Supports for Student Learning Program Research Series: Barriers Faced by Students with Disabilities

Final Report Submitted

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Executive Summary: In Canada, access to postsecondary education, which includes university, college, or apprenticeship programs, is becoming ever more important in terms of securing future employment, long-term health, and economic security. Statistics Canada suggests that over 75% of future jobs will be in high skills sectors and require postsecondary education (PSE) (Government of Canada, 2017). Longitudinal studies also reinforce the emerging imperative of accessing postsecondary education in terms of long-term health and economic independence (Ballingall, 2015; Fonseca & Zheng, 2011; Irwin, 2015; Kearney et al., 2015). Canada has reached a "universal" level of PSE access; however, access for students with disabilities continues to be more limited (Kirby, 2009). This research examines barriers students with disabilities encounter in their pursuit of PSE, provincial and territorial disability-related investments to support PSE students, as well as students' access to, graduation from, and future earnings following PSE participation. With a focus on education, this work is grounded in critical disability theory that asks us to consider how disability is constructed and produced through social, environmental, and economic factors (Erevelles et al., 2006; Meekosha & Shuttleworth, 2009; Oliver, 1990).

Research questions: (1) What are the barriers to education faced by students with disabilities? (2) What services are provided and/or investments have been made by provincial and territorial governments to reduce these barriers? What gaps or overlaps exist? (3) What is the current context as it relates to students with disabilities' access to, graduation from and future earnings following PSE participation? and (4) What recommended actions could Employment and Social Development Canada's SSLP take to reduce these barriers, enhance learning experiences, and overall improve educational outcomes for students with disabilities?

Methodology: In order to respond to the research questions, this study employed three distinct approaches to gather data and information: (1) a review of literature; (2) a provincial and territorial scan of disability-related investments for postsecondary education students; and (3) a research study, drawing on a unique data set of data linkages between the Toronto District School Board's (TDSB) Grade 9 Cohort, the Postsecondary Student Information System (PSIS), and Statistics Canada's T1FF (tax files), examining issues of access, graduation, and outcomes of PSE participation.

Highlights: Students' pathways to PSE are often fraught by the experiences they have in K-12 public education. In particular, biased perceptions of ability, practices of ability-grouping, academic streaming, and exclusion (such as suspension), have all been highly correlated to PSE access. Students arriving to PSE programs often face extensive access barriers related to accommodations, services/supports, and the built environments.

Across provinces and territories, there is inconsistency in financial aid supports for postsecondary students with disabilities. Access to financial aid is often conditional, tied to program criteria, and what costs it will cover.

Students with disabilities are almost twice as likely to not access postsecondary education compared to their non-disabled peers. Once students' sociodemographic, program, and school-based variables were accounted for, there was only a negligible (1%) gap in graduation rates across disability status. Across disability status, the outcomes of postsecondary credentials do not appear to result in future income parity, suggesting persistent ableism within the workforce.

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Introduction

In Canada, access to postsecondary education, which includes university, college, or apprenticeship programs, is becoming ever more important in terms of securing future employment, long-term health, and economic security. Statistics Canada suggests that over 75% of future jobs will be in high skills sectors and require postsecondary education (PSE) (Government of Canada, 2017). Longitudinal studies also reinforce the emerging imperative of accessing postsecondary education in terms of long-term health and economic independence (Ballingall, 2015; Fonseca & Zheng, 2011; Irwin, 2015; Kearney et al., 2015). Canada has reached a "universal" level of PSE access, however, access for students with disabilities continues to be more limited (Kirby, 2009). This research examines barriers students with disabilities encounter in their pursuit of PSE, provincial and territorial disability-related investments to support PSE students, as well as students' access to, graduation from, and future earnings following PSE participation. As such, our research sought to respond to the following questions:

1. What are the barriers to education faced by students with disabilities?
2. What services are provided and/or investments have been made by provincial and territorial governments to reduce these barriers? What gaps or overlaps exist?
3. What is the current context as it relates to students with disabilities' access to, graduation from, and future earnings following PSE participation?
4. What recommended actions could Employment and Social Development Canada's SSLP take to reduce these barriers, enhance learning experiences, and overall improve educational outcomes for students with disabilities?

In order to respond to the research questions, this study employed three distinct approaches to gather data and information: (1) a review of literature; (2) a provincial and territorial scan of disability-related investments for postsecondary education students; and (3) a research study, drawing on a unique data set of data linkages between the Toronto District School Board's (TDSB) Grade 9 Cohort, the Postsecondary Student Information System (PSIS), and Statistics Canadas T1FF (tax files), examining issues of access, graduation, and outcomes of PSE participation.

Thinking critically about disability and education

Addressing disability discrimination in education

Section 15 of the *Canadian Charter of Rights and Freedoms* identifies disability as a protected status (Government of Canada, 1982). The Ontario Human Rights Commission (OHRC) states that despite integrated supports into schools, "a significant number of students with disabilities continue to face obstacles in their attempts to access educational services in Ontario" (OHRC, 2018, 7). In addition, the OHRC claims "'Disability' continues to be the most often cited ground of discrimination under the [*Human Rights*] *Code* in human rights claims made to the Human Rights Tribunal of Ontario (HRTO), with significant systemic issues being raised in disability and education claims" (2018, 4). The Ontario Human Rights Commission (2018) also notes, "The belief that disability is an abnormality has been used to rationalize the

exclusion, neglect, abuse and exploitation of people with disabilities in various different contexts. It may also inform paternalistic and patronizing behaviours towards students with disabilities" (20).

The experience of disability can be complex and there are many factors that can lead to students either self-identifying or being institutionally identified as having a disability. Despite institutional identification through special education, there is an important disconnect between institutional and self-identification of disability (Parekh & Brown, 2020). Drawing from a study on the Toronto District School Board (TDSB), less than a third of students who were institutionally identified as requiring special education services self-identified as having a disability (Parekh & Brown, 2020). The disconnect between institutional identification and self-identification of a disability is even more pronounced for students who have faced historical marginalization in schools and raises questions as to how disability is constructed in relation to students' racial, class, and other sociodemographic characteristics (see Parekh & Brown, 2020, for full results). As such, due to flawed perceptions of ability and biased notions of who deserves academic opportunities or who belongs in academic communities (Ladwig & McPherson, 2017; Parekh et al., 2018), racialized students, students from lower income communities, and male students are more likely to be denied access to academic opportunities required for postsecondary access and achievement (Cooc & Kiru, 2018; Ferguson, 2019; James & Turner, 2017; Queiser & De Araujo, 2017). Therefore, through this review, when we think about disability, we include students who have been systemically "disabled" through ability-based programming or decisions related to future academic opportunities.

