

# Comparing university outcomes of International Baccalaureate Diploma Programme graduates to their peers in Toronto and Vancouver, Canada

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## Research summary June 2022

Summary developed by the IB Research department based on a report prepared by: Professor Scott Davies (University of Toronto) and Professor Neil Guppy (University of British Columbia)

Study managed on behalf of the IB Research department by Dr Michael Thier



## Key acronyms

### International or cross-provincial

International Baccalaureate (IB) Diploma Programme (DP)

French Immersion (FI)

### Ontario

Toronto District School Board (TDSB)

Ontario Secondary School Diploma (OSSD)

University of Toronto (UofT)

### British Columbia

Greater Vancouver Regional District (GVRD)

Dogwood Diploma (DW)

University of British Columbia (UBC)

## Purpose

This study examines the success of International Baccalaureate (IB) Diploma Programme (DP) graduates<sup>1</sup> across two of Canada's largest high-school-to-university pathways: specifically, the Toronto District School Board (TDSB) to the **University of**

**Toronto (UofT)**, and public high schools in the Greater Vancouver Regional District (GVRD) to the **University of British Columbia (UBC)**. Data from these districts offer insight into the characteristics of DP graduates and their performance in two of Canada's top universities.

### Outcomes of interest

Researchers compared the university outcomes of **DP graduates** to those of **French Immersion (FI)**<sup>2</sup> graduates and graduates with standard high school diplomas in Toronto (the **Ontario Secondary School Diploma**,<sup>3</sup> hereafter OSSD) and Vancouver (the **Dogwood Diploma**,<sup>4</sup> hereafter DW). For both universities, the study focused on the following post-secondary outcomes:

- the faculties and/or fields of study students enter and graduate from
- cumulative grade point averages (CGPAs) or university course grades
- graduation rates (four- and six-year).

In addition, the researchers examined the following university-specific outcomes:

- UofT: Earning merit awards
- UBC: Participation in study abroad exchanges and cooperative education programmes.

<sup>1</sup> The researchers use "DP graduates" as an umbrella term in this study, although definitions of DP graduates differ somewhat across the two datasets. In Ontario, researchers designated students as DP graduates if they were recorded as DP students in their UofT admission records and if their previous secondary schools were listed as IB World Schools. The researchers determined DP graduates in the UBC case as students that the university flagged in their registration data as having participated in DP coursework in secondary school.

<sup>2</sup> French Immersion (FI) students provide a useful comparison to DP students in most Canadian contexts, as both sets of students may undergo selection processes to enter and/or remain enrolled in popular, intensified and/or enriched alternative education programmes. Additionally, at the two universities of interest, both sets of students provide roughly similar sample sizes, which can be computationally useful for statistical comparisons.

<sup>3</sup> Students who complete Ontario's traditional high school curriculum receive an Ontario Secondary School Diploma (OSSD).

<sup>4</sup> British Columbia's traditional public high school curriculum is known as the "Dogwood Diploma" (DW).



## Research design

### Data sources

The data for this study had two sources. Toronto data came from linking student administrative records from six consecutive TDSB cohorts of Grade 12 students during academic years 2006–07 through 2011–12 to all students UofT admitted from September 2006 to September 2021. The Toronto data collection protocol captured 487 DP graduates, 532 FI graduates and 17,167 graduates with Ontario’s traditional OSSD.

Vancouver data came first from student administrative records on all GVRD-based public high school graduates that UBC admitted between 2012 and 2018. These data distinguish DP graduates from those with

FI designations and from those with DW diplomas. The researchers randomly sampled the latter from GVRD high school entrants to UBC (both high schools that had authorized DPs and those that did not). The Vancouver data included 1,731 DP students, 1,137 FI students and 3,198 students with the traditional DW diploma.

Overall, pooling the Toronto and Vancouver datasets, the analyses included more than 2,200 DP graduates and more than 22,000 comparison students.

### Comparison groups

With descriptive comparisons, the researchers compared the statistics of DP graduates to those of all other students at the UofT and UBC. However, DP students likely differ in key ways from other students in the Ontario and British Columbia education systems.

Given this, both the Toronto and Vancouver portions of the study compared DP graduates to graduates from FI programmes, since both sets of students may undergo selection processes to enter and/or remain enrolled in intensified and enriched alternative high school programmes (closer to an “apples to apples” approach than other analytical strategies might allow). Such an approach aims to compare DP graduates to other students who are deemed similar along various dimensions. The reasoning here is that DP students are likely to be considerably selective, possibly both via self-selection and institutional selection.

