

The Cost of Failure in Ontario's Public Secondary Schools

By

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**A thesis submitted in conformity with the requirements for the degree of
Doctor of Philosophy in Education**

**Graduate Department of Leadership, Higher and Adult Education
Ontario Institute for Studies in Education of the
University of Toronto**

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2013

Abstract

Large bodies of empirical evidence show that policies and practices that support failure in schools does little to improve student outcomes, yet course failure remains widespread in secondary schools. Further, there is a growing body of evidence indicating these policies and practices are costly in fiscal terms. This study builds on this body of evidence to ask the question: how much money does course failure in secondary schools cost the Ontario public education system annually? Borrowing from Levin & McEwan's resource cost modelling approach, the study calculates the volume of course failure across all secondary schools in the province and establishes estimates of the annual cost of secondary course failure taking into account some factors known to be systematically related. This work aims to better understand the costs of providing public secondary school education in order to make more effective use of resources. In the 2008–09 school year 7.9% of course registrations in Ontario secondary schools resulted in failure. Fail rates are greater for students who receive special services and vary considerably by subject area. The annual cost is estimated to be \$472 million.

Acknowledgements

I would like to thank my thesis committee (Dr. Ben Levin, Dr. Steven Anderson, and Dr. John Portelli) for all of their support over the past couple of years. In particular, I would like to thank Dr. Levin, my thesis supervisor, for all his efforts in helping to guide and to support me throughout the doctoral program.

To my family, friends, and colleagues, thank you for believing in me.

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Chapter 1

Overview of the study

1.1 Introduction

Millions of students failing secondary courses each year are recognized to constitute a failure of education systems (OECD 2007; 2012). They are falling short of their social, economic, and political responsibility to provide students with the knowledge, skills, and experiences necessary for life success in the 21st century. The issue of course failure is also significant from a cost perspective because resources are consumed whether or not a course is completed successfully. The implication for researchers and policymakers is this: millions of dollars each year (one estimate puts the cost at \$250 million for Ontario in one school year) are tied to failing students, an outcome with no academic or emotional benefit to students (Levin, 2008). These millions represent potential efficiencies that could presumably be spent to better serve the needs of students and schools.

Empirical evidence has already established that the public cost (reduced tax collection, greater reliance on social systems) and the private costs of failure — failure of any type — in schools in the long-term are high (CCL, 2009; Pacific Research Institute, 2008; OECD, 2012; Levin & Belfield, 2007; Psacharopolous, 2007; Rouse, 2007). What is missing from the research literature is an understanding of the volume and cost of course failure from a short-term perspective. This study builds on this body of evidence to ask the question: how much money does course failure in secondary schools cost the Ontario public education system in one school year? The study calculates the volume of course failure across all secondary schools in the province and establishes estimates of the annual cost of secondary course failure taking into account some factors known to be systematically related (i.e., grade level, subject area, special needs).

Other studies have looked at the costs of failure in education but this thesis takes an innovative approach. *Course failure* is being interrogated in this study and actual district expense schedules are used to estimate the cost. Other studies have used secondary dropouts as the measure and estimated the private and public costs over the lifetime of the student; this one focuses on direct budget impacts on schools and districts. This study also differs from conventional cost analyses

because the costs are not compared against alternatives, though the results of this study can be a stepping stone to this line of inquiry.

1.2 Problem Statement

Ontario, like so many OECD educational jurisdictions, has undertaken the challenge of implementing reforms aimed at reducing failure — course failure, dropout, low skills — in schools (OECD 2007; 2012; Ontario 2008b). This already challenging work is compounded by a number of factors, namely economic uncertainties around the globe (e.g., the American and European financial crises), which increase the likelihood of funding cuts to public education. There are also political considerations, not least the potential for leaders in education to shift their view in favour of endorsing failure in schools. Circumstances are such that education stakeholders must figure out how they can reduce failure in schools without increasing the costs of operation or losing public confidence, while also managing other priorities. For these reasons, educators, researchers, and policymakers are interested in policies and practices that can offer solutions capable of reducing school failure and, ideally, achieve this goal without increasing spending.

It comes as no surprise, then, that policies and practices that support academic failure are currently under scrutiny (OECD, 1998; 2007; 2012). In this study, “academic failure” is being interrogated in terms of *course failure* which is a potential antecedent to other types of academic failure — such as high school dropout. There is a growing body of evidence that policies and practices that support course failure do little to improve student outcomes (achievement or socio-emotional) and are costly in fiscal terms both for the individual and the state (Grubb, 2009; Levin and Belfield, 2007; Levin, 2008; Psacharopoulos, 2007; OECD, 2007; 2012).

Ontario, like other OECD educational jurisdictions, does not release details of the volume or costs of secondary course failure (if they are calculated at all) (Warren & Saliba, 2012). It is believed by some scholars this absence perpetuates both the public and policy view that course failure is a “readily available” and inexpensive solution to underperforming schools and students (Natriello, 1998). Indeed, grade repetition (the subsequent outcome of course failure) remains “one of the main tools to respond to individual weak performance” in many OECD countries

(OECD, 2012, p. 51). Furthermore, not having standard measures or reliable estimates of the volume and cost of course failure means administrators are making resourcing decisions with minimal attention to the cost effectiveness of education outcomes. At a time when education leaders claim to be committed to data informed decision making and reducing failure in schools, this situation is not ideal.

The principal aim of this work is to better understand the volume and real costs of secondary course failure and to make this information part of the public discourse on the role of failure in education. This knowledge could be used to distribute resources more effectively and to better fulfil the social, economic, and political responsibilities of education systems.

1.3 Research Questions

The study's main question is: how much money does failure in secondary schools cost the Ontario public education system in one school year? Three sub-questions frame the interrogation of the data:

1. How many secondary course failures were there in Ontario in 2008–09?
2. How do fail rates relate to factors such as subject area, course type, grade level, and additional services?
3. What proportion of board budgets is accounted for by failed courses?

These questions emerged from the review of literature related to costs of failure in education as outlined in Chapter 2. Regarding sub-question two, student characteristics that are known to be related to school failure (e.g., gender, race) are not included in the analysis since these characteristics are not related to costs, at least not in Ontario.

1.4 Course failure versus grade repetition

Previously mentioned, the type of failure interrogated in this study is secondary *course failure*. Course failure is understood in this study to be a separate outcome from grade repetition. More specifically, course failure and grade retention are understood to be two separate outcomes — you cannot be retained in a grade or course unless you have been failed. However, not all students who fail opt to repeat a grade or course.

The research related to grade repetition is mentioned throughout the study. This is mostly because the research literature does not properly distinguish between course failure and grade repetition. Indeed, it is difficult to locate any research on the topic of “course failure.” I presume this is partly due to researchers not having open access to course/pass fail rates, while they can collect information on retention using through survey responses. The point being made is that course failure in this study is a distinct outcome from repetition, research on grade repetition is cited because it is the closest outcome available that is widely studied.

1.5 Organization of the Thesis

The report has been structured in seven chapters.

Chapter 1 introduces the study and outlines the problem statement, research questions, and the organization of the thesis.

Chapter 2 provides an overview of failure in education, followed by a review of the literature on the costs of failure, and the development of the conceptual framework.

Chapter 3 outlines the methodology used to estimate the volume and cost of failure for Ontario’s public secondary education system, and highlights innovative features of the approach.

Chapter 4 focuses on the number of course failures in Ontario secondary schools in 2008–09.

Chapter 5 analyzes course fail rates according to related factors for which Ontario data were available, including subject area, course type (i.e., academic or applied), grade level and courses within subject areas for each of the student population groups.

Chapter 6 answers sub-question three of the study by attaching a cost to the course failures presented in the two previous chapters.

Chapter 7 pulls together the findings in Chapters 4, 5 and 6 to illustrate that failure has serious consequence for high school completion, with a high degree of waste in certain subject areas, at different grade and course levels. This chapter also discusses the implications and application of the findings for research, policy, and practice.

Chapter 2

Literature Review

2.1 Introduction

Chapter 2 provides an overview of failure in education, followed by a review of the literature on the costs of failure, and the development of the conceptual framework.

2.2 An overview of education reforms aimed at reducing school failure (1998–2012) from an OECD perspective

The 1990s and 2000s are decades marked by educational reforms across OECD education jurisdictions aimed at providing equal education opportunities, producing high levels of achievement, creating accountable education systems, and generating positive social outcomes (OECD, 1998; OECD, 2007, 2012; Psacharopoulos, 2007). That so many educational jurisdictions — national and state level — (e.g., Australia, Finland, Ontario, Canada, New Zealand, the United Kingdom, the United States, etc.) undertook education reforms at the same time marked the beginning of a general trend towards educational reform across OECD education jurisdictions. As important, the reforms undertaken varied from one jurisdiction to another. Some focused on improving the equitable provision of educational services at all levels of the education system (Finland, Ontario, Canada). Others focused on setting minimum competency standards at each grade level, holding schools and students accountable for achieving them (with consequences of repetition) (e.g., the United States) (Allen et al., 2009; Newsweek, 2004; OECD, 1998, 2007).

Some reforms have enjoyed more success than others. Finland, for example, focused on the equitable provision of educational services at all levels. Educational leaders can boast that fewer than 2% of its students repeat a grade or course before leaving compulsory education at the age of 16 (Valijarvi & Sahlberg, 2008). The country is also a top performer in reading, math, and science literacy according to the 2000, 2003, 2006, and 2009 Programme for International Student Assessment (OECD, 2011). Finnish officials credit their success to system reforms driven by the educational principles of “early intervention”, addressing “dynamic inequalities in

all schools”, “automatic student promotion”, the provision of “individualized support mechanisms”, “systematic counselling”, and “career guidance” (Valijarvi & Sahlberg, 2008).

The State of California (a U.S. case) approached reforms with a focus on raising standards through greater standardized testing and competition (between students and schools for resources). Though reducing course failure may not have been the primary objective of reform, their efforts have not resulted in improved secondary graduation rates or reducing the need for remedial education (Pacific Research Institute, 2008).

OECD first recognized failure in schools to be a problem back in the late 1990s (OECD, 1998). To the extent that OECD has influence on policy and practice direction in member states (this idea is explored later in this chapter), two decades later and billions (U.S.) of dollars spent on reforms (an educated guess) already spent on various education reforms to improve education systems, failure — course failure, dropout, and failure to graduate from high school with high level skills — remains widespread across most OECD educational jurisdictions (OECD, 1998, 2007; 2012; 2012b), including Ontario, Canada (Levin, 2008). This raises the question: why is reducing course failure so difficult? This question is explored more fully in the next section.

2.3 Search criteria and how the literature review was conducted

The literature that addresses some aspect of failure is vast, so parameters had to be set. A four step process was used to conduct the literature review. Step one was to determine inclusion and exclusion criteria. Of interest, and therefore included, was research on the costs of failure at all levels of the K-12 and post-secondary education systems, with a emphasis on fiscal (financial costs, particularly at the system or institutional level) over non-fiscal costs (socio-emotional impact on students). The literature review included scholarly and grey literature. Articles and reports that discussed public and private social costs were included if public fiscal costs were also discussed. Research was drawn from non-peer reviewed works with appropriate qualification of the author — that is recognized leaders in the field of education who publish on the topic of failure in schools. Out-of-scope issues included: works that have no direct relationship to the fiscal costs of failure, including works that examined solely the social costs of failure.

The second major step was the literature search. Four different approaches were used to locate relevant literature: online search portals (Scholars Portal, Google Scholar, and University of Toronto Library Portal), key article reference searches for those articles that specifically addressed either the volume or the fiscal costs of failure in education, and existing OECD literature. Approximately 600 items were located through searches and a detailed search log was maintained. Scholars Portal does not rank order searches, so all items located through the search were reviewed (between 20 and 52 items per search). For searches using Google Scholar, the first 200 items were reviewed out of thousands of possible items. A combination of different search terms was employed when locating the articles. Specifically, searches were conducted using the discrete terms of “student”, “failure”, “cost”, “education”, “repetition” using various “AND”, “OR” search permutations.

Step three involved an analysis of the resource found through the search. A review of the abstract (or summary) of each of the 600 plus items of interest was conducted based on the inclusion/exclusion criteria (described above). This step served to cull the items down to approximately 80 relevant resources. In step four, the final material was read and analysed.

Other criteria: the literature had to be published between the 1960s and 2013. This period was selected because of the limited availability of research on the topic of the fiscal costs of course failure. By searching for materials over a period of fifty years, it was presumed (correctly) that a greater number of relevant articles would be located. The majority of the research on the topic of failure was published in the United States followed by Western Europe and Canada between 1980 and 2012.

The literature review was limited to works published in the English language. Despite this limitation, the literature included in this review was published in multiple countries including Canada, France, Spain, Netherlands, Belgium, Finland, and the United States.

One of the limitations of this review is having reviewed only English language works (my primary language of proficiency). A second limitation is related to the difficulty in selecting search terms that capture the variability in how failure is discussed in different bodies of

literature. For example, in the United States, failure is often discussed along with concerns of “adequacy” of system inputs (i.e., funding). In Spain, failure refers specifically to students who fail to obtain a “leaving certificate” at the end of compulsory education at age 16 (Psacharopoulos, 2007). In Ontario, Canada, failure refers (unofficially) to students who do not meet requirements to advance by grade or course level (Levin, 2008).

2.4 Review of the literature

A preliminary finding of the review found that researchers have focused their work on three areas of study: 1) the socio-emotional impact of failure on students, 2) the relationship between failure in schools and key characteristics of education systems, and 3) the costs of failure to individuals and to society. Investigators seem to have addressed (more or less) the first two areas. The latter appears to have gained momentum in the 1990s when OECD countries began collecting more reliable data, and the need to demonstrate cost-effectiveness for public investment in education became a policy imperative. The review focuses on the third area of focus as this area is directly related to the study.

The main review is structure in five sections: 1) the five W’s and how failure impacts on students; 2) the trajectory of research investigating the costs of failure; 3) approaches to estimating the costs of failure, 4) OECD and the educational goal of “No More Failures”; and 5) Ontario’s public education system and its economic pressures.

2.4.1 The five W’s and how failure its impacts on students

What is *failure* in education?

There is no one meaning. Indeed, there are different understandings across and within levels of an education system, and also across different education systems. This section provides a general discussion on the matter of *what* is failure in education. It is worth noting again that failure in this study is being interrogated in terms of *course failure*.

It is helpful to begin the discussion by considering how failure (the outcome and the output) was built-in to the age/grade model of school and classroom organization. The basic age/grade model places a group of students in one classroom, with one instructor whose role is to transmit knowledge and develop skills. There are two basic outcomes for students in this model: if a student successfully meets the achievement requirements of the grade or course level (criteria typically determined by the classroom teacher based on his/her interpretation of the curricula), the student will be permitted to advance to the next grade or course level with their age cohort. If the student does not meet the requirements, then s/he will be failed — which often means repeating a grade or course level if the student remains in the school system. Variations of the age/grade progression model exist, for example, some jurisdictions automatically promote students in the elementary panel, but generally these features are common to all of them, making it the conventional form of organization of public education across OECD countries (OECD, 2008).

The term ‘failure’ is also used to describe different parts or outcomes of the education system. For example, at the system level (political system), failure can be used to describe different parts of system operations. For example, inadequate funding that leads to the failure of students is considered an input failure (Levin & Belfield, 2007; Grubb, 2009). Failure can also be used to describe an education system’s general failure “to provide inclusive education services that lead to enrich[ed] student learning” (OECD, 2012, p.20). Failure is also used in the literature by some scholars to describe the underlying assumptions of an education system. For example, critics of the age/grade model believe the cause of failure lies in systemic barriers to marginalized students and parents in addition to problematic assumptions of the purpose of education, such as the view that education primarily serves the economy (Portelli et al., 2007).

At the district and school levels, failure can be used to describe “the incapacity of a school to provide fair and inclusive education and an adequate learning environment for students to achieve the outcomes worthy of their effort and ability” (OECD, 2012, p. 20). This incapacity could take the form of inadequate learning supports (e.g., special needs support staff) or poor resourcing (e.g., funding, teacher placement).

At the student level failure is most commonly used to describe a student's achievement outcome. For example, a student "fails" if at the end of a school year, term, or course the student **is not permitted to advance** and must **repeat**¹ the grade or course or **drop out**². Failure can also be used to describe a student who graduates from secondary school but without the competencies needed for civic or workplace success, referred to as **low level skill**³.

Just as there are multiple meanings of failure, failure is also perceived differently across OECD education jurisdictions and, accordingly, some more desirably than others. For example, France and Belgium have a history of failing a great number of students compared to other OECD countries — both having a long held belief of the overall benefits of failing students (OECD, 1998). In the United States, politicians frequently promise to introduce policies and practices that "get tough" on underperforming students (and teachers) which often leads to higher numbers of failing students (Grubb, 2009).

Despite the differences in how failure is understood and perceived, there is an emerging view across OECD countries (since the late 1990s) that large numbers of failures reflects a *failure* of education systems and should be addressed (OECD, 1998; 2007; 2012). This is an important shift in perspective from only 50 years ago, when failure was widely viewed as a sign that an education system was fulfilling its function.

How much failure is there secondary schools?

In OECD's 2012 report *Equity and Quality in Education — Supporting Disadvantaged Students and Schools*, it is reported that "grade repetition is practiced in many OECD countries: 13% of 15-year-olds are reported to have repeated at least one year either in primary or secondary school" (OECD, 2012, p. 51). The OECD average upper-secondary graduation rate also gives a

¹OECD defines grade repetition "when students, after a formal or informal assessment, are held back in the same grade for an additional year, rather than being promoted to the next stage along with their peers" (OECD, 2012, p. 51); UNESCO defines a *repeater* to be "a pupil who is not promoted to the next grade or does not complete an educational programme and who remains in the same grade the following year" (UNESCO, 2012, p.17)

²Canadian Council on Learning defines dropout as "a student [who] leaves school without the course credits needed to graduate" (CCL, 2009)

³OECD defines failure at the individual level as "...the failure of a student to obtain a minimum level of knowledge and skills, which can at the extreme lead to dropping out of school" (2012, p. 20).

sense of ‘how much failure’ there is in secondary schools. *Education at a Glance 2012* reports that the “percentage of young people graduating from upper secondary education exceeds 75% in 23 of 27 countries...[and in] Finland, Greece, Ireland, Israel, Japan, Korea, Portugal, Slovenia and the United Kingdom it is 90% or more” (OECD, 2012b, p. 16). This means that, on average, 20% of students in OECD countries are not graduating from upper secondary school “in the time normally allocated for completing the programme” (2012b, p. 17).

In answering ‘how much failure’ it is important to note that the volume of failure partly depends on the jurisdiction in question. According to a 2011 Eurydice report, most European countries have laws that support grade repetition in some form, along with regulations that stipulate the terms of progression and retention and any limitations (Eurydice, 2011). Two retention outliers are Iceland and Norway — both have legislation requiring that children in compulsory schooling progress automatically to the next year regardless of their academic performance (with some exceptions for parent and pupil choice) (Eurydice, 2011). The United Kingdom has no regulations on failure (or grade retention) though it is custom that children be “taught with their own year-group” and placed “out of year group only in exceptional circumstances” (Eurydice, 2011, p. 43).

How these jurisdictions take up and enforces rules and regulations greatly impacts on how much failure there is in a given year. For example, the French and Flemish Communities of Belgium consider pupil behaviour in making retention/progression decisions. In Spain, “pupils are liable to repeat a year if they have three or more unsatisfactory marks” (Eurydice, 2011, p. 44). Other countries take a more holistic approach. In Finland, the student must be “deemed capable of successfully completing that year” in order to advance (Eurydice, 2011, p. 45).