Theoretical framework and a note on language

This research is grounded in critical disability theory. As a theoretical framework, critical disability theory asks us to consider how disability is constructed and produced through social, environmental, and economic factors (Erevelles et al., 2006; Meekosha & Shuttleworth, 2009; Oliver 1990). Instead of conceptualizing disability as an individual impairment, sociological understandings of disability recognize how the experience of disability is shaped by intersecting identities and positionalities (Erevelles et al., 2019). As such, language related to disability is evolving. In government, rights, and international conventions, person-first language is typically used (e.g., Convention on the Rights of Persons with Disabilities). However, many within the disability community adopt identity-first language, such as the term "disabled," as a way to highlight the social, environmental, and political disablement people with various forms of impairment face. New guidelines from the National Centre on Disability and Journalism (2021), in alignment with recommendations from the Associated Press Stylebook (APStylebook, 2020), endorses using identity-first language when preference is known and person-first language when describing a group where the preference is not. Therefore, to align with the aims of the disability community and movements towards disability justice, we will also be adopting both identity-first and person-first language throughout this work (see Annamma & Morrison, 2018; Sins Invalid, 2019).

Elementary and special education school factors

Discussions on academic streaming typically refer to secondary school programs and pathways. However, ability grouping occurs much earlier and carries significant implications for secondary streaming (Parekh & Brown, 2019). Special education is a primary process through which students are grouped by ability (Brantlinger, 2006). Placement in self-contained special

education classes has also been evidenced to be a significant factor for students unable to transition into postsecondary education. Overall, PSE access rates of students placed in self-contained special education programs in elementary school are low (Brown & Parekh, 2010; Brown et al., 2013). However, in combination with other factors such as low achievement on Grade 6 EQAO and suspension (Brown et al., 2013) as well as higher absenteeism and suspension (Brown et al., 2020), studies have demonstrated significantly limited access for students reaching postsecondary education. As decisions related to ability grouping often rely on the perception of what a student is capable of, stigma and entrenched bias can limit students with disabilities from accessing their choice of programs (Parekh et al., 2018). In a recent study, 67% of parents and guardians reported that appropriate curriculum choices are not made available to their children with disabilities (Reid et al., 2018).

Curriculum access is not the only reported barrier – attitudinal barriers and discrimination also play a role. For instance, 64.9% of Ontario parents reported that their disabled child had experienced some kind of bullying or harassment either from fellow students or from teachers and administrators (OHRC, 2018). Likewise, students with disabilities also reported experiences of bullying and harassment in school (Provincial Advocate for Children and Youth, 2016). Students accessing special education services were also disproportionately suspended from school, more often and for longer, than their non-disabled peers (Brown et al., 2013; OHRC, 2018; Zheng & De Jesus, 2018). Between 2015 and 2016, in Ontario, 49.6% of suspensions and 45.8% of expulsions involved a student who was identified through special education (OHRC, 2018), even though the overall proportion of students involved in special education was approximately 17.6% (2017–18) (Ontario Ministry of Education, 2019).

Secondary school factors

Streaming has a cumulative effect and once students are placed in a "low ability" group, that placement tends to be permanent (Mitchell, 2015). Examining which student and secondary school factors predicted postsecondary access through a regression analysis, high school course levels (Grades 9 & 10 Academic, Grades 11 & 12 University) all resulted in statistical significance ($p < 0.05$) with Grade 12 University course completion predicting triple the access to postsecondary education for students (Parekh et al., 2021). However, it is important to note that "[f]or students who took the majority of their courses at the Academic level in Grade 9, 87.6% went on to take the majority of their courses in Grade 12 at the University level" (Parekh et al., 2021, p. 13) and of students who took "the majority of their Grade 12 courses at the University level, 93.3% of them took the majority of their Grade 9 courses at the Academic level" (p. 14). Another study showed that less than half of students taking an Applied/College preparatory pathway actually make it into college as most students accessing college tend to have taken the Academic/University preparation pathway through high school (Quan & James, 2017). It is clear that secondary school streaming plays an important role in students' future access to postsecondary education.

In our work in schools, we often hear the narrative that marks are what defines pathways, not the program. But two recent studies support a conflicting hypothesis. When looking specifically at Grade 9 math, students who achieved a "D" in Grade 9 Academic level math were just as likely to access postsecondary education as students who achieved an "A" in Grade 9 Applied math (Brown et al., 2018). In a second study, less than 20% of students who were in elementary self-contained special education programs went on to access Academic level courses in high school, even when their marks were high and when 90% of their similarly achieving

peers enrolled in the Academic program (Parekh & Brown, 2019). These findings are important as they demonstrate the importance of program over grades in terms of future academic access.

The disproportionate overrepresentation of historically marginalized groups is evidenced in both special education (Brown & Parekh, 2010; Connor, 2017; De Valenzuela et al., 2006; Erevelles et al., 2006; Ferri & Connor, 2005; Reid & Knight, 2006) and secondary school streaming (Archer et al., 2018; Domina et al., 2017; Parekh, 2013). Students with disabilities; students from low-income families; Black, Latinx, and Indigenous students; and students who are learning English are disproportionately overrepresented in non-Academic high school pathways (Follwell & Andrey, 2021a; Parekh, 2013). Examining data from the TDSB, Black students accounted for 26% of students in Applied classrooms for Grades 9 and 10, even though the Black student population accounts for less than 13% of the student population (Parekh et al., 2021). Students formally identified through an Identification, Placement, and Review Committee (IPRC) as having an exceptionality (excluding gifted) were close to four times as likely to be represented in Applied classrooms for Grades 9 and 10, while students with only an Individual Education Plan (IEP) (not formally identified) were over three times as likely (Parekh et al., 2021). Follwell and Andrey (2021b) also found that 38% of students from low-income families in Ontario were more likely to be streamed into Applied-level math, making it more difficult to achieve the necessary prerequisites to reach postsecondary education, as compared to 26% from high-income communities.

Barriers in accessing and succeeding in PSE

The transition process to postsecondary education can begin while students are still in high school and it typically requires several steps. For instance, students and/or their families may begin the process by exploring postsecondary programs, determining eligibility based on marks and course prerequisites, as well as the viability of attendance based on location of the school, supports and services offered, and accessibility of the campus. Prospective students and/or their families might also explore postsecondary and/or disability-specific funding that supports disabled students' access to postsecondary education. Reaching out to possible programs to determine access to accommodations, establishing requisite documentation outlining students' eligibility to receive disability-related accommodations, and securing necessary equipment and supports are all additional requirements disabled students typically face in their pursuit of postsecondary education. Note that advocacy required for both physical and instructional accommodations is often ongoing.

Barriers within the admissions process: According to Statistics Canada, access to postsecondary education continues to be a barrier for disabled students. For non-disabled Canadian youth, approximately 77% will enroll in PSE by their early 20s, however that figure drops to 60% for youth with a diagnosed neurodevelopmental disorder, and even further down to 48% for those with mental health conditions (Arim & Frenette, 2019). The levels of enrollment drop even lower for students with both a mental health condition and a neurodevelopmental condition, with only 36% moving on to postsecondary education (Arim & Frenette, 2019).

