



Research Report

**THE GRADE 9 COHORT OF FALL 2002: A
FIVE-YEAR COHORT STUDY, 2002-2007**

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The Grade 9 Cohort of Fall 2002: A Five-year Cohort Study, 2002-2007
Dr. Robert S. Brown

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EXECUTIVE SUMMARY

This report has two objectives: 1) looking at the Grade 9 cohort of Fall 2002 at the end of five years, and how it compares to the earlier Grade 9 cohort of Fall 2000 at the end of five years; 2) looking at how the different subgroups of the Grade 9 cohort of Fall 2002 fared at the end of five years of secondary study. The comparisons can be made since the methodology used in this process is one that, with some changes over time, can be traced to a Toronto District School Board (TDSB) cohort research tradition of nearly half a century. This consistency allows valid trend comparisons.

Traditionally, cohort studies remove the students who transfer outside the system, since we cannot say what will be the ultimate outcomes of those students. When we remove the 2,030 students who transferred to another educational authority outside the TDSB, we are left with three categories:

- 73% of the students (11,836 out of 16,173) had graduated by the end of Year 5 (received an Ontario Secondary School Diploma (OSSD) or successfully completed 30 or more credits);
- 7% of them (1,080) had not graduated but were still in the TDSB in Fall 2007 for Year 6 of secondary studies; and
- 20% of them (3,257) had dropped out by the end of Year 5 (i.e. left the TDSB without a record of transferring, or without graduating).

Compared to the Fall 2000 cohort, this is an increase of 4% in the proportion of students graduating, a decline of 3% in dropout, and an increase of 1% in the proportion of students continuing on for an additional sixth year of secondary study. This decline in dropout and increase in graduation continues a long-term process that has been measured for twenty years.

In looking at differences between subgroups, progress is incremental but continuous. While often very large differences remain, there are grounds for optimism in that many of the gaps appear to be narrowing. Declines were found according to gender and student age (although the gap remained between female and male students and between age-appropriate and older students). Nine of ten deciles of neighbourhood income showed a lower dropout rate in the more recent Fall 2002 cohort than the Fall 2000 cohort.

Furthermore, the dropout rate decline of the lowest income group (from 34% to 26%) is greater than the highest income group (13% to 12%).

Another positive finding was in looking at students taking a majority of their compulsory Grade 9/10 courses in academic, applied, and locally-developed Programs of Study. Compared to the previous Fall 2000 cohort, it was found that the graduation rate of students taking a majority of courses in the academic program increased very slightly (82% to 84%) while the rate of those taking applied courses increased by 3% (41% to 44%) and the rate of students taking locally-developed courses increased 5% (28% to 33%). Thus the gap between Grade 9/10 Programs of Study- while still very large- has decreased over the past two years.

In both the Fall 2000 and Fall 2002 cohorts, we found that the relationship between types of courses taken in Grades 9/10 and types of courses taken in Grades 11/12 was very close: with the 2001 cohort, 96% of students taking a majority of University courses in Grades 11/12 had taken a majority of Academic courses in Grades 9/10. This highlights a discrepancy between the official Ministry curriculum documents- where streaming no longer exists- and the reality of students' lives, where streaming exists in a form very similar to the earlier Ontario Schools: Intermediate and Senior (OS:IS) curriculum. Thus, the categorizations of the current Ontario Secondary Schools (OSS) curriculum- where 'streaming' has been made covert rather than official- need to be re-examined.

There were other findings that were both positive and negative, although the positives outweighed the negatives. In looking at student language, the dropout rate of students speaking Russian and Greek increased, English stayed the same while 13 other languages showed a decline in dropout. In looking at regions of birth, the dropout rate of students from Eastern Europe and Central/South America and Mexico stayed the same, while the dropout rate of all other regions declined. With all three cohorts, students from the English-speaking Caribbean and those born in Central/South America and Mexico had the highest dropout rates. With all three cohorts, students from the English-speaking Caribbean and those born in Central/South America and Mexico had the highest dropout rates.

This analysis confirmed that final student achievement is very closely related to achievement in Grade 8 and the early years of high school. Almost all (92%) students

with Level 4 (mark of 80% or higher) in Mathematics in Grade 8 had graduated by the end of five years of high school, while a little over a third of students (39%) with Level R (mark of below 50%) in Mathematics in Grade 8 had graduated five years later.

Likewise, with the results of the Fall 2000 and Fall 2002 cohorts, we found that those who successfully complete the Grade 10 Ontario Secondary School Literacy Test (OSSLT) the first time it is offered, were most likely to graduate on time, the least likely to return to the TDSB for additional schooling, and the least likely to drop out. They were also most likely to complete 16 credits by the end of Grade 10. Students who wrote but failed the OSSLT should be considered moderately at risk- most will graduate, although it may take longer for these students to complete secondary school. Students deferred from writing the test the first time, and those who are absent during the writing of the test, are most likely to be at risk.

The Fall 2000 cohort study had found Year 1 (Grade 9) absenteeism closely linked to graduation and dropout by the end of Year 5. With the Fall 2002 cohort, we looked at Year 2 (Grade 10) absenteeism, available the first time for all students in the cohort. Findings replicate earlier results. Students with low absenteeism in Grade 10 (3% or less) had high graduation and low dropout rates; students absent more than 10% of the time (an average of more than half a day a week) are more likely to be at risk, while most students absent for more than 20% in Grade 10 (more than a day a week) dropped out by the end of Year 5.

Two-thirds of the students in the cohort applied to Ontario post-secondary institutions in 2006 or 2007; assuming previous ratios of success to applications, this would mean that over half (51%) of cohort students would attend post-secondary institutions in 2007, and it is likely that this proportion will ultimately rise above 60%. Only 8% of the cohort had graduated from high school- and thus had the opportunity to apply to post-secondary- but did not in 2006 or 2007. In part because so many graduates now apply to post-secondary, patterns of post-secondary applicants closely reflect patterns of graduation and dropout.

INTRODUCTION

The TDSB and its predecessor Boards have been involved in cohort tracking studies for almost half a century (the first Toronto tracking study followed the Grade 9 cohort of 1959 as it progressed through the system).

The first TDSB cohort study was the Grade 9 cohort of Fall 2000. The fall 2002 Cohort is the third such study, looking at 13-15 year old students who started secondary studies in the TDSB in Fall 2003. By the end of summer 2007, the majority would have finished, although a number will continue into secondary studies over the next few years. Cohort studies look at the progress of students at different points in time. This report looks at how the Grade 9 cohort of Fall 2002 fared in its first five years to Fall 2007. A final report will examine the progress of students to Fall 2009.

A Note on Methodology

A more detailed description of the methodology can be found in Appendix A. It should be noted, however, that the terms 'dropout' and 'graduation' are quite elastic and can mean many things. The methodology used here can be traced to the original 1959 cohort study, with updates resulting from a provincial committee on tracking secondary students from the mid 1990s (see Brown et al., 1996). The methodology is consistent to enable comparisons over time; we are thus able to compare these dropout and graduation rates to the 1987 and 1991 Toronto and Scarborough Grade 9 cohorts (see Brown, 1997, and Turner, 1997). However, one should be cautious in comparing this information to other cohorts, which may use quite different methodologies and hence may not be validly comparable.

FINDINGS

Overall Outcomes

There were 18,204 students in the initial Grade 9 cohort. Because of complications from the conversion of four legacy student information systems to the Trillium system, 15 records were invalid. Of the remaining 18,189 students, by Fall 2007:

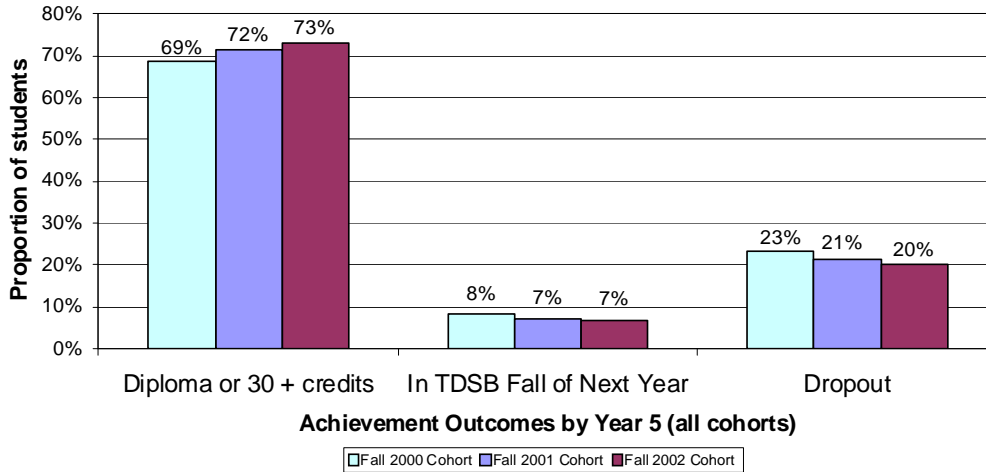
- 65% of the students (11,836) had graduated (received an OSSD or successfully completed 30 or more credits);
- 6% of them (1,080) had not graduated but were still in the TDSB in Fall 2006 for Year 6 of secondary studies;
- 11% of them (2,016) had transferred outside the TDSB to another educational institution; and
- 18% of them (3,257) had dropped out, that is, left the TDSB without a record of transferring, or without graduating.