These differences in how countries take-up and enforce rules is also reflected in the reported rates of grade repetition. It is estimated that approximately 20% or more 15-year-old students repeat a year at least once in the French Community of Belgium, Spain, and France; this compares to 1.5% of students in Finland, and United Kingdom (Eurydice, 2011, p. 57). In a separate report, OECD found that grade repetition affects over 30% of students in France, Spain, and Belgium (OECD, 2012, p. 51). Census data from 2004 out of the United States indicates that “9.6% of

youth ages 16 to 19 had been retained in a grade one or more times” (Allen et al., 2009, p. 481); that is, retention that happens to students once they have arrived at this age.

In Canada, provincial and territorial governments do not publicly report on grade repetition or course failure. Despite this, there are indications that course failure is an issue in Ontario’s secondary schools. Ontario’s graduation rate is 82% (after 5 years). This means that 18% of students are not graduating on time because they are failing to earn enough credits to graduate.

The answer to ‘how much failure’ also partly depends on time — specifically the popularity of policies and programs that rely on failure to address underperforming students and teachers at a particular moment in time. Put simply, when policies that support failure are introduced, the number of failures increases. For example, retention programs were unpopular in the United States during 1960s and 1970s (Owings & Magliaro, 1998). Policies banning social promotion returned in the 1980s, as it did when New York City instituted grade retention, but then fell out of vogue again in 1990s because of the high number of “second-time repeaters” and a 40% drop out rate for those retained (Eide and Goldhaber, 2005). In 2003, Bloomberg, the newly elected mayor of New York City, re-introduced a ban on social promotion for Grade 3 students and, in 2009, extended the ban to Grades 4 and 6. In 2012, there was a ban “roll-back” for a small number of students who are “overage for their grade” and “held back multiple times” (Decker, 2012). In short, how much failure there is in a jurisdiction can change year-to-year with changes in policy and practice.

Who fails in schools?

Scholars examining patterns in who fails at school have found that specific groups of students are overrepresented, such as **racialized minorities** (Bowman, 2005; Comber & Kamler, 2004; Community, 2005; Jimmerson et al., 2006; Florida State of School Psychologists, 2004; Valencia, 1999), **gender** — **boys** (Community, 2005; Janosz et al., 2011), **immigrants** (Community, 2005; Eurydice, 2011), **Aboriginal youth** (Community, 2005), **student with special education needs** (Community, 2005; Eurydice, 2011; Florida state of school psychologists, 2004; Jimmerson et al., 2006; Owings & Magliaro, 1998; Smith & Sheppard, 1987), **students from low-income families** (Community, 2005; Comber & Kamler, 2004;

OECD, 1998; Smith & Sheppard, 1987; Valencia, 1999) and **students whose first or second language is different from the language of instruction** (Comber & Kamler, 2004; OECD, 1998). Scholars have also found that when these factors are combined, the chance of failure escalates rapidly (Jimmerson et al., 2006).

Why do students fail in school?

The surface answer to this question is that a student fails when they do not meet requirements for advancement — low student achievement, poor attendance, “bad” behaviour or a combination thereof (Eurydice, 2011). By this view, failure is the exclusive responsibility of the student.

An alternative answer considers a wide range of contributing and interacting factors, including the education system, family, socio-cultural context, and student factors (OECD, 1998; Psacharopoulos, 2007). By this view, academic failure is a shared responsibility.

It is important to understand how these two explanations of why students fail differ. The first answer is connected to **deficit thinking**: “a person-centered explanation of school failure among individuals linked to a social group [...] transmitted by poor genetics, inferior culture and class or inadequate socialization” (Valencia, 1999). For centuries deficit thinking has provided an explanation both for the existence of failure in schools and why students continue to fail regardless of intervention (OECD, 1998; Valencia, 1999). By this view, the purpose of education is to sort high performing from low performing students, and failing students an essential, natural, and desirable way for schools and teachers to achieve this purpose. In 2012, the deficit explanation for school failure remains widely held in scholarly, policy, and public circles despite being refuted by decades of empirical evidence across many disciplines of study (Comber & Kamler, 2004; Natriello, 1998; OECD, 1998; 2007; 2012; Valencia, 1999). Indeed, an OECD report from 1998 concluded that failure is common to all OECD countries but why students fail is strongly affected by specific national context (cultural and political factors that favour failure) (OECD, 1998). A 2011 Eurydice report seems to echo this conclusion stating that, “the existence of a culture of grade retention is the reason why the practice is used more often in certain countries” (p. 60).

The second explanation views academic failure as a student issue and that of his or her surroundings. By this view, a student is labelled and/or builds the perception of self as “failure” through their day-to-day interactions with the **education system** (poor pedagogical practice, learning supports, weak review and control procedures and vaguely defined standards for progression) (Janosz et al., 2011; Natriello, 1998; OECD, 1998; 2007), their **family** (malnutrition, inadequate housing, residential stability) (Community, 2005; Janosz et al., 2011; Rebell, 2007), **socio-cultural disadvantage** (low-socioeconomic status, recent immigrants, racialized minorities) (Community, 2005; OECD, 2007) and **personal factors** (disabilities, aggressiveness, hyperactivity-inattentiveness, oppositional behaviours, social isolation, peer rejection, drug use) (Community, 2005; Janosz et al., 2011). The literature on deficit thinking is not be examined any further because this literature frames and presents solutions to failure in schools in a way that conflicts with the underlying assumption in this study that all students can succeed in schools if they receive the proper supports (more on underlying assumption of the study in Chapter 3, Methodology).

When do students fail?

Failure can occur at any stage in a student’s formation (their progression through the age/grade classroom model). When students fail also depends on the legislation, rules, and educational norms of a jurisdiction. When secondary failure does occur, it happens most often after compulsory education ends (when students are no longer legally required to attend school) between the ages of 15–18 (OECD, 2012b).

The answer to ‘when’ students fail is also tied to **specific grade levels** and **subject areas**. For example, Ontario’s 2012 EQAO test results indicate that compared to five years ago, the percentage of students meeting or exceeding the provincial standard in mathematics has remained the same in Grade 3, decreased by three percentage points in Grade 6, and over half the students in Grade 9 applied mathematics are not meeting the standard (EQAO, 2012). These numbers suggest that students find it increasingly difficult to pass mathematics courses as they advance through the grade levels (also a finding of this study).

How does failure impact on students?

Research investigating the impact of failure on academic and social outcomes ‘took-off’ in the 1970s and continues into the present. A few key empirical studies continue to be cited repeatedly across the decades. The key findings of these studies as they relate to the impact of failure and student social outcomes is discussed below.

Jackson (1975) is cited as one of the first articles to report on failure in a systematic way. The author reviewed 30 published articles on the effects of failure (grade retention) between 1911 and 1973. Jackson concludes from his work that, “[t]here is no reliable body of evidence that grade retention is more beneficial than grade promotion for students with serious academic or adjustment difficulties” (p. 626–627).

In 1984, Holmes and Mathews conducted a meta-analysis of 44 studies published between 1929 and 1981 comparing the effect of failure (retention) on 11,132 non-promoted and regularly promoted elementary and junior high school students. In total, the characteristics of 575 effect sizes were investigated. The results point to negative overall effects on a number of outcomes, including academic achievement, personal adjustment, attitude towards school, behaviour, and attendance. Holmes (1989) added an additional 19 works (published between 1925 and 1989) to the 44 from the previous meta-analysis, reporting on a total of 63 studies. Again, the author found that failure (retention programs) had no overall benefit on student achievement or personal adjustment in 54 studies, with the additional nuance that in nine studies reporting some benefit to students that these benefits decreased over time — a finding also confirmed recently by OECD (2012).

Jimerson (2001) completed a systematic review and meta-analysis of 20 studies published between 1990 and 1999. The author compared retained students to a comparison group of promoted students, examining the achievement and socio-emotional outcomes that distinguish the two. The author concludes that,

“[r]esearch results published between 1990 and 1999 are very similar to findings reported during the preceding 90 years. Specifically, studies examining the efficacy of grade retention on academic achievement and socioemotional adjustment that have been

published during the past decade report results that are consistent with the converging evidence and conclusions of research from earlier in the century that fail to demonstrate that grade retention provides greater benefits to students with academic or adjustment difficulties than does promotion to the next grade.” (p. 434–435)

In 2009, Allen et al. conducted a meta-analysis (using multi-level modelling) examining the effects of grade retention on achievement. The study investigated characteristics of 207 effect sizes⁴ across 22 studies published between 1990 and 2007. The authors found that studies with poorer methodological controls found more negative effects of grade retention, while better controls resulted in a less negative picture. Overall the authors conclude that “these results support the view that the null hypothesis of no effect on retention on achievement cannot be rejected” (p. 493) — essentially that there is no statistical difference between promotion and retention on achievement outcomes. The authors note however that given the expense and socio-emotional toll on students, the use of grade retention as a means of improving student outcomes should be called into question.

Grey sources tend to report an overall negative impact of failure on students. A 2007 OECD report entitled *No more Failures: Ten Steps to Equity in Education* analyzes 2003 PISA data and finds that students who repeat years also tend to do badly at school. A 2012 OECD report entitled *Equity and Quality in Education: Supporting Disadvantaged Students and Schools* reviews 2009 PISA and other academic sources and finds that any short term benefits of retention “fade away in the later years” (p. 53), and in the long-term retention increases the likelihood of negative student outcomes, like increased risk of dropout. The same report also found that students who are retained “perceive repetition not as an enabling opportunity but as a personal punishment and social stigma, and may be further discouraged from education” (p. 53).

Studies that originate from country experiences also confirm the negative effect of grade retention on students. In Valijarvi & Sahlberg (2008), the authors explain that grade repetition was common place in Finland the 1970s when grammar and civic schools were the norm. With

⁴ “An effect size calculated from data is a descriptive statistic that conveys the estimated magnitude of a relationship without making any statement about whether the apparent relationship in the data reflects a true relationship in the population.” (Wikipedia, 2013)

the change to comprehensive schools in 1972, the “educational value and moral purpose of grade repetition” was questioned and “evidence from systematic follow-up studies and inspections at that time suggested that students normally benefit only a little, if at all, from repeating the same grade” (p. 386). Changing to a school model that placed less value on grade repetition gradually led to a decrease in the number of grade repetitions to 2%.

The repeated findings across the studies discussed above is that failure either has a negative overall impact on student academic outcomes or that promoting is no worse than retaining. In fact, the only clear finding from the literature is that failure has a negative socio-emotional impact on students. The meaning of these findings for the purpose of this study is that the time and money invested in failing students in schools are resources invested in not positive outcome at all; that is to say no benefit that can be measured.

2.4.2 The trajectory of research investigating the costs of **failure**

This section provides an overview of the evolution of research on the costs of failure over the past five decades to illustrate how this study is a logical next step. More attention is given to works examining the **fiscal costs** (costs that are measured in monetary terms) and specifically those pieces estimating the **short-term fiscal costs of failure** in an education system.

Background on research investigating the “costs” of failure

The bulk of research in the social sciences investigating the **social costs** (non-monetary) of failure began in the 1960s and 1970s — though Jackson (1975) notes at least five reports on grade retention in the United States published before 1930.

Researchers examining the costs of failure at the student level (or private cost) found positive relationships between failure in schools and student alienation, low self-concept, negative attitude towards school, poor attendance, dropping out, and a higher incidence of unemployment as a youth (Allen et al., 2009; Bowman, 2005; Holmes and Mathews, 1984; Holmes, 1989; Jackson, 1975; Jimerson et al., 2006; Natriello, 1998; Psacharopolous, 2007). At the level of social systems (or social costs), scholars found positive relationships between large numbers of students

failing in schools and higher rates of unemployment, lower quality social health, and greater participation in social welfare (Bull, 2007; Psacharopolous, 2007). The most important contribution of this line of work is the finding that both the private and social costs that are emergent in youth carry into adulthood in the form of recurring unemployment, less healthy lifestyles, and/or lower civic participation.

Research examining the **fiscal costs** of failure can be traced back to the 1970s in the United States. As Levin and Belfield (2007) describe, experts were called before the United States Select Senate Committee on Equal Educational Opportunity where they testified that poor education led to negative and costly social consequences. The experts argued that a greater investment in education could lead to a greater financial return for individuals and the state (Levin & Belfield, 2007). At the time of the hearing, estimates were unavailable to support their claims (estimates had never been calculated) and, consequently, policymakers and educational administrators found it difficult to justify the enormous financial investments being demanded. The most important contribution of this early work was establishing the potential relationship between failure in schools and an unknown fiscal cost to individuals and the state.

Research exploring the fiscal costs of failure continued into the 1980s, 1990s, and 2000s. Two main reasons emerged from the review to explain why researchers continued to pursue this line of inquiry: 1) to “be aware of the extent of student failure...and the amount of resources...used in creating that outcome (Dobson and Sharma, 1999); 2) to produce estimates that can be used by scholars and policymakers to debate the role of failure, its costs to individuals and society, as well as justify major investments in education (Levin & Belfield, 2007; Warren & Saliba, 2012);

Studies examining the fiscal costs at the individual level are fewer in number. The lack of availability of data at the individual level and the availability and accessibility of valid and reliable data longitudinally that can be matched at the individual level (likely) contribute to having few studies in this area. Of the studies that are available, they report that the short-term cost for students who are low achievers or dropouts is lower wages in comparison to their higher-achieving and in-school counterparts (Psacharopolous, 2007). In the long-term, these same low achieving students carry their lower earning potential into adulthood resulting in lower lifetime earnings (CCL, 2009; Pacific Research Institute, 2008; OECD, 1998; Psacharopolous, 2007).

Studies examining the fiscal costs at the system level are greater in number. These studies report on relationships between failure in schools and reduced tax collection (income, sales, property, and corporate), slower economic growth, and greater reliance on health, justice and public welfare systems; all of which means greater public expense (Levin & Belfield, 2007; Pacific Research Institute, 2008; Psacharopoulos, 2007, p. 9). The following are some key estimates to illustrate this point: it is estimated that the cost of failure (dropout) in the United States is \$50 billion a year in lost federal and state income tax revenue (Rouse, 2007). In Canada, the aggregated annual cost of high school dropout to health, social assistance, and justice systems is estimated to be \$23.8 billion, \$969 million, and \$350 million respectively and \$378 million in reduced tax revenue (CCL, 2009).

The more narrow assessment of fiscal costs for an education system in the short-term is relatively understudied. One of the first attempts can be traced back to America in the 1970s. In 1972, the *annual* direct cost of repetition for U.S. schools as a whole was estimated to be between \$739 and \$903 million (Jackson, 1975). This estimate jumped to “billions” in 1987 (Smith & Sheppard, 1987) and jumped again to “over \$10 billion” in 1990 (Martinez & Vandergrift, 1991). By 2001 researchers estimated the costs of failure in the U.S. in terms of additional costs for students to repeat courses or years to be roughly \$17.8 billion (Eide and Goldhaber, 2005).

In 1980 France, it was estimated that the country spent 30% of its education budget on funding grade repetition and dropouts, while the French community of Belgium spent 6 billion Belgian Francs (or approximately 188M CAD) on repetition in 1990–1991 (OECD, 1998). In 2012, OECD released figures estimating the total annual costs of repetition, relative to expenditure on primary and secondary education, to be 4% across OECD countries and that in “Belgium, the Netherlands, Portugal and Spain the direct costs of grade repetition account for more than 8% of the annual expenditure on primary and secondary education” a figure that is likely even higher since “students who repeat a year are more likely to engage in high-risk behaviour and/or dropout,...increas[ing] expenditure on other social services” (OECD, 2012, p. 52).

In sum

There is consensus among scholars that the financial burden of failure to the state is substantial and that these resources could be spent better serving the needs of students and schools (Black & Wiliam, 2005; Levin, 2008, 2011; OECD, 1998, 2007, 2012). The present situation has created a dilemma for education administrators who are aware of the burden failure in schools puts on the education system yet they are unable to explore alternatives. Natriello (1998) offers the following explanation:

As thorough and systematic as the research on retention has been in considering the effects on the students retained or promoted, it has not considered the broader effects of retention policies on the communities, schools and classrooms that fall within the purview of school administrators. [A]dministrators seeking to secure funding to establish alternatives to retention face considerable resistance, while the decision to add a full year of additional expenditures for a retained student is made without much notice of the budgetary implications at the school, district or state level. [W]ithin the limited context of seeking to chart the best course for an individual student, retention is often the most readily available, if the most expensive, option for remediation. (On-line source)

The aim of this study is to help move the discussion of failure in schools away from the abstract notion that failure costs society “tens of billions over decades” to a more concrete discussion that failure costs districts millions and schools thousands each year. Furthermore, having reliable estimates of the volume and cost of failure could contribute by helping to break the historical practice of relying on failure as the default option for struggling secondary students and provide an evidence base to support additional investments in practices known to reduce failure (e.g., the use of formative assessment) (Wiliam, 2008).

2.4.3 Measuring grade retention and approaches to estimating the fiscal cost of failure

This section briefly explores the importance of having a measure of grade retention; the status of attempts to measure grade retention in the field; and discusses in detail different methods that have been used to estimate the cost of failure.

The answer to why it is important to have a measure of grade retention is straightforward. Grade retention on its own is “a widely used policy tool” in nearly all OECD education educational jurisdictions (Eurydice, 2011; OECD 2007) and yet there is “surprisingly little” (Warren & Saliba, 2012, p. 320) known about how many students repeat grades, even though course failure are outcomes that precede dropout and high school graduation.

With regard to the status of measuring grade retention, Warren & Saliba (2012) note that “[t]here is currently no systematic, reliable, and well-validated way to quantify grade retention rates at the state level, by grade or otherwise; even national estimates rely on imperfect proxies” (p. 320). Surveys like National Educational Longitudinal Survey (NELS) (Warren & Saliba, 2012) and PISA 2009 (Eurydice, 2011) use retrospective questions, with questionable validity, and rely on student or parent self-report for measuring repetition. Other studies used age-grade delay to measure retention (OECD, 1998; Eurydice, 2011), which “can only be taken as a loose conceptual proxy” (Warren & Saliba, 2012, p. 321). These measures are further critiqued for their inability to “produce reliable state level estimates...[,] suffer from sampling and attrition biases [and] can only speak to the experiences of students in single cohorts” (Warren & Saliba, 2012, p. 321). The authors add that one of the current challenges in the field is to develop a “conceptually simple method” that relies on “publicly available data that are routinely collected each year” (Warren & Saliba, 2012, p. 320).

In the following section, I discuss different discussion on approaches to costing failure:

Approach 1: Estimating the cost of high-school non-completion

In a 2008 piece, Levin argues that significant public resources are being spent on failure, and that failure is an outcome with no benefit to students. To illustrate how much money he believes is

tied to failing students each year, Levin takes the overall rate of secondary school non-completion —25 per cent at the time — and divides this amount by the cost of operating secondary schools (\$1 billion CAD). He arrives at an estimate for the cost of failure (non-completion) of approximately \$250 million.

The unit of analysis in Levin’s article is the student who fails to graduate secondary school and the level of analysis is at the system level.

Approach 2: Estimating the cost of retention

In a 2005 study, Eide and Goldhaber developed a framework for considering what the costs/benefits of grade retention would have to be in order to make grade retention a cost-effective policy/practice. To demonstrate the cost of retention policies, the authors use student enrolment data and estimates of average expenditure per child published by the National Center for Education Statistics. In the United States there were 47.5 million students in grades K–12 and the average expenditure per child was estimated to be approximately \$7,500 (Eide and Goldhaber, 2005, p. 198). The authors estimated the annual retention rate to be between 1% (low) and 5% (high) of the 47.5 million elementary and secondary students (the rationale supporting the selection of retention rate was not specified). Using simple multiplication, they estimated the cost of failure to be as low as \$3.5 billion a year affecting about 475,000 children or as high as \$17.8 billion, affecting 2.38 million children.

