APPLIED OR ACADEMIC:

High Impact Decisions for Ontario students

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Applied or Academic: High Impact Decisions for Ontario students

Grade 8 is a critical year for Ontario's students. It is not only a pivotal point in a young person's emotional, social, and physical development[1], but also a time when students must choose between taking applied and academic courses in high school. These course selections largely determine students' educational pathways throughout high school and have the potential to influence their post-secondary options and career opportunities[2].

This report examines the gap between Ontario's stated policy regarding students' choices in high school and the reality on the ground. It looks at whether grade 8 students should be required to make decisions that have such important short and long term consequences in light of international evidence suggesting that it contributes to lower outcomes.

QUICK FACTS

- 28% (38, 181) of Ontario grade 9 students take applied mathematics.
- 62% of students who take applied mathematics take 3 or more applied courses
- In a Toronto District School Board study, only 40% of students who took applied courses in grade 9 had graduated after 5 years.

A SOLUTION TO STREAMING?

Applied and academic courses were introduced in 1999 when the Ministry of Education implemented the Ontario Secondary Schools policy, *Ontario Secondary Schools, Grades 9–12: Program and Diploma Requirements, 1999* (OSS:99)[3]. The policy was intended to end streaming in Ontario high schools and create a system that kept "options open for all students" [4].

Prior to 1999, secondary students were streamed into either a vocational, college, or university track. This system was widely criticized for disproportionately placing low-income students into vocational and college tracks[5]. The new system established applied and academic courses in grades 9 and 10, which were prerequisites for a range of "destination-based" courses in grades 11 and 12. Academic courses were intended to focus on "abstract applications of essential concepts" and applied courses were described as stressing "practical, concrete application of concepts"[6].

The expectation was that students would take a combination of applied and academic courses in grades 9 and 10 that aligned with their interests and needs. Both course types were to offer equally high quality educational experiences and equally rigorous standards[7]. The policy also stressed the need for flexibility in the new system, noting that in grades 9 and 10 "students are not required to make binding decisions about a particular educational and career path"[8].

DIVIDING STUDENTS INTO SEPARATE TRACKS

Although the Ontario Secondary Schools policy outlines ways that students can take both applied and academic courses, data from the Ministry of Education on course selections in 2014 shows that 60% of students taking applied math were taking three or more applied courses and that only 11% of students in applied math take no other applied courses[9].

In most cases, students in applied courses are in different classrooms, have different teachers, and experience a different curriculum[10]. Students are, in effect, grouped into separate tracks, contradicting the notion that students would mix-and-match applied and academic courses as articulated in OSS:99[11] .

Perhaps even more troubling is the nature of the differences between these two types of courses.

Dr. Alan Sears, a leading scholar in citizenship education, recently conducted a review of the grades 9 and 10 history and geography curricula in relation to citizenship education in Ontario. He found substantial differences between applied and academic courses, raising concerns about key content differences between the academic and applied courses (See Figure 1).

FIGURE 1

Grade 9 Geography example

Academic	Applied
By the end of this course, students will: B1.1 analyse environmental, economic, social, and/or political implications of different ideas and beliefs about the value of Canada's natural environment, and explain how these ideas/beliefs affect the use and protection of Canada's natural assets ***Sample questions***: "How does the traditional ecological knowledge of the First Nations, Métis, and Inuit peoples influence their beliefs about the natural environment and its importance to them?" "Is there a current issue that highlights conflicting beliefs about the value of Canada's natural environment and how it should be used or protected? What actions and processes are occurring in order to resolve the conflict?" "What is the difference between a preservation or conservation park system?" "How might the opening of the Northwest Passage affect Canada's claim to Arctic sovereignty?" "How does the protection of wildlife relate to one's beliefs about the value of wildlife?" [12]	By the end of this course, students will: B1.1 describe the types of natural disasters that can occur in Canada, and analyse the impacts of selected events ***Sample questions***: "What were some of the social, political, environmental, and economic impacts of the tornado that hit Goderich in 2011?" "What are some typical impacts of ice storms on communities in southern Ontario and Quebec?" "How does heavy flooding, like that along the Red River in 2011, affect communities?" "How does the risk of an earthquake in southern Ontario compare with that in British Columbia?" "Can a natural disaster have positive impacts? Can you give examples?"