Traditionally, cohort studies remove the students who transfer outside the system, since we cannot say what will be the ultimate outcomes of those students. When we remove the 2,016 external transfers, we are left with three categories:

- 73% of the students (11,836 out of 16,173) had graduated by the end of Year 5 (received an OSSD or successfully completed 30 or more credits);
- 7% of them (1,080) had not graduated but were still in the TDSB in Fall 2006 for Year 6 of secondary studies; and
- 20% of them (3,257) had dropped out by the end of Year 5 -i.e., left the TDSB without a record of transferring, or without graduating.

As seen in Figure 1, this is an increase of 4% in the proportion of students graduating, a decline of 3% in dropout, and an increase of 1% in the proportion of students continuing on for an additional sixth year of secondary study. The remaining results will present out of the base of 16,173, that is, once the external transfers have been eliminated.

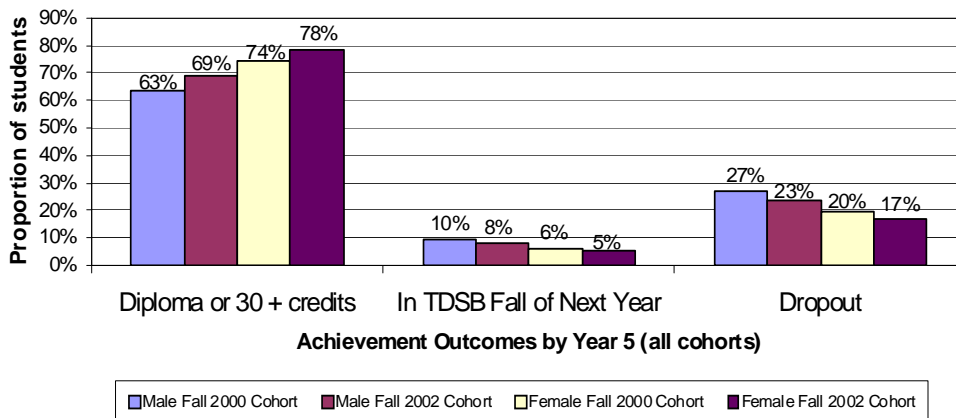
**Figure 1: Grade 9 Cohorts of Fall 2000, Fall 2001, and Fall 2002:
Outcomes at the End of Five Years of Secondary School**



Gender

As with previous studies, female students in the Fall 2002 cohort were more likely to graduate (78% compared to 69% for male students) while male students were more likely to still be working on graduation requirements in Year 6, and to drop out. Outcomes of both genders in this cohort improved compared to the Fall 2000 cohort; the gap between genders has been somewhat reduced: male students now have a graduation rate 9% lower than female students, compared to a difference of 11% in the earlier cohort (see Figure 2).

**Figure 2: Grade 9 Cohorts of Fall 2000 and Fall 2002:
Gender and Achievement by Year 5**



Student Age

Students in the cohort were between the ages of 13 (born in 1989) and 15 (born in 1987), although the age-appropriate majority were 14 (born in 1988). The pattern seen in the first cohort has been repeated: age-appropriate students had achievement patterns approximately the same as the total cohort; the comparatively small number of 13 year olds had higher graduation and lower dropout by the end of Year 5, and those who were a year older had noticeably lower graduation rates and approximately double the dropout rate. On the positive side, each age group had improved over the achievement of the previous cohort at the same point in time (e.g., the dropout rate of 15 year olds had declined from 53% to 45%).

Table 1: Age of Student and Achievement to Year 5 (Fall 2007)

Age	Outcomes to Year 5						TOTAL
	Graduate		Still in TDSB		Dropout		
1987	377	44.6%	92	10.9%	377	44.6%	846
1988	11351	74.7%	982	6.5%	2861	18.8%	15194
1989	108	81.2%	6	4.5%	19	14.3%	133
TOTAL	11836	73.2%	1080	6.7%	3257	20.1%	16173

English, Mathematics, and Science Achievement in Grade 8

Students in this cohort had been in Grade 8 in the 2001-2002 school year. We have report card information on Mathematics, English, and Science for 8300 students¹, or 51% of the cohort who were tracked until Fall 2007 (the missing rate was due in part to students entering Grade 9 from outside the TDSB, in part due to difficulties in matching student ID numbers, and in part due to incomplete report card information).

As seen in Tables 2, 3, and 4, the relationship of Grade 8 achievement and secondary outcomes five years later is extremely strong. For example, of students who achieved Level R in Grade 8 Mathematics (less than a mark of 50%) only 39% had graduated by the end of five years of high school. Of students who achieved Level 1 in Grade 8 Mathematics (a mark of 50-59%) only half had graduated. By comparison, 92% of

¹ Mathematics achievement was calculated by averaging the marks of the five Mathematics Report Card strands; English achievement was calculated by averaging the marks of Reading and Writing. Science and Technology existed as one subject/strand and therefore no averaging needed to be done for it.

students with Level 4 in Grade 8 Mathematics (a mark of 80% or more) had graduated by the end of five years of high school. Likewise, the five-year dropout rate ranges from 48% of students with Level R in Grade 8 Mathematics, to 6% of those with Level 4. Similar results are seen with Grade 8 achievement in English and Science (see Tables 3 and 4).

Table 2: Mathematics Achievement in Grade 8 (2001/2) and Outcomes to Year 5 Secondary (Fall 2007)

Overall Mathematics Levels Grade 8 2001/2 (#, %)	Outcomes to Year 5 (#, %)						TOTAL
	Graduate		Still in TDSB		Dropout		
Level R	178	38.8%	61	13.3%	220	47.9%	459
Level 1	533	49.8%	130	12.1%	407	38.0%	1070
Level 2	1057	65.0%	147	9.0%	421	25.9%	1625
Level 3	1668	80.3%	97	4.7%	312	15.0%	2077
Level 4	2833	92.3%	56	1.8%	180	5.9%	3069
TOTAL	6269	75.5%	491	5.9%	1540	18.6%	8300

Table 3: English Achievement in Grade 8 (2001/2) and Outcomes to Year 5 Secondary (Fall 2007)

Overall English Levels Grade 8 2001/2 (#, %)	Outcomes to Year 5 (#, %)						TOTAL
	Graduate		Still in TDSB		Dropout		
Level R	103	32.0%	57	17.7%	162	50.3%	322
Level 1	418	46.8%	113	12.7%	362	40.5%	893
Level 2	1137	63.5%	164	9.2%	490	27.4%	1791
Level 3	2226	82.0%	115	4.2%	373	13.7%	2714
Level 4	2365	93.2%	38	1.5%	135	5.3%	2538
TOTAL	6249	75.7%	487	5.9%	1522	18.4%	8258