***Funding*:** In a small study examining student's perceptions of accommodations, over 40% of respondents identified that they had to undergo psychoeducational assessments, at an average cost of $1,375.00, as part of the accommodation process (Pierre, 2016). Not only does this create an immediate barrier to PSE entry for students with disabilities seeking accommodation, but it

also requires students to take on an additional expense. In terms of overall funding, Chambers et al. (2011) found that disabled students experienced markedly higher rates of debt than their non-disabled counterparts. Their report indicated that 37% of students with disabilities felt that the funding they received was inadequate to cover their specific accommodation needs; 67% of students with disabilities claimed to have encountered serious financial barriers in their studies, while 35% reported that the cost of living was a major concern. To complicate findings further, Chambers et al. released a second study on the relationship between funding and the visibility of disabilities. They found that 40% of student respondents with a visible disability relied on government grants, while only 35% of those with a non-visible disability relied on the same source of funding. Their study also illustrates that students with medical disabilities often have to carry higher debt loads in order to complete their education as medical issues may interrupt their ability to complete their education compared to non-disabled students.

Requirements for disability and/or accommodations disclosure: The enrollment process within PSE Disability Services/Support Offices may result in many disabled students having to engage in ongoing negotiations to ensure that their identified accommodations are honoured and implemented. According to Parsons et al. (2021), over 86% of study participants received fewer accommodations at the university level than they did in high school despite postsecondary institutions' duty to accommodate (OHRC, 2016b). Parsons et al. (2021) showed that transitioning to PSE often resulted in a decrease of the accommodations that students were able to receive. A survey on the experiences of navigating the accommodations process revealed that students often felt uncomfortable disclosing disability or the need for accommodations to their professors or to students who may be filling accommodation supports (scribing, etc.) (Pierre, 2016). Respondents shared experiences of their resistance to or disagreement of their identified accommodations. When there is conflict around their supports, some students may opt to not disclose their accommodation needs and, instead, try navigating a far more challenging educational environment without support.

Assistive technologies: Sourcing, funding, and integration: Assistive technology (AT) is a key accommodation for many students accessing postsecondary education. AT can include computers, smartboards, and recording devices as well as software that enables text-to-speech/speech-to-text. However, issues surrounding the acquisition, funding, and integration of these types of accommodations can complicate the transition process and sustained success of disabled students (Fichten et al., 2012). For example, Shanouda and Spagnuolo (2021) identified that while these technologies are often employed as key accommodations, the associated funding to secure AT is often unavailable to disabled students. Disabled students bear the additional burden of having to collect documentation and assessments from healthcare providers in order to qualify for AT-related funding and accommodation. In addition to the challenges associated with accessing key funding for AT, Fichten et al. (2012) shared that students often end up missing crucial instructional time due to the inability to acquire AT or as a result of AT breaking down. Should an issue with functionality occur, it can take days or weeks to repair and restore, further diminishing a disabled student's ability to attend class and access the material. Additionally, the pace at which AT is developed may not align with the technological demands that students face with respect to online and digital information access.

Accessibility challenges on campus: Once enrolled in postsecondary education (and even in disability support services), many students who require accommodation still face accessibility barriers on campuses. In their 2012 report on accessibility and university campuses, NEADS (National Education Association of Disabled Students) identified a series of systemic issues related to the accessibility of postsecondary campuses:

- Students are often required to sit in rooms with staircases and barriers that limit their seating options, removing them from being close to the instructor.
- Social, recreational, and retail locations may be in areas of the campus that students with limited mobility cannot access.
- Emergency evacuation procedures may not be inclusive and put disabled students at a higher level of risk than non-disabled students.
- On-campus housing may be limited due to the age of buildings or the structure of bathrooms and other facilities.
- Parking locations may be distant and inaccessible to students with mobility issues. (NEADS, 2012)

Prema and Dhand (2019) also highlight that while legal frameworks addressing accommodations are typically in place at postsecondary institutions, students continue to face several hidden barriers including, for example, accessible lab space with accessible tools and equipment.

Disability representation lacking on PSE campuses*:* Ongoing stigma and lack of positive disability representation is pervasive within PSE institutions. According to Perma and Dhand (2019), one of the key attitudinal barriers to success is the absence of disabled faculty within postsecondary institutions. Many students do not learn from disabled professors, scientists, or engineers, either at the academic level, or through peer and mentoring programs. This lack of representation can lead to the absence of belief in students' own ability to complete a desired program or PSE qualification. In addition to a lack of mentors, the stigmatization pervasive in K-12 schooling, is often replicated in the postsecondary environment, creating barriers towards perceived ability. In a 2020 investigation into the perception of disability amongst medical students, findings revealed that even with appropriate medical education, a significant number of students still held negative beliefs towards colleagues with disabilities (Gault et al., 2020).

The impact of COVID-19 on K-12 learning and PSE access

Once COVID-19 pandemic hit, many schools and disability services were either moved online or were closed. For many families of young disabled children, the pandemic resulted in a loss of disability-related support and critical community services (Gallagher-McKay et al., 2021; Underwood et al., 2021). With the move to online schooling and services, many families were required to take on dual roles as service providers and educators, and many parents had to continue meeting their own employment commitments (Gillmore, 2020; Underwood et al., 2021). As a result of the move to online learning, some guardians of disabled students reported a deterioration in their child's prosocial behaviours (Whitley et al., 2021). Along with the impacts highlighted above, the COVID-19 pandemic has added a new level of strain for students who are reliant on AT to support their in-class instruction as there is decreased support and interventions to address technology-related issues should they emerge.

At the PSE level, some services have not yet (at the time of this writing) resumed due to ongoing risks of infection. For example, Carleton University's assisted support program, which enables students to live independently on campus, was suspended at the beginning of the pandemic; however, the assisted support program has now been cancelled without an expected date of return (Trick, 2021). At the PSE level, the pandemic resulted in many programs moving online. Pichette et al. (2020) examined the findings from a recent study that surveyed 623 students of which approximately 200 self-identified as having a disability. Their results indicated an increase in the challenges facing disabled students:

> These challenges included uncertainty about course expectations and how to access support; difficulty focusing, staying on top of readings and assignments, and issues understanding course material; inadequate access to accommodations and accessible material; difficulty communicating and building or sustaining relationships; inequitable access to, and problematic assumptions about, technology and internet; and inaccessible assessments. Additionally, the study shows students who may not have previously identified as having an accessibility need have recently found themselves facing challenges and are now in need of support or accommodations. (para. 2)

The COVID-19 pandemic has had a tremendous impact on the education sector; however, it has promoted a broader discussion about accessibility, technology, and participation. Many colleagues have shared the common thought that *"once everyone needed accommodations to access their work or studies, it was made acceptable and available to all"* – the assurance of access and flexibility that disability communities have long been advocating for. As educational sectors continue to face new waves of COVID-related restrictions and changes to curriculum delivery, Pichette et al. (2020) have compiled a series of recommendations to promote accessibility and support of disabled students:

> To help address these challenges, the report offers several recommendations for improving accessible learning beginning in the fall 2020 semester. These include:
>
> - Incorporating Universal Design for Learning (UDL) principles in all courses
> - Empowering students to make choices that suit their needs
> - Enabling transferable skill development
> - Creating certainty where you can
> - Sharing information about how to access services and accommodations remotely
> - Finding ways to facilitate engagement and meaningful interaction
> - Checking in with students
> - Recording synchronous lectures and being mindful that chat tools can be distracting
> - Protecting immunocompromised students when in-person courses resume
> - Practicing empathy. (para. 2)

Each of these recommendations highlights important aspects of pedagogy that can result in impactful supports for students. Additionally, ARCH Disability Law Centre (2020)

recommends that all digital approaches implemented to support students with disabilities during COVID-19 should be open to review, particularly when assistive technologies are employed. For students in the K-12 sector, ARCH also recommends that IEPs be revisited to ensure that students who experience prolonged remote learning during the COVID-19 pandemic are having their educational and support needs reassessed.

Recommendations for the PSE sector

Throughout the literature, there are a number of recommendations supported by research on and by experiences of disabled students who have successfully transitioned into and through postsecondary education. Getting into a PSE program of choice is one hurdle; however, there are many ways that PSE institutions can support disabled students. The Ontario Human Rights Commission (2018) has provided six recommendations that can ease students' transition into and success within PSE:

1. Eliminate the mandatory nature of disclosure of diagnosis where students must provide intimate details of their disability to staff who often do not have a medical background. This will also allow newly understood disabilities to be included as they are often identified before acceptable criteria are outlined.
2. Implement interim accommodations where students can be immediately supported as the required paperwork is being processed. This will minimize the wait time and provide vital interventions that would otherwise be delayed
3. Include temporary mental health disabilities into the support regimes, instead of relying on diagnoses which are longer term.
4. Centralize the accommodations process to minimize processing time and increase efficiency in processing requests for support.
5. Acknowledge retroactive accommodations where necessary to provide students with financial and academic accommodations for past work that was done before the students' disability was fully identified.
6. Introduce clear communications and training to ensure that a uniform message of support is delivered, regardless of how the student approaches the support process. (Paras. 1–6)

Stadnyk and Parsons (2021) argue for a centralization of successful transition practices and approaches along with a shared repository of information. Not only would this centralize resources and make them accessible, but also would function as a space where new ideas and approaches could be tested and verified. Stadnyk and Parsons recommend a focus on promoting self-advocacy, particularly in accessing accommodations at the PSE level. They also promote researching new and more robust assistive technologies that match the evolving needs of disabled students. With respect to the drop in accommodations that are seen in the transition process, Parsons et al. (2021) advise that students and schools adopt functional language in how they describe disability and accommodations. Shared language may improve consistency of accommodations[1].

[1] See Jacob & Parekh (2022) for associated literature review.

Examining established recommendations for increasing access to postsecondary education

A recent report published by the Higher Education Quality Council of Ontario examined barriers to PSE, particularly for historically marginalized populations. The first report, *Early Supports for Accessing Postsecondary Education: Good, Bad or Indifferent?*, focused on interventions that could be made along with K-12 education systems to improve postsecondary access (Deller & Tamburri, 2019). While beyond the purview of the federal government, the first recommendation to improve equitable access to PSE is to eliminate academic streaming in Grades 9–10. Academic streaming in Grades 9–10 has been a legacy feature in secondary school that has resulted in disproportionate access to PSE (James & Turner, 2017; Parekh et al., 2021). The Ministry of Education in Ontario has made structural changes to the Grade 9 curriculum to address streaming in Grade 9, as it is the only province in Canada that streams students in the ninth grade (Pichette, Deller & Colyar, 2020).

However, there are a number of recommendations where federal investments could be useful in the K-12 education sector. In her doctoral thesis, Fiona Deller (2018) evaluated 14 early intervention programs supporting low-income youth. Deller notes there are often key program characteristics integrated into program design. For instance, although focused on low-income youth, many programs targeting this particular population included financial supports. It is important to note that many students with disabilities also experience poverty or economic exclusion. Even for families with means, accessing mobility and accommodation equipment can be expensive. Therefore, we would expect that financial supports would play a key role in early intervention programs for students with disabilities. However, financial supports, such as financial waivers or scholarships, may not ease the concerns youth and their families have around the loss that students incur from spending years outside the labour market while they attend postsecondary studies (Palameta & Voyer, 2010, as cited in Deller, 2018). Chatoor (2021) argues that similar investigations be undertaken to determine, from students' perspectives, why students with disabilities are less likely to participate in PSE.

Other characteristics integrated into early intervention programs may include admissions processes/applications, collaboration with families, and geographic or population targets. Deller (2018) describes a number of these elements:

> A good early intervention program has the following elements: an array of supports that participating students can access, including academic supports, counselling and mentoring supports, and financial supports; an understanding that the decision to go to postsecondary begins early in the educational pathway, and an attempt to give the youth as many years of programming as possible (some programs have more of a focus on this than others); a belief that academic achievement is one of the keys to postsecondary access, and that youth benefit from high academic expectations combined with academic supports to achieve those expectations; an understanding that it is important to deliver information about postsecondary and student aid at key times in the educational pathway; and, finally, that a financial incentive is often (but not always) an important part of encouraging low-income students that they can access postsecondary education.... (p. 170)

In the conclusion of her study, Deller (2018) reports that, overall, the early intervention programs evaluated had a notable impact on students' "high school graduation and

postsecondary enrollment, but struggled to effect academic achievement and postsecondary retention" (p. 174). She notes that all the other factors including types of supports offered, financial supports, place-based programs, and parental involvement result in more nuanced outcomes, and questions the success of programs that adopt application processes, suggesting that they may be catering primarily to students who are highly self-motivated.

In terms of program design, drawing on experience and guidance from students with disabilities is key. In the report, *We Have Something to Say,* released through the Office of the Provincial Advocate for Children and Youth (2016), student and family interviews were compiled to focus on experiences of students with disabilities in education. Although many recommendations were specific to the Ministry of Education, the emphasis on establishing a youth advisory table and ongoing partnerships with youth with disabilities to "inform and review policies pertaining to all facets of their education" (p. 78) was an important one. This principle could be extended to the development or review of existing programs designed specifically for disabled youth.

Moving from the K-12 sector to PSE, Deller and Tamburri (2019) recommend that investments be made in the bridging and transition programs to ensure that prospective PSE students are not hindered by not having a high school diploma. They also recommend that lower-income families be automatically enrolled in debt-repayment and enrollment and savings plans programs, such as the Canada Learning Bond. The authors claim that automatic enrollment particularly supports students from low-income or immigrant families. Further investments can be made in supporting community-based early intervention programs (see Deller & Tamburri, 2019, for a list of community programs that have been shown to improve PSE access for underrepresented groups).