In Dobson and Sharma (1999), the authors estimated the cost of academic failure for postsecondary students at the institutional level. The authors make use of the Australian government’s own funding formula and Australia’s higher education statistics collection to correlate student fail rates with key factors, including gender, **discipline**, enrolment type (full-time, part-time, etc.) and to calculate the cost of failure. What constituted failure and what constituted “cost” was clearly defined and described out, including **operational costs**, **libraries**, **information technology**, and **administration**. The authors found their approach could be used to provide an average estimate of the cost of failure and that this simple measure could be used as

one of many institutional level “performance indicators” for government and university administrators.

In both of these studies the student is the unit of analysis. In Dobson & Sharma (1999) the aim was to develop a method for estimating the volume and costs of failure to better inform decision making, including “review[ing] expenditure decisions (including remediation) in order to improve student performance without reducing output quality” (p. 153). The first study analyzed the data at the country level, the second at the institutional (although individual student level data are used).

OECD used a related but different approach to estimate the cost of grade retention in the 2007 OECD report entitled *No more failure: Ten steps to equity in education*. The approach first estimated the cost of an additional year of fees (primary or secondary incurred by the state) then the opportunity cost of one year of the students’ time in the form of lower earnings. Total country costs were then estimated by multiplying estimated costs per failed year (which include fees and loss earnings) multiplied by the total number of failures. The cost estimates are listed in Table 1 below.

Table 1 – The cost of failure for specific OECD countries

Country	Total country cost	Cost per student repeating one year (thousands USD at purchasing power parity)	
	Primary and lower secondary school (millions of USD at purchasing power parity)	Primary School	Lower Secondary School
Belgium	440	16	18
Denmark	30	14	14
Finland	10	8	11
Hungary	80	9	9
New Zealand	50	20	19
Sweden	40	10	10
United States	5 270	13	14

Source: OECD 2007

The unit of analysis in the OECD approach is the student and the level of analysis is at the state (national) level.

Approach 3: Estimating the cost of remediation

In 2008, the Pacific Institute of California estimated the annual direct and indirect costs of failure for students, California's colleges and community colleges, and the state. The Pacific Institute combined private, institutional and social costs to come up with a comprehensive estimate of the cost of remediation. The aim of the Pacific Institute report was to illustrate that the costs of failure in schools are significant.

Their approach takes data for a single cohort of college entrants requiring remedial instruction across all of California's public post-secondary systems in years two and four. The researchers use remediation rates provided by universities and community colleges (taking the lower range of the estimates to be conservative). Lacking any publicly reported figures on per-student remedial costs, the authors averaged education fees (tuition) and annual student course loads to determine the annual direct cost to educational institutions (the extent of the methodological description) (Pacific Research Institute, 2008). The report estimates costs of \$1.1 – \$5.5 billion in lower private earnings, \$274 million to public post-secondary institutions, and \$1.9 – 5.4 billion in increased health care, justice, and social welfare costs to the state (Pacific Research Institute, 2008). The unit of analysis in this study is the student and the analysis was conducted at the state, institutional, and private levels.

In sum

The costs of failure in schools has been examined across many fields of study, including sociology, economics, psychology, and education. The fiscal costs of failure have been looked at mostly through a long-term lens using grade retention or high school graduation as measures of failure. The methodological rigour, transparency, and quality of data vary across studies.

The majority research exploring the fiscal costs of failure is published in the United States. No Child Left Behind (NCLB) policies⁵ almost guarantee that research examining the relationships between failure and costs will continue, along with other movements (e.g., college and career readiness initiatives and policies) and external factors (e.g., economy).

OECD and the educational goal of “no more failures”

One of the roles OECD plays as an international think tank is to identify shifts in educational policy across member states. OECD can do this because of their unique position running large-scale assessments and interacting with influential research and policy stakeholders on a regular basis. The role of OECD in framing key messages, popularizing issues, and comparing different educational policy and program options is well documented, notably in the field of early childhood education and care (OECD, 2006; White, 2011). This is significant because it suggests that the work of OECD signals the current direction(s) in education policy at the level of senior administrators across member states.

In the 1990s, OECD shifted their messaging on the topic of failure in schools. In 1998, the OECD released a report entitled *Overcoming Failure at School* calling for a shift in educational policies to address the needs of disadvantaged groups (OECD, 1998). This work led to the 2007 OECD report entitled *No More Failures: Ten steps to equity in education*, with policy suggestions aimed primarily at the state and district levels to improve equity, and thereby reduce school failure (OECD, 2007). In 2009, the *Overcoming School Failure* project was established with the aim of identifying and analyzing initiatives that are empirically proven to reduce school failure (OECD, 2010), which led to the 2012 report entitled *Equity and quality in education – supporting disadvantaged students and schools* (OECD, 2012).

In short, for over a decade OECD has been working with leaders of member states to move education systems away from seeing failure as a natural and desirable outcome of education systems towards an outcome that must be minimized through reforms in policy and practice. From an OECD perspective, this study is relevant and timely in light of ongoing policy

⁵ The No Child Left Behind Act is legislation passed in 2002 that expands the role of the United States federal government in education. The purpose of the legislation is to meet broad gains in student achievement and hold states and school more accountable for making progress (Education Week, 2004).

discussions and reform activities aimed at reducing failure in schools. In addition, the direction of OECD towards the educational goal of “no more failures” lends credibility that the findings of this study will be used in Ontario and internationally for the benefit of students.

2.4.4 Ontario’s public education system and its economic pressures

Kindergarten to Grade 12 public education in Ontario is the exclusive responsibility of the provincial government. There are approximately two million children in Ontario’s 5000 public schools (4000 elementary, 900 secondary) and 120,000 teachers (Levin, 2008b). The system is organized into four sets of locally elected and publicly governed school boards (English public, English Catholic, French Public, French Catholic) with overlapping boundaries (there are 72 school boards in total). Public education in Ontario is 100% publicly funded. The details of the grant formulas and other criteria for distributing education funding are published each year in a report entitled, *The Technical Paper*. Education funding to school boards in 2008–09 consists of a Pupil Foundation Grant, a School Foundation Grant, a Pupil Accommodation Grant and 14 special purpose grants based on each board’s particular circumstances (i.e., geographic, declining enrolment adjustment, student transportation grant, etc.) (Ontario, 2008). School boards are required to report their annual budget expenditures to the Ministry of Education each year (more on this in the conceptual framework).

There is no official policy concerning failure in schools at the ministry level. It is arguable however that Ontario has an unofficial policy on failure in secondary schools. In order for a secondary student to graduate with an Ontario Secondary School Diploma (OSSD), the student must earn 30 course credits.⁶ For each enrolled course, the student must complete the course with a grade of 50% or greater or the student is deemed to have “failed” and no course credit is granted. Unofficially then, Ontario does have a policy on failure in secondary schools.

There is evidence of course failure in Ontario’s secondary schools. Ontario’s high-school graduation rate is 82% (after five years), which means 18% of Ontario secondary students are not

⁶ Since 2000, students in Ontario must also successfully complete the Ontario Secondary School Literacy Test in order to earn their OSSD. Effectively, the test serves as another way in which students can “fail” in that students who are unsuccessful as completing the OSSLT will not be allowed to graduate (EQAO, 2013).

graduating on time and must have failed one or more of their enrolled courses⁷. Recent research in Ontario on high-stakes standardized testing and EQAO 2012 achievements results indicate that the same factors of social class, race, ethnicity, and language status discussed earlier in this chapter are tied to failure in Ontario's secondary schools (EQAO 2012; Kearns, 2011).

Ontario's current government has been in office since 2003. Over this same period the ministry of education has formulated a series of system reforms, outlined in the 2008 strategic policy document entitled "*Reach Every Student: Energizing Ontario Education*" (Ontario, 2008b). This document reveals that one of the aims of government is to shift the focus of public schools away from emphasizing student deficits towards building student resilience and skills. The ministry's reluctance to acknowledge "failure" in its policy documents may be a reflection of this attempt to shift school and system culture. It is also noteworthy that the vision and stated goals for the Ontario public education system are broadly consistent with the vision and goals recommended in the 2007 OECD report, *No More Failures*.

In line with this strategic vision for education the government significantly increased spending in public education beginning in 2003 (Ontario, 2011). In 2004–05, total funding to school boards was approximately \$16 billion, already \$1 billion more than the 2003–04 school year (Ontario, 2004). In 2011–12, funding to school boards was \$21 billion — \$11,207 per-pupil — which is a 4.6% increase from 2010–11. This means that spending in education has increased each year for nearly a decade, even as the province began facing serious economic challenges in 2008. From a finance perspective, this rate of increase is difficult to sustain given no changes in taxation, the costs of borrowing, and resource needs of other public services (i.e., health with an aging population).

In 2012 the economic health of the Ontario government, like so many other Canadian provinces and OECD states, is troubled. The government faces large budget deficits and growing levels of public debt. In 2010–11, Ontario posted a \$16.7 billion deficit and the 2011 Ontario budget has projected deficits of \$16.3 billion in 2011–12 and \$13.3 billion in 2013–14 (Ontario, 2011).

⁷ The Ministry's reported graduation rate is based on calculating the percentage of grade 9 students who graduate within five years (Auditor General of Ontario, 2011).

Balanced budgets are not projected until 2017–18. One risk of the current fiscal and political situation in Ontario is that cuts could be made to the \$21 billion dollar education portfolio. Much of the billions invested in education were spent on system wide programs, such as primary class size reduction and full-day kindergarten, with other smaller investments directed to programs for struggling secondary students, including Specialist High Skills Major and Dual Credits.⁸

Reliable estimates of the volume and costs of secondary schools do not exist to inform the selection of new interventions at a time when each dollar spent must be spent optimally. There are indications, however, that the ministry is aware that interventions that can reduce student failure (dropout) today could result in savings to society's other social systems in the future (Ontario, 2013).

Ontario's public education system has made progress since 2003 in achieving its stated goals and in keeping the system focused on student success. Failure, however, remains a common outcome and more work needs to be done for the provinces to meet its goals. Ontario, like other OECD educational jurisdictions, will need to be creative if it hopes to continue making progress towards "no more failures" while managing spending restrictions.

2.4.5 Influential perspectives

Theory is not the focus of this study but it is necessary to discuss the influential perspectives informing research on the costs of failure. The ontology of the literature is realist: education systems exist, can be observed and measured. The literature takes a mainly functionalist view of education systems and schools — that education systems serve a productive and social function for society as a whole (Burrell & Morgan, 1979).

Across the literatures, failure is broadly understood as a method of sorting academically low-performing from high-performing students in education systems (Coulter et al., 1992; OECD, 1998; 2008; Owings & Magliaro, 1998). This purpose has been described in different ways over

⁸ Specialist High Skills Major and Dual Credits are alternative credit pathways geared towards students at-risk of not graduating. The programs allow students to earn credits in applied, workplace or college settings as opposed to the traditional classroom setting.

the decades, from “cull[ing] the incompetent (Dobson & Sharma, 1999, p. 142) to providing “an extra opportunity to fully acquire the required knowledge in order to move forward successfully” (OECD, 2012, p. 51). In short the language used to describe the purpose of failure has shifted over the years, but its core purpose (function) in education systems has not.

The 1980s, 1990s, and 2000s were a critical time for research and policy regarding failure in education as researchers attempted to explain the wide-spread perception that schools were not generating students with high-level competencies. The cause of this decline has been partly attributed the use of social promotion in the 1960s and 1970s (Owings & Magliaro, 1998; Shimbori, 1979). Functionalist researchers, concerned with schools failure to transmit core knowledge and skills and to sort students by competency, pursued a line of research aimed at rationalizing school functions and outputs (such as failure), by measuring the amount of resources tied to these outputs, and tying them to overall system outcomes (Burell & Morgan, 1979; Peters, 1999).

There is also a critical element in the literature on failure in schools. There is acknowledgement that the decision to redistribute resources is not just one of function but also one of values. There is concern for who benefits, what ends are pursued, and how resource distribution contributes to a broader social vision (Foster, 1986). For example, researchers investigating the private and social non-fiscal costs of failure are particularly concerned about how the ‘costs’ disproportionately affect at-risk youth.

There are two perspectives that are influential in the literature: the liberal and neoliberal perspectives. The liberal perspective generally places emphasis on individual rights, freedom, choice and, from an educational perspective, raising the whole status of the student (i.e., social, economic, political) (Portelli et al., 2007). Liberal scholars see the cause of — and the responsibility for — failure as the deficient or inadequate provision of education by schools, and by extension, school systems. More specifically, it is the failure of schools to provide education appropriate to different needs that leads students to fail, and not the personal shortcomings of students (academic or otherwise). Liberal scholars propose addressing failure by reorienting

education systems, through policy and practice reform, to better meet the individual learning needs of student with the aim of minimizing the effects of inequity (OECD 2007, 2012).

The literature also reflects a neoliberal perspective. The neo-liberal perspective generally places an extreme focus on the individual and the market model as a superior form of political economy (Hursh, 2005; Peters, 1999). Neoliberal scholars see the cause of failure as too much interference by an inefficient education bureaucracy failing to provide students and families with adequate choice in their educational formation. Public education systems (schools and teachers) are too inflexible and unresponsive to the individual learning needs of students and communities, which ultimately results in failure. Neoliberals propose addressing failure by providing students (and families) with greater choice through privatization and in giving parents more say in which knowledge and skills get developed and how (Hursh, 2005).

There are areas of agreement between the two perspectives. Liberals and neoliberals agree on the *why* it is important to cost failure: for an organization to operate effectively, both agree that it is necessary to know the unit cost of production. Indeed Hayek, a liberal economist and father of neo-liberalism, proposed a similar question in 1944 when he sought to develop a pricing system to know the true costs and possibilities of production (Peters, 1999). Liberal and neoliberal scholars also acknowledge that inadequate provision of education by schools and school systems plays a contributing role in school failure and both camps call for education reform as part of the solution.

Disagreement between the two exists on *what* the final outcomes of these reforms should be. Liberal scholars and their organizational extensions emphasize reforms to the education system that focus on building student knowledge, skills, and experiences to elevate their whole status as an individual (e.g., social, economic, freedom). Neoliberal scholars and their organizational extensions propose revamping school systems by introducing market/individual oriented solutions, including charter schools, school vouchers and choice models, thought to better equip students with knowledge, skills and experiences required to participate fully in the economy.

2.5 Conceptual framework

This study accepts the functionalist view of schooling, but with a critical view of contributing to greater equity in schools and the social vision of “no more failures”. I acknowledge the influence of both liberal and neoliberal perspectives in the literature but note that this study takes a liberal-minded view of the issue of failure in schools. The data will be analyzed and interpreted in a way that reflects this theoretical and political view.

Three claims grounded in the evidence underlie this study. The first is that policies, practices, and programs that support failure are ineffective at improving overall student academic or social achievement. The second is that failure is costly in fiscal terms to the individual and the state, and these resources could potentially be reallocated to better serve students. The third is that OECD countries and states, like Ontario, are revamping their education systems with the aim of reducing failure in schools.

The study’s main question is, “how much money does failure in secondary schools cost the Ontario public secondary education system in one year?” Failure in this study refers to the outcome when at the end of an enrolled course a secondary student does not earn the course credit (this definition based on OECD’s and UNESCO’s definition for repetition, see footnote on p. 18).

Based on the findings of the literature review, there is no single accepted measure of course failure or an established approach to costing course failure in secondary schools. This study takes an innovative approach both to determining the volume and cost of course failure. I present a simple method for measuring the volume that uses actual secondary course pass/fail rates. Course failure is measured using Ontario’s own criteria for successful secondary course completion — completing an enrolled course with a grade of 50% or greater. I also present a simple method for determining the associated fiscal cost of course failure using school board level instructional and operating expenses. The unit of analysis in the study is the student and the analysis conducted at the district and provincial levels.

From the literature review, we know that failure is systematically related to key demographic characteristics, including race; gender — boys; immigrants; student with special education needs; low-income families; and language status. The review also uncovered that failure is related to key achievement factors, including discipline (or subject area) and grade level. Though we know that all of these factors are related to failure in some way, given the limitations of data availability and reliability, it is not possible to examine all of these. Also, not all of these factors are relevant for this study — that is, not all of these factors are tied to cost. Here in the conceptual framework below, **I identify and provide a supporting rational** for the inclusion of key factors and expense items in the analysis of the study. In the methods chapter, I explain **how** I address the factors in my study given the available data.

As a first step in identifying which factors to include in the analysis, I approached the Ontario Ministry of Education for a copy of Ontario School Information System (OnSIS) data dictionary (a document that lists all OnSIS variables). When I reviewed the data dictionary, I kept in mind only those factors that were either related to the cost of course failure or help to tell the story. The next step involved listing key variables from the dictionary and matching them to factors identified in the literature review (see Table 2).

Table 2 – Variables in OnSIS data dictionary corresponded to factors identified in the literature review

OnSIS Variable	Corresponding factor
Special education status	Special education
Language first spoken	Language status ⁹
Gender	Gender
Year of entry	Immigrant status
Country of birth	Immigrant status
Grade designation	Grade level
Course code	Subject area (or discipline)
Source: OnSIS 2009	

Table 2 lists those factors identified in the literature review have the potential to be assessed with OnSIS data. Note that race and family income status were identified as factors related to failure in schools but the Ontario Ministry of Education does not collect data on these (also there is no

⁹ Language status is understood as a student's first language is not the language of instruction.

rationale to support that these factors are related to the cost of course failure). Exactly what data exists to support the analysis of these factors is discussed in Chapter 3, Methodology. The rationale supporting the inclusion and exclusion these factors and other factors is offered below.

In Ontario, school boards receive funding over and above standard pupil funding to provide special education and English second language services. Therefore, special education and language status are two factors that are directly related to the cost course failure and are included in the analysis. Gender was initially considered as a factor of analysis because this characteristic is tied to failure. However, the factor was omitted from the analysis because gender is not tied to additional funding and its inclusion would not provide any direction on how to better distribute resources. With respect to immigration status, like gender, the ministry does not provide any funding to school boards on the basis of this characteristic, and so this factor is not included in the analysis. Grade level and subject are two characteristics that make it possible to tell the story of how failure breaks out across the student groups, and they are included as factors of analysis (see Table 3).

Two additional factors are included that were not identified in the literature review. The first is school board type. In Ontario there are four types or categories of school boards: English public, French public, English Catholic, French Catholic. School board type is included to make it possible to comment on how the volume and cost of failure are distributed across the four board types. The second added factor of analysis is course level. In 2000, a new curriculum was introduced in Ontario. With the new curriculum, there are three course levels in Grades 9 and 10: Academic, Applied, Open (a general enrichment education course) and five course levels in Grades 10 and 11: University, University/College, College, Workplace and Open. The different course levels effectively create “destination-related stream[s] in Ontario’s public secondary education system (Ontario, 2000)¹⁰. Course level is included as another factor of analysis to make

¹⁰ Transfer courses are offered to students wanting to bridge streams. For example, a student enrolled in Grade 10 Applied English cannot automatically enrol in the Grade 11 University English course because the prerequisite entry course is Grade 10 Academic English. A “bridge” partial-credit course is available for those students who “wish to change from one course type to the other in the same subject between Grade 10 and Grade 11 or between Grade 11 and Grade 12. A transfer course can be taken as a summer course or as an independent-study or partial-credit course within school hours (Ontario, 2000, p. 6).

it possible to describe how failure is distributed. Table 3 below summarizes the factors of analysis included in this study.