**Table 4: Science and Technology Achievement in Grade 8 (2001/2)
and Outcomes to Year 5 Secondary (Fall 2007)**

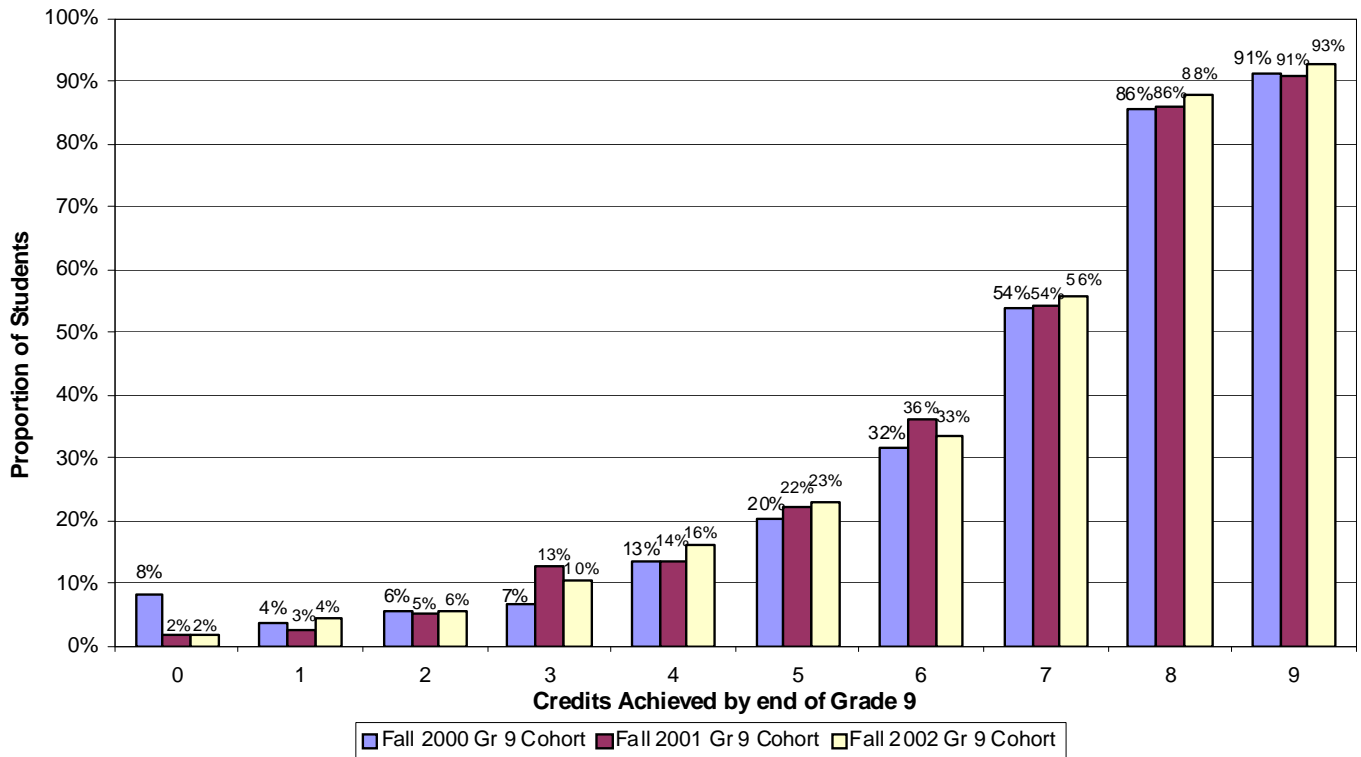
Overall Science and Technology LevelsGrade 8 2001/2 (#, %)	Outcomes to Year 5 (#, %)						TOTAL
	Graduate		Still in TDSB		Dropout		
Level R	171	34.8%	74	15.1%	246	50.1%	491
Level 1	732	53.6%	151	11.1%	483	35.4%	1366
Level 2	1178	69.2%	140	8.2%	385	22.6%	1703
Level 3	1812	83.4%	84	3.9%	276	12.7%	2172
Level 4	2365	93.6%	38	1.5%	123	4.9%	2526
TOTAL	6258	75.8%	487	5.9%	1513	18.3%	8258

Grade 9 Credit Accumulation

Research since the early 1990s has demonstrated a clear relationship between credit accumulation in the early years of high school and future academic achievement (see Brown, 1993).

The relationship of Grade 9 credit achievement to graduation is clearly demonstrated with the three TDSB Grade 9 cohorts (see Figure 3). In all three cohorts, the vast majority of students who had eight Grade 9 credits (86-88%) or nine Grade 9 credits (91-93%) had graduated by the end of five years; little more than half (54-56%) of those with seven credits had graduated; while around a third of students with six credits had graduated. For students who complete six or fewer credits by the end of Grade 9, the chances of graduation by the end of five years remain remote.

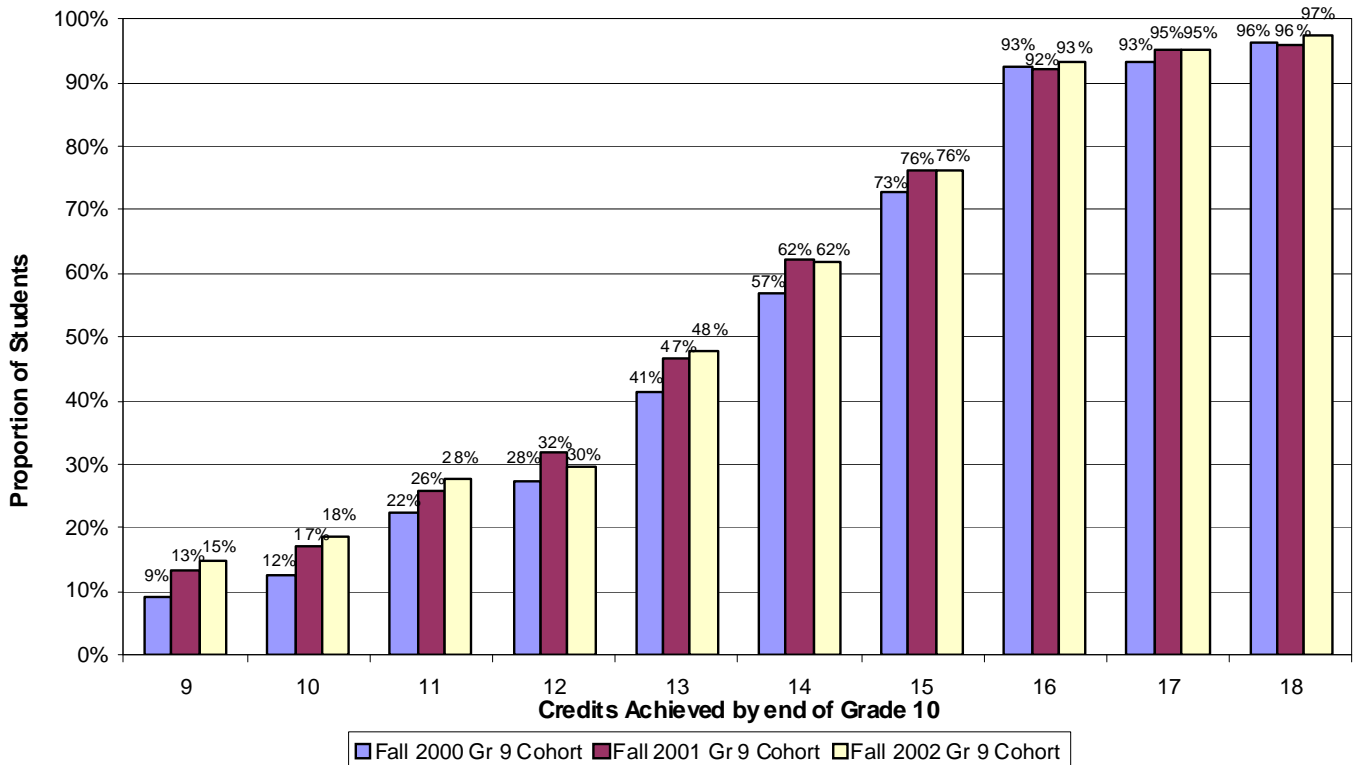
Figure 3: Graduation Rate of Grade 9 Students Based on Credit Accumulation
Graduation Rate after Five Years of Secondary School (Four Years After End of Grade 9)



Grade 10 Credit Accumulation

A clear documentation of the relationship of Grade 10 credit accumulation with five-year high school graduation had been established as long ago as the Toronto Grade 9 cohort of 1987, hence the common phrase of “16 by 16”- by the end of Grade 10, by the time that most students had turned 16, those who finished 16 credits were most likely to graduate from high school. This pattern is replicated with all three Grade 9 cohorts, as seen in Figure 4.

Figure 4: Graduation Rate of Grade 10 Students Based on Credit Accumulation
Graduation Rate after Five Years of Secondary School (Three Years After End of Grade 10)



Program of Study: Transition from Grades 9/10 to 11/12

Under the current Ministry of Ontario Secondary School (OSS) curriculum, streaming has been officially eliminated. Instead, students in Grades 9/10 take courses in three programs of study: Academic, Applied, and Locally Developed Essential. In Grade 11/12, students take University, College, Mixed (University/College) and Locally Developed Essential courses (a large number of ‘open’ courses are also offered with no program of study).

In the first TDSB Grade 9 cohort study (Brown, 2006), students were examined according to the *majority* of courses taken in their program of study². For example, if a Grade 9 student took a majority of courses in the Academic program of study, the student was classified as taking courses in the Academic program of study. If the student took a majority of Grade 12 courses in the University program of study, the student was classified as taking courses in the University program of study. When examined this way, the OSS programs of study were structurally very similar to the streams in the former OS:IS curriculum.

A similar methodology was applied to the Fall 2002 cohort. As seen in Table 5, it is clear that the same close relationship still exists between program of study in Grades 9/10 and program of study in Grades 11/12. Of students taking a majority of their courses in the Grade 11/12 University program of study, 96% (8,611 of 8,938) had earlier taken a majority of courses in the Grade 9/10 Academic program of study (a proportion nearly identical to the 97% of similar students in the earlier Fall 2000 cohort). It is therefore apparent that while the Ontario curriculum does not officially recognize it, streaming still exists in the secondary panel, in particular, university-directed streaming, and that little has changed over the past three years of cohort analysis.