I am struck by the much more critical and potentially political nature of the questions raised for academic students [versus] applied students. The implication is that academic students are much more ready for critical citizenship than applied students. In citizenship, I don't know why you would have different content. There seems to be an assumption that applied students wouldn't be able to handle the bigger issues. In my own experience as a teacher, students in applied are, in many cases, much more ready to engage in critical questions than academic students are.

Dr. Alan Sears, University of New Brunswick

Dr. Sears also mentioned that by having applied and academic courses in subjects, such as history or geography, Ontario's school system may be conflating a difference in previous academic performance with a student's ability to understand and learn about important issues.

Additionally, recent research in the Toronto District School Board (TDSB) indicates that rather than being connected to students' interests and career aspirations, students' placements in either academic or applied courses are more closely tied to achievement in grade 8[13].

In the TDSB in 2010, for instance, 53.5% of the students in grade 9 applied courses had not successfully completed all their grade 8 courses and were "transferred" to high school rather than promoted. Only 4.5% of students in academic courses were transferred[14]. These results, which are echoed by international studies on course-by-course tracking[15], suggest that applied courses have disproportionately become placements for lower performing students rather than

courses for students seeking to learn practical applications of concepts related to their career goals.

THE ASSOCIATION BETWEEN APPLIED COURSES AND WIDENING ACHIEVEMENT GAPS

Along with evidence that lower achieving students are more likely to take applied courses, research demonstrates that the current course selection system may be exacerbating achievement gaps in secondary school.

A recent study by the TDSB shows that grade 9 students taking mostly applied courses were much less likely to have graduated in five years (40%) than those in academic courses (86%) were[16]. Previous studies on course programs in Ontario have also noted only 21% of students taking applied math in grade 9 went on to college[17], only 3% went on to university.

Even more concerning, the Education Quality and Accountability Office (EQAO) reports that students who were successful on EQAO tests in grades 3 and 6 are less likely to be successful in applied mathematics than students who take academic mathematics in secondary school are[18].

In 2013, EQAO also reported a 40% gap in test performance between students in academic and applied courses[19]:

- In grade 9, 84% of students in academic mathematics were at or above the provincial standard, compared to only 44% of students in applied mathematics.
- 94% of students in academic English successfully completed the Ontario Secondary School Literacy Test (OSSLT), compared to only 51% of students in applied English.
- Over the past five years, the OSSLT success rate for students in applied English has declined from 62% to 51%.

THE LINK BETWEEN APPLIED COURSES AND SOCIOECONOMIC STATUS

There is also evidence that the applied/academic system may perpetuate current economic and educational disparities among families[20]. Demographic data from EQAO along with 2006 Census data show that schools with higher percentages of students from low-income families also have higher proportions of students in applied mathematics (See Figure 2)[21].

A recent TDSB study found that 92% of students from the highest income neighborhoods took the majority of their courses as academic courses, compared to only 56%

Applied courses were introduced in secondary schools a number of years ago to offer programming for students with different strengths, interests, needs and learning styles. Student achievement in these courses continues to lag. It's worth reviewing the intent of these courses and how they might better support student achievement.

Bruce Rodrigues, CEO, EQAO

FIGURE 2

Demographic characteristics of Ontario schools with the highest and lowest percentage of students in Grade 9 Applied Math

Demographic characteristics by school (averages)	10% of schools with highest levels of applied math enrolment	Provincial average	10% of schools with lowest levels of applied math enrolment
Applied students	58%	32%	10%
Family income	$61,720	$84,440	$112,420
Households living in poverty (LICO)[19]	18.2%	12.8%	14.8%
Parents without high-school diploma	14.2%	8.3%	5.6%
Parents with university education	15.9%	25.2%	43.2%
Recent immigrants (arrived in Canada within 5 years)	5.5%	4.5%	6.6%
Immigrants	14.1%	13.8%	21.2%
English Language Learners	9%	3.9%	4.6%
Aboriginal students	4.8%	2.9%	1.3%

School practices or systems that start grouping or 'tracking' students early on in their educational curricula are associated with larger socio-economic inequalities in secondary educational performance, without any gains in average performance... [education systems should] avoid early tracking and defer student course selections until upper secondary.