Another report authored by Deller et al. (2019), *Redefining Access to Postsecondary Education*, examines how investments can be organized to target groups that continue to be disproportionately excluded from PSE participation. As universal approaches do not necessarily address issues of equity, targeted strategies and initiatives are key. The authors recommend funding PSE institutions on outcomes (such as graduation, labour market metrics, etc.) rather than access, and caution that PSE access numbers are not equal and that we must monitor both access into all forms of PSE programs. Across both reports, authors make a call for investments into better monitoring, data collection and tracking as students move through K-12 education, into and through PSE.

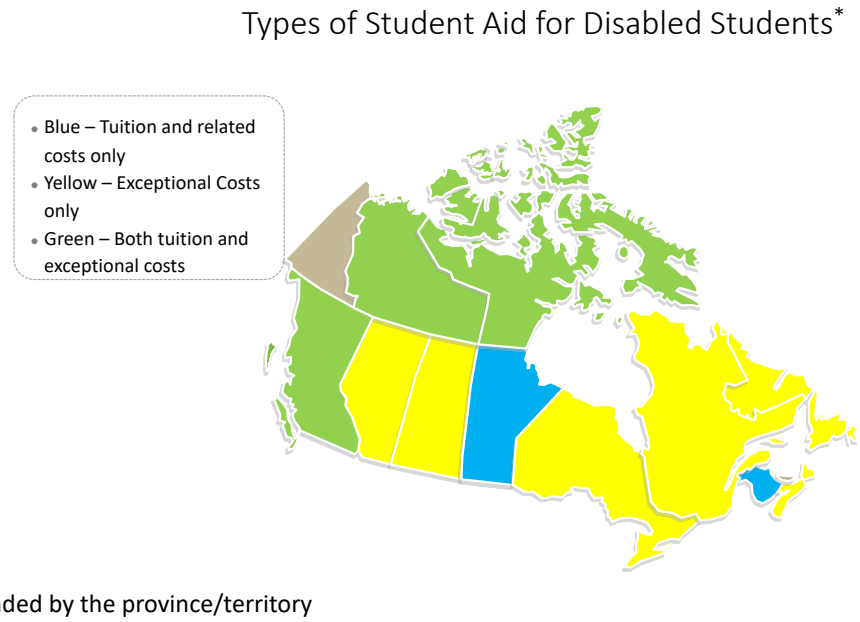
Recent research has shown that students arriving to university directly from high school tend to fare better in university compared to students who arrive indirectly (Parekh et al., 2020). However, the promotion of transition/transfer programs has been shown to support students in the transition between secondary school, college, and university and to support historically marginalized communities. The transition process from secondary to postsecondary education is known as a "step" approach, where students move from secondary school to college, with the intent being to accrue sufficient transfer credentials to continue advancing throughout the postsecondary system (i.e., a move to university) (Anyinam et al., 2020). This pathway of intermediate steps towards university, as opposed to a direct transition from high school to university, was pursued by 16% of high school students, 22.6% of students after entering college, and 32.3% of students once they were successful in college (Anyinam et al., 2020).

The progressive transition path also benefitted historically marginalized and racialized students at a higher rate than other transition options. For instance, Anyinam et al. (2020) found that Indigenous peoples living in Canada were triply represented within the group of disabled

students who took the transfer option compared to those who did not take the college to university transfer option. The higher rate of representation within the transfer group may indicate that this path of progressive steps towards university can be beneficial to students experiencing intersectional barriers.

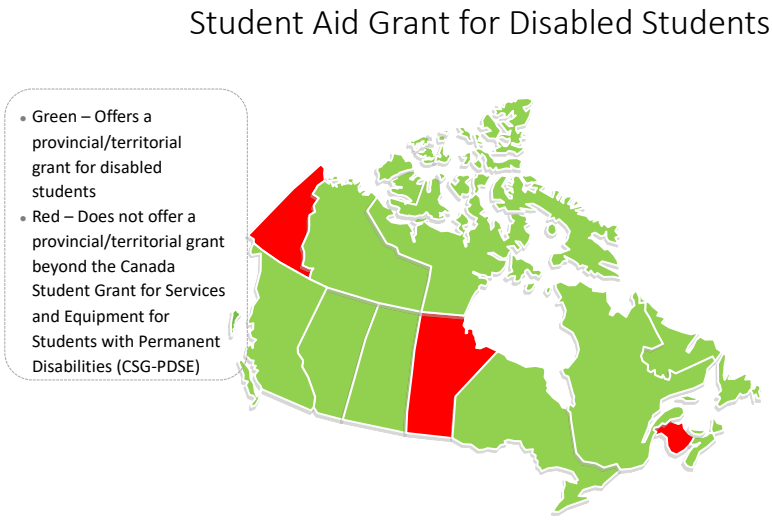
Investments into supporting students into and through PSE

As students face a number of barriers both on their pathways through K-12 and as they begin their postsecondary education experience, it is important to recognize the degree to which provinces and territories invest in disability-related supports for postsecondary students. To better understand the Canadian context, a scan of these provincial and territorial investments was conducted with results summarized in the section that follows.[2] Most provinces and territories offer some form of Student Aid Grant to support disabled students with the exception of Manitoba, New Brunswick, and the Yukon. Many provinces and territories offer funds on top of the Canada Student Grant for Services and Equipment for Students with Permanent Disabilities (CSG-PDSE). However, it is important to note that some funds designed to address issues with accessibility are granted to those who work in the area of disability or with disabled people. Many disability-related supports for students target tuition or related costs while others cover exceptional costs. Some investments cover both.



Some provinces and territories do not offer disability-related grants for postsecondary students beyond the CSG-PDSE.

[2] See Collis (2022) for full results.