Table 5: Program of Study Grades 9/10 Compared to Grades 11/12

Grades 9/10 Program of Study (#, %)	Grades 11/12 Program of Study (#, %)										TOTAL
	University		College		Mixed		Workplace		Could not Define		
Academic	8611	75.7%	953	8.4%	1598	14.1%	171	1.5%	38	0.3%	11371
Applied	316	10.9%	1669	57.6%	416	14.4%	366	12.6%	130	4.5%	2897
Locally Developed	11	2.8%	62	16.0%	10	2.6%	266	68.7%	38	9.8%	387
TOTAL	8938	61.0%	2684	18.3%	2024	13.8%	803	5.5%	206	1.4%	14655

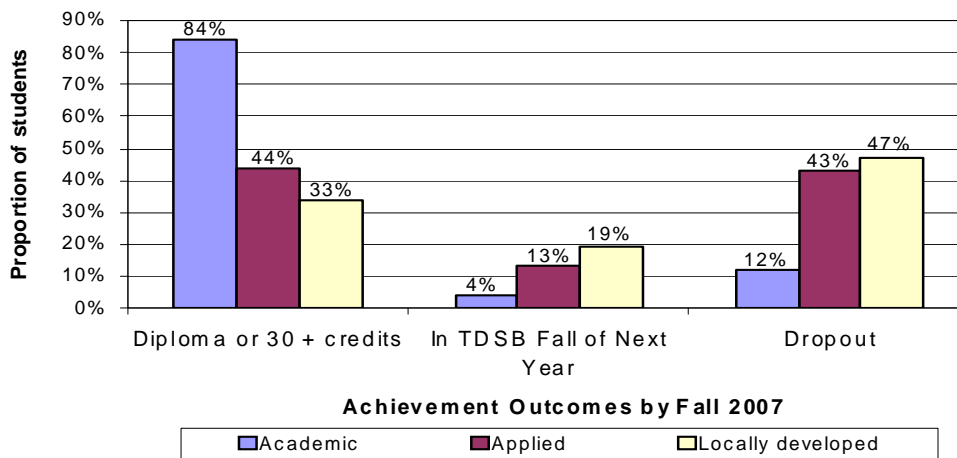
Note: Program of study defined here by the majority of courses taken.

² There is currently no consistent way to determine students' program of study. For example, EQAO Grade 9 Mathematic assessment looks at the program of study of Grade 9 Mathematic courses (Academic and Applied only), while the Grade 10 literacy test (OSSLT) disaggregates information according to Grade 10 English courses (Academic, Applied, Locally developed). However, students will sometimes take English courses in one program of study and Mathematic courses in another program of study. The process used in this study is intended to be a comprehensive, multiple-course measurement of program of study.

Program of Study: Grades 9/10

Secondary success by the end of five years of secondary study is closely related to the program of study taken in Grades 9/10. Thus, 84% of students taking a majority of Grade 9/10 courses in the Academic program of study had graduated by the end of five years, compared to 44% of students taking Applied courses and 33% of students taking Locally Developed Essential courses.

Figure 5: Grade 9 Cohort of Fall 2002: Grade 9/10 Program of Study and Achievement by Fall 2007



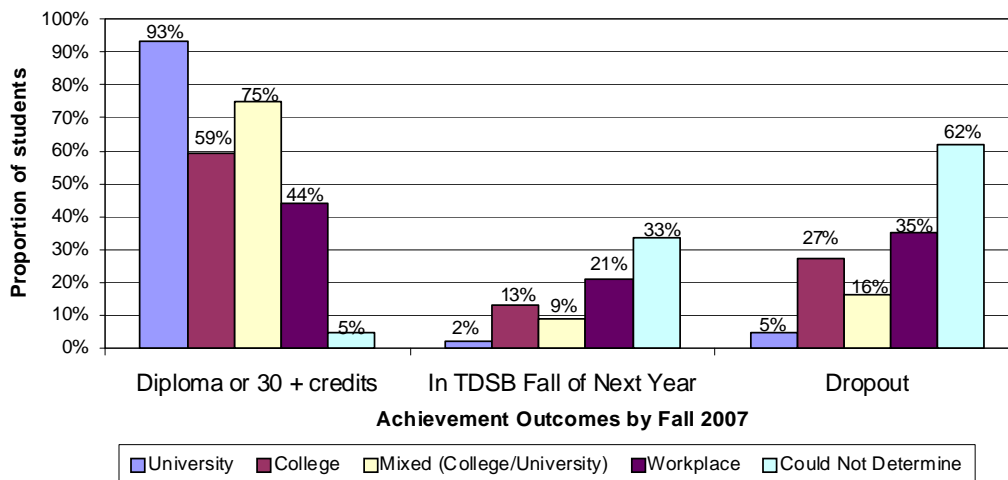
Daunting as this may be, it has to be taken in context. Compared to the previous Fall 2000 cohort, we find that the graduation rate of students taking Academic courses has improved by 2% (82% to 84%) while the graduation rate of students taking Applied increased by 3% (41% to 44%) and the rate of students taking Locally Developed courses increased by 5% (28% to 33%). The gap between Grades 9/10 programs of study- while still very large- has slightly decreased over the past two years. It will be important to examine future cohorts to see if this trend continues.

Program of Study: Grades 11/12

By Year 5, almost all students taking a majority of Grade 11/12 courses at the University level had graduated (93%). This graduation rate was much lower for those students taking College courses (59%) and Workplace courses (44%). Seventy-five percent (75%) of those taking a majority of Mixed courses (University and College) had graduated. Since 75% is approximately midpoint between the University and College graduation rates, it would seem that these students have an appropriate combination of University and College characteristics.

As with students taking courses in Grades 9/10 programs of study, these very large differences need to be taken in context when comparing the Fall 2002 to the earlier Fall 2000 cohort. In both cases, the graduation rate of the high-performing University students is consistent (at 93%). There was slight improvement in the graduation rate of students taking College courses (57% to 59%), and more pronounced graduation rates of students taking Mixed courses (70% to 75%) and Workplace courses (39% to 44%). Some improvement appears to be taking place in the subgroups that need it most (although, of course, a great deal remains to be done).

Figure 6: Grade 9 Cohort of Fall 2002: Grade 11/12 Program of Study and Achievement by Year 5 (Fall 2007)



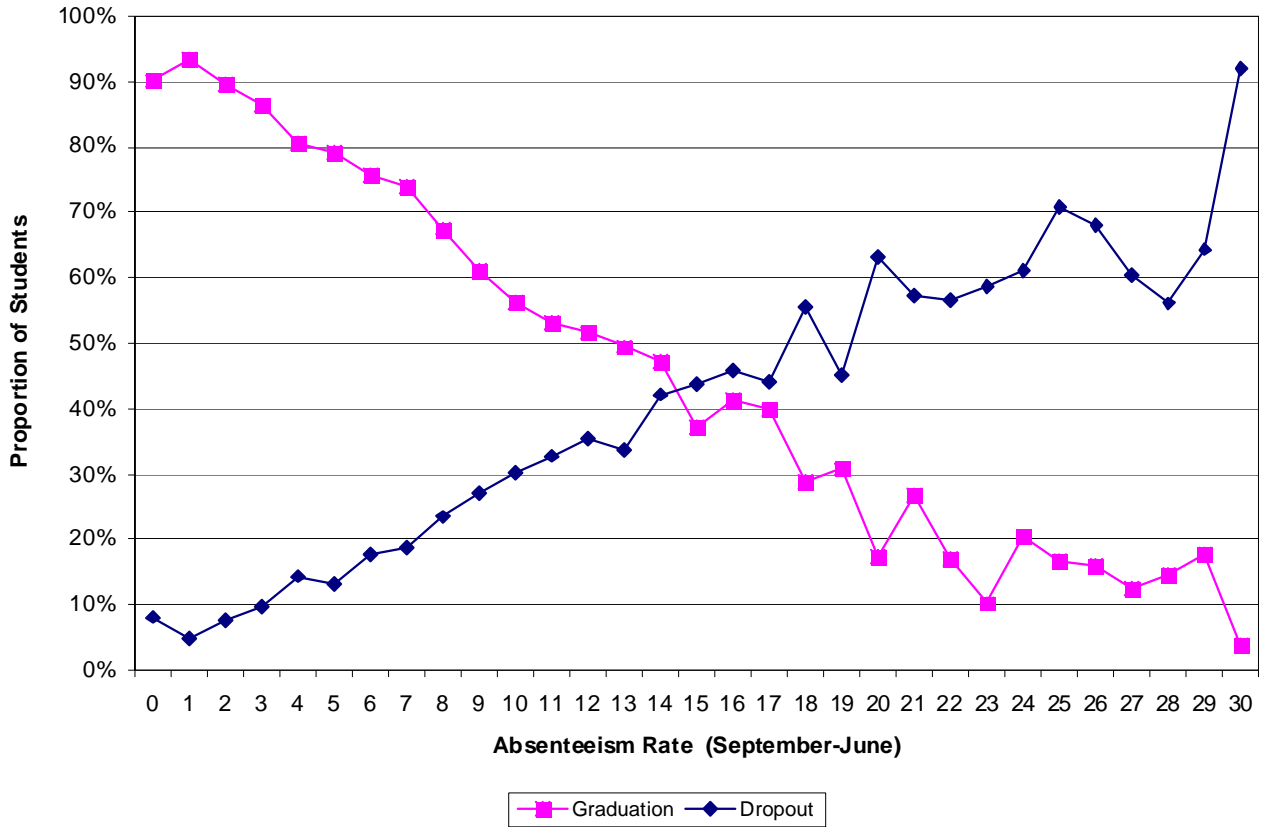
Grade 10 Absenteeism

Absenteeism data for students in the cohort became available in Fall 2003, when the Trillium Student Information System became common for all TDSB students. At that point, students had started Year 2 of the study (Grade 10).