The third logic of comparison retains the aforementioned “apples to apples” logic, but attempts to compare DP graduates to a general pool of other graduates (not just FI graduates), while limiting that pool in ways that make it more similar to the pool of DP graduates. One procedure for doing so is to limit comparisons to students attending the same high schools. This procedure can reduce the influence of some confounders<sup>5</sup> since all students are from the same schools, while retaining other control variables.

Due to the limits of the various approaches, the researchers employed all three logics of comparison.



<sup>5</sup> Confounders can be defined as additional factors or variables that may distort or complicate the understanding of relations or associations between variables.

Degree programme on entry (%)	High school programme		
	OSSD	FI	DP
Arts	48.0	62.0	29.8
Commerce	11.7	4.3	8.4
Engineering	8.2	8.1	11.7
Science	32.1	25.5	50.1

Table 1. DP graduates were more likely than other students to enter STEM fields at UofT

Degree programme on entry (%)	High school programme		
	DW	FI	DP
Arts	36.9	39.6	25.5
Business/Commerce	8.3	8.3	9.4
Engineering	10.2	13.6	14.6
Forestry	5.1	0.0	0.0
Human kinetics	4.8	4.7	1.9
Land and food systems	11.0	2.6	2.7
Science	22.9	30.6	45.1

Table 2. DP graduates were more likely than other students to enter STEM fields at UBC

## Findings by outcome (UofT and UBC)

### Fields of study

#### UofT

- DP graduates were much more likely to enter science, technology, engineering and mathematics (STEM) fields (specifically science (50.1%)) and much less likely to enter arts (29.8%) than were their high school peers (table 1). This finding is noteworthy because the DP is sometimes thought to emphasize the humanities and social sciences.

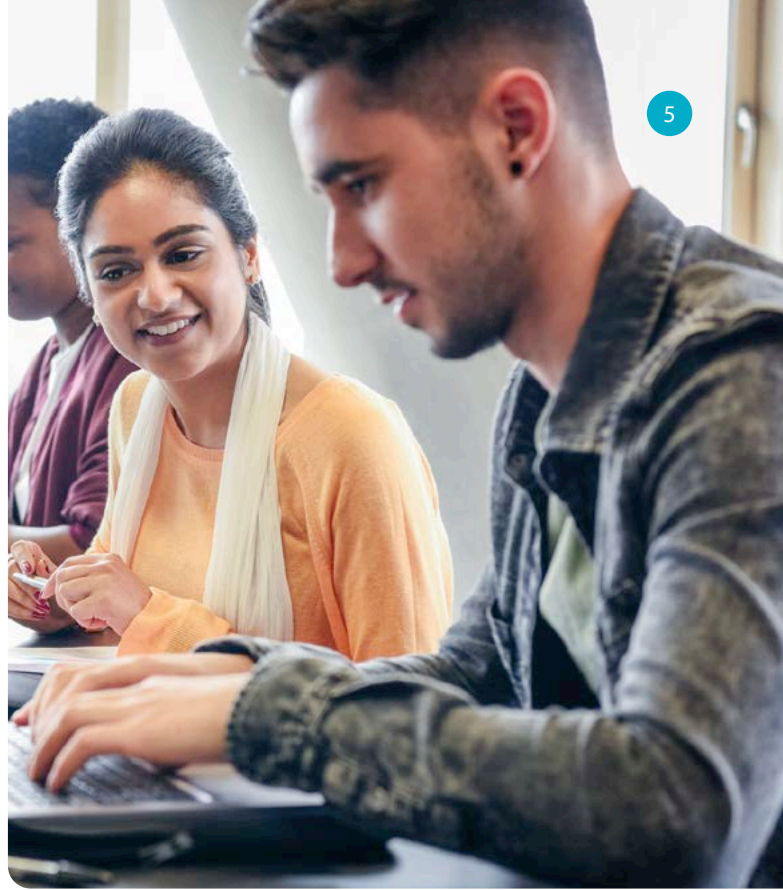
#### UBC

- Similar to the findings at UofT, DP graduates at UBC were much more likely to enter science faculties (45.1%) and much less likely to pursue the arts (25.5%) (table 2).

### Grades

#### UofT – CGPAs

- DP graduates attained both higher initial and final CGPAs than did OSSD students. The advantage over OSSD graduates persisted even after adjusting for an array of factors, including university admission average (average high school grades). Further, since



the gaps were larger among students' final CGPAs than they were for their initial CGPAs, these results suggest that the DP advantage grows over time while attending UofT.