Analysis of the provincial and territorial scan

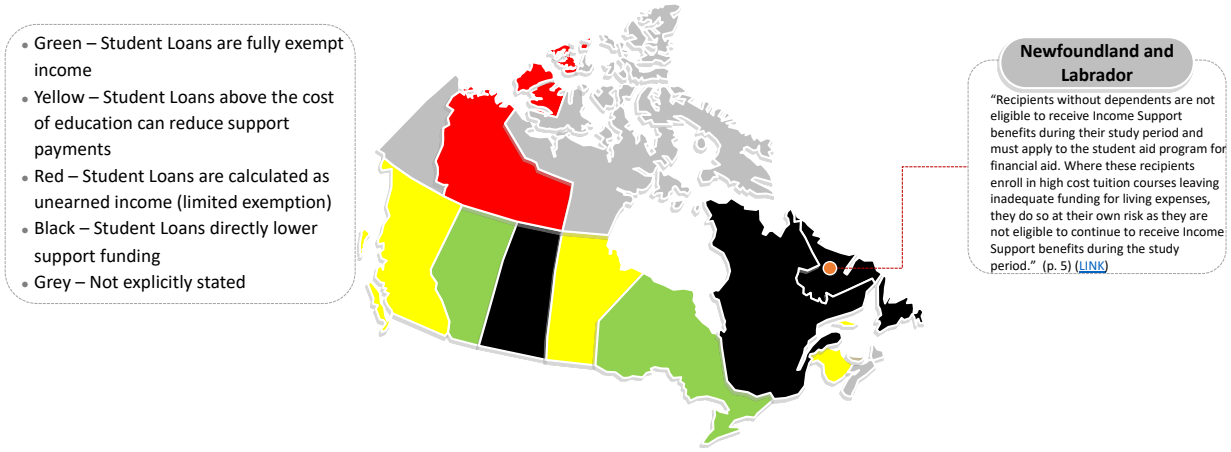
***Tying disability-related aid to student loans*:** The nature of Canadian disability-related financial aid for postsecondary studies is largely tied to student loans. Most funding programs add grants to student loans with the aim of reducing the overall borrowed amount. As the majority of funding programs are tied to student loans, students must qualify for student loans and have a calculated need of at least $1. This means that students who do not qualify for student loans will not receive disability assistance. Solely tying disability-related student supports to loans ignores that disability can be, in itself, expensive. Access to critical mobility and academic supports/devices as well as assessments and transportation services are costly, yet necessary to enable participation.

***Tying disability-related aid to work programs*:** In some jurisdictions, access to disability-related financial aid is tied to programs that promote employment (e.g., see Saskatchewan's Workforce Development for People with Disabilities [WFD-PD] program or New Brunswick's Training and Employment Support Services [TESS]). Making disability-related financial aid available only for employment-focused programs reduces students' options to programs that produce "productive" graduates. In addition to limiting students' choices, this creates a divide where disabled people are expected to study to be "useful" while others are permitted access to subjects such as art, literature, and theory-focused fields. Lastly, some programs will not admit students who already have a marketable skill (see TESS). This means that disabled students with a marketable skill, who are trying to improve their skills through education, will be denied access, ultimately trapping them in low-paying jobs.

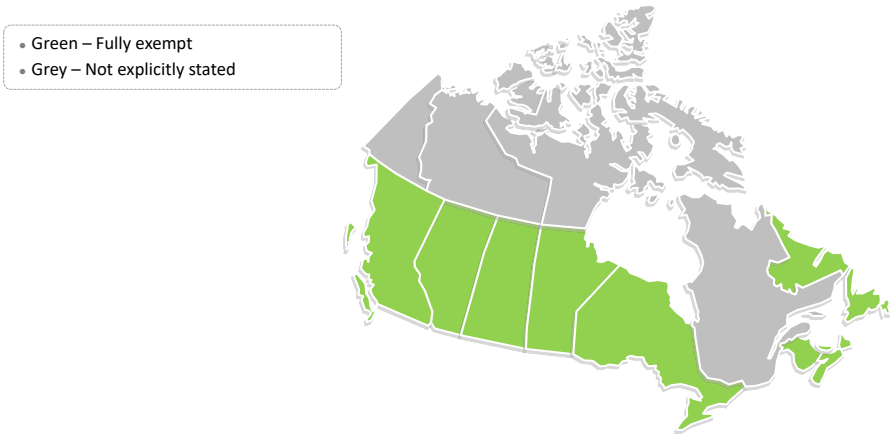
Tying disability-related aid to accommodations: There appears to be discrepancies between how disability-related funding should be spent. As mentioned, some jurisdictions promote covering tuition and exceptional costs related to postsecondary education. For instance, comparatively, British Columbia offers very little financial aid for tuition (less than $2,000/year) but has the most programs to provide services and equipment (e.g., technology, communication, and support services). While helpful, these programs do not increase access for students who cannot afford tuition.

Interactions between disability support programs and student loans: Many disabled students also draw on disability support programs for financial assistance. Dependent on jurisdiction, disability-related funding for postsecondary education can either complement students' current access to disability support programs or claw them back. For provinces that explicitly address the interactions between Registered Education Savings Programs (RESPs) and Disability Support Programs (DSPs), disability support payments are not reduced by RESPs. However, it is important to note that not all families are in a financial position to contribute to RESPs.

Student Loan Effects on Disability Support Programs



RESP Effects on Disability Support Programs



Financial investments are critically important to ensuring that students with disabilities can access and succeed in postsecondary education. However, the best way to improve access is to offer financial aid to disabled people in a way that they can self-direct/self-manage costs (e.g., see Fleming, 2019).

Research Study

In reviewing the literature and the scan of provincial and territorial investments, the research team embarked on an analysis using a unique data set that linked the Toronto District School Board's (TDSB) Grade 9 Cohort data with the Postsecondary Student Information System (PSIS), and Statistics Canadas T1FF (tax files). From this data set, we were able to examine a sample of over 43,000 students and examine their secondary and postsecondary pathways. Of importance, we queried whether students with disabilities were accessing postsecondary education on par with their non-disabled peers and whether the attainment of postsecondary education led to equitable income earnings for both students with and without disabilities. In relation to pathways and outcomes, we were able to query what factors matter most. As will be discussed, disability is a complicated measure. To disentangle the complexities between impairment and structural disablement, such as disability produced through systems, practices, and policies, our analysis examines the intersectional relationship of disability to other identity and structural factors. This intersectional approach informs our analysis of who accesses postsecondary education, who graduates, and who benefits from postsecondary education participation.

Data[3]

The data for this study is derived by drawing on elaborate data linkages among the Toronto District School Board's (TDSB) Grade 9 Cohort, the Postsecondary Student Information System (PSIS), and Statistics Canadas T1FF (tax files).[4] The analyses include students who started their secondary schooling in the TDSB in 2004, 2005, or 2006, and entered a community college or university undergraduate degree program in Ontario beginning in 2009, 2010, or 2011. Employment earnings are derived from tax records for the year 2017.

The primary purpose of the statistical analyses is to assess the impact of having a disability on the earnings across various secondary and postsecondary pathways. The key variables in the analyses are employment earnings (in 2017 dollars),[5][6] derived from the T1FF, and disability status. Students are assessed as having a disability if they were identified as having a disability by the TDSB, or if they had received a permanent disability grant from the Canada Student Loan Program (CSLP), or if they claimed a disability amount in the 2017 income tax (DISDN).