Figure 7 shows the relationship of absenteeism in Year 2 (Grade 10) to graduation and dropout by the end of Year 5 (Fall 2007). The absenteeism rate was calculated by taking the days absent out of the total number of days attended over the school year (September to June). Thus, if the student was absent 18 days out of 180 school days, the absenteeism rate is 10%. The findings here replicate earlier pre-Trillium results (e.g., Brown, 1999; Brown, 2006). Students with low absenteeism (3% or less) had high graduation rates and low dropout rates. Students absent for more than 10% (an average of more than half a day a week) are more likely to be at risk, while most

students absent for more than 20% in Grade 10 (more than a day a week) dropped out by the end of Year 5.

Figure 7: Grade 10 Absenteeism (September-June) and Graduation-Dropout by the end of Year 5 (Fall 2007)



Student Languages

There were 16 “key” languages spoken by students in the Grade 9 cohort of Fall 2002- that is, 100 or more students in the cohort spoke them. These languages accounted for 92% of the cohort students (13,961 of 15,247 for which there is language data). Slightly over half (55%) of students in the cohort spoke English only. Students speaking English only had dropout rates slightly higher than the full cohort (23% compared to 20%). The dropout rate of English-only speaking students has been unchanged over the past three years.

The language groups with the highest dropout rates over the five years of the study were Portuguese (38%), Spanish (38%), and Somali (35%). These are also the three language groups with the highest proportion of at-risk Grade 9 students according to credit accumulation in 2003-4 and 2004-5 (Brown, 2006), and the highest in the previous 2000 and 2001 cohorts. However, the dropout rate of all three groups has fallen slightly over the past three years.

Table 6: Key Languages and Dropout Rates: the Fall 2000, Fall 2001, and Fall 2002 Cohorts

Language	% dropouts: Fall 2000 Cohort	% dropouts: Fall 2001 Cohort	% dropouts: Fall 2002 Cohort	Number of students in the Fall 2002 cohort
Arabic	27.8	19.5	16.7	132
Bengali	16.7	10.8	7.3	177
Chinese	12.0	10.0	9.0	1921
English	22.9	23.4	22.5	8415
Greek	17.7	12.2	25.2	103
Gujarati	14.3	9.0	9.3	182
Hindi	*	20.0	*	86
Korean	20.0	12.1	13.8	283
Persian (Farsi)	30.6	27.4	25.2	301
Portuguese	42.5	37.0	38.0	108
Punjabi	34.6	18.8	19.8	227
Romanian	10.8	*	*	86
Russian	19.6	23.0	22.9	402
Somali	36.7	28.4	35.1	208
Spanish	39.1	38.9	37.5	216
Tamil	16.9	15.4	13.7	614
Urdu	19.5	20.4	17.4	438
Vietnamese	24.6	23.3	20.9	234

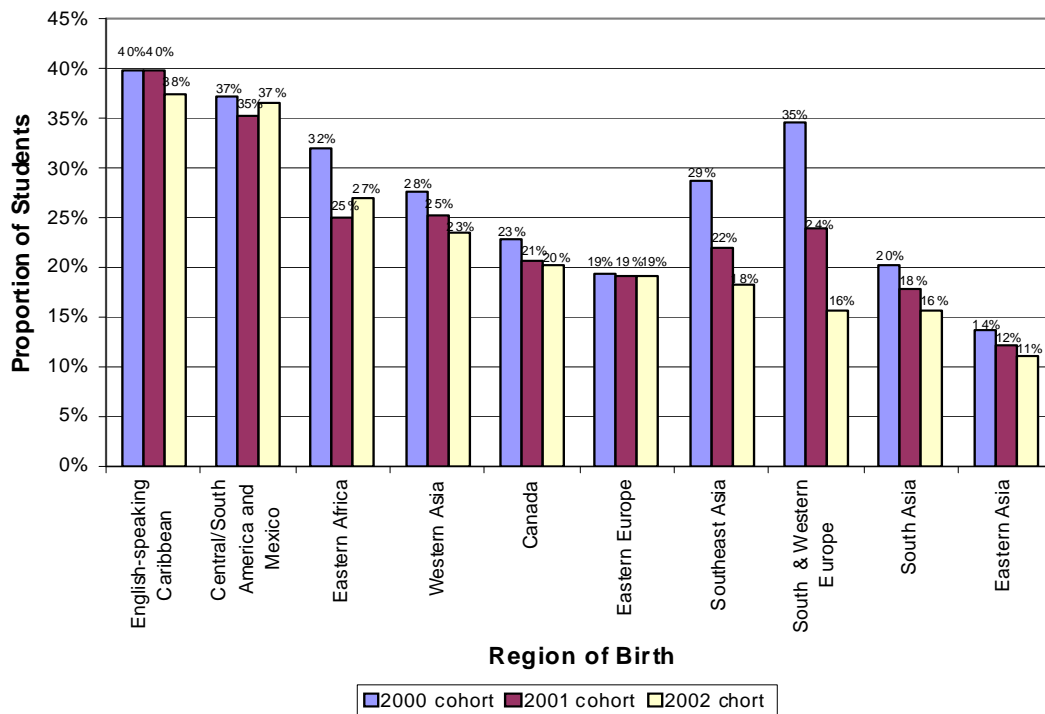
*not released since number in group is less than 100.

Region of Birth

Students living in the TDSB area come from over 200 countries of birth, and it is therefore difficult to provide analysis on this variable. Instead, data from countries of birth have been combined into 10 'regions of birth'. Figure 8 shows the dropout rate for students from these regions for the three cohorts (only regions with 100 or more students are shown).

- In all three cohorts, students from the English-speaking Caribbean and those born in Central/South America and Mexico had the highest dropout rates, while students from Eastern Asia had the lowest dropout rates.
- Students born in Canada had a dropout rate similar to that of the full cohort (23% in 2000, 21% in 2001).
- The dropout rate of all regions except for Eastern Europe, and Central/South America and Mexico have declined between the Fall 2000 and Fall 2002 cohort (the rates of Eastern Europe and Central/South America and Mexico stayed the same).

Figure 8: Dropout of Cohort by Region of Birth: Grade 9 Cohorts of 2000, 2001, and 2002



Years in Canada and Achievement by the End of Year 5

There are no obvious major differences between date of arrival in Canada, and student achievement in the cohort. Students born in Canada had achievement that was characteristic of the total cohort. Those who had arrived in Canada one year or less before starting Grade 9 had a slightly higher dropout rate than the total cohort.³

Table 7: Years in Canada and Outcomes by Year 5 (Fall 2007)

Years in Canada (#, %)	Outcomes to Year 5, Fall 02 Cohort (#, %)						TOTAL
	Graduate		Still in TDSB		Dropout		
One year or less	426	70.9%	32	5.3%	143	23.8%	601
2 years	506	72.8%	37	5.3%	152	21.9%	695
3	461	73.8%	41	6.6%	123	19.7%	625
4	356	74.3%	28	5.8%	95	19.8%	479
5	294	72.8%	21	5.2%	89	22.0%	404
6	306	74.1%	20	4.8%	87	21.1%	413
7	297	77.5%	25	6.5%	61	15.9%	383
8	280	76.9%	25	6.9%	59	16.2%	364
9	242	75.6%	24	7.5%	54	16.9%	320
10	255	78.9%	18	5.6%	50	15.5%	323
11	179	71.9%	23	9.2%	47	18.9%	249
12	165	67.3%	26	10.6%	54	22.0%	245
13 years or more	337	72.5%	35	7.5%	93	20.0%	465
Born in Canada	7085	72.8%	673	6.9%	1969	20.2%	9727
TOTAL	11189	73.2%	1028	6.7%	3076	20.1%	15293

³ Arrival date in Canada became available for the first time in the Grade 9 Fall 2001 cohort. Patterns shown in Table 7 were similarly observed in the Fall 2001 cohort.

Administration of the OSSLT in October 2003 and the Literacy Requirement

Challenges of the Merging Process

As part of their graduation requirement, Ontario secondary students need to pass a literacy requirement administered through Education Quality and Accountability Office assessments (EQAO), the provincial testing authority. Starting in their second year of high school (Grade 10), students are eligible to complete the literacy requirement (OSSLT) for the first time. These students are therefore known as *first-time eligible students* when discussing OSSLT results. However, this does not mean that all first-time eligible students will write the test- some will be deferred to the next administration; some will be absent during the time of the administration; a comparatively small number are exempted because these students with special needs do not have high school graduation as their pathway to education.⁴

Therefore, in theory, all 15,713 students in the cohort who were present in the TDSB at some time during the 2003/4 school year, their second year of high school (Grade 10), should have results in the October 2003 administration of the OSSLT.⁵ Instead, we had a match rate of 15,289 of 15,713, or 97%. During this time EQAO did not collect student number identifiers (the Ontario Education Number or OEN had not yet been introduced). Matches therefore depended upon student information in our Student Information System being consistent with similar information collected on the student by EQAO (e.g., last name, first name, gender). If there was any difference (e.g., a misspelling of a name, missing information) there would not be a match, as happened here with 3% of the cases.