Table 3 – Factors of analysis included in this study

Factors of analysis
Special education status
Language status (ESL)
Grade level
Subject area
School board type
Course level

The review of the literature also established that course failure has a fiscal cost. There was only one study in the review [Dobson and Sharma (1999)] that approached the question with a level of detail that required individual costs factors to be identified. These cost factors included school operations, libraries, information technology, and administration — all at the post-secondary level. This study is looking at the secondary panel, so different cost factors needed to be considered.

Previously mentioned, all school boards are required to submit to the ministry consolidated statements of financial positions each period, including expenses (known as Schedule 10). The expense items listed in Schedule 10 are compared with the cost factors identified in the literature review.

Table 4 – Schedule 10 expense items and cost factors compared¹¹

Schedule 10 expense items	Cost factors identified in the literature review
Classroom teachers	
Supply Teachers	
Teacher assistants	
Prof./ParaProf./Tech.	
Library/Guidance	Libraries
Department Heads	Administration
Principals and VPs	
School Office	
Staff Development	
Text./Supplies	
Computers	Information and communications technology
Custodial Operations	School operational costs
Maintenance Operations	
Utilities	
School Operations and Maintenance Administration	
Leases	
Source: Ontario Ministry of Education, Financial Statements, Schedule 10 Expenses	

All of the expense items listed in Schedule 10 are relevant to the Ontario context and reported on for each school board. All of these expenses are key instructional and school operational expenses, and so included as part of the cost analysis. Schedule 10 expenses excluded from this analysis include Administration (e.g., Trustees, Directors & Supervisory Officers, Board Administration, and amortization), Transportation, Geographic Circumstances, and Pupil Accommodation (e.g., capital projects). These expenses items were omitted for two reasons. First they are too far removed from the delivery of classroom education and, therefore, not tied to fail rates. The second is that if they were included, they would greatly increase the costs of failure in a way that contradicts the aim of this study: to produce reliable estimates of the efficiencies that could be realized with the prevention of each individual course failure.

¹¹ Note that special education expense items are identical but are listed in different schedules. This breakout is the result of Ontario’s funding for special education being enveloped from other student funding.

Chapter 3

Methodology

3.1 Introduction

Chapter 3 outlines the approach used to estimate the volume and cost of failure for Ontario's public secondary education system and highlights innovative features of the approach.

3.2 Definition, parameters, and assumptions

Previously discussed, Ontario does not have an official definition of failure that applies to the public secondary education system. However, Ontario's credit based system has a condition for earning a course credit: a course must be completed with a grade of 50% or greater. This condition is used to measure course failure in this study. It is noteworthy that this condition does not include voluntary course withdrawals after (or before) the penalty date¹². Voluntary withdrawals consume resources in the same way as a course failure. The rationale for excluding voluntary withdrawals from the study is that the Ontario Ministry of Education does not recognize voluntary withdrawals to be course failures and would not supply the data.

The September to June calendar span when secondary students enrol and complete secondary courses is referred to as *school year*. Students in Ontario must earn at least 30 secondary course credits to graduate from secondary school. The program is designed so the average student can complete 30 course credits over four school years (Grades 9, 10, 11, and 12). For purposes of this study, it is assumed that a student completes an average of 7.5 course credits (30 credits/4 school years) in a school year. The 7.5 course credit average is used frequently in this study to estimate cost. For example, to determine cost per course it is necessary to divide the total annual cost of education per pupil by the average number of course credits earned by a student in a school year.

Students in Ontario are able to withdraw from a course without penalty before the first mid-term exam because of a system wide policy known as "full disclosure". This policy assumes that the student who withdraws before the first mid-term exam will enrol in another course, which means the costs of instructing that student simply transfers over. After the mid-term exam, however, the possibility of enrolling in another course is unlikely as the other courses have moved too far along for a student to catch-up. When a course is withdrawn after the mid-term exam, it is fair to assume that the costs incurred by the system (i.e., salaries, supplies, operational costs) are spent with no way to recuperate the costs.

A second assumption of the study is that different kinds of secondary students receive different amounts of funding. Funding in Ontario is such that students who qualify for additional educational services, such as special education and English second language, receive funding over and above the amount provided for a standard pupil. Presumably this means the cost of failure for a student who receives these additional services is more than for a student who does not receive these services. It is noteworthy that this additional funding provided by the ministry is enveloped, meaning the money must be spent on special education (and reported separately in the expense schedules). If the cost of these additional services is averaged out over the entire student population, then the cost for educating a standard pupil is inflated and the cost of educating a student who receives additional services is underestimated. To account for this, this study looks at the volume and the cost of failure for the Total Student Population (TSP) first, then looks at the cost for three student subgroups — the Special Education Population (SEP), the English Second Language Population (ESLP) and the Standard Pupil Population (SPP)¹³.

3.3 Type of cost analysis

Levin and McEwan (2001) present four major approaches to cost analysis: 1) cost effectiveness, 2) cost-benefit analysis, 3) cost utility, and 4) cost-feasibility. *Cost-effectiveness* is when costs are combined with measures of effectiveness and all alternatives can be evaluated according to their costs and their contribution to meeting the same effectiveness criterion. *Cost-benefit analysis* refers to the evaluation of alternatives according to their costs and benefits when each is measured in monetary terms. *Cost utility analysis* refers to the evaluation of alternatives according to a comparison of their costs and their utility (or expression of satisfaction) of value. *Cost-feasibility analysis* refers to the method of estimating only the costs of an alternative in order to ascertain whether or not it can be considered (Levin & McEwan, 2001).

The type of cost analysis suited to answer the study's main question can be described as a *basic cost analysis* which seeks only to answer the question *how much does failure cost and what is the distribution of these costs* (White et al., 2005). There is no analysis of feasibility, effectiveness or

¹³ Total Student Population = Special Education Population + English Second Language Population + Standard Pupil Population

benefit. A basic cost analysis then is different from the conventional forms described above because the costs are not being compared to something else.

3.4 Data Sources

In this section, I explain **how** I address the factors in my study given the available data. All of the data and budget information used in this study was provided by the Ontario Ministry of Education.

There are two sources. The first is Ontario School Information System (OnSIS). Brought on-line in 2004, school boards use OnSIS to submit achievement and demographic data via a web based system. Data is collected three times in a school period (October, March and June) and covers a range of domains including course titles, number of classes, number of students and educators, student attendance, etc. Approximately 90 million data elements are collected each year.

In January 2011, the Education Statistics and Analysis Branch (ESAB) of the Ontario Ministry of Education, the branch responsible for the management of OnSIS, provided me with a copy of their data dictionary. I compared the variables the data dictionary with achievement and demographic factors identified in the literature review (see Table 3, Conceptual Framework). This table was presented to ESAB officials in March 2011 as a starting point for developing a memorandum of understanding/data sharing agreement. After several discussions with ministry officials, an agreement was reached on the data elements to support the analysis. Table 5 outlines exactly what data elements were provided by the ministry through OnSIS (right side column) for each of the factors identified in Table 3, Conceptual Framework (left side column).

Table 5 – Factors and OnSIS data elements compared

Factors identified in the Conceptual Framework	OnSIS Data elements
School board type	Data for 72 publicly funded boards operating as one of four school board types: English public, English Catholic, French public, French Catholic
Special education status	Achievement and demographic data for students receiving special education services by school board

	Total number of secondary enrolments for students receiving special education services by school board
English Second Language status	Achievement and demographic data for students receiving English Second Language services by school board
	Total number of secondary enrolments for students receiving English Second Language services by school board
Subject area	Course codes that can identify the subject for each course offered in each school board
Grade level	Course codes that can identify the grade level for each course offered in each school board
Course level	Course codes that can identify the course level (e.g., Academic, Applied) for each course offered in each school board

The terms of the memorandum of understanding are that data be provided for the 2008–09 school year. This year was selected because the data are reliable, ready to share, and choosing a later period would likely not result in any material difference in volume or cost. The data was received in six sets. Data sets 1 through 3 provide the total number of course passes and failures for TSP, SEP, and ESLP. Data sets 4 through 6 provide total student enrolments for the same student groups. Table 6 below outlines in detail the data provided in each of the data sets.

Table 6 – Data sets 1 through 3, number of course passes and failures

Set	Description
1	Number of students with passing marks and failing marks by course and by board in 2008–09
2	Number of students with passing marks and failing marks by course and by board in 2008–09, for students who received special education services*
3	Number of students with passing marks and failing marks by course and by board in 2008–09, for students enrolled in an ESL course (ESLAO, ESLBO, ESLCO, ESLDO, or ESLEO)
* Students who received special education services will include students with identified and non-identified exceptionalities and exclude students identified as gifted.	

Table 7 – Data sets 4 through 6*, student enrolments

Set	Description
4	Number of secondary students enrolled by board in 2008–09
5	Number of secondary students enrolled by board in 2008–09, for students who received special education services*
6	Number of secondary students enrolled by board in 2008–09, for students enrolled in an ESL course (ESLAO, ESLBO, ESLCO, ESLDO, or ESLEO)
* Students who received special education services will include students with identified and non-identified exceptionalities and exclude students identified as gifted	

The second source of information, Schedule 10 statements, was provided by the Elementary and Secondary Business and Finance Division of the Ontario Ministry of Education. Schedule 10 Statements reflect actual cash flows in each of the school boards for a given school year.¹⁴ Using Schedule 10 statements also offered the added benefit of taking into account each school board's specific instructional and operational expenses. The statements for each school board were provided by the ministry in six data files.

Protecting the identity of students and respecting their privacy is the highest priority for the ministry. As part of the terms of reference the data received was depersonalized (all student identifiers removed) and counts of less than six enrolments were suppressed to protect the identity of students. All of this work was completed by the ministry.

Finally, while working with the data I noticed that the way in which the data was extracted from the OnSIS frame resulted in the double counting of a small number of students who receive both special education and English second language services. The data provided by the ministry for the special education and ESL student populations were discrete — but some students could receive both special education and ESL services. The implication is that the number of course failures and enrolments for SPP were determined by subtracting from TSP the corresponding number of special education and ESL students. Because a small number of students received both special education and ESL, these students were subtracted twice, essentially resulting in a slight over-estimation of the number of ESL and special education numbers and a slight under-estimation of standard pupils. To get a sense of how small, total ESL enrolment for the province is 16,944. If you divide this number by the total number of secondary course enrolments, which is 709,099, it means that 2.39% of course enrolments are ESL students. Therefore, even if half of ESL students also receive special education services, which is not likely the case, the most being double counted for enrolment is 1.19%. In short, the double counting in enrolments did not have a major impact but is worth mentioning.

¹⁴ Note that Schedule 10 provides number for total education spending and a separate set of numbers for special education spending only. This breakout is the result of Ontario's funding for special education being enveloped from other student funding.

3.5 Ethics Review

This study was exempt from research ethics review under the Tri-council Policy Statement: Ethical conduct for research involving humans, 2nd Edition (TCPS-2). Article 2.4 states, "research ethics board review is not required for research that relies exclusively on secondary use of anonymous information" (Government of Canada, 2012).

3.6 Methodology

The approach used to answer each of the study's questions is addressed here.

Question 1: How many secondary course failures were there in Ontario in 2008–09?

The total number of course failures is counted for each school board and added together to determine the provincial total. These steps are repeated for data sets 1, 2 and 3 to determine the total number of failures for each student population and for each school board type.

Question 2: How do fail rates relate to factors such as subject area, grade level, course level and additional services?

The data sets provided by the ministry lists the courses offered in each school board as well as the name of the school board, school board type, course code (identifies subject area— English, math, science), grade level (9, 10, 11, or 12) and course level (e.g., Academic, Applied, Open, University, University/College, College, Workplace). Having course codes also made it possible to analyze specific courses within relevant subject areas (more on this in Chapter 4). The factor breakout is done for TSP, SEP and ESLP. Sorting of subject areas, grade levels, individual and other functions (adding pass/fail rates) were done in Excel (data provided by the ministry was in Excel tables).

Question 3: What are the fiscal costs of failure?

Levin & McEwan’s Resource Cost Modelling (RCM) approach (Levin & McEwan, 2001; White et al., 2005) was used to *guide* the costs analysis. RCM was selected over the ingredients approach to cost analysis because it formalizes the process (e.g., systematic, replicable) and allows for a more complex division of cost categories — that is it accounts for the different services students are receiving in the school setting (White et al., 2005). The authors recommend a series of steps as part of a costing process: 1) be clear about the scope of the activity; 2) identify and categorize the expense items necessary for estimating cost; 3) assign a monetary value to expense items for each of the services; 4) add the expense items (this last step was added to the model to make explicit an implied step in the model). A detailed description of each step is offered below.

Step 1: be clear about the scope of the activity

The scope of activity is framed by the conceptual framework (Chapter 2) and the methodological assumptions and parameters discussed earlier. For the purpose of this study, there are three broad service categories being provided in Ontario’s secondary school classrooms that need to be accounted for in this cost analysis: 1) standard services provided to all students, 2) special education services, and 3) English second language services.

Step 2: identify and categorize the expense items necessary for estimating cost

The expense items listed (identified) in Table 4 (Chapter 2) are categorized as either a direct or indirect cost.¹⁵ A direct cost is an expense directly involved in the production or provision of service. Direct costs are easily tracked on an item-by item basis, e.g., salaries for personnel. An indirect cost is an expense indirectly involved in the production or provision of service. Indirect cost are not as easily tracked, e.g., administrative costs, maintenance costs. Any cost can be handled as either direct or indirect, depending on the supporting rationale (Wikipedia, 2011). Consistently identifying a budget item as either gross or indirect cost is most important. In Table 8 below the instructional and operational expense items listed in Table 4 are categorized as either

¹⁵ In accounting, gross cost is the summation of direct and indirect costs.

a direct or indirect cost. The categorization is based on their direct or indirect role in the delivery of education in schools.

Table 8 – Expense items categorized as either a direct or indirect cost

Gross Costs	
Direct Costs	Indirect Costs
Classroom <ul style="list-style-type: none"> - Classroom teachers* - Supply teachers* - Teacher assistants* - Textbook, learning materials & classroom supplies, & equipment - Classroom computers 	Extended Classroom <ul style="list-style-type: none"> - Professionals, paraprofessionals and technicians* - Library and guidance* - Department heads* - Staff development Non-classroom <ul style="list-style-type: none"> - Principals and Vice-principals* - School office* School operational expenses <ul style="list-style-type: none"> - custodial operations - maintenance operations - utilities - school operations and maintenance administration - leases
Source: Ontario, 2009 – Net expenditure for compliance * includes salaries and employee benefits	

The cost of failure for each school board is calculated twice in this study, first using gross cost and again using direct costs. The rationale for calculating both was to establish a range of the total cost. It would be technically correct to cost failure using only gross costs (that is adding both the indirect and direct costs) however, indirect costs do not increase with each additional student the same way that direct costs increase. Calculations using gross costs, therefore, overestimate the total cost of failure. Likewise, calculations using only direct costs underestimate the costs of failure. This means the most accurate estimate lies somewhere in between the two. Therefore, it is important to run some of the analyses using both.

Note in Table 8 that personnel (e.g., classroom teachers, supply teachers, teacher assistants, etc.) are broken out in more detail than other costs. This reflects Levin and McEwan’s standard that “ingredients” included in the costs analysis “commensurate with the ingredients’ overall

contributions to the program's total costs — salaries typically being the largest cost category in education (White et al., 2005).

Step 3: assign a monetary value to expense items for each of the services

Before discussing how a monetary value was assigned to each expense item, it is important to discuss the two options available for determining the unit cost per individually enrolled course: the average cost or the marginal cost approach. The average cost approach averages the cost of providing education over the total number of students receiving the education. The advantage of this approach is that it is straightforward. The problem is that the cost of servicing each unit is not the same. The marginal cost approach measures the change in cost when the quantity produced/serviced increases by one unit. Both approaches provide a different estimate of the costs of failure, neither superior to the other.

To illustrate the difference between the two, assume in a secondary classroom there are 26 students. Also assume (for simplicity) that the cost of one teacher's salary is \$49,000 and books \$1,000. Say at the end of the course the 26th student in the class fails to earn their course credit. What is the cost of failure for that one unearned course credit?

Using the average cost approach, the total cost of education provision would be the teacher's salary plus books ($\$49,000 + \$1,000 = \$50,000$). This amount would then be divided by 26 (total student units). The cost of each course would be \$1,923 per pupil ($\$50,000 / 26 \text{ students} = \text{cost/student}$). Which means the cost for the one unearned course credit is \$1,923.

Using the marginal cost approach it would be necessary to estimate the cost of failure for the 26th unearned unit. This would be a difficult question to answer. Essentially it would require an independent analysis of each failing student and the data available does not allow for that. Even if it were, the gain would not likely be worth the effort. Furthermore, when the numbers of failures is very large (as in the case of this study) the difference between the marginal and average cost diminishes. My thesis will not attempt to explore the marginal cost, however, I did want to make note that it was considered.

Getting back to how monetary values were assigned, an excel template was developed (see APPENDIX I) listing the direct and indirect expense items for TSP in two separate columns, the portion of the enveloped special education funding for the same expense items in two other columns, and another column for the adjusted special education amount that combines the enveloped portion of special education expenses plus SEP’s proportional share of standard pupil funding (non enveloped instructional and operational funding). This template was copied to create 70 spreadsheets—one for each school board¹⁶. To add a value in each cell, the Schedule 10 value provided by the MOE was matched to the corresponding cell in the spreadsheet¹⁷.

Step 4: add up the expense items and estimate the total fiscal costs of failure

With the expense items inputted into the spreadsheet, the next step was to calculate the gross cost of secondary school instruction and school operation for both TSP and SEP. To calculate the amount for ESLP and SPP, recall that the gross cost of secondary education provision for TSP is the total of SEP, ESLP, and SPP spending. By subtracting the total gross cost of secondary provision for SEP from TSP, the remainder is the total gross cost of provision for ESLP and SPP. Note: it was determined later in the study that it was not possible to isolate ESLP spending from SPP spending, so the expense items for these are combined under the title ESLP/SPP expenses (more on this in Chapter 5). To make the calculations easy to follow, the mathematical operations are outline below.

Calculation 1 – Secondary gross instructional and operational cost of failure TSP, school board level

$$\frac{\text{Gross cost of secondary school instruction and operations for TSP}}{\text{/ Total number of secondary students enrolled in board}} = \text{Board average instructional and operational cost per pupil for one school year}$$

$$\frac{\text{Board average instructional and operational cost per pupil for one school year}}{\text{/ average number of secondary credits completed by a student in one year}^{18}} \times \text{total secondary student course failures} = \text{Gross average instructional and operational cost of course failure for TSP}$$

¹⁶ The ministry was only able to provide data for 70 of the 72 school boards. Data and analysis from this point in the study report on 70 school boards only.

¹⁷ Because the study looks at cost for only one school year, there was no need to adjust expense items for inflation, etc.

¹⁸ This calculation gets **the school board average instructional and operational cost per secondary course**.

Calculation 2 – Secondary gross instructional and operational cost of failure for SEP, school board level

Gross cost of secondary school instruction and operations for SEP
/ Total number of special education students enrolled in secondary schools in the board

= Board average instructional and operational cost for one school year per SEP

Board average instructional and operational cost for one school year per SEP
/ average number of secondary credits completed by a student in one year
X total number of special education student course failures

= Gross average instructional and operational cost of course failure for SEP

Calculation 3 – Secondary gross instructional and operational cost of failure, ESLP and SPP, school board level

Gross cost of secondary school instruction and operations for the ESLP and SPP
/ Total number of ESL and Standard Pupils enrolled in secondary schools in the board

= Board average instructional and operational cost for one school year per ESLP/SPP

Board average instructional and operational cost for one school year per ESLP/SPP
/ average number of secondary credits completed by a student in one year
X total number of ESL and standard pupil course failures

= Gross average instructional and operational cost of course failure for ESLP/SPP

Calculation 4 – Secondary gross instructional and operational cost of failure provincial level

For each student population, total the amounts for each school board to get the secondary gross average instructional and operational cost of course failure at the provincial level.