The other key independent variable captures the postsecondary pathway during the study period, and consists of five possible categories:

1) No postsecondary education
2) Some college education, but did not graduate
3) Some university education, but did not graduate
4) Graduated college
5) Graduated university

Several sociodemographic control variables used in this study were derived from the TDSB data set, including gender, whether the students started their secondary program on time (14 years of age), their first language (English), and country of birth. We also included a variable capturing a neighbourhood income decile that was derived through postal code and census data. Some models also include TDSB variables that other research has found to be important predictive markers of not completing high school or transitioning into PSE (Brown & Parekh, 2013; Brown et al., 2020). These include variables that assess whether students passed the Ontario Secondary School Literacy Test (OSSLT), had been suspended in secondary school, or took most of their Grade 9 courses in applied or academic streams. We also included variables that captured the number of credits earned in Grade 9, the percentage of time each student was absent in Grade 9, and their overall Grade 9 average. Finally, in analyses pertaining only to students who entered PSE during the study period, we included the postsecondary field of study derived from the PSIS data set. This variable distinguishes among liberal arts, STEM, business, health, or other fields of study. Further information on these variables can be found in Walters et al. (2021).

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[3]For detailed information on variable descriptions, please see report written for and published by the Ontario Council of Articulation and Transfer, Parekh, et al, 2022..

[4] Further information relating to the data linkages can be found in Walters et al. (2021).

[5] One limitation of using tax information derived through the T1FF is that it is not possible to capture hours worked, or distinguish between full-time or part-time workers. Students who were registered in a college or university program in 2017 were excluded from the analyses, as were students who obtained a second PSE credential after their initial program.

[6] Only cases with positive 2017 earnings less than $200,000 were included in the analyses. Sensitivity tests were employed to confirm that unusual and outlying observations did not have a significant influence on the statistical estimates.

Disability variable:[7] The disability was constructed by including the following variables:

- Students accessing TDSB's special education services/supports (excluding gifted).
- Students who did not have experience in special education but applied for the Canadian Student Grant for Students with Permanent Disabilities when accessing postsecondary education.
- Students who both accessed special education in the TDSB and the Canadian Student Grant for Students with Permanent Disabilities.
- Students who were identified as having a disability through the T1 Family File (T1FF) for 2017.

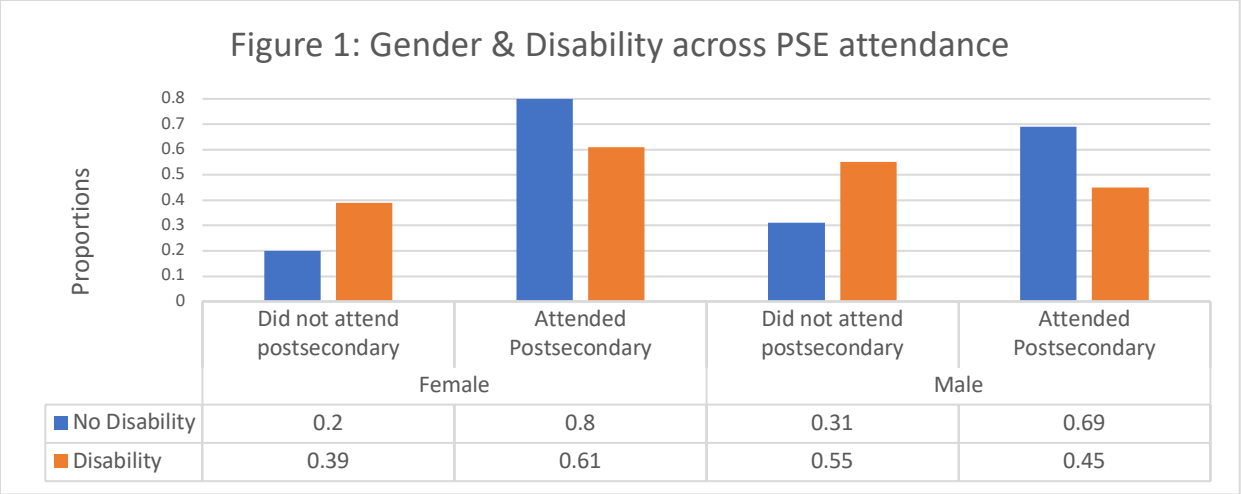
Note that recent changes to guidelines in disability language encourages the use of identity-first language, such as "disabled people," and when the identity preferences of a group are unknown to employ person-first language, such as "people with disabilities." Importantly, as noted earlier, new guidelines have also recommended that the terms "students with special education needs" be discontinued as they are deemed offensive (National Center on Disability and Journalism, 2021). To describe students included within the composite disability variable, we will employ a concept that aims to adopt both a sociocultural and identity-based approach to disability by referring to students as students with disability.

Results

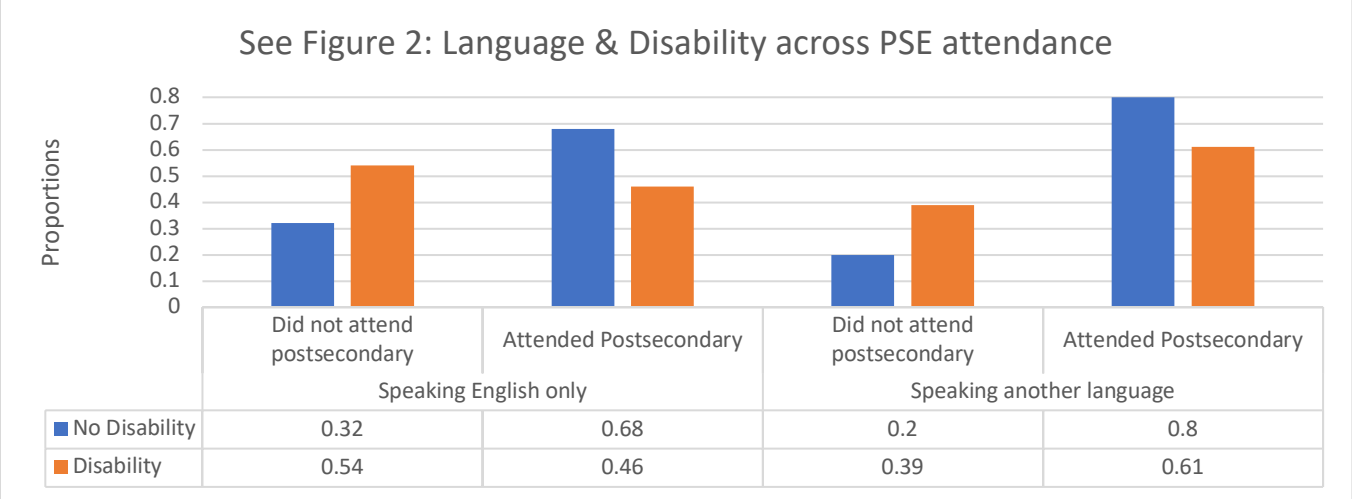
Accessing postsecondary education

Examining the interrelation between different characteristics can be helpful in identifying systemic issues around academic pathways and access to postsecondary education. Exploring PSE access outcomes across the intersection of gender and disability reveals disparate patterns. Overall, male students were less likely to access PSE than female students. Adding the disability variable, male students with disability were notably less likely to attend PSE (45% attendance rate) than both non-disabled male students (69%) and female students with disability (61%). The proportion of female students not attending PSE (20%) close to doubles for female students with disability (39%). (See Figure 1.)