OECD (Organization for Economic Cooperation and Development 2012)

of students from the lowest income neighborhoods[22]. By contrast, 6% of students in the highest income neighborhoods took the majority of their courses as applied courses compared to 33% of students in the lowest income neighborhoods. While the TDSB study does not represent the entire province, it provides evidence of demographic imbalances in a school district that serves over 200,000 students[23], approximately 10% of all students in the province.

INTERNATIONAL EVIDENCE AGAINST SEPARATING STUDENTS EARLY IN SECONDARY SCHOOL

In 2012, the Organization for Economic Co-operation and Development (OECD) outlined several factors contributing to lower performance among students in lower tier courses (e.g. applied classes in Ontario) based on data from 65 countries[24].

- Teachers may have lower expectations for some students, particularly disadvantaged or lower performing ones, and assign them slower-paced and more fragmented instruction.
- Students, in turn, adjust their expectations and efforts, resulting in even lower performance.
- Students placed in lower-performance groups may experience a low-quality learning experience.

The OECD administers the Programme for International Student Assessment (PISA), which assesses 15-year-old students in mathematics, reading, and science. In 2013, the organization affirmed that separating students into groups produces lower outcomes for lower-income groups, especially when they are divided from their peers early in secondary school[25].

The OECD has recommended that education systems should "avoid early tracking and defer student course selections until upper secondary"[26]. Other international studies have demonstrated that dividing students at earlier stages in school may intensify the effect of family factors on student performance with low-income students exhibiting lower test scores during secondary school[27].

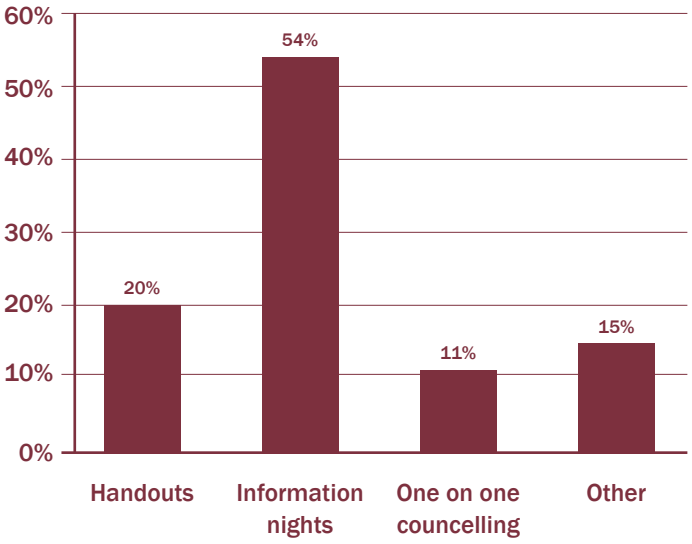
SCHOOL SUPPORTS FOR GRADE 8 COURSE SELECTIONS

As applied courses are linked, in many cases, to lower outcomes across a wide range of indicators, we investigated the level of support schools offer grade 8 students in making these potentially critical decisions.

> There is no way for a principal of an elementary school of [approximately 500] students with one secretary and no vice principal to know more details on [high school course choices]. My entire day is spent dealing with the urgent and immediate. There is literally no time left to delve into such things. The government trumpets that we're "curriculum leaders," yet will not ensure funding is in place and is spent on administrators so that we can actually do such things.
>
> Elementary school, Waterloo Catholic DSB

FIGURE 3

Main source of information for parents and students regarding course choices and their implications (Grade 8)



Provincial policy mandates that by grade 7 all students must have an Individual Pathway Plan (IPP). The IPP is a self-assessment tool that students from grades 7 to 12 use to keep track of what they have learned, their goals for after they graduate and how they plan to achieve those goals. Schools with grades 7 and 8 must have a "clearly delineated process in place to support students" in creating and reviewing their IPPs at least twice a year[28]. IPPs are meant to be "the primary planning tool for students as they move through grades toward their initial postsecondary destination"[29]. However, 16% of schools with grade 8 report that they do not use students' IPPs to inform course recommendations to students.