⁴ EQAO incorrectly classified 593 of students in this cohort as previously eligible, although all who were in the TDSB in 2001/2 were in Grade 8 and 94% had a Grade 9 code in 2002/3. This problem with OSSLT data has been corrected in more recent years. Since these are Year 2 (Grade 10) students in the 2003/4 school they are interpreted here as first-time eligible students.

⁵ This number excludes the students who transferred out of the TDSB between Years 1 and 5 of the study i.e. between 2002/3 and 2006/7.

Administration of the OSSLT in October 2002 and Literacy Requirement

Completion by Fall 2007

Of the 15,289 students where we matched first-time eligibility in Fall 2003, 92% completed their literacy requirement in some way—either through successive administrations of the OSSLT, or in completing the Ontario Literacy Course⁶. However, this overall high completion rate masked extremely large differences among those who did not pass the test the first time (i.e., those who did not successfully complete the test the first time).

- The vast majority those who passed only Reading or Writing had later completed the rest of the test (89% of those who passed Writing only and 87% of those who passed Reading only).
- More than two thirds (69%) of those who failed both Reading and Writing later completed their requirement.
- A majority (54%) of those deferred during the first administration later completed the literacy requirement.
- However, only 45% of those who had been absent during the first administration later completed the literacy requirement. This is the most at-risk group.

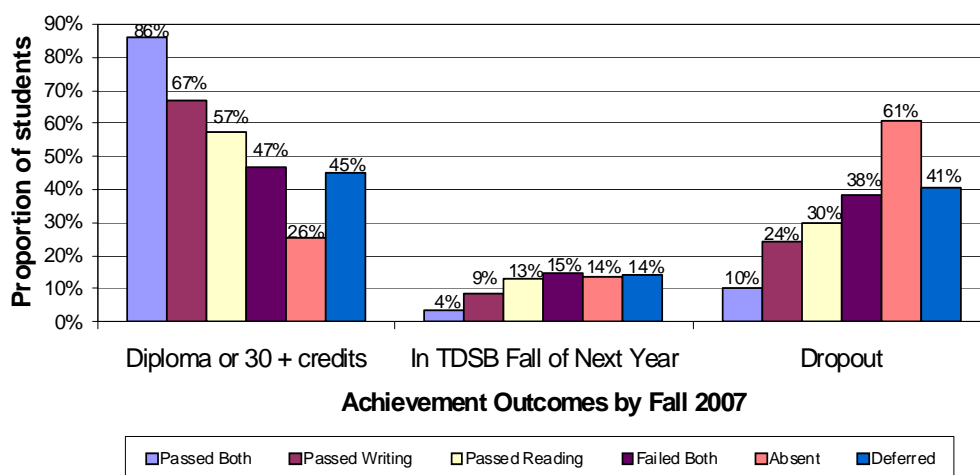
Most (85%) students who had not completed their literacy requirement had dropped out by the end of Year 5; of this cohort, only 272 students were in the TDSB in Year 6 without completing the literacy requirement.

⁶ The completion rate of the full cohort of 16,173 students was slightly lower, at 89%.

Administration of the OSSLT in Grade 10 (October 2002) and Achievement by Fall 2007

Research on the previous Grade 9 cohort found a very strong relationship between performance on writing the OSSLT for the first time, and subsequent student achievement. Similar results were found here (see Figure 9).

**Figure 9: Grade 9 Cohort of Fall 2002:
First OSSLT Test Results and Achievement by Year 5 (Fall 2007)**



In looking at the results of both cohorts, we can make the following generalizations:

- First-time students who **successfully complete** the OSSLT are most likely to graduate on time, least likely to return to the TDSB for additional years of schooling, and least likely to drop out. They are also, usually, students who have completed 16 credits by the end of Grade 10, and hence considered low-risk- although a small number will nonetheless run into problems in subsequent years;
- First-time students who write the OSSLT but **fail** it should be considered moderately at risk. Those who failed Reading only, or failed Writing only are most likely to later complete the literacy requirement and graduate. Those who fail *both* Reading and Writing are in a more serious at-risk category, but eventually the majority will graduate (some in their sixth or seventh year of secondary study); and
- Students who should write the OSSLT, **but do not**, should be considered high risk- that is, first-time students who are **deferred and students who are absent** during the writing of the test. A majority of absent students will in fact drop out over the next four years.

Students are deferred for different reasons. There are two main ones: 1) students are deferred because they have arrived recently in Canada from other countries, and their proficiency in English is thought inadequate for the test (however, this accounted for less than a quarter of recent immigrants in this cohort), and 2) They are deferred because it is thought that they are not adequately prepared at the time of the administration. At this point, both groups appear to be highly at risk. However, since recent immigrants are also more likely to take longer to complete high school, we will need to wait for the full seven years of the cohort study to conclude to see the complete picture on deferred students.

Immigration and Passing the OSSLT

For immigrants as well as non-immigrants, success in the OSSLT usually predicted future achievement. The vast majority of recent arrivals who were successful in the first OSSLT, and those who failed either Reading or Writing, had graduated by the end of five years; those who failed both Reading and Writing, and those who deferred, were more at risk, and those who were absent were most at risk. However, recent immigrants did better in each of these categories than the total TDSB population (e.g., the graduation rate of first-time successful students was 86% for all students in the cohort but 89% for recent immigrants).

Neighbourhood Income

We do not have the income of student families, but instead derive a proxy from federal Census data. This is calculated by taking the postal code of where students lived in Fall 2001, and matching it to the average family income of the student's neighbourhood (Dissemination Area) of the 2001 national census. Students were then divided into ten income groups, from lowest income to highest income.⁷

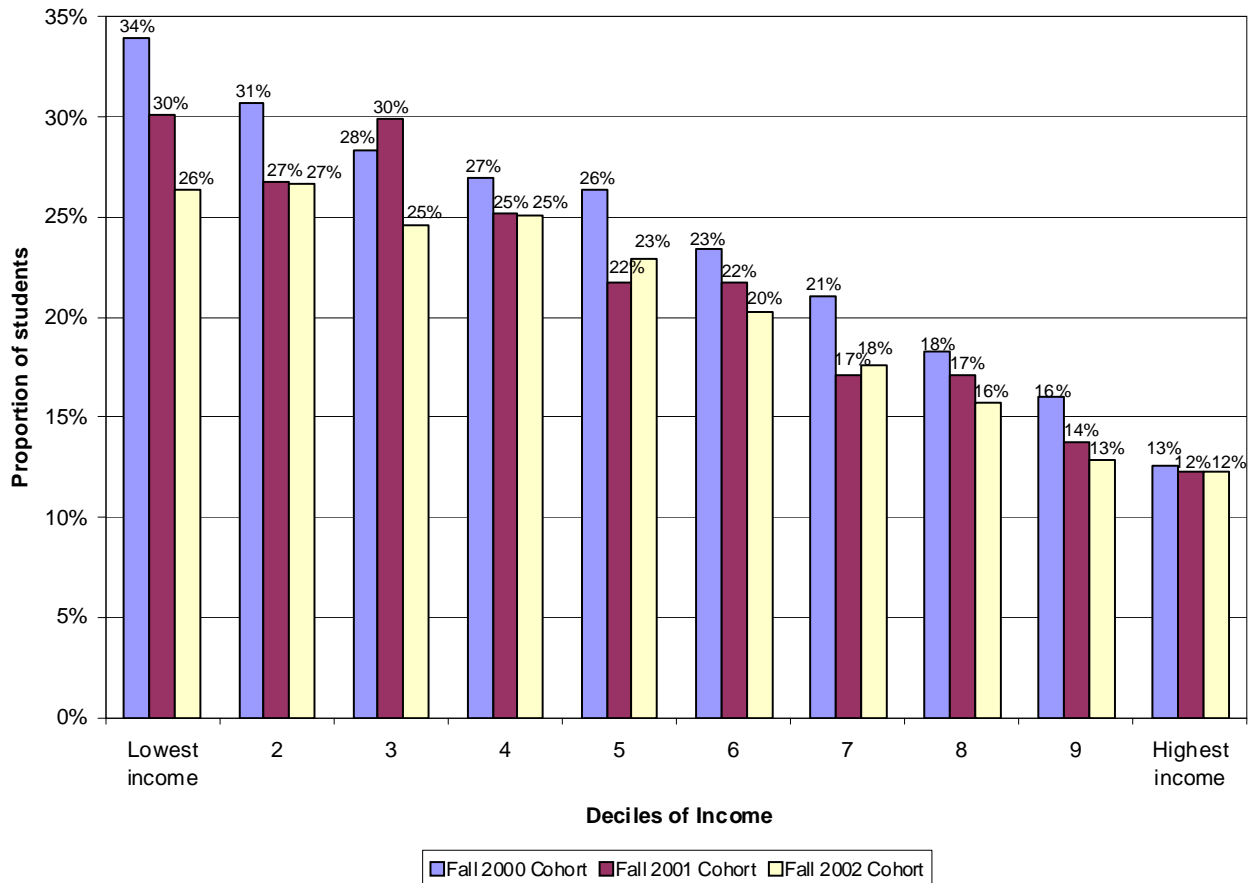
Figure 10 shows the dropout rate of the Grade 9 cohort by the end of five years, according to neighbourhood income, from lowest to highest. The first column shows the dropout rate for the Fall 2000 cohort, the second column shows the dropout rate for the Fall 2001 cohort and the third shows the dropout rate for the most recent Fall 2002 cohort. Overall, there are great differences between neighbourhoods, with 26% of

⁷ For comparison, all three cohorts were matched with the same range of average family incomes (e.g., the lowest income range included any student living in Dissemination Area with an average family income of or below \$35,274)

students from the lowest income neighbourhood dropping out by the end of five years, while only 12% of students from the highest income neighbourhood had dropped out over the same period.