- Both DP and FI graduates appear to be better prepared than OSSD graduates to attain high grades during their time at UofT. This was found to be true even for advanced coursework.

### UBC – Average course grades

- The researchers examined the average course grades of UBC students at three different points in time: at the end of their typical first year, near the end of their graduation term and for all of their classes at UBC. Across these three measures, DP graduates consistently achieved higher university averages than DW and FI graduates.

### Drop-out and graduation rates

#### UofT

- **Drop-out rates (failing to graduate by 2020):** DP graduates had the lowest university drop-out rates (12.9%) compared to FI students (14.2%) and OSSD students (19.6%).

- **Graduation rates within four and six years:** Graduation rates within four and six years from entry into UofT suggested that DP graduates complete their university degrees in a timelier manner than OSSD graduates and FI graduates (except among the 2012 FI cohort entrants) (table 3).

University outcome		High school programme		
		OSSD	FI	DP
% Graduated within 4 years	2008	62.8	55.6	74.4
	2009	64.5	75.0	76.2
	2010	64.4	65.3	78.3
	2011	62.3	64.3	78.2
	2012	61.6	74.4	71.2
% Graduated within 6 years	2008	76.5	79.5	82.0
	2009	78.0	84.5	85.3
	2010	77.5	79.5	86.3
	2011	76.4	78.3	85.2
	2012	75.0	84.3	81.6

Table 3. Graduation rates (four- and six-year) by high school programme





## UBC

- **Rates of leaving university early (failing to complete at least 30 credits of coursework):** DP graduates were less likely to leave UBC for any reason than were graduates of DW or FI. Specifically, 7.6% of DW graduates and 4.9% of FI graduates left early, compared to 4.0% of DP graduates.
- **Graduation rates within four and six years:** DP graduates were more likely to graduate in a timely manner compared to DW graduates. Additionally, compared to FI graduates, DP graduates showed higher four- and six-year graduation rates (table 4).

University outcome		High school programme		
		DW	FI	DP
% Graduated within 4 years*	2013	65.7	62.5	71.6
	2014	65.1	63.6	72.0
% Graduated within 6 years**	2013	83.0	85.9	87.8

\* Only students entering UBC between 2012 and 2014 are included in "% Graduated within 4 years"

\*\* Only students entering UBC between 2012 and 2013 are included in "% Graduated within 6 years"

Table 4. Graduation rates (four- and six-year) by high school programme

## Province-specific findings

### UofT

- **Earning merit awards:** DP students were the most likely to earn merit awards at UofT, with 43.1% winning awards, followed closely by those from FI programmes (39.3%). Students with the traditional OSSD trailed significantly at 29.0%. However, further statistical analysis suggests that the advantage of DP students is likely related to having superior high school grades.

### UBC

- **Enrolment in study-abroad programmes:** The results indicated that DP graduates pursued opportunities to study abroad (13.5%) at roughly comparable rates to their peers in DW (12.1%) and FI (16.0%) high school programmes.
- **Cooperative education programmes:** UBC students can also enrol in cooperative education programmes where they can gain professional workplace experience by alternating between academic terms and paid, full-time work placements. DP graduates were significantly more likely to participate in cooperative education programmes (37.3%) than were students with either DW (23.5%) or FI (28.4%) diplomas.