In this year's survey, we asked about the main sources of information for students and parents regarding course choices (See Figure 3).

One-on-one counseling has the potential to provide more in-depth and individualized support, but only 11% of schools report students and families receive information this way. This may be a result of limited resources – in particular, guidance counsellors – in elementary schools.

Guidance counsellors can be vital sources of support for course selections, and the Ministry has identified guidance counsellors as having an important role in career and life planning[30]. However, according to our survey data, only 20% of schools with grades 7 and 8 report having a guidance counsellor, and the vast majority are only employed part-time.

The 15% of elementary schools that report using *other* sources mentioned "professional judgment," "personal knowledge of a student," "ongoing assessments," and "transition meetings with parents." A considerable number of elementary school principals remarked that a more effective process was needed to support students and parents in making course selections.

In addition to school initiatives for recommending courses, school staff also provide important support. Grade 8 teachers have in-depth knowledge of their students, and most students indicate that their teachers are effective at providing support for course selections[31]. However, the inflexibility and low movement of students once they are in secondary school means that teachers are trying to help students make decisions that may have significant consequences long after they leave grade 8.

Based on our analyses, the current level of school support for students in making course decisions in grade 8 appears to be insufficient given the impact of these choices on a student's career and life trajectories.

OBSTACLES TO COURSE TRANSFERS

To examine the extent to which the system fosters movement between courses, we asked principals how they support students in both selecting courses and transferring between course types. While 90% of schools report that they have initiatives to ensure students select appropriate courses, very few schools report that often students transfer from applied to academic courses.

Students in early adolescence are experiencing tremendous physical, social and emotional changes, and may change their perspectives, interests, and aspirations[32]. Consequently, it is important that secondary schools have a flexible structure to accommodate pathway changes in a responsive way. As one secondary school principal noted:

> *We need to embed flexibility because having an eighth grader make binding decisions at the age of 12 or 13 is probably not the best idea. I think that is why as a school and as a community, we are trying to have those decisions not be impactful on the rest of someone's life. So we are really pushing the mixed timetable. Some people think you can either take only applied or academic. So we are really trying to make people understand that it can be a mix. Here, we only have a handful of kids who have an all applied timetable.*
>
> (Secondary School Principal, Toronto District School Board)

The majority of schools report that they work to ensure that students are in appropriate courses, but only 3% report that students transfer from applied to academic often, and 43% report that students transfer from applied to academic courses "never" or "not very often" (see figure 4).

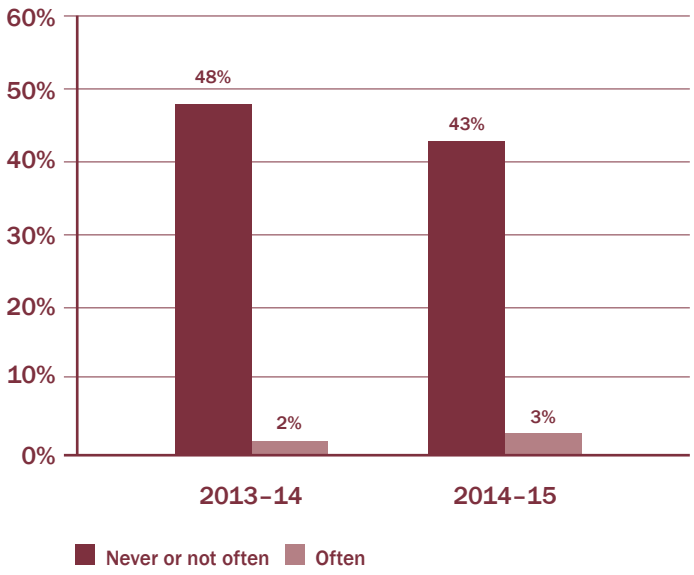
Although students can transfer from an applied to an academic course, they may be required to take an additional course[33].