At the same time, a comparison to the previous Grade 9 cohort of Fall 2000 shows a more positive picture. All income groups show a lower dropout rate in the more recent Fall 2002 cohort than the previous Fall 2000 cohort. Moreover, the decline of the lowest income group (from 34% to 26%) is greater than the highest income group (13% to 12%). Thus, without wishing to understate the large socio-economic divide that exists, it would appear that the gap has decreased over the past year. It remains to be seen if this positive development will continue over time.

**Figure 10: Grade 9 Cohorts of Fall 2000 Fall 2001 and Fall 2002:
Dropout by Family Income, End of Year 5**



Applications to Post-secondary

Students applying to post-secondary institutions in Ontario send their applications through the Ontario Universities Application Centre (OUAC) and the Ontario College Application Service (OCAS). Sixty-eight (68%) of the students in the cohort applied to post-secondary institutions in 2006 or 2007. Most of the students who did not apply to post-secondary, did not do so because of lack of opportunity: Out of 5,139 students in the cohort who did not apply to post-secondary institutions, 57% dropped out and 19% had not graduated but were still in the TDSB in Year 6. Thus, only 1,223 students in the cohort (8%) had graduated (and therefore had the opportunity to apply to post-secondary) but had not applied in 2006 or 2007.⁸

Table 8: Applications to Post-secondary

	Frequency	Percent
Applied to university only	7693	47.6
Applied to college only	2156	13.3
Applied to university and college	1185	7.3
Did not apply to post-secondary	5139	31.8
TOTAL	16173	100.0

Assuming that previous patterns apply and that three quarters of applicants will actually attend in the fall, this means that by Fall 2007, 51% of the cohort attended post-secondary institutions, 20% dropped out, 6% were still in the TDSB, while 23% entered the workforce directly—a majority of which, as noted, are unsuccessful post-secondary applicants. It is highly likely that many of these students will reapply to post-secondary in the future (as will many of the students present in the TDSB in Year 6). Consequently, it is a reasonable expectation that the proportion of post-secondary students out of the full cohort will rise above 60%.

⁸ Moreover, 9% of these graduates were still in the TDSB over the current 2007/8 school year, and many active and former TDSB students will have the opportunity to apply to post-secondary in the 2008 and 2009 application cycles.

In part because so many graduates apply to post-secondary, patterns of post-secondary applications tend to closely reflect patterns of graduation and dropout. Students were more likely to apply if they are:

- Female (74% compared to 63% of males);
- Age-appropriate for Grade 9 (70%) or a year younger (76%); only 39% of those a year older than age-appropriate in Grade 9 applied to post-secondary;
- Students who took a majority of courses at the Academic level in Grade 9 (80%), compared to 38% of those taking a majority of courses at the Applied level, and 20% of those taking a majority of courses in the Locally Developed-Essentials program of study;
- Students who had Level 3 or 4 in English, Mathematics or Science in Grade 8 report cards. Ninety-one (91%) of those achieving Level 4 in Grade 8 English and 78% of those with Level 3 applied to post-secondary, compared to 57% of those with Level 2, 40% with Level 1 and 27% with Level R;
- Not at risk in Grade 9, that is, with 7 or more credits (79%, compared to only 15% of those who had completed 6 or fewer credits by the end of Grade 9);
- Born in Eastern Asia (85%) or South Asia (81%). Sixty-seven (67%) of Canadian-born students applied to post-secondary; while students from Central & South American and Mexico with 42% and the English-speaking Caribbean with 38% had the lowest post-secondary application rates;
- Students speaking Bengali (89%), Chinese (87%), Gujarati (86%), and Tamil (86%). Sixty-two (62%) of English-speaking students applied, while Spanish (38%) and Portuguese (37%) had the lowest post-secondary application rates; and
- Living in the highest income neighbourhoods (80%), however, at the majority of students from the lowest-income neighbourhoods (59%) are also applying to post-secondary.

CONCLUSION

Cohort studies are studies of always-changing student status. The cohort process is, above all, a historical study, following students over time as they progress through the secondary school system. Students can take up to seven years to finish their secondary studies. During that time, some students who had dropped out will return to the TDSB; others will transfer out of the TDSB, and some will leave but then return. Still others will drop out of the TDSB yet return to the Ontario education system in some other pathway, for example, the Canadian Adult Achievement Test (CAAT) system or Adult regular day schools; however, this study examines only students as they exist within the day school records of the TDSB.

Consequently, there can be no “true” dropout or graduation rate, only a summary of what our records tell us at certain points in time. During the 2006-7 school year, there were no less than six concurrent cohort studies in progress. Nonetheless, the importance of these studies are threefold: first, looking at changes of the same students over time (e.g., the difference of outcomes at students’ fourth, fifth, sixth, and seventh years of secondary study); secondly, looking at trends, through comparing different cohorts at the same stage of progress (e.g., how the Grade 9 cohort of Fall 2000 compares to the Grade 9 cohort of Fall 2002 at Year 5 of secondary study); and thirdly, how different subgroups of students compare at the same point in time (e.g., gender differences in achievement at Year 5 of secondary study).

A report next year will focus on the first objective, examining the Grade 9 cohort of Fall 2000 over a full seven years of secondary study (Fall 2000 to Fall 2007). This report concentrated on the second and third objectives:

- Looking at the Grade 9 cohort of Fall 2002 at the end of five years, and how it compares to the Grade 9 cohort of Fall 2000 at the end of five years; and
- Looking at how the different subgroups of the Grade 9 cohort of Fall 2002 fared at the end of five years of secondary study.

The comparisons can be made since the methodology used in this process is one that, with some changes over time, can be traced to TDSB cohort research tradition of nearly half a century. This consistency allows valid trend comparisons.

The picture here is similar to that seen in the 2006-7 annual outcomes of the TDSB Secondary Student Success Indicators⁹. In general, progress is positive, although on an incremental rather than a dramatic fashion. While large differences between subgroups remain, there are grounds for optimism in that many of the gaps appear to be narrowing.

The overall five-year graduation rate increased and the dropout rate declined, continuing a long-term process that has been measured (over irregular intervals) for 20 years (see Appendix A). Declines were also found according to gender and student age (although the gap remained between female and male students and between age-appropriate and older students). Nine of ten deciles of neighbourhood income showed a lower dropout rate in the more recent Fall 2002 cohort than the Fall 2000 cohort; and furthermore, the decline of the lowest income group (from 34% to 26%) is greater than the highest income group (13% to 12%).

Another positive finding was in looking at students taking a majority of their compulsory Grade 9/10 courses in Academic, Applied, and Locally Developed Essentials programs of study. Compared to the previous Fall 2000 cohort, it was found that the graduation rate of students taking a majority of courses in the Academic program increased very slightly (82% to 84%) while the rate of those taking Applied courses increased by 3% (41% to 44%) and the rate of students taking Locally-Developed courses increased 5% (28% to 33%). The gap between Grade 9/10 Programs of Study- while still very large- has decreased over the past two years.

In both the Fall 2000 and Fall 2002 cohorts, we found that the relationship between types of courses taken in Grades 9/10 and types of courses taken in Grades 11/12 was very close: with the 2001 cohort, 96% of students taking a majority of University courses in Grades 11/12 had taken a majority of Academic courses in Grades 9/10. This highlights a discrepancy between the official Ministry curriculum documents- where streaming does not exist- and the reality of students' lives, where streaming does exist. The current categorization process of the OSS curriculum- where 'streaming' has been made covert rather than official- needs to be re-examined.

There were other findings that were both positive and negative. In looking at student language, the dropout rate of students speaking Russian and Greek increased, English

⁹ see the Fact Sheets at <http://www.tdsb.on.ca/site/ViewItem.asp?siteid=172&menuid=3019&pageid=2403>

stayed the same, while 13 others showed a decline in dropout. In looking at regions of birth, students from Eastern Europe stayed the same while the dropout rate of all other regions declined. With all three cohorts, students from the English-speaking Caribbean and those born in Central/South America had the highest dropout rates.

In general, this analysis found that final student achievement is very closely related to achievement in Grade 8 and the early years of high school. Thus, almost all (92%) of students with Level 4 (mark of 80% or higher) in Mathematics in Grade 8 had graduated by the end of five years of high school, while little over a third of students with Level R (mark of below 50%) in Mathematics in Grade 8 had graduated five years later.