Calculation 5 – Direct instructional and operational cost of failure school board level

Repeat the steps in calculations 1, 2 and 3 using direct costs instead of gross cost.

3.7 Chapter Summary

The study is a basic cost analysis that does not fit into any of the conventional forms. Levin & McEwan's resource cost model is used as guide to tie secondary course fail rates to their associated instructional and operational expenses for TSP, SEP, and ESL/SPP. The study uses a systematic protocol that could be replicated in other educational jurisdictions.

Chapter 4

Analysis of Secondary Course Failures in Ontario, 2008–09

4.1 Introduction

Chapter 4 focuses on the number of course failures in Ontario secondary schools in 2008–09. Possible explanations for patterns are explored briefly in the chapter, with most of the discussion reserved for later in the thesis.

4.2 Analysis

For TSP, there were 5,082,543 secondary course attempts across 70 school boards in Ontario, 4,682,535 completed successfully (or passed) and 400,008 unsuccessfully (or failed). This means 92.1% of all enrolled secondary courses were completed successfully and 7.9% unsuccessfully. This last percentage may seem small but it means that, on average for TSP, a student will have more than 2 course failures over the course of four school years (30 course credits needed to graduate multiplied by 7.9%). Table 9 below summarizes the total number of enrolments, course passes and failures, and total course attempts for TSP in Ontario and for three student subgroups SEP, ESLP and SPP.

Table 9 – Total number of enrolments, passes/failures, and total course attempts for TSP, SEP, ESLP, and SPP in Ontario, 2008–09

	TSP		SEP		ESLP		SPP ¹⁹	
Enrolments	709,099		125,097		16,944		567,058	
Passes	4,682,535	92.1%	723,408	87.7%	102,271	86.9%	3,856,856	93.2%
Failures	400,008	7.9%	101,054	12.3%	15,458	13.1%	283,496	6.8%
Total attempts	5,082,543	100%	824,462	100%	117,729	100%	4,140,352	100%

¹⁹ The numbers in Table 9 (and all subsequent tables) for SPP were derived by subtracting the number of students identified as having special needs and receiving ESL services from TSP. For example, the total number of passes for SPP was derived by taking the number of passes for TSP and subtracting the total number of passes for SEP and ESLP (4,682,535 – 723,408 – 102,271 = 3,856,856).

To summarize Table 9, special education and English second language students are more likely to fail an enrolled course by as much as 6.3 percentage points compared to standard pupils. Standard pupils have the lowest failure rate at 6.8%.

It is possible to look at the percentage of enrolled secondary courses that ended in failure at the school board level for TSP, SEP, ESL, and SPP (see Table 10 below). Each of the school boards has been given a number (one to 70) so not to identify the school board by name.

Table 10 – Percentage of course failures in Ontario's school boards, 2008–09

To read this table, look at school board one in the TSP column. The percentage is 10.9%. This means that 10.9% of courses attempted for TSP resulted in failure in this particular school board.

School Board #	TSP	SEP	ESLP	SPP	School Board #	TSP	SEP	ESLP	SPP
1	10.9%	17.0%	-	9.6%	36	4.8%	14.3%	-	3.2%
2	10.5%	15.8%	-	9.4%	37	5.4%	13.1%	-	4.5%
3	13.8%	20.8%	-	12.7%	38	4.5%	9.1%	-	3.4%
4	10.5%	14.1%	-	9.6%	39	2.3%	3.8%	-	1.9%
5	14.2%	22.3%	-	12.7%	40	5.2%	7.9%	8.0%	4.6%
6	6.6%	13.6%	-	5.4%	41	4.0%	7.6%	11.8%	3.4%
7	7.9%	14.9%	-	6.8%	42	3.9%	9.5%	0.0%	2.7%
8	11.0%	17.4%	-	9.4%	43	9.3%	12.4%	13.1%	8.3%
9	7.6%	11.4%	-	6.6%	44	4.0%	7.4%	0.0%	3.1%
10	3.0%	5.0%	-	2.6%	45	3.4%	6.5%	4.8%	2.9%
11	6.5%	13.0%	-	5.4%	46	7.1%	12.8%	9.1%	6.1%
12	6.0%	9.5%	8.7%	5.2%	47	7.8%	14.0%	9.9%	6.6%
13	9.1%	16.1%	10.1%	7.8%	48	7.3%	17.9%	15.6%	5.8%
14	12.7%	18.1%	10.2%	11.4%	49	3.3%	6.3%	8.9%	2.8%
15	9.7%	13.6%	15.5%	8.9%	50	6.0%	11.1%	13.3%	5.1%
16	7.7%	12.6%	11.0%	6.3%	51	4.1%	9.9%	10.3%	3.2%
17	5.8%	8.7%	12.1%	5.3%	52	6.2%	10.9%	15.5%	4.5%
18	4.5%	6.6%	-	3.8%	53	3.4%	6.9%	8.4%	2.7%
19	8.9%	13.1%	8.8%	7.9%	54	4.7%	8.7%	-	4.2%
20	8.1%	13.3%	14.3%	7.1%	55	3.5%	6.2%	-	2.5%
21	10.0%	14.8%	7.9%	8.8%	56	5.0%	8.0%	12.3%	4.2%
22	4.4%	6.9%	15.3%	4.0%	57	4.6%	11.4%	-	3.2%
23	14.1%	19.4%	7.2%	12.9%	58	3.2%	7.2%	14.2%	2.3%
24	7.6%	9.6%	18.9%	7.1%	59	9.0%	15.9%	-	6.0%

25	11.7%	18.1%	14.2%	10.8%	60	5.2%	10.5%	-	3.3%	
26	8.4%	12.6%	16.8%	7.7%	61	4.8%	9.5%	-	4.2%	
27	6.9%	9.7%	8.9%	5.9%	62	3.5%	7.0%	-	2.9%	
28	8.9%	14.1%	14.3%	7.3%	63	2.7%	5.8%	-	2.2%	
29	4.4%	7.2%	13.6%	3.7%	64	4.5%	8.6%	-	3.6%	
30	4.1%	6.3%	8.4%	3.6%	65	2.0%	3.9%	-	1.7%	
31	9.8%	16.5%	11.6%	8.3%	66	5.7%	7.7%	-	5.1%	
32	8.2%	14.3%	7.6%	7.0%	67	2.2%	6.0%	-	1.7%	
33	6.7%	14.2%	-	4.3%	68	2.6%	5.3%	-	2.2%	
34	5.4%	11.5%	-	4.1%	69	2.0%	4.7%	-	1.3%	
35	6.9%	10.8%	-	6.0%	70	2.7%	5.5%	-	2.0%	
						TSP	SEP	ESLP	SPP	
						MEAN	7.9%	12.3%	13.1%	6.8%

An observation from Table 10 is that a few boards have percentage in one student category that stands out either above or below the others. For example, school boards 11, 16, 46, 47, and 48 have percentages of courses failed below the mean for all student groups with the exception of SEP. For school boards 22, 24, 29, 52 and 58, the percentages of courses failed for TSP, SEP and SPP are below the mean while the percentage for ESLP is above. The opposite is true for school boards 21 and 23, with the percentages of course failures for ESLP below the mean while the others are above. This could suggest that some boards are better at delivering services to students, resulting in lower course failure.

It is also possible to look at the percentage of course failures for the four school board categories. See table 11 below.

Table 11 – Percentage of course failures for Ontario's four school board categories, 2008–09

School board	TSP	SEP	ESLP	SPP
70 school boards	7.9%	12.3%	13.1%	6.8%
English Public	9.0%	13.4%	13.8%	8.0%
English Catholic	5.9%	10.3%	10.9%	4.9%
French Public	4.4%	9.2%	-	3.5%
French Catholic	2.5%	5.4%	-	2.0%

The English Catholic, French Public and French Catholic boards have percentages of course failures below the mean, which is weighted by the percentage of course failures in the English Public board. An interesting observation from Table 11 is that even though the percentage of

course failures for the French Public and French Catholic boards are lower than their English counterparts, the percentage of course failure is 2.6 and 2.7 times higher for SEP than SPP in the French Public and French Catholic boards respectively, and only 1.6 and 2.1 for the English Public and English Catholic boards. One explanation could be that French boards face difficulties in delivering special education services to students (e.g., hiring qualified special education staff, equivalent resources available in French) compared to English boards (this cannot be determined from the data).

Another way to examine the data is to look at average course failures by enrolment. In Table 12 below, the total number of course failures in a given board is divided by the number of student enrolments in the same board; this calculation gives average course failures per student.

The average is provided for TSP, SEP, ESL, and SPP. Each of the school boards has been given a number (one to 70) so not to identify the school board by name.

To read Table 12, look at school board one in TSP column. The average course failures per student is 0.7, which means for every student enrolled there is, on average, 0.7 course failures (out of an average enrolment of about 7.5 courses in a school year). For the TSP the average course failure per student is 0.56—or for every student enrolled there is, on average, 0.56 course failures.

Table 12 – Average course failures per student for each student population group

School Board #	TSP	SEP	ESLP	SPP	School Board #	TSP	SEP	ESLP	SPP
1	0.70	0.98		0.63	36	0.36	1.09		0.23
2	0.70	1.03		0.64	37	0.38	0.77		0.33
3	0.96	1.21		0.91	38	0.32	0.63		0.24
4	0.70	0.85		0.65	39	0.17	0.26		0.14
5	0.96	1.44		0.86	40	0.37	0.53	0.58	0.34
6	0.43	0.86		0.35	41	0.30	0.50	0.94	0.26
7	0.52	0.83	1.00	0.46	42	0.29	0.66	0	0.20
8	0.74	1.10		0.65	43	0.70	0.88	0.90	0.64
9	0.49	0.69	2.00	0.44	44	0.30	0.50	0	0.24
10	0.20	0.29		0.17	45	0.26	0.45	0.36	0.23
11	0.47	0.83	0.60	0.39	46	0.53	0.91	0.67	0.47
12	0.42	0.60	1.06	0.37	47	0.57	0.95	0.79	0.49

13	0.64	1.05	0.73	0.56	48	0.56	1.32	1.45	0.44	
14	0.99	1.24	1.07	0.92	49	0.25	0.43	0.67	0.21	
15	0.71	0.93	0.81	0.65	50	0.43	0.73	0.85	0.37	
16	0.50	0.73	0.90	0.42	51	0.31	0.71	0.90	0.24	
17	0.37	0.56		0.34	52	0.45	0.76	1.20	0.33	
18	0.32	0.45	0.63	0.29	53	0.25	0.46	0.60	0.21	
19	0.61	0.84	1.09	0.55	54	0.35	0.56	0	0.31	
20	0.56	0.85	0.60	0.50	55	0.25	0.42		0.18	
21	0.72	1.00	1.13	0.65	56	0.36	0.57	0.81	0.31	
22	0.30	0.44	0.53	0.28	57	0.34	0.78		0.24	
23	1.02	1.28	1.36	0.95	58	0.22	0.47	1.27	0.16	
24	0.50	0.59	1.04	0.48	59	0.70	1.23		0.47	
25	0.79	0.98	1.56	0.76	60	0.35	0.71		0.22	
26	0.58	0.77	0.64	0.54	61	0.37	0.73	0.25	0.32	
27	0.47	0.64	0.70	0.41	62	0.22	0.51		0.18	
28	0.57	0.86	1.05	0.48	63	0.19	0.38		0.16	
29	0.27	0.42	0.57	0.23	64	0.30	0.58		0.24	
30	0.27	0.37	0.13	0.25	65	0.15	0.29		0.13	
31	0.67	0.95	0.48	0.59	66	0.44	0.59		0.40	
32	0.60	1.00		0.52	67	0.17	0.45		0.13	
33	0.46	0.85		0.32	68	0.20	0.40		0.17	
34	0.36	0.80		0.27	69	0.14	0.31		0.09	
35	0.50	0.69		0.45	70	0.20	0.38		0.16	
						TSP	SEP	ESLP	SPP	
						MEAN²⁰	0.56	0.81	0.91	0.50
						SD	0.22	0.28	0.46	0.21

Looking at the 70 school boards in TSP column, 67 have less than one course failure per student enrolled. Three school boards stand out from the group: school boards three and 14 each have nearly one course failure for every student enrolled, and school board 23 having more than one course failure for every TSP student enrolled. For SEP, 12 school boards have an average greater than 1, which means there is more than one course failure on average for each special education student enrolled. For ESLP, 13 school boards have an average failure per student greater than 1, and in one case (school board 9) the average is 2.0. For the SPP, three school boards have an average greater than 0.9.

²⁰ The mean for each student group is calculated by dividing total number of course failures by the number of enrolments. For example, TSP failures total 400,008 and total secondary enrolment is 709,099. Divide total course failures by enrolment to get 0.56.

An overall observation is that some school boards have several times as much failure as others. For example, school board 23 has 6.8, 4.4 and 7.3 times as much failure as school board 65. School board 23 has 7.2, 4.1 and 10.5 times as much failure as school board 69 when you compare the same student groups.

A second interesting observation from Table 12 is the standard deviation for both SEP and ESLP. The average course failure per student is greater for ESLP than SEP with a standard deviation nearly twice as large for ESLP. This suggests that the distribution of course failures across SEP is more evenly distributed across the student population than for ESLP, which suggests that some ESLP students are failing very few courses, some are failing many. It also illustrates that indeed the services students receive is tied to the numbers of course failures.

It is possible to look at the average course failure per student for the four school board categories. Looking at Table 13, the average is 0.56 for TSP, 0.81 for SEP, 0.91 for ESLP, and 0.50 for SPP across 70 school boards.

Table 13 – Average course failure per student for the four school board categories

School board	TSP	SEP	ESLP	SPP
70 school boards	0.56	0.81	0.91	0.50
English Public	0.64	0.86	0.95	0.59
English Catholic	0.43	0.71	0.78	0.37
French Public	0.30	0.67	0.25	0.23
French Catholic	0.19	0.37	-	0.15

Table 13 is useful because it reveals the variability across the school boards in Table 12 but in a different way. The average failure per student is higher in English public school boards compared to the other three. French public and Catholic boards have the lowest average across the population groups. It is not possible with these data to explain why this is the case, but this pattern is worthy of mention since it could suggest that some school boards are able to deliver education in a manner that results in fewer course failures.

4.3 Chapter summary

For TSP and all student subpopulations, the vast majority of enrolled courses are passes. The fail rates for TSP (7.9%), SEP (12.3%), ESLP (13.1%), and SPP (6.8%) indicate that there is a relationship between course failures and additional services received by students, confirming one of the study's assumptions. Students receiving special education and English second language services are nearly twice as likely to fail a course as their SPP counterpart.

Another significant finding in this chapter is that some school boards seem to struggle where other boards succeed. Table 10 suggests that that some boards may be struggling to provide services to SEP and ESLP students more than other school boards, resulting in higher course failures. Table 12 also supports this finding, revealing that some school boards are better at helping students move forward, some with average course failures per student less than 0.2, other 0.7s, others 1 per student or greater. Also significant, the rate of failure and the average number of failures per student is higher in English public school boards compared to the other three board types. French public and Catholic boards have the lowest fail rates and average course failures across the student population groups.

It is noteworthy that these board by board variations could also be random, and more years of data would be needed to determine if fluctuations of this size are expected as normal random year to year variation.

Chapter 5

Analysis by Factors Known to Be Related to Failure

5.1 Introduction

Chapter 5 analyzes course fail rates according to related factors for which Ontario data were available, including subject area, course type (i.e., academic or applied), grade level and courses within subject areas (e.g., calculus within mathematics) for each of the student population groups.

5.2 Breakdown by curriculum subject area

In the table below, 19 subject areas are listed in the far left column. These subject areas are from *the Ontario Curriculum 9–12, Course Descriptions and Prerequisites* (Ontario, 2011). To the right are the number of course attempts, total number of passes and failures, and their corresponding percentages. The number of course passes and failures are provided for each of the student population groups (Tables 14, 15, 16).

Table 14 – Total number of attempts, passes and failures and corresponding percentages by Ontario curriculum subject areas for TSP (all student course attempts in Ontario)

Subject area	Attempts	Passes		Failures	
		#	%	#	%
The Arts	439,046	413,007	94.1	26,039	5.9
Business studies	204,575	189,873	92.8	14,702	7.2
Canadian and World Studies	682,854	631,368	92.6	51,486	7.4
Classical studies and international languages	23,150	21,741	93.9	1,409	6.1
Computer studies	28,376	26,439	93.2	1,937	6.8
English	693,234	634,654	91.5	58,580	8.5
English Literacy Development (ELD)	2,218	1,732	78.1	486	21.9
English Second Language (ESL)	23,374	20,175	86.3	3,199	13.7
French	225,341	217,464	96.5	7,877	3.5
Guidance and Career Education	240,295	214,142	89.1	26,153	10.9
Health and Physical	392,085	370,471	94.5	21,614	5.5
Interdisciplinary studies	23,832	22,012	92.4	1,820	7.6
Mathematics	673,712	594,616	88.3	79,096	11.7
Native Languages	1,426	1,141	80	285	20

Subject area	Attempts	Passes		Failures	
		#	%	#	%
Native studies	3,864	3,287	85.1	577	14.9
Ontario Secondary School Literacy Course	13,261	11,591	87.4	1,670	12.6
Science	627,081	581,650	92.7	45,431	7.3
Social Sciences and Humanities	432,159	401,736	93	30,423	7
Technology Education	349,660	322,903	92.3	26,757	7.7
TOTAL	5,079,543	4,680,002	-	399,541	-
AVERAGE	267,344	246,316	-	21,028	-
STDEVA	262,946	240,997	-	23,300	-
<p>Note: excluded from this table are courses with subject codes "K", "O" and "Y" as they are not listed in the curriculum course list. Subject areas "K" and "O" offered few course offerings and all three areas contained either empty or mostly suppressed values in the pass/fail columns. Therefore, the totals will be different from the totals listed in Table 9.</p> <p>Source: Ontario 2011</p>					

Table 15 – Total number of attempts, passes and failures and percentages by curriculum subject area in Ontario for SEP

Subject area	attempts	Passes		Failures	
		#	%	#	%
The Arts	71,812	63,940	89	7,872	11
Business studies	25,839	22,454	86.9	3,385	13.1
Canadian and World Studies	106,406	92,721	87.1	13,685	12.9
Classical studies and international languages	2,498	2,206	88.3	292	11.7
Computer studies	3,952	3,522	89.1	430	10.9
English	113,562	99,519	87.6	14,043	12.4
English Literacy Development (ELD)	189	166	87.8	23	12.2
English Second Language (ESL)	407	318	78.1	89	21.9
French	21,715	20,346	93.7	1,369	6.3
Guidance and Career Education	51,859	44,569	85.9	7,290	14.1
Health and Physical	66,496	59,996	90.2	6,500	9.8
Interdisciplinary studies	3,100	2,766	89.2	334	10.8
Mathematics	104,004	88,266	84.9	15,738	15.1
Native Languages	379	285	75.2	94	24.8
Native studies	829	632	76.2	197	23.8
Ontario Secondary School Literacy Course	6,154	5,372	87.3	782	12.7
Science	85,128	75,665	88.9	9,463	11.2
Social Sciences and Humanities	62,216	54,890	88.2	7,326	11.8

Subject area	attempts	Passes		Failures	
Technology Education	86,441	75,930	87.8	10,511	12.2
TOTAL	812,986	713,563	-	99,423	-
MEAN	42,789	37,556	-	5,233	-
STDEVA	42,371	37,001	-	5,464	-
<p>Note: excluded from this table are courses with subject codes “K”, “O” and “Y” as they are not listed in the curriculum course list. Subject areas “K” and “O” offered few course offerings and all three areas contained either empty or mostly suppressed values in the pass/fail columns. Therefore, the totals will be different from the totals listed in Table 9.</p> <p>Note: that the number of passes for Special Education lower than the number listed in Table 9 by 10,000, which is approximately 1.4% of total course passes. The 10,000 fewer than expected could mean that these courses have a workplace or life skills focus and may be heavily enrolled by special needs students. For example, a courses entitled <i>Personal Life Skills</i> falls under course K; <i>Construction Craft Worker</i>; under O; <i>Baking Techniques under Y</i>.</p> <p>Source: Ontario 2011</p>					

Table 16 – Total number of attempts, passes and failures and percentages by curriculum subject area in Ontario for ESLP

Subject area	# of attempts	# of passes	% of passes	# of failures	% of failures
The Arts	9,817	8,753	89.2	1,064	10.8
Business studies	5,474	4,752	86.8	722	13.2
Canadian and World Studies	14,527	12,840	88.4	1,687	11.6
Classical studies and international languages	515	449	87.2	66	12.8
Computer studies	542	473	87.3	69	12.7
English	4,865	4,226	86.9	639	13.1
English Literacy Development (ELD)	797	658	82.6	139	17.4
English Second Language (ESL)	22,967	19,820	86.3	3,147	13.7
French	1,823	1,702	93.4	121	6.6
Guidance and Career Education	6,467	5,580	86.3	887	13.7
Health and Physical	8,389	7,652	91.2	737	8.8
Interdisciplinary studies	123	105	85.4	18	14.6
Mathematics	16,420	13,602	82.8	2,818	17.2
Native Languages	-	-	-	-	-
Native studies	5	5	100	0	0
Ontario Secondary School Literacy Course	377	337	89.4	40	10.6
Science	13,086	11,279	86.5	1,757	13.5
Social Sciences and Humanities	6,143	5,278	85.9	865	14.1
Technology Education	5,007	4,385	87.6	622	12.4
TOTAL	117,344	102,986	-	15,398	-

AVERAGE	6,176	5,661	-	855	-
STDEVA	6,601	4,682	-	939	-
Note: excluded from this table are courses with subject codes “K”, “O” and “Y” as they are not listed in the curriculum course list. Subject areas “K” and “O” offered few course offerings and all three areas contained either empty or mostly suppressed values in the pass/fail columns. Therefore, the totals will be different from the totals listed in Table 9.					
Source: Ontario 2011					

In Table 17 below, the number of course attempts and percent of failures is presented for SPP on the far right side of the table. The other student populations groups are also included for comparison.