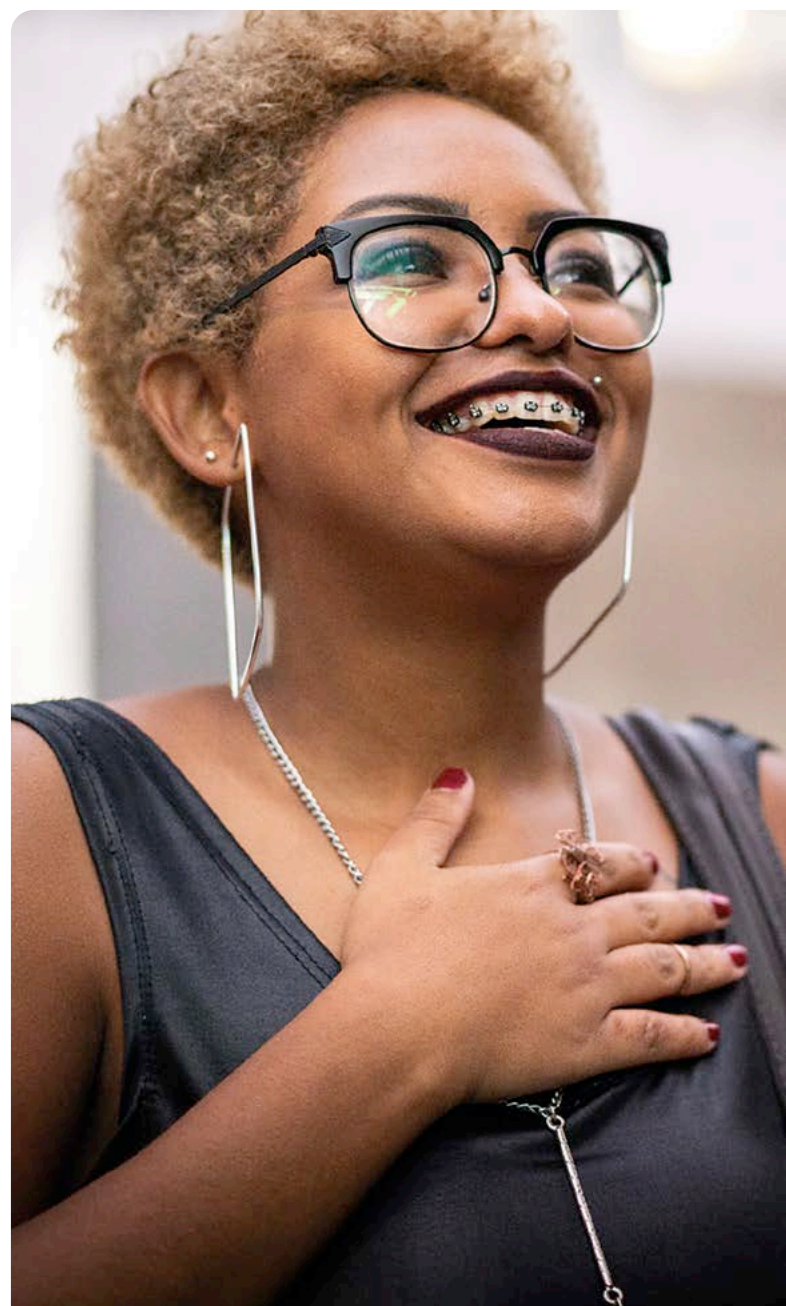
## Canada-wide findings

In this section, the researchers offer a brief comparison of the findings to Canada-wide benchmarks for two university outcomes: enrolment in STEM fields and graduation rates.

- **Enrolment in STEM fields:** DP graduates at UofT and UBC appear to pursue STEM degrees at markedly higher rates than do typical Canadian undergraduates. While more than 60% of DP graduates in the UofT and UBC samples pursued science and engineering degrees, data from the Post-secondary Student Information System (Statistics Canada) showed that, overall, only 22% of Canadian university students in 2018 enrolled in STEM fields (CMEC, 2018).<sup>6</sup>

- **Graduation rates:** DP graduates at UofT and UBC appear to greatly exceed Canadian benchmarks for university graduation rates. Statistics Canada (2018) reports that, overall, 40% of Canadian undergraduates complete their bachelor's degrees within 4 years, while the corresponding figures across the various UofT and UBC cohorts of DP graduates ranged from 64–84%. Statistics Canada further reports that, overall, 74% of Canadian undergraduates complete their bachelor's degrees within 6 years, while the corresponding figures across the DP cohorts ranged from 81–91%.

These cursory findings on Canada-wide benchmarks suggest that DP graduates at UofT and UBC often notably outperform other Canadian university students.



<sup>6</sup> Exact definitions of STEM fields may differ.



## Conclusions

In summary, the results from this study indicate that DP graduates tend to perform better than their peers from traditional high school programmes across several university outcomes. Compared to graduates with traditional high school diplomas (OSSD and DW), DP graduates had significantly higher university grades. Additionally, DP students were less likely to drop out from university and were generally more likely to graduate in a timely manner. At both universities, DP graduates showed a greater likelihood of enrolling in science and engineering programmes as opposed to the arts and other faculties. DP graduates also fared well on a number of university outcomes compared to FI students, another enriched high school programme. In terms of province-specific findings, at UofT, DP students earned more merit awards and, at UBC, DP graduates were more likely to enrol in cooperative education programmes. Lastly, cursory comparisons to national data suggest that DP graduates at UofT and UBC tend to perform at substantially higher levels than typical Canadian undergraduates.



## References

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This summary was developed by the IB Research department. A copy of the full report is available at: [www.ibo.org/en/research/](http://www.ibo.org/en/research/). For more information on this study or other IB research, please email [research@ibo.org](mailto:research@ibo.org).

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