Such a requirement may represent a substantial barrier, preventing capable students from transferring to an academic course. This structural inflexibility also conflicts with the Ministry's stated intention to support students in adapting "to changes within themselves and the world around them"[34]. Recognizing this, some boards, such as Halton District School Board, have waived this requirement, and instead, offer in-school support to prepare transferring students for academic coursework.

In some schools, principals have tried to improve flexibility by scheduling applied and academic courses during the same time block, thereby allowing students to transfer more easily

FIGURE 4

Rates of transfer from Applied to Academic



The transfer course is not very practical because it is a half-credit, and there is a reluctance for students to take a summer course that is a half-credit.

Secondary School Principal, Toronto District School Board

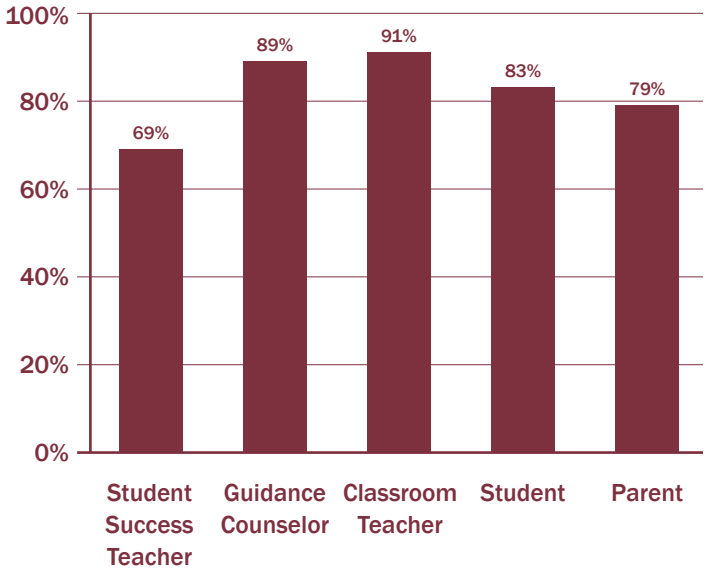
At the end of every semester, 100% of the students are discussed in a room by a special education resource teacher, an administrator, and a guidance counselor to make sure that everything that is necessary is on track for success... What is it that we do differently than other places? We don't discuss [students] in silos and we don't assume [staff] have to stay in silos.

Really importantly, we report success or non-success every five weeks throughout the semester. And through a school-team process, we look at what's going on and why we are not meeting the needs of certain students... All of our [support staff] will come around the table to look at what is best for a kid.

Secondary School, Halton District School Board

FIGURE 5

People involved in initiating transfer decision



between courses[35]. In smaller schools with fewer teachers, however, this structural change is often not possible[36].

SCHOOL INITIATIVES AIMED AT INCREASING FLEXIBILITY

To gain a clearer understanding of the structures that permit greater flexibility for student transfers, we conducted follow-up interviews with principals in schools that reported students "often" transfer from applied to academic courses. The findings from the interviews suggest that intentional, well-coordinated school policies that involve not only students and parents but also multiple members of the school staff improve mobility within the school.

Secondary schools also identified critical people who help to initiate a decision for a student to transfer from one program of study to another (see Figure 5), lending further support to the notion that well-coordinated school level initiatives involving students, parents, and multiple school staff members may be most effective in enhancing transfer opportunities.

CHOOSING A PATHWAY BEFORE KNOWING THE DESTINATION

As mentioned earlier, students in grade 8 are at an age when many "physical, social and emotional processes are in flux and formation"[37], leading to shifts in academic needs and career interests as they progress through adolescence. Requiring these students to make course choices in grade 8 may set some of them on pathways that will not align with career and life goals which may emerge as they move through secondary school. For at-risk youth in particular, making an informed transition to secondary school can be a significant challenge[38].