Table 17 – Total number of attempts and percent of failures by curriculum subject area in Ontario for SPP and the other student populations

Subject area	TSP		SEP		ESLP		SPP	
	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail
The Arts	439,046	5.9	71,812	11	9,817	10.8	357,417	4.8
Business studies	204,575	7.2	25,839	13.1	5,474	13.2	173,262	6.1
Canadian and World Studies	682,854	7.4	106,406	12.9	14,527	11.6	561,921	6.4
Classical studies and international languages	23,150	6.1	2,498	11.7	515	12.8	20,137	5.2
Computer studies	28,376	6.8	3,952	10.9	542	12.7	23,882	6
English	693,234	8.5	113,562	12.4	4,865	13.1	574,807	7.6
English Literacy Development (ELD)	2,218	21.9	189	12.2	797	17.4	1,232	26.3
English Second Language (ESL)	23,374	13.7	407	21.9	22,967	13.7	0	-
French	225,341	3.5	21,715	6.3	1,823	6.6	201,803	3.2
Guidance and Career Education	240,295	10.9	51,859	14.1	6,467	13.7	181,969	9.9
Health and Physical	392,085	5.5	66,496	9.8	8,389	8.8	317,200	4.5
Interdisciplinary studies	23,832	7.6	3,100	10.8	123	14.6	20,609	7.1
Mathematics	673,712	11.7	104,004	15.1	16,420	17.2	553,288	10.9
Native Languages	1,426	20	379	24.8	-	-	1,047	18.2
Native studies	3,864	14.9	829	23.8	5	0	3,030	12.5
Ontario Secondary School Literacy Course	13,261	12.6	6,154	12.7	377	10.6	6,730	12.6
Science	627,081	7.3	85,128	11.2	13,086	13.5	528,867	6.5
Social Sciences and Humanities	432,159	7	62,216	11.8	6,143	14.1	363,800	6.1
Technology Education	349,660	7.7	86,441	12.2	5,007	12.4	258,212	6
TOTAL	5,079,543	-	812,986	-	117,344	-	4,149,213	-

Note: excluded from this table are courses with subject codes “K”, “O” and “Y” as they are not listed in the curriculum course list. Subject areas “K” and “O” offered few course offerings and all three areas contained either empty or mostly suppressed values in the pass/fail columns.

Note: Because of the way SPP is calculated (by subtracting SEP and ESLP from TSP) the number of SPP attempts is higher than expected due to the lower than expected 10,000 course passes identified in the SEP table.

Source: Ontario 2011

Comparing across the four student groups

Looking at Table 17, the fail rate for mathematics is consistently high across the student populations — TSP (11.7%), SEP (15.1%), ESL (17.2%), and SPP (10.9%) — and the subject area also has a high number of course failures at 78,824 (673,712 attempts * 11.7% fail rate) compared to other main subject areas. English, Canadian and World Studies, and Science come in second, third and fourth for having high fail rates and course attempts across the population groups. It is noteworthy that the Ontario Secondary School Literacy Course is a remedial course for students who did not pass the initial OSSLT test. According to the numbers in Tables 14-17, 1,670 students failed the course, 782 or nearly half (46.8%) were students receiving special education services (782), 40 students (2.4%) were students receiving ESL and 848 were standard pupils (50.8%). That special need students represent about 17.6% of total enrolments and ESL students 2.4% in 2008–09 (see Table 9, Chapter 4) means, special needs students are overrepresented in the number of failures.

The **specialty** subject areas have the highest fail rates across the student population groups. Despite the high fail rates, the total number of course attempts for all five specialty subject areas totals only 44,143 (Native Language: 1,426, Native Studies: 3,864, ESL: 23,374, ELD: 2,218, OSSLC: 13,261) which means that attempts in these five areas make up less than 1% of total course attempts (the total number of course attempts in 2008–09 for TSP is 5,082,543). Still the fail rates for these speciality courses is alarming, especially since one of the arguments for having such courses is to appeal to the special learning needs of students considered at-risk.

5.3 Failure by course type and grade level

This section of analysis breaks out the pass/fail rates for secondary courses by course type – Academic and Applied (Grade 9 and 10), University, University/College, College, Workplace (Grade 11 and 12) and Open — and grade level.

Table 18 – Total number of course attempts broken out by course type and grade level for TSP, SEP, ESLP, and SPP

Subject area	TSP		SEP		ESLP		SPP	
	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail
Grade 9 – Academic	521,403	3.8	37,338	5.6	7,624	10.3	476,441	3.6
Grade 9 – Applied	250,520	12.8	75,356	14.2	8,588	15.9	166,576	11.9
Grade 9 – Open	514,720	5.1	105,809	9.6	14,636	11	394,275	3.6
subtotal	1,286,643	6.1	218,503	9.7	30,848	12.2	1,037,292	4.9
Grade 10 – Academic	452,607	5.4	34,152	9.6	9,116	11.9	409,339	4.9
Grade 10 – Applied	216,226	16.3	59,704	16.3	6,338	15.5	150,184	16.3
Grade 10 – Open	773,244	7.7	145,466	13.7	21,017	11.6	606,761	6.15
subtotal	1,442,077	8.2	239,322	13.8	36,471	12.3	1,166,284	7
Grade 11 – University	355,323	5.9	24,299	6.4	5,453	13.5	325,571	5.8
Grade 11 – University/College	334,713	7.3	36,420	11.2	4,417	13.7	293,876	6.7
Grade 11 – College	214,678	13.3	44,073	15.1	2,600	17.1	168,005	12.8
Grade 11 – Workplace	83,850	14.6	36,151	15.5	857	17.3	46,842	13.9
Grade 11 – Open	283,452	10.1	54,896	14.4	4,956	13.7	223,600	9
subtotal	1,272,016	9.1	195,839	13.1	18,283	14.3	1,057,894	8.2
Grade 12 – University	470,531	5.9	32,594	6.2	2,139	12.1	435,798	5.8
Grade 12 – University/College	215,453	5.6	20,215	8.6	897	12.8	194,341	5.3
Grade 12 – College	142,281	11.1	26,516	12.5	839	13.3	114,926	10.7
Grade 12 – Workplace	32,425	11.1	13,706	12.2	177	21.5	18,542	10.1
Grade 12 – Open	99,310	11.1	25,773	13.2	1,490	14.2	72,047	10.3
subtotal	960,000	7.3	118,804	10.2	5,542	13.2	835,654	6.9
TOTAL	4,960,736	-	772,468	-	91,144	-	4,097,124	-

Note: filters were set to include all courses ending in D (Academic), P (Applied), U (University), M (University/College), C (College), E (Workplace), O (Open).
Courses were omitted ending in any other letter or number, including: L, K, R, T,H

Comparing across the student groups

For **TSP**, the fail rates for Academic, University, and University/College are below the benchmark fail rate of 7.9%. Applied, College, and Workplace are above the benchmark.

For **SPP**, course failure is less common in Academic, University, and University/College courses and for Open level courses in Grades 9 and 10 (all below the 7.9 benchmark). Fail rates for Applied, College, and Workplace are all greater than 7.9%.

For **SEP** and **ESLP** students, fail rates are consistently above the 7.9% benchmark (with the exception of Grade 9 Academic and Grades 11 and 12 University for special education students). ESLP fail rates are greater than special education fail rates, though fewer overall course attempts, which means less numbers of failures overall.

The fail rate is highest in Grades 10 and 11 across the student populations. Grade 10 is the year with the highest number of course attempts. Between Grades 10 and 11 the number of course attempts begins to decrease, possibly a sign that students are enrolling in fewer courses in senior grades and also dropping out of secondary school. Open courses are the second most heavily enrolled course level across the student populations in Grades 9 and 10, declining in numbers in Grades 11 and 12. By Grade 12, course attempts across all student populations converge at the University level, followed closely by University/College and Open.

A troubling finding in this section is that the number of course failures conflict with the stated aims of having “streamed” course pathways in secondary schools. With the introduction of the new curriculum in 2000, the ministry notes that “...[t]he new system of courses is intended to enable students to choose courses that are suited to their strengths, interests, and goals” (Ontario, 2000, p. 4). One would guess then that fail rates would be similar across the course levels, but fail rates are all above the 7.9% benchmark for Applied, College and Workplace type courses, and fail rates for SEP and ESLP are generally higher for all course types compared to SPP, including academic. These numbers add weight the research finding and policy push by OECD that education systems should “avoid early tracking [in lower secondary] and defer student selection to upper secondary” (OECD, 2012, p. 12).

5.4 Failure by courses within curriculum subject areas

The finding that certain subject areas have more failures is also true for certain courses within these subject areas and at certain grade levels. In this section, the analysis looks at courses for two main subject areas (English and mathematics) across course and grade levels.

Subject area: English

Beginning with English, the table below shows the fail rate for English courses offered in English public and Catholic boards (courses beginning with “ENG”) and French public and Catholic boards (courses beginning with “EAE”).

Table 19 – Number of attempts and fail rate for English courses across the student population groups

	TSP		SEP		ESLP		SPP	
	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail
ENG1D – Gr 9, Academic	106,900	3.6	7,883	5.6	372	6.7	98,645	3.4
ENG1P – Gr 9, Applied	41,427	13.8	14,754	13.1	257	17.9	26,416	14.2
ENG1L – Gr 9, Local credit	9,970	20	7,996	16.7	62	16.1	1,912	34
subtotal	158,297	7.3	30,633	12.1	691	11.7	126,973	6.1
EAE1D – Gr 9, Academic	4,070	0.9	344	3.8	-	-	3,726	0.6
EAE1P – Gr 9, Applied	1,455	4.1	508	5.3	-	-	947	3.4
EAE1L – Gr 9, Local credit	239	6.3	170	5.9	-	-	69	7.2
subtotal	5,764	1.9	1,022	4.9	-	-	4,742	1.3
ENG2D – Gr 10, Academic	106,292	4.4	8,029	6.3	1,075	8.9	97,188	4.2
ENG2P – Gr 10, Applied	44,983	16.2	13,899	14.8	619	17.1	30,465	16.8
ENG2L – Gr 10, Local credit	7,889	18.9	6,286	16.3	44	45.5	1,559	28.3
subtotal	159,164	8.5	28,214	12.7	1,738	12.8	129,212	7.5
EAE2D – Gr 10, Academic	3,909	1.1	320	4.7	-	-	3,589	0.8
EAE2P – Gr 10, Applied	1,573	4.9	518	6.2	-	-	1,055	4.3
subtotal	5,482	2.2	838	5.6	-	-	4,644	1.6
ENG3U – Gr 11, University	99,175	5.5	6,702	6.7	735	12	91,738	5.4
ENG3C – Gr 11, College	53,134	16.4	13,023	16.2	414	12.3	39,697	16.5
ENG3E – Gr 11, Workplace	7,892	20	5,402	17	36	27.8	2,454	26.6
subtotal	160,201	9.8	25,127	13.8	1,185	12.6	133,889	9.1
EAE3U – Gr 11 University	3,401	1.4	252	6	-	-	3,149	1.1
EAE3C – Gr 11, College	1,738	4.5	449	5.3	-	-	1,289	4.2
EAE3E – Gr 11, Workplace	126	14.4	90	11.1	-	-	36	22.2

subtotal	5,265	2.8	791	6.2	-	-	4,474	2.1
ENG4U – Gr 12, University	86,640	5.7	5,723	5.8	113	13.2	80,804	5.7
ENG4C – Gr 12, College	55,996	13.1	11,532	13.2	179	19	44,285	13
ENG4E – Gr 12, Workplace	4,764	15.7	3,204	14.2	23	21.7	1,537	18.8
subtotal	147,400	8.8	20,459	11.3	315	17.1	126,626	8.4
EAE4U – Gr 12, University	2,604	1.7	150	3.3	-	-	2,454	1.5
EAE4C – Gr 12, College	1,588	5.3	320	4.7	-	-	1,268	5.4
EAE4E – Gr 12, Workplace	56	5.4	17	0	-	-	39	7.7
subtotal	4,248	3.1	487	4.1	-	-	3,761	2.9
TOTAL	645,821	8.4	107,571	12.3	3,929	12.9	534,321	7.59

Note: There were no course enrolments for students identified as ESL in French and Catholic boards, so there are no numbers to report.

Subject area: Mathematics

This section focuses on the number of course attempts and the fail rate for specific math courses offered in all school boards and across all student population groups. The data is examined by grade and course level.

Table 20 – Number of attempts and fail rate for mathematics courses across the student population groups

Subject area	TSP		SEP		ESLP		SPP	
	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail	# of attempt	% fail
MPM1D – Gr 9, Academic	106,113	6.7	7,522	8.7	2,625	12.7	95,966	6.4
MFM1P – Gr 9, Applied	52,947	16.8	15,330	18.8	2,191	24.2	35,426	15.5
MAT1L – Gr 9, Local Credit	14,769	19.2	9,915	15.5	937	25	3,917	27.3
subtotal	173,829	10.8	32,767	15.5	5,753	19.1	135,309	9.4
MPM2D – Gr 10, Academic	96,764	10.6	6,720	11.4	2,980	15.7	87,064	10.3
MFM2P – Gr 10, Applied	63,026	20.3	14,050	22.4	1,872	18.4	47,104	19.7
MAT2L – Gr 10, Local Credit	12,329	16.8	8,027	14.6	418	17.9	3,884	21.3
subtotal	172,119	14.6	28,797	17.7	5,270	16.8	138,052	13.8
MCR3U – Gr 11, University	67,107	8.6	4,434	7.5	1,958	14.3	60,715	8.5
MBF3C – Gr 11, College	51,118	17.8	9,768	18.4	826	21.1	40,524	17.6
MCF3M – Gr 11, University/College	35,870	13.4	2,678	17	724	18.8	32,468	13
MEL3E – Gr 11, Workplace	19,808	17.7	9,695	15.9	292	18.2	9,821	19.4
subtotal	173,903	13.3	26,575	15.5	3,800	16.9	143,528	12.8
MCV4U – Gr 12, University	31,068	5.4	2,378	4.5	323	6.8	28,367	5.4

MDM4U – Gr 12, University	32,538	5.4	1,823	6.8	241	16.2	30,474	7
MHF4U – Gr 12, University	50,162	7.2	3,360	5.7	719	11.5	46,083	7.2
MCB4U – Gr 12, University	-	-	-	-	-	-	-	-
MCT4C – Gr 12, University	4,606	9.5	508	14.2	72	6.9	4,026	8.9
MAP4C – Gr 12, College	29,632	10.7	4,923	12.2	206	18	24,503	10.4
MEL4E – Gr 12, Workplace	5,832	14	2,881	12.6	44	22.7	2,907	15.2
subtotal	153,838	7.8	15,873	9.2	1,605	12.2	136,360	7.6
TOTAL	673,689	11.7	104,012	15.1	16,428	17.2	553,249	10.9

Comparing the subject areas of English and mathematics

English Academic and University level course fail rates are low compared to other course levels, but the fail rate (generally speaking) is higher in grades 11 and 12 than in grades 9 and 10 suggesting students enrolled in Academic/University level courses could benefit from some type of support (a non-costly intervention, such as lunch or break period study/tutoring sessions) in the final years. I mention this to illustrate that even though failure occurs in higher numbers and at a higher rate for other course levels (e.g., Applied, College) and in the lower grade levels, failure can also be an issue in Academic and University level courses in the higher grade levels.

In Grades 9 and 10, English local credit courses have the highest fail rates, and in Grades 11 and 12 Workplace has the highest fail rate. SPP students have lower fail rates for Academic and University level courses but comparable fail rates to special education and ESL student for Applied, College and Workplace.

Local, Applied, and Workplace mathematics courses have high fail rates, nearly double or triple the 7.9% benchmark across all the student populations. Academic and university level courses have the lowest fail rates across grade and course levels. Unique to math, the fail rates for Grade 10 Academic, Grade 11 and some Grade 12 University level courses are above the 7.9% benchmark failure rate. This means that, generally speaking, students enrolled in math have a greater chance of failing than in any other subject area, particularly in later grades and at any course level.

5.5 Chapter summary

The four subject areas with the most course failures are math, English, Canadian and World Studies, and Science. Special education and ESL students are far more likely to fail an enrolled course in any subject area compared to SPP. Mathematics and English have the highest number of course failures compared to any other subject area. Indeed, the fail rate in mathematics is particularly high across all student populations, at any grade and course level, when compared to English and other main subject areas. This finding raises a question: why are fail rates for certain subject areas higher than for others? It is possible to hypothesize. English courses are requisite in Ontario until Grade 12. Mathematics is only a requisite course until Grade 10 but most University and College programs require a competency in mathematics higher than a Grade 10 level. This could mean that many students are enrolling in math and English courses they otherwise would not take; that is, they would not enrol in the course if they were not required. That these two courses are important requisites that students are not internally motivated to take might partly explain why the fail rates are higher for these two subject areas.

Academic and University courses have lower fail rates compared to Applied, College and Workplace courses across the student population groups and grade levels. That Applied, College and Workplace level courses have consistently higher fail rates raise an equity issue and questions as to why this is the case. A partial explanation could be that these course levels are more heavily enrolled by SEP and ESLP students, two groups with much higher fail rates compared to SPP. It is possible with the data sets provided by the Ontario Ministry of Education to explore this hypothesis in more detail but it deviates from the main thesis of this study, which is to determine the total cost of failure. This would be a good follow-up question for further research.

