</td>
<td>Urban Forestry</td>
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<td>VCA</td>
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<tr>
<td>WTQ</td>
<td>Welding Techniques</td>
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Appendix L
Fleming programs that DC students were registered in during fall 2011

Number of students registered in semester one in post-secondary programs at Fleming in Fall 2011 who previously took a dual credit course.

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<thead>
<tr>
<th>PROGRAM CODE</th>
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<th>Count</th>
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<td>Business Admin-Accounting</td>
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<tr>
<td>BTF</td>
<td>Biotechnol Technol-Forensics</td>
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<td>CBS</td>
<td>L&amp; S Admin-Customs Border Serv</td>
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</tr>
<tr>
<td>CHT</td>
<td>Chef Training</td>
<td>5</td>
</tr>
<tr>
<td>CJS</td>
<td>Community and Justice Services</td>
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<tr>
<td>CM</td>
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<td>CYW</td>
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<td>FHP</td>
<td>Fitness and Health Promotion</td>
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<td>FT</td>
<td>Forestry Technician</td>
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</tr>
<tr>
<td>GBE</td>
<td>Business</td>
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<td>Gen Arts &amp; Science-Univ Transf</td>
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<tr>
<td>HEO</td>
<td>Heavy Equipment Operator</td>
<td>3</td>
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<td>HIM</td>
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<td>HVT</td>
<td>Heating, Ref &amp; Air Cond</td>
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<td>LSR</td>
<td>Law&amp;Sec Admin-Sec&amp;Risk Mgmt</td>
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<td>MST</td>
<td>Massage Therapy</td>
<td>3</td>
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<tr>
<td>PHS</td>
<td>Preparatory Health Science</td>
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<tr>
<td>PN</td>
<td>Practical Nursing</td>
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<td>PWF</td>
<td>Personal Support Worker</td>
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<tr>
<td>PWS</td>
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<tr>
<td>RDB</td>
<td>Resources Drilling &amp; Blasting</td>
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<tr>
<td>RLS</td>
<td>Recreation &amp; Leisure Services</td>
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<td>Blasting Techniques</td>
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<tr>
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<td>UF</td>
<td>Urban Forestry</td>
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<tr>
<td>WTQ</td>
<td>Welding Techniques</td>
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</tr>
</tbody>
</table>

*Information not available for 23 students.*
Appendix M

President Tilly consent to use overall college GPA and retention rates

----- Forwarded Message -----
From: Tony Tilly <ttilly@flemingc.on.ca>
To: liskilton@yahoo.com
Sent: Friday, October 12, 2012 7:26 AM
Subject: Permission

I give permission to Linda Skilton to include the Fleming College overall Semester One academic average for the fall of 2010 and the fall of 2011 in her PhD thesis. I further give permission to include the overall college retention rates from the fall 2010 to winter 2011 and fall 2011 to winter 2012 for all semester one students at Fleming College.

Tony Tilly, Ph.D.
President
Sir Sandford Fleming College
ttilly@flemingc.on.ca
Phone (705) 749-5535
Fax (705) 749-5559
Appendix N

Email script to program coordinators regarding this study

From: Linda Skilton
To: Linda Skilton
CC: Monique Gatt
Date: 25/03/2011 6:04 PM
Subject: Help me get a message out to your students please
Attachments: Abstract - for REB.doc

Hello
Can you please make an announcement - early next week (March 28/29) - to your Second Semester students? The announcement (exactly as stated below) is as follows:

______________________________________________
You may have received an email on Friday (March 25th) with the subject line that read ...
Research Study regarding Dual Credit programs - Please Participate
A dual credit course is a course that is taken while you are in high school but is a college course which is typically delivered at a college campus.
If you have received this email, please read it and consider participating in this research study. To participate, you must complete the consent form that is attached to the email and return it to Linda Skilton (the researcher) by following the instructions on the consent form. This study will provide valuable information about the impact that dual credit courses on student success.

(End of announcement)

______________________________________________

Given that the student participants in this study will be anonymous, please do not ask them to identify themselves to you.
Background
I am emailing you because at least one of the students in your program in semester 2 was sent an email today, on my behalf, by Fleming Data Research (Monique Gatt).
I am doing PhD research and have sent an email to those students who have taken a Dual Credit (DC) course while they were in high school and then came to Fleming in the fall of 2010 as full time students. I am asking them to volunteer to participate in my research.
In addition to my sending the email to these students, I am asking for your help so that as many students as possible (56 at Fleming in total) read this email and hopefully agree to participate.
If they agree to participate, they will complete an online survey and perhaps take part in an interview.

Thanks for your help and if you have any questions, do not hesitate to contact me. I have attached my research abstract if you are interested in knowing more about my study.

Very much appreciated!
Linda

Linda Skilton
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Fleming College
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Lindsay, Ontario
K9V 5E6
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lskilton@flemingc.on.ca