Grade 8 course selections also seem to conflict with many of the Ministry's stated goals. In *Creating Pathways to Success*, the most recent policy involving career and life planning, the Ministry articulates the need to empower students and help them "respond to the realities of a complex, rapidly changing world"[39]. Students are encouraged to discover who they are, explore opportunities, pursue their passions, and design personal pathways to success[40].

However, students are expected to make decisions before they have any experience with high school life and the opportunities that are available to them. Requiring grade 8 students to make important decisions about their future without the benefit of firsthand experience appears to be an impractical element of the current system.

RECENT INITIATIVES: SUCCESS COMBINING APPLIED AND ACADEMIC

A small number of schools in Ontario seem to have recognized the fundamental problem associated with setting students on different pathways based on grade 8 course selections. These schools have delayed early course selection by combining applied and academic courses in grade 9. In our annual report last year, we highlighted a program at the Granite Ridge Education Centre, a small K-12 school near Kingston, which incorporated applied math into academic math.

Approximately one-third of students required extra support and were enrolled in a supplementary for-credit math and learning skills course. Even though the school told students that they could transfer to the applied math program mid-year if they found the academic program too challenging, they all chose to remain in academic math. Notably, teachers reported improved student behavior and time on task in the grade 9 academic math class[41].

Given these promising initial results, we followed-up with Granite Ridge Education Centre's principal, Heather Highet, for this year's report. She confirmed the program's continuing successes: teachers have bought into the initiative and are now convinced that combining students in a multi-level classroom is a good way to teach math. The perspectives of students who would have been in an applied course also changed as a result of the school's initiative.

Furthermore, students at Granite Ridge are exhibiting impressive results on EQAO examinations. Last year, 89% of students writing the math test achieved provincial standard or higher, compared to the Limestone District School Board at 82% and the province at 84%[42].

The success of the initiative at Granite Ridge offers key insight and learning for potential province-wide efforts aimed at delaying secondary school course selections.

Internationally, Poland provides an example on a larger scale of a school system that ended early streaming of students and decreased the grouping of students based on previous performance during secondary school[43]. During Poland's initiative from 2003 to 2012, Polish students' mathematics test scores on PISA rose from below the OECD average (490) to above the average (518). Poland was also able to reduce the percentage of low performing math students from 22% to 14%[44].

> What stood out was the students understood that they really have to work at something and not give up. Students told me that it is cool to know that a person is not fixed in intelligence... These were the students that received extra support in math.
>
> Heather Highet, Granite Ridge Education Centre

> One of our most exciting statistics when we look at cohort data for the students that were in the [academic math] course last year (now in grade 10) – Of our students that met the provincial standard in grade 9 academic math, 59% of them had not met the provincial standard in grade 6 math. So we saw a large percentage of these kids increase their numeracy skills.
>
> Heather Highet, Granite Ridge Education Centre

Recommendation

People for Education has investigated the effects of academic and applied courses in Ontario for several years. Each year our findings have indicated that the system is not adequately equipped to provide support for course selections given the critical importance of these decisions. Additionally, we continue to find a lack of flexibility in the system. While some schools have undertaken formal initiatives to increase flexibility, a low degree of student movement largely characterizes the current system.

Perhaps most importantly, evidence indicates that grade 8 is simply too early to require course decisions that could be potentially binding. Although Ontario's school system has made considerable strides in the equity of learning opportunities for all students, there is extensive evidence to support delaying course decisions involving academic and applied courses to a later point in secondary school. We strongly recommend that this decision be delayed until at least after grade 9.

Research Methods

Unless cited from other sources, the statistics and quoted material in this report originate from People for Education's 18th annual survey (2014-2015) on school resources in Ontario's elementary schools and 15th annual survey of school resources in Ontario's secondary schools. For our qualitative investigations into school-level flexibility, citizenship education, and the delaying of course decisions, we undertook semi-structured interviews.