In short, the well-above the benchmark fail rate in specialty subject areas (e.g., Aboriginal) and in Applied, College and Workplace level courses suggest that attempts to provide specialty subjects and streamed programming geared at students at-risk is not succeeding in helping these students to earn their course credit. All of these points will be revisited in Chapter 7.

Chapter 6

The Costs of Failure

6.1 Introduction

Chapter 6 answers sub-question three of the study by attaching a cost to the course failures presented in the previous two chapters.

6.2 Analysis

In Tables 21 through 26 below, the cost of course failure is provided for TSP, SEP, and ESLP/SPP at the system level and for the four school board types (i.e., English Public, English Catholic, French Public, French Catholic). The cost figures below cover gross and direct instructional and school operational costs, consistent with the approach described in Chapter 3.

Table 21 – Gross cost of failure for TSP

School board	Gross Cost of course failure	Gross Cost of instruction and school operations ²¹	Gross Cost of failure as % of Gross instructional and operational budget for TSP ²²	Average cost per course
All 70 school boards	\$472,729,698	\$6,161,170,319	7.7%	\$1,183 ²³
EN Public	\$363,690,841	\$4,151,601,104	8.8%	\$1,193
EN Catholic	\$100,487,999	\$1,727,331,454	5.8%	\$1,123
FR Public	\$3,413,052	\$77,843,630	4.4%	\$1,768
FR Catholic	\$5,137,807	\$204,394,131	2.5%	\$1,514

²¹ Secondary school instructional and school operational costs only.

²² The cost of failure is calculated down to the cost per individual course in each school board. Therefore, one might be expected that the % of the instructional and operational budget tied to failure would reflect the fail rate in a given school board type. As expected, these numbers are almost identical to the fail rate for each school board type (see Table 11), with the variance accounted for in the different course costs.

²³ Formula: Board average instructional and operational cost per pupil for one school year / average number of secondary credits completed by a student in one year = school board average instructional and operational cost per secondary course.

Table 22 – Direct cost of failure for TSP

School board	Direct Cost of course failure	Gross Cost of instruction and school operations	Direct Cost of failure as % of Gross instructional and operational budget for TSP	Average cost per course
All 70 school boards	\$344,667,627	\$6,161,170,319	5.6%	\$862
EN Public	264,090,685	\$4,151,601,104	6.4%	\$866
EN Catholic	\$74,935,759	\$1,727,331,454	4.3%	\$837
FR Public	\$2,265,606	\$77,843,630	2.9%	\$1,174
FR Catholic	\$3,375,577	\$204,394,131	1.65%	\$995

Table 23 – Gross cost of failure for SEP

School board	Gross Cost of course failure	Gross Cost of instruction and school operations	Gross Cost of failure as % of Gross instructional and operational budget for SEP	Average cost per course
All 70 school boards	\$178,541,274	\$1,649,410,912	10.82%	\$1,767
EN Public	\$132,816,706	\$1,143,573,916	11.61%	\$1,783
EN Catholic	\$41,481,288	\$437,524,188	9.48%	\$1,678
FR Public	\$1,662,895	\$17,335,951	9.59%	\$2,602
FR Catholic	\$2,580,384	\$50,976,858	5.06%	\$2,149

Table 24 – Direct cost of failure for SEP

School board	Direct Cost of course failure	Gross Cost of instruction and school operations	Direct Cost of failure as % of Gross instructional and operational budget for SEP	Average cost per course
All 70 school boards	\$136,383,042	\$1,649,410,912	8.27%	\$1,350
EN Public	\$100,079,756	\$1,143,573,916	8.75%	\$1,343
EN Catholic	\$33,180,069	\$437,524,188	7.58%	\$1,342
FR Public	\$1,167,490	\$17,335,951	6.73%	\$1,827
FR Catholic	\$1,955,726	\$50,976,858	3.84%	\$1,628

Table 25 – Gross cost of failure for ESLP/SPP

School board	Gross Cost of course failure	Gross Cost of instruction and school operations	Gross Cost of failure as % of Gross instructional and operational budget for ESLP/SPP	Average cost per course
All 70 school boards	\$314,353,049	\$4,511,759,407	6.97%	\$1,052
EN Public	\$244,021,162	\$3,008,027,188	8.11%	\$1,059
EN Catholic	\$65,285,439	\$1,289,807,266	5.06%	\$1,008
FR Public	\$2,003,718	\$60,507,679	3.31%	\$1,552
FR Catholic	\$3,042,730	\$153,417,273	1.98%	\$1,388

Table 26 – Direct cost of failure for ESLP/SPP

School board	Direct Cost of course failure	Gross Cost of instruction and school operations	Direct Cost of failure as % of Gross instructional and operational budget for ESLP/SPP	Average cost per course
All 70 school boards	\$228,619,134	\$4,511,759.407	5.07%	\$765
EN Public	\$175,248,455	\$3,008,027,188	5.83%	\$761
EN Catholic	\$50,010,373	\$1,289,807,266	3.88%	\$772
FR Public	\$1,307,230	\$60,507,679	2.16%	\$1,013
FR Catholic	\$2,053,075	\$153,417,273	1.34%	\$937

Overall, Tables 21 through 26 reveal that English public boards have a greater percentage of their instructional and operational budget tied to failure consistently across the student populations. French Catholic boards have the smallest percentage of their instructional and operational budget tied to failure, followed by French public. French public schools have the highest average cost per course failure, followed by French Catholic.

Reporting both gross and direct costs beyond this stage in the analysis resulted in cumbersome tables or several large repeating tables. I decided to report on gross costs only to make reporting simpler and less confusing. The supporting rationale is this: gross costs (direct and indirect) in this study are school level costs. Reporting using only gross costs overestimates the cost of failure but only slightly because of the conservative choice to include only school level costs in the cost estimates (recall more indirect costs, such as school board administration, were excluded). Reporting only direct costs would omit the expense of principals and vice principals

from the cost estimates, which seemed unreasonable given that these costs are part of the school supports that make it possible to deliver education.

To get a sense of how much of total gross instructional and operational spending is allocated to course failure for each school board category and each student group, see Table 27 below. The amount in each cell is calculated by dividing the total gross cost of failure for a particular student group (TSP, SEP, ESLP/SPP) by the corresponding total gross cost of instruction and operation for TSP for the respective school board category (see Tables 21 through 26 for source figures).²⁴

Table 27 – Cost of failure as a percentage of gross budget by school board category

School board category	TSP	SEP	ESLP/SPP
All 70 school boards	7.7%	2.9%	5.10%
EN Public	8.8%	3.2%	5.88%
EN Catholic	5.8%	2.4%	3.78%
FR Public	4.4%	2.14%	2.57%
FR Catholic	2.5%	1.26%	1.49%

One observation from Table 27 is that the percentage of gross instructional and operational spending allocated to course failure for ESLP/SPP is greater than SEP in each school board category, this in spite of the higher average cost of failure per course for SEP. That said given that SEP is a much smaller population than ESLP/SPP the percentage of gross budget spent on course failure for SEP is not insignificant. A possible implication of this finding is that administrators may want to dedicate more attention to reducing the fail rate for special needs students as a way of improving both efficiency and equity.

It is also possible to look at the percentage of gross budget spent on failure by school board, see Table 28 below.

²⁴ For example, 7.76% for TSP was calculated by dividing \$477,863,173 / \$6,161,170,319; 2.9% for SEP was calculated by dividing \$178,541,274/\$6,161,170,319

Table 28 – Percentage of gross budget spent on failure by school board²⁵

School Board #	TSP	SEP	ESL/SPP	School Board #	TSP	SEP	ESL/SPP
1	9.3%	3.5%	6.1%	36	4.8%	3.4%	2.4%
2	9.4%	3.2%	6.6%	37	5.1%	2.2%	3.5%
3	12.8%	3.8%	9.3%	38	4.2%	2.2%	2.4%
4	9.3%	3.7%	5.8%	39	2.2%	1.1%	1.3%
5	12.8%	4.8%	8.6%	40	4.9%	1.6%	3.5%
6	5.7%	2.9%	3.5%	41	3.9%	1.4%	2.9%
7	6.9%	2.9%	4.5%	42	3.8%	2.3%	1.9%
8	9.9%	4.4%	6.0%	43	9.4%	3.6%	6.1%
9	6.6%	2.9%	3.9%	44	3.9%	1.9%	2.3%
10	2.6%	1.2%	1.6%	45	3.4%	1.4%	2.3%
11	6.2%	2.8%	3.9%	46	7.1%	2.6%	4.9%
12	5.6%	2.4%	3.5%	47	7.6%	3.4%	4.8%
13	8.6%	3.6%	5.6%	48	7.5%	3.7%	4.7%
14	13.3%	4.2%	9.3%	49	3.3%	1.3%	2.3%
15	9.4%	3.5%	6.3%	50	5.8%	2.5%	3.8%
16	6.6%	3.4%	3.7%	51	4.1%	2.0%	2.6%
17	4.9%	1.8%	3.4%	52	6.0%	3.3%	3.1%
18	4.3%	1.7%	2.9%	53	3.3%	1.4%	2.2%
19	8.1%	3.2%	5.3%	54	4.6%	1.5%	3.3%
20	7.5%	2.9%	4.9%	55	3.3%	2.0%	1.6%
21	9.7%	3.3%	6.7%	56	4.8%	1.8%	3.3%
22	3.99%	1.4%	2.8%	57	4.5%	2.9%	2.3%
23	13.6%	4.1%	9.7%	58	2.9%	1.7%	1.6%
24	6.65%	1.9%	4.8%	59	9.4%	5.9%	3.9%
25	10.6%	3.2%	7.7%	60	4.7%	3.3%	1.9%
26	7.7%	3.6%	4.7%	61	4.9%	1.5%	3.7%
27	6.2%	3.1%	3.6%	62	3.0%	1.2%	2.0%
28	7.6%	3.8%	4.3%	63	2.6%	1.2%	1.6%
29	3.6%	1.6%	2.2%	64	3.9%	2.1%	2.3%
30	3.6%	1.3%	2.4%	65	2.0%	0.7%	1.4%
31	8.9%	4.0%	5.4%	66	5.9%	2.6%	3.6%
32	8.0%	3.4%	5.2%	67	2.3%	1.2%	1.4%
33	6.2%	4.3%	2.6%	68	2.7%	1.2%	1.8%
34	4.8%	2.5%	2.7%	69	1.9%	1.3%	0.9%
35	6.7%	2.9%	4.1%	70	2.7%	1.4%	1.5%
				MEAN	7.7%	2.9%	5.1%

²⁵ Note: adding percentage SEP and ESLP/SPP will not total TSP.

Looking across all the student subpopulations, the majority of school boards spend a greater percentage of their gross budget on failure for ESLP/SPP students, with only 10 exceptions: school boards 33, 36, 42, 52, 55, 57, 58, 59, 60, 69. In the cases of boards 52 and 58, the percentage is only slightly higher. In the other cases, the percentage is as little as .5% to 1.6% greater. Also noteworthy, school boards 2, 3, 14, 21, 23, 24, 25 stands out with a percentage spent on ESLP/SPP at least double that of SEP.

6.3 Cost of failure by subject area

In this section, the cost of course failure is broken out by subject area. Note the average cost per course used to estimate the cost are as follows: \$1,183 (TSP), \$1,767 (SEP), \$1,052 (ESL/SPP).

Table 29 – Number and cost of failure by subject area and student population groups

Subject area	TSP		SEP		ESLP/SPP	
	# of fails	Cost of failures	# of fails	Cost of repetitions	# of fails	Cost of repetitions
The Arts	26,039	\$30,804,137	7,872	\$13,909,824	18,167	\$19,111,684
Business studies	14,702	\$17,392,466	3,385	\$5,981,295	11,317	\$11,905,484
Canadian and World Studies	51,486	\$60,907,938	13,685	\$24,181,395	37,801	\$39,766,652
Classical studies and international languages	1,409	\$1,666,847	292	\$515,964	1,117	\$1,175,084
Computer studies	1,937	\$2,291,471	430	\$759,810	1,507	\$1,585,364
English	58,580	\$69,300,140	14,043	\$24,813,981	44,537	\$46,852,924
English Literacy Development (ELD)	486	\$574,938	23	\$40,641	463	\$487,076
English Second Language (ESL)	3,199	\$3,784,417	89	\$157,263	3,199	\$3,365,348
French	7,877	\$9,318,491	1,369	\$2,419,023	6,508	\$6,846,416
Guidance and Career Education	26,153	\$30,938,999	7,290	\$12,881,430	18,863	\$19,843,876
Health and Physical	21,614	\$25,569,362	6,500	\$11,485,500	15,114	\$15,899,928
Interdisciplinary studies	1,820	\$2,153,060	334	\$590,178	1,486	\$1,563,272
Mathematics	79,096	\$93,570,568	15,738	\$27,809,046	63,358	\$66,652,616
Native Languages	285	\$337,155	94	\$166,098	191	\$200,932
Native studies	577	\$682,591	197	\$348,099	380	\$399,760
Ontario Secondary School Literacy Course	1,670	\$1,975,610	782	\$1,381,794	888	\$934,176
Science	45,431	\$53,744,873	9,463	\$16,721,121	35,968	\$37,838,336
Social Sciences and	30,423	\$35,990,409	7,326	\$12,945,942	23,097	\$24,298,044

Humanities						
Technology Education	26,757	\$31,653,531	10,511	\$18,572,937	16,246	\$17,090,792
Note: this table excludes course subject areas having codes not listed in the Curriculum Guidebook.						

Key observations from the table above for TSP, SEP, ESLP/SPP, math stands out as having the highest number of failures for all three student groups (79,096; 15,738; 63,358) and the highest cost of repetitions (\$93,570,568; \$27,809,046; \$66,652,616) compared to all other subject areas. English comes in having the second highest number of repeats (58,580; 14,043; 44,537) and total cost (\$69,300,140; \$24,813,981; \$46,852,924). In third and fourth place are Canadian and World Studies and Science.

6.4 Cost of failure by grade level and courses

In this section, the cost of course failure is broken out by grade level. Note the average cost per course used to estimate the cost are as follows: \$1,183 (TSP), \$1,767 (SEP), \$1,052 (ESL/SPP) (same as above).

Table 30 – Cost of course failure by grade and course level

Grade	TSP		SEP		ESLP/SPP	
	# of fails	Cost	# of fails	Cost	# of fails	Cost
Grade 9 Academic	19,848	\$23,480,184	2,115	\$3,737,205	17,733	\$18,655,116
Grade 9 Applied	31,930	\$37,773,190	10,676	\$18,864,492	21,254	\$22,359,208
Grade 9 Open	26,112	\$30,890,496	10,172	\$17,973,924	15,940	\$16,768,880
Total Grade 9	77,890	\$92,143,870	22,963	\$40,575,621	54,927	\$57,783,204
Grade 10 Academic	24,216	\$28,647,528	3,263	\$5,765,721	20,953	\$22,042,556
Grade 10 Applied	35,181	\$41,619,123	9,777	\$17,275,959	25,404	\$26,725,008
Grade 10 Open	59,520	\$70,412,160	20,067	\$35,458,389	39,453	\$41,504,556
Total Grade 10	118,917	\$140,678,811	33,107	\$58,500,069	85,810	\$90,272,120
Grade 11 University	21,054	\$24,906,882	1,543	\$2,726,481	19,511	\$20,525,572
Grade 11 University/College	24,451	\$28,925,533	4,080	\$7,209,360	20,371	\$21,430,292
Grade 11 College	28,583	\$33,813,689	6,645	\$11,741,715	21,938	\$23,078,776
Grade 11 Workplace	12,234	\$14,472,822	5,587	\$9,872,229	6,647	\$6,992,644
Grade 11 Open	28,757	\$34,019,531	7,895	\$13,950,465	20,862	\$21,946,824
Total Grade 11	115,079	\$136,138,457	25,750	\$45,500,250	89,329	\$93,974,108
Grade 12 University	27,665	\$32,727,695	2,020	\$3,569,340	25,645	\$26,978,540
Grade 12 University/College	12,167	\$14,393,561	1,745	\$3,083,415	10,422	\$10,963,944
Grade 12 College	15,732	\$18,610,956	3,303	\$5,836,401	12,429	\$13,075,308

Grade 12 Workplace	3,589	\$4,245,787	1,675	\$2,959,725	1,914	\$2,013,528
Grade 12 Open	11,007	\$13,021,281	3,400	\$6,007,800	7,607	\$8,002,564
Total Grade 12	70,160	\$82,999,280	12,143	\$21,456,681	58,017	\$61,033,884

Looking at Table 30, Grades 10 is the most costly year in terms of course failure for TSP and SEP, with lower costs in Grades 11 and much lower costs in Grades 9 and 12. For ESL/SPP, Grades 11 is the most costly year in terms failure, followed closely by Grade 10, and much lower in Grades 9 and 12. Applied, College, and Open level courses are the most costly across grades for TSP, SEP and ESL/SPP, with the exception of Grade 12 University level having the highest number of failures and cost in Grade 12 for TSP and ESL/SPP.

In the next table the cost of failure are looked at by courses within the subject areas of English, math and English Second Language/Literacy Development. The same cost per course is used to calculate costs as in the tables above.

Table 31 – Cost by English course for all student populations

English courses ²⁶	TSP		SEP		ESLP/SPP	
	# fails	Cost	# fails	Cost	# fails	Cost
ENG1D – 9	3,858	\$4,564,014	443	\$782,781	3,415	\$3,591,528
ENG1P – 9	5,736	\$6,785,688	1,933	\$3,415,611	3,803	\$4,000,756
ENG1L – 9	1,995	\$2,360,085	1,334	\$2,357,178	661	\$695,372
EAE1D – 9	36	\$42,588	13	\$22,971	23	\$24,196
EAE1P – 9	59	\$69,797	27	\$47,709	32	\$33,664
EAE1L – 9	15	\$17,745	10	\$17,670	5	\$5,260
Total Grade 9	11,699	\$13,839,917	3,760	\$6,643,920	7,939	\$8,350,776
ENG2D – 10	4,696	\$5,555,368	503	\$888,801	4,193	\$4,411,036
ENG2L – 10	1,490	\$1,762,670	1,029	\$1,818,243	461	\$484,972
ENG2P – 10	7,280	\$8,612,240	2,062	\$3,643,554	5,218	\$5,489,336
EAE2D – 10	43	\$50,869	15	\$26,505	28	\$29,456
EAE2P – 10	77	\$91,091	32	\$56,544	45	\$47,340
Total Grade 10	13,586	\$16,072,238	3,641	\$6,433,647	9,945	\$10,462,140
ENG3C – 11	8,725	\$10,321,675	2,105	\$3,719,535	6,620	\$6,964,240
ENG3E – 11	1,581	\$1,870,323	918	\$1,622,106	663	\$697,476
ENG3U – 11	5,451	\$6,448,533	447	\$789,849	5,004	\$5,264,208
EAE3C – 11	78	\$92,274	24	\$42,408	54	\$56,808
EAE3E – 11	18	\$21,294	10	\$17,670	8	\$8,416

²⁶ D – Academic, P – Applied, L – Local credit, U – University, C – College, M – University/College, E – Workplace.