Likewise, with the results of the Fall 2000 and Fall 2002 cohorts, we found that those who successfully complete the Grade 10 Ontario Secondary School Literacy Test (OSSLT) the first time it is offered were most likely to graduate on time, the least likely to return to the TDSB for additional schooling, and the least likely to drop out. They were also most likely to complete 16 credits by the end of Grade 10. Students who wrote the OSSLT but failed it should be considered moderately at risk; most will graduate, although it may take longer for these students to complete secondary school. Students who were deferred from writing the test the first time, and those who are absent during the writing of the test were most likely to be at risk.

The Fall 2000 cohort study had found Year 1 (Grade 9) absenteeism closely linked to graduation and dropout by the end of Year 5. With the Fall 2002 cohort, we looked at Year 2 (Grade 10) absenteeism, available the first time for all students in the cohort. Findings replicate earlier results. Students with low absenteeism in Grade 10 (3%) had high graduation and low dropout rates; students absent more than 10% of the time (an average of more than half a day a week) are more likely to be at risk, while most students absent for more than 20% in Grade 10 (more than a day a week) dropped out by the end of Year 5.

Two-thirds of the students in the cohort applied to Ontario post-secondary institutions in 2006 or 2007; assuming previous ratios of successful applications, this would mean that slightly over half (51%) of cohort students would attend post-secondary institutions in 2007, and is likely that this proportion will ultimately rise above 60%. Only 8% of the cohort had graduated from high school (and thus had the opportunity to apply to post-secondary) but did not in 2006 or 2007. In part because so many graduates now apply

to post-secondary, patterns of post-secondary applicants closely reflect patterns of graduation and dropout.

RECOMMENDATIONS FOR FUTURE COHORT RESEARCH

Recent Arrivals and ESL/D

There were no obvious differences between date of arrival in Canada and student achievement in this cohort. Those who had arrived in Canada two years or fewer before the start of Grade 9 had a slightly higher dropout rate and slightly lower graduation rate than the total cohort. At the time that these students started Grade 9, course information on English as a Second Language/Dialect (ESL/D) was limited. With the recent cohorts, more detailed course information has been available on Trillium. In the future, it might be useful to differentiate types of ESL/D students, to see the degree to which proficiency in English (rather than crude categories like 'ESL/D' or 'recent arrivals') relates to secondary achievement over time.

Returning Students and Transition to Post-secondary

In the previous Fall 2000 cohort study (Brown, 2006), we had looked at the students who had dropped out and then returned to the TDSB. At that point, we found that a quarter of dropouts had at some point returned to the TDSB in the five years of the study. Rather than look again at five-year outcomes for returning students in this cohort, it would be more useful to examine outcomes at the end of seven years- by this time we will have a complete picture of students returning to the TDSB through the regular secondary school system process. Similarly, since we have found in the Fall 2000 cohort study that students apply to post-secondary institutions over multiple years (and multiple times in multiple years), our best picture of cohort post-secondary patterns would be at the conclusion of seven years. Again, note that even this will not be the complete picture, since many students will return to the secondary panel through the adult program or other District School Boards (DSBs), while those and other students will enter post-secondary as adult students.

Information from the Student Census

Analysis of current student cohorts is limited to what has been collected in the TDSB Student Information System. This is missing many variables that are considered essential for a comprehensive examination of student achievement (e.g., socio-

economic information like parental status- living with mother only, father only, both parents, parental education, and parental occupation- and key student information like attitudes towards school, future educational plans, and participation in homework, part-time work and extracurricular activities). This information is now available for students in the Grade 9 cohort of Fall 2006 who wrote the Student Census in November 2006. We have provided an initial analysis of the Grade 9 results of this cohort (Brown and Sinay, 2008). With time, as those students progress through the system, we will be able to provide a much more comprehensive picture of secondary student success than is currently available.

HISTORICAL CHANGES: THE TORONTO LEGACY COHORTS 1987-2002

In the current Ontario educational system, most students complete high school and much of the research focuses on who does not finish high school and why students drop out. It is important to remember that historically speaking, this is a fairly recent development.

In 1946, the Department of Education (now the Ministry of Education) published a chart showing longitudinal student progress in Ontario at the time. Out of all students starting Grade 1, only 67% passed the high school entrance exam and only 56% started Grade 9 (hence, 44% did not make it to Grade 9). A fifth (21%) of Ontario students completed Grade 12 and 13% completed Grade 13, while only 4%, or less than 1 in 20 who started in elementary school, made it to post-secondary institutions (Department of Education, 1946, p. 106).

With the first Toronto Grade 9 cohort report of 1959, all students were expected to at least *start* high school (and the High School Entrance Exams were long gone) but “public” schools ended at Grade 10, commercial-technical schools at Grade 12 and collegiate/academic institutes at Grade 13. The lack of consistent curriculum and student timelines made a consistent ‘graduation’ or ‘dropout’ rate problematic. Still, it was determined that as of the end of Year 5 (1963-1964) only 13% of all students or 29% of students enrolled in collegiate/academic schools had completed Grade 13 (Wright, 1967, p. 3), a rate not greatly different from the Ontario figures of 1945.

In the 1960s, high school graduation was rare, but by 1987, it became common enough that the Radwanski Report now focused on the crisis of a ‘high’ Ontario dropout rate of 30% (Radwanski, 1987). The first Toronto cohort of Fall 1987 is a useful benchmark in that it is one of the first years of the OS:IS system, where the structure of graduation is most similar to our current OSS system; the cohort of Fall 2000 was the first where all curriculum was clearly under the OSS system¹. Table 1 shows five Grade 9 cohorts that were part of similar longitudinal studies (in each of the studies, students were followed for five school years after starting Grade 9). For consistent comparison, information for

¹ Depending on interpretation, there have been at least five major curriculum reorganizations in Ontario since the Education Act of 1871. OS:IS, implemented in the 1980’s to replace the Robarts system was important in that for the first time all high school graduation took place after completing Grade 12. However, with OS:IS a majority of students took five to seven years to finish their requirements, and it was rare for students to have completed their Ontario Academic Credits (OAC), needed to apply to university, in under five years (see Brown, 1993). The students in the current OSS curriculum started graduating in 2003.

the Fall 2000 and Fall 2002 cohorts is provided here only for students attending schools in what had been the Toronto legacy system.

**Table 1: Fifteen Years of Toronto Cohort Studies:
Toronto Legacy System Cohorts of 1987, 1991, 1993, 2000, and 2002**

Cohort	Graduated (%)	Still in TBE system (%)	Dropout (%)
Cohort of 2002 (to Fall 2007)	69	9	22
Cohort of 2000 (to Fall 2005)	64	12	24
Cohort of 1993 (to Fall 1998)	63	17	21
Cohort of 1991 (to Fall 1996)	59	19	22
Cohort of 1987 (to Fall 1992)	56	11	33

Over the 15 years of cohort studies:

- The graduation rate increased from 56% to 69%.
- Dropout declined from 33% to 21%, increased to 24% and is now approximately at 1993 levels (22%).
- The proportion of students still in school in Year 6 of secondary school increased markedly from the 1987 to 1991 and 1993 cohorts (from 11% to 17%), but is now at the lowest on record at 9%.

Thus, the pattern of recent years is a continuation of longer Ontario trends, showing an increase in graduation—from a comparatively rarity in the 1960's, to a slight majority of students in the 1980's, to an overwhelming propensity by 2007.

SELECTION OF THE GRADE 9 COHORT

Selection Process

At the time of the selection of Grade 9 students, no consistent flag existed among the three Student Information Systems then in place, to determine Grade 9 students who are new to secondary studies (as opposed to students who had started secondary studies in previous school years). The following selection criteria were used:

The initial process selected students in TDSB secondary grades (including the Grade 9s of 10 TDSB junior high schools) between the ages of 13 and 15, who were present in the TDSB in Fall 2002.

Then, the following students were deleted:

- Any student attending a secondary school in the TDSB during March 2002;
- Any student who had completed more than 1 Grade 10 credit by the end of June;
- Any student awarded an equivalency credit by the end of June 2003; and
- Any student who had been awarded more than 9 credits by the end of June 2003.

Sources of Information

Several sources of information have been used to develop the set of indicators of student success:

- Information drawn from the student information systems currently being used in the TDSB, as provided by the Data Warehouse, for the 2002/3, 2003/4, 2004/5, 2005/6, and 2006/7 school years;
- Demographic data for all students attending TDSB secondary and junior high day schools (e.g., date of birth, grade, gender, country of birth);
- Exit dates and exit codes of TDSB secondary students over five years;
- Snapshots of all TDSB students at various points in time (usually, but not always done three times a year— October 31, March 31, and May/June);

- Transcript data for secondary students (including subject, mark, and credit information on all courses) over five years;
- Data on Ontario Secondary Student Literacy Test (OSSLT) from 2003/4, 2004/5, 2005/6 and 2006/7. from EQAO and also from the TDSB Trillium system; and
- Family income data from the 2001 Census (the average income of families living in a City of Toronto Dissemination Area, or DA, which was then linked to the student datasets using the postal code of student residence).

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