The annual surveys were mailed to principals in every publicly funded school in Ontario during the fall of 2014. Translated surveys were sent to French-language schools. Surveys were also available for completion online in English and French. All survey responses and data are confidential and stored in conjunction with Tri-Council recommendations for the safeguarding of data[43]. The 2014-2015 survey generated 1,196 responses from elementary and secondary schools principals. This figure equals 28% of the province's schools. Of the province's 72 school boards, 71 participated in the survey. Given these figures, the responses provide a representative sample of publicly funded schools in Ontario (see Figure 4). Calculations have been rounded to the nearest whole number and may not amount to 100%.

DATA ANALYSIS

The analyses in this report are based on both descriptive and inferential statistics. The descriptive statistical analyses were conducted in order to summarize and present numerical information in a manner that is comprehensible and illuminating. In instances where inferential statistical analyses are used, we examined associations between variables, using logistic regression analysis. All data were analyzed using SPSS statistical software. For regional comparisons, schools were sorted by region using postal codes. The GTA region comprises all of the schools in Toronto together with schools located in the municipalities of Durham, Peel, Halton, and York.

Regional Data

Region (sorted by postal code)	% of schools responding to the survey	% of schools in Ontario
Eastern Ontario	19%	18%
Central Ontario (not including GTA schools)	11%	17%
Greater Toronto Area (GTA)	35%	34%
Southwestern Ontario	23%	20%
Northern Ontario	12%	11%

Number of schools responding by school board

District School Board	# of schools
Algoma DSB	13
Algonquin and Lakeshore Catholic DSB	14
Avon Maitland DSB	16
Bluewater DSB	14
Brant/Haldimand-Norfolk Catholic DSB	5
Bruce-Grey Catholic DSB	3
Catholic DSB of Eastern Ontario	1
CÉP de l'Est de l'Ontario	15
CS Viamonde	12
CSC Providence	9
CSD du Grand Nord de l'Ontario	10
CSD du Nord-Est de l'Ontario	2
CSDC Centre-Sud	12
CSDC de l'Est ontarien	5
CSDC des Aurores boréales	3
CSDC des Grandes Rivières	3
CSDC du Centre-Est de l'Ontario	8
CSD catholique Franco-Nord	0
CSDC du Nouvel-Ontario	11
DSB of Niagara	9
DSB Ontario North East	6
Dufferin-Peel Catholic DSB	6
Durham Catholic DSB	7
Durham DSB	15
Grand Erie DSB	30
Greater Essex County DSB	14
Halton Catholic DSB	5
Halton DSB	25
Hamilton-Wentworth Catholic DSB	6
Hamilton-Wentworth DSB	4
Hastings and Prince Edwards DSB	12
Huron-Perth Catholic DSB	4
Huron-Superior Catholic DSB	11
Kawartha Pine Ridge DSB	48
Keewatin-Patricia DSB	4
Kenora Catholic DSB	1
Lakehead DSB	11
Lambton Kent DSB	34
Limestone DSB	15
London District Catholic SB	11
Near North DSB	13
Nipissing-Parry Sound Catholic DSB	5
Niagara Catholic DSB	1
Northeastern Catholic DSB	4
Northwest Catholic DSB	2
Other School Authority	1
Ottawa Catholic DSB	14
Ottawa-Carleton DSB	38
Peel DSB	58
Peterborough Victoria Northumberland Catholic DSB	24
Rainbow DSB	15
Rainy River DSB	3
Renfrew County Catholic DSB	4
Renfrew County DSB	11
Simcoe County DSB	44
Simcoe Muskoka Catholic DSB	14
St. Clair Catholic DSB	9
Sudbury Catholic DSB	1
Superior North Catholic DSB	7
Superior-Greenstone DSB	6
Thames Valley DSB	43
Thunder Bay Catholic DSB	4
Toronto Catholic DSB	42
Toronto DSB	196
Trillium Lakelands DSB	18
Upper Canada DSB	29
Upper Grand DSB	37
Waterloo Catholic DSB	13
Waterloo Region DSB	22
Wellington Catholic DSB	12
Windsor-Essex Catholic DSB	9
York Catholic DSB	24
York Region DSB	39

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