EAE3U – 11	49	\$57,967	15	\$26,505	34	\$35,768
Total Grade 11	15,902	\$18,812,066	3,519	\$6,218,073	12,383	\$13,026,916
ENG4C – 12	7,316	\$8,654,828	1,517	\$2,680,539	5,799	\$6,100,548
ENG4E – 12	750	\$887,250	456	\$805,752	294	\$309,288
ENG4U – 12	4,924	\$5,825,092	331	\$584,877	4,593	\$4,831,836
EAE4C – 12	84	\$99,372	15	\$26,505	69	\$72,588
EAE4E – 12	3	\$3,549	0	0	3	43,156
EAE4U – 12	43	\$50,869	5	8,835	38	\$39,976
Total Grade 12	13,120	\$15,520,960	2,324	\$4,106,508	10,796	\$11,357,392

Looking at Table 31 for cost of failure by English course, the main finding here is that the cost of failure for TSP and ESLP/SPP increases each year Grades 9, 10, and 11, and decreases in Grade 12. For SEP, the cost of failure remains stable in Grades 9, 10, and 11 and decreases in Grade 12. Also noteworthy is the amount spent on failure is higher (nearly double in Grade 11 and over double in Grade 12) for ESLP/SPP than SEP across the course grade levels

Table 32 – Cost of failure by course within the subject area of math for all school boards and student populations

Math courses	TSP		SEP		ESLP/SPP	
	# fails	Cost	# fails	Cost	# fails	Cost
MPM1D – 9	7,103	\$8,402,849	656	\$1,159,152	6,447	\$6,782,244
MFM1P – 9	8,898	\$10,526,334	2,879	\$5,087,193	6,019	\$6,331,988
MAT1L – 9	2,842	\$3,362,086	1,539	\$2,719,413	1,303	\$1,370,756
Total Grade 9	18,843	\$22,291,269	5,074	\$8,965,758	13,769	\$14,484,988
MPM2D – 10	10,231	\$12,103,273	767	\$1,355,289	9,464	\$9,956,128
MFM2P – 10	12,767	\$15,103,361	3,145	\$5,557,215	9,622	\$10,122,344
MAT2L – 10	2,072	\$2,451,176	1,171	\$2,069,157	901	\$947,852
Total Grade 10	25,070	\$29,657,810	5,083	\$8,981,661	19,987	\$21,026,324
MBF3C – 11	9,081	\$10,742,823	1,794	\$3,169,998	7,287	\$7,665,924
MCF3M – 11	4,806	\$5,685,498	456	\$479,712	4,353	\$4,579,356
MCR3U – 11	5,785	\$6,843,655	331	\$348,212	5,454	\$5,737,608
MEL3E – 11	3,503	\$4,144,049	1,543	\$2,726,481	1,960	\$2,061,920
Total Grade 11	23,175	\$27,416,025	4,124	\$6,724,403	19,054	\$20,044,808
MEL4E – 12	815	\$964,145	364	\$643,188	451	\$474,452
MAP4C – 12	3,185	\$3,767,855	601	\$1,061,967	2,584	\$2,718,368
MCB4U – 12	-		-	-	-	-
MCT4C – 12	436	\$515,788	72	\$127,224	364	\$382,928
MCV4U – 12	1,666	\$1,970,878	108	\$190,836	1,558	\$1,639,016
MDM4U – 12	2,302	\$2,723,266	124	\$219,108	2,178	\$2,291,256
MHF4U – 12	3,604	\$4,263,532	192	\$339,264	3,412	\$3,589,424
Total Grade 12	8,008	\$9,473,464	1,461	\$2,581,587	10,547	\$11,095,444

Looking at Table 32 for cost of failure by math courses, the main finding here is that the cost of failure increases in cost in Grades 9, 10, and 11 and decreasing significantly by grade 12 for the ESL/SPP and SPP. The cost of failure remains stable for SEP in Grades 9 and 10, decreasing slightly in Grade 11 and again in Grade 12. Overall, Grade 12 is the least costly year for mathematics across the grade levels (again, this is possibly attributed to mathematics no longer be a required course in later years and internally motivated students being the ones who enrol). Also noteworthy is the amount spent on failure is at least double and even four times as high for ESLP/SPP than SEP across the course grade levels

In the next table, the cost of failure is looked at for English Second Language and English literacy Development courses. Because the number of failures are so small, Table 33 lists only the number of failures for TSP (average cost per course \$1,183).

Table 33 – Cost of failure by English Second Language and English Literacy Development courses

Courses within English and Literacy Development	# fails	Cost
ELDAO – Level 1, ELD, Open Course	176	\$208,208
ELDBO – Level 2, ELD, Open Course	105	\$124,215
ELDCO – Level 3, ELD, Open Course	109	\$128,947
ELDDO – Level 4, ELD, Open Course	74	\$87,542
ELDEO – Level 5, ELD, Open Course	23	\$27,209
ESLAO – Level 1, ESL, Open Course	583	\$689,689
ESLBO – Level 2, ESL, Open Course	601	\$710,983
ESLCO – Level 3, ESL, Open Course	808	\$955,864
ESLDO – Level 4, ESL, Open Course	743	\$878,969
ESLEO – Level 5, ESL Open Course	465	\$550,095
Total	3,687	\$4,361,721

The main finding in table is that the total cost of failure for ESL/ELD courses across school boards is under \$4.5 M, which is not a major contributor to the nearly \$472M cost of failure.

6.5 Chapter summary

The total gross cost of failure across 70 school boards for TSP is estimated to be \$472,729,698 or 7.7% of gross cost of instructional and operational costs. The total direct cost of failure is

\$344,667,627 or 5.6% for TSP. The direct and indirect cost estimates provide a range for the cost of failure. The difference between the gross and direct costs is approximately \$128 million.

Overall, the amount spent on course failure varies considerably across school boards (over half spend upwards of 5% of their instructional and operational budgets). English public and Catholic school boards spend more than French boards, though the average cost per course is higher for French boards. For most school boards, the data would suggest placing a greater emphasis on reducing failure for ESLP/SPP because of its significant share of the total cost, except for 10 school boards where the data suggests reducing the number of SEP failures could be the priority.

With regard to subject area, mathematics is the most costly subject area at \$93,570,568, followed closely by English at \$69,300,140, and this is true across all student populations. Canada and World Studies is the third most costly subject area at \$60,907,938. The cost of failure for ESL and ELD was found to be immaterial across the school boards in light of the billions of dollars spent on instruction and school operations.

Chapter 7

Overall Findings, Limitations, Applications and Conclusion

7.1 Introduction

Chapter 7 pulls together the findings from Chapters 4, 5 and 6 to illustrate that failure has serious consequence for high school completion, with a high degree of waste in certain subject areas. This chapter also discusses the application of the findings for research, policy, and practice.

7.2 Overall findings

This section begins with a summary of the findings from Chapters 4, 5 and 6 and organizes the information in a way that answers the study's main question and three sub-questions. The section ends with a look at the implications of the findings for Ontario's public secondary school system.

The study's main question: how much money does failure in secondary schools cost the Ontario public education system annually?

In 2008–09, the total gross cost of failure for Ontario's public education system is estimated to be \$472,729,698 or 7.7% of total instructional and operational spending. The total direct cost of failure across school boards was \$344,667,627 or 5.6%.

How many secondary course failures were there in Ontario, 2008–09?

The vast majority of enrolled secondary courses are passed and this is true across all the student populations. Looking at TSP, the average pass rate is 92.1% which means 4,682,535 enrolled secondary courses are passed.²⁷

²⁷ $92.1\% = 4,682,535 / 5,082,543$

Reassuring as these numbers are they indicate that 7.9% of enrolled secondary courses are failed (or 400,008 courses).²⁸ While 7.9% appears to be small, it means that the average student will have more than 2 course failures over four years (30 credits * 7.9% fail rate). The fail rate for TSP (7.9%), SEP (12.3%), ESLP (13.1%), and SPP (6.8%) indicate that course failure is indeed connected to the services students receive. For example, special need and ESL students are nearly twice as likely to repeat a course as their SPP counterpart.

Another significant finding from this chapter has to do with school boards. Regarding school board type, the average failure per student is higher in English public boards compared to the other three, with the French boards having the lowest average cost. It is not possible with these data to explain why this is the case, but it may be related to teacher/student ratios in the classroom or pedagogical approaches used in the different boards. Speaking of individual school boards, the varied percentages of failed course attempts could suggest that that some boards may be struggling to provide services to SEP and ESLP, resulting in higher course failures. Overall, the tables in Chapter 4 reveal an obvious but important reminder that course failure is a reality in every school board.

How do fail rates break out by factors known to be related (subject area, course type, grade level, courses, and additional services)?

Fail rates vary considerably across subject areas. English and mathematics have high fail rates (8.5% and 15.1%) compared to the other main subject areas. These subject areas also have high course enrolments relative to other subject areas, resulting in 58,580 English and 79,096 math course failures for TSP across the province.

All grades are affected by failure, but Grades 10 and 11 have the highest fail rates with the largest drop in course attempts between the two. It is reasonable to hypothesize that the drop between grades coincides with students enrolling in fewer courses as they advance into upper secondary and is also an indication that students are beginning to drop out of school.

²⁸ $7.9\% = 400,008 / 5,082,543$

All course levels, including academic, have students failing courses. Applied (Grade 9 and 10), College, Workplace and Open level courses (Grade 11 and 12) have the greater number of student course failures. A teacher working in a secondary school may say that this is already common knowledge for practitioners, but the numbers offer some nuance. The finding indicates that efforts to reduce failure might be most effective if resources and supports were targeted at Grades 9, 10 and 11 mathematics courses, and Grades 10, 11, and 12 for English — where failure rates are highest.

A related and more striking finding from this chapter has to do with the fail rate in specialty subject areas being well above the benchmark (e.g., Aboriginal languages), also true for Applied, College and Workplace level courses. Previously discussed, Ontario introduced new curriculum back in 2000 with the aim of “enable[ing] students to choose courses that are suited to their strengths, interests, and goals” (Ontario, 2000, p. 4). The numbers in this chapter suggest that ministry’s current offering of specialty subjects and attempt at offering streamed programming geared at students at-risk is not producing the intended results. Further, the tables in Chapter 5 consistently point to SEP and ESLP students failing at much higher rates in all subject areas and across grade levels. This means that the millions and billions of dollars spent each year providing services to these student groups are not levelling the fail rates, compared to SPP. This finding could have implications for the delivery of secondary school programs and services in Ontario secondary schools, particularly if Ontario hopes to continue reducing school failure and improving the high-school graduation rate.

What proportion of board budgets is accounted for by failed courses?

The percentage of each school board’s budget spent on course failure varies considerably with over half spending upwards of 5% of their school instructional and operational budgets. English public boards have the highest overall cost of failure, which make sense since 67% (478,223/709,099) of secondary students in Ontario are enrolled in English public secondary schools. The cost per course is higher for the two French boards compared to English boards as they have higher per student funding for various reasons. The numbers in Chapter 6 suggest that English boards have a greater urgency to address failure but all boards would benefit from

reducing fail rates. Overall, these estimates demonstrate that failure in schools is wasteful to a high degree.

The average cost of failure per course for TSP across 70 school boards is \$1,183. Using the estimated number of course failures for English and math above (58,580 and 79,096), this means approximately \$162 million is tied to course failure in English and math alone. Course repetitions for special needs students across school boards costs \$1,767, nearly double the cost per course for ESLP/SPP at \$1,052. This confirms one of the key assumptions of the study that a course failed by a student who receives additional services costs more than students who does not.

7.3 Limitations

School boards have considerable discretion in how they spend their non-enveloped allocations and the budget estimates reported back to the ministry in Schedule 10 are only estimates. Ministry officials have confirmed that there is no direct tie between the expenses listed in Schedule 10 and the amount school boards receive or report back, with the exception of enveloped funds. This means that even though the most accurate possible figures were used to attach costs to course failures, they remain only estimates and not “final” or “exact” figures. The second limitation of this study is that I have only one year of data, so the patterns might be different in other years.

7.4 Implications and applications

When Levin (2008) estimated the cost of failure in Ontario public secondary schools to be \$250 million, he already argued that this was wasteful to a high degree. This study finds that the cost of failure is nearly double his estimate, affirming that indeed Ontario has considerable resources tied to failing secondary students.

The implications of these estimates for graduating secondary school on time are significant. In the 2008–09 school year 7.9% of course registrations resulted in failure yet 27% of Ontario students did not graduate from high school in four years (73% graduation rate in four years) (Global News, 2012). Assuming the 7.9% failure rate has remained stable over time, these numbers demonstrate how a low rate of failure can compound over many years with serious consequence to high school completion.

One of the findings of the study is that reducing all course failures in the province could result in efficiencies up to \$472 million. Even though the average cost approach was used to generate this estimate (as opposed to marginal cost), it is easy to envision the potential efficiencies that could be realized in a secondary school by reducing course failures. For example, a typical Ontario secondary school has an average enrolment of 900 students. The average course failure per student enrolled is 0.56 (see Chapter 4, Table 12). This means that in a typical secondary school, there are on average 504 (900×0.56) failed courses in a school year. In Ontario, a typical secondary classroom has a classroom teacher class size ratio of 22:1 (Ontario 2008) and a typical secondary school teacher in Ontario teaches 6 courses in a year. This means that each secondary school teacher teaches, on average, to 132 course enrolled students in a year. Therefore, it stands to reason that if you could prevent 132 course failures, you could realize an efficiency of one secondary school teacher.

By this logic, the average secondary school with 504 course failures a year could realize the potential savings of 3.8 ($504/132$) teacher salaries —approximately \$81,230 per teacher including benefits (Ontario, 2013) — simply by eliminating failures and adjusting the course timetable and course offerings to reflect 3.8 fewer teachers. This example illustrates the potential efficiencies resulting from reduced teacher salaries, and none of the other instructional and operational costs included in the methodology, meaning the savings would be even greater.

It is also important to stress again that this money represents potential efficiencies. School boards in Ontario receive funding based on student enrolment, so if boards are successful at reducing failure, they will also reduce enrolments and effectively decrease their “revenue”. The “efficiencies” would be gained by the ministry and the public purse. One way around this situation would be for the ministry to come to an agreement with school boards allowing them to keep any monies realized by improving the efficiency (reduced course failure) of schools in their district. Schools and school boards could then use the money, for example, to invest in keeping teachers, introduce more progressive assessment practices or intensive tutoring.

There are several practical applications of this work. First, the thesis serves as a **framework for thinking about calculating the volume and costs of secondary course failure** at the system and school board levels. Currently no such framework exists (Warren & Saliba, 2012; Dobson & Sharma, 1999). The estimates calculated in this study also serve as a stepping stone for analyzing the cost of course failure against alternatives (see further research).

A second application is to use of some of the reporting in this study for the purpose of **monitoring and reporting** on the resources invested in education. The course fail rate for example, could be added to the suite of indicators and measures, like the high school graduation rate, used to assess effectiveness at the district and system levels. This study also reported on the percentage of course failures at the provincial level (7.9%), which could be used as a benchmark for comparing across school boards and to track system progress longitudinally. Other examples include the average number of course failures per student enrolled; gross cost of secondary course failure as a percentage of total gross instructional and operational budget; and average cost of secondary failure per course — all of which could be used for reporting on progress made in reducing course failures, selecting interventions to reduce course failure, and making transparent the costs of education delivery.

This last point about public reporting is particularly significant. By making the total number of failures and their associated fiscal costs public information, school and system administrators can be held accountable for the results in their school board and public debate on the role of failure in education can be better informed. Accountability of this type could take the form of parents and community leaders asking school board Trustees explain/justify their board's fail rate as it compares to other schools, school boards, or the provincial average. Furthermore, making transparent the volume and costs of failure could also set in motion public debate to discuss the merits of introducing various alternatives to address failure, such as more **progressive instruction and assessment practices** in key areas where failures rates are high (note that instructional and assessment practices were not evaluated as part of the study). For example, introducing more progressive instructional and assessment practices for special needs students may cut course failure rates resulting in successful educational outcomes for students who would have previously been unsuccessful and, possibly, result in cost efficiencies.

The results of this study also point to specific ways additional supports could be targeted. For example, English Academic and University level course fail rates for SPP are low compared to other course levels, but the fail rate (generally speaking) is higher in grades 11 and 12 than in grades 9 and 10, which means students enrolled in Academic/University level English courses could benefit from some type of support in the final years.

7.5 Further research

The data reveals that more needs to be done to support students in Applied, Workplace, College, courses across grade levels. The persistent high numbers of failure for these course types is an equity concern — these students are not receiving the support they need to complete these courses successfully. More research into why students in these grade levels are failing and possible solutions is one area of further research.

The results of the study also suggest that some boards are better at providing special education and ESL services, resulting in lower course failures. One study could explore why some school boards appear to be better equipped to help students advance than others. The study could identify those school boards having the lowest fail rates and conduct a scan of the policies, programs, and practices in those districts specific to supporting the advancement of special needs and ESL students. This information could then be used to look the policies, programs and practices in comparator districts having higher average course failures for these same student groups, with the ultimate aim of identify those initiatives that may be better suited to reduce the fail rate of special needs and ESL students.²⁹

The cost estimates produced in this study could also be used to conduct further cost analyses comparing the costs of failure in school boards and even schools with the costs of alternatives. These comparisons could serve as invaluable pieces of evidence to inform the selection and implementation of multi-million (and in some cases multi-billion) dollar investments in education aimed at reducing failure.

²⁹ Before conducting this study the first step would be to look at more than one year of data to be sure these board to board differences are real.

7.6 Conclusion

The purpose of this study is to answer questions about the total number of secondary course failures and their associated costs in Ontario in order to better understand the extent of resources tied to failure in schools. In one respect, the study found what was already known and expected: students are failing and this costs money. The main contributions of this study are the added nuances to this story, illustrating more precisely the volume of secondary course failure and to what extent the money tied to failing student is wasteful and counterproductive to Ontario's secondary education goals. Particularly worrisome are the number of course failures in English and mathematics and the estimated cost of \$162 million a year.

Historically, research on the costs of failure has made the most impact in the political sphere, providing the evidence demanded by policy makers and the public to justify the expense of reforming education systems. Similarly, this study makes transparent information that can inform debates about the effective use of school resources happening everyday in Ontario, in Canada's other provinces and territories, and in educational jurisdictions internationally.

My hope is that the findings of the study will be used by parents and education advocates in Ontario to demand that school boards focus on reducing school failure instead of cutting programs if budget reductions are required. Recall the public debate in Ontario not long ago about public school pool closures in the province due to lack of funds. Cuts to this program would have saved mere thousands of dollars (compared to the multimillion dollar budgets of school boards) yet funding could not be found until a widely reported public backlash in the media changed the mind of school and system administrators.

At the district and system levels, my hope is that the findings of the study will be used as the final piece of evidence to end the historical practice of relying on failure as the default option for students struggling (on the grounds that it is both ineffective and costly in fiscal terms) and set in motion research and policy analysis that uses these cost estimates to make more informed decisions about which supports to provide struggling students.

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APPENDIX I – School board expense template

School District:

Budget Items							
Direct Costs (Classroom)	All Students	spec ed on schedule	Adjusted Special Education	Indirect Costs (Non-classroom)	All students	Spec ed on schedule	Adjusted Special Education
Classroom teachers (salary and wages)				Prof./ParaProf./Tech (salary and wages)			
Classroom teachers (employee benefits)				Prof./ParaProf./Tech (employee benefits)			
Supply teachers (salary and wages)				Library/Guidance (salaries and wages)			
Supply teachers (employee benefits)				Library/Guidance (employee benefits)			
Teacher assistants (salary and wages)				Staff development			
Teacher assistants (employee benefits)				Department Heads (salary and wages)			
Textbooks, LM, CS, & equipment				Department Heads (employee benefits)			
Classroom computers				Principal and VPs (salary and wages)			
				Principal and VPs (employee benefits)			
				School Office (salary and wages)			
				School Office (employee benefits)			
				School operation and maintenance			
TOTAL DIRECT COSTS	0	0	0	TOTAL INDIRECT COSTS	0	0	0
				TOTAL GROSS COSTS	0	0	0