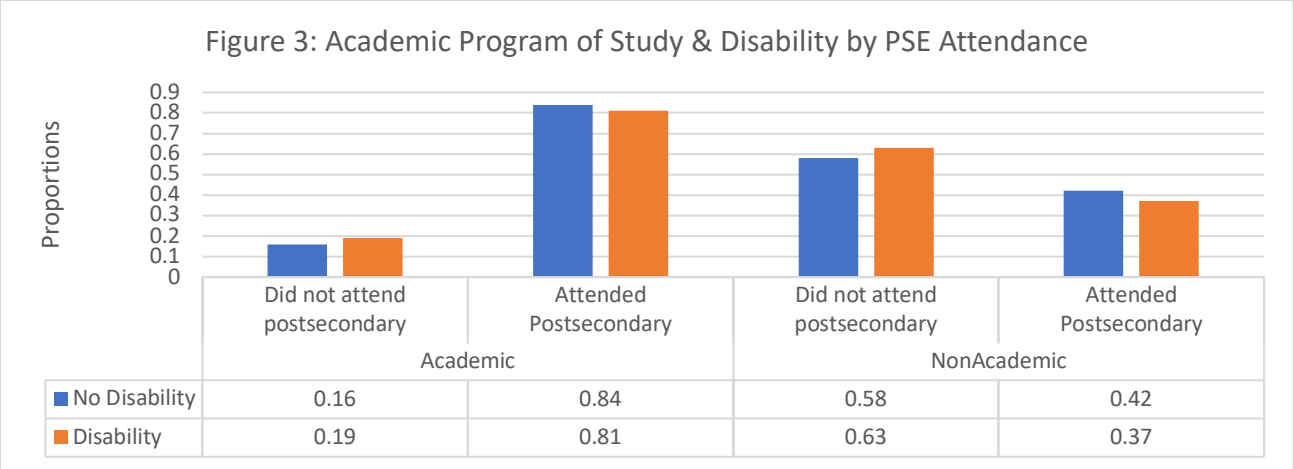
[7] The description of the disability variable and note on language was largely drawn from a report written for and published by the Ontario Council of Articulation and Transfer, see Parekh et al., (2022), pg. 9-10.



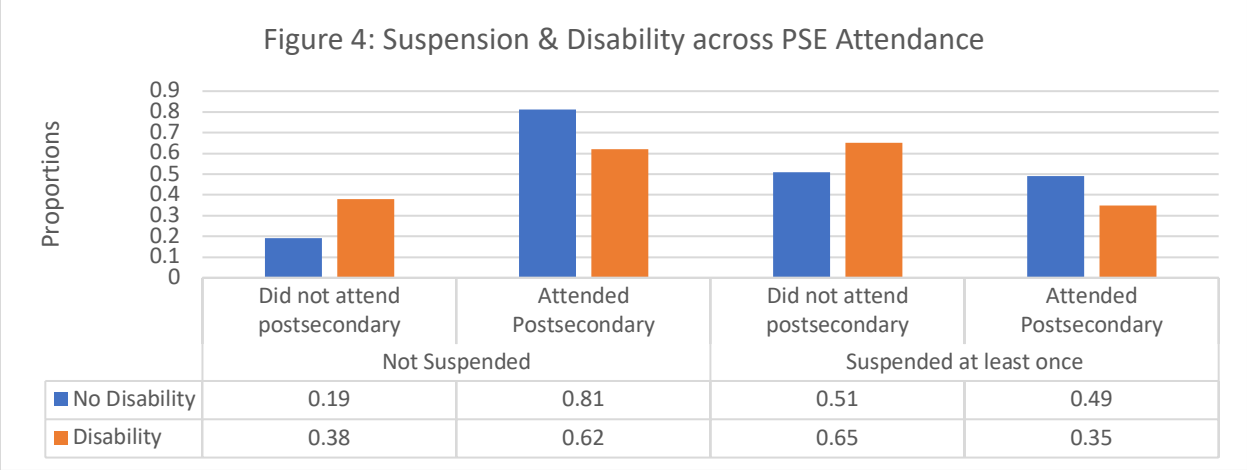
Students who spoke another language other than English, both with and without disability, were more likely to access PSE compared to their peers who spoke only English. For students with disability, just over a third (39%) of students who spoke another language other than English did not attend PSE, compared to over half (54%) of students with disability who spoke only English. (See Figure 2.)



Interestingly, there was a much more muted difference in PSE attendance between disability status when accounting for students' Grade 9 program of study. In fact, for students who took the majority of their courses at the Academic level, the vast majority of students went on to PSE, but the difference between students with and without disability was about 3%. Likewise, of students who did not take Academic level courses in Grade 9, less than half went onto PSE and the difference between students with and without disability was 5%. It appears that program pathways nearly all but collapse the differences typically attributed to disability. This finding seems to support the research literature that program pathways play an integral role in students' access to PSE (Parekh, 2013). (See Figure 3.)

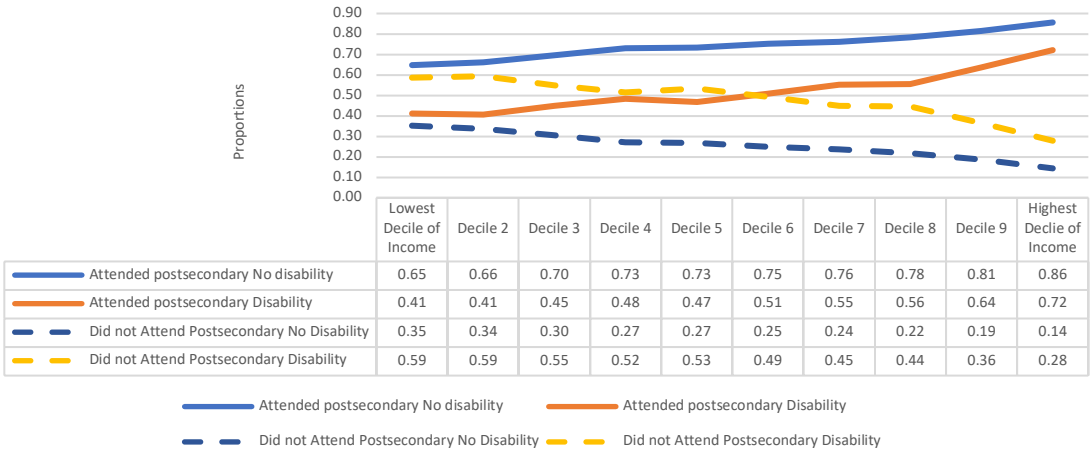


The relationship between suspension, disability, and PSE attendance is highly relevant. The suspension variable nearly or more than doubles the rate of PSE non-attendance for students with and without disability. For instance, for non-disabled students who have never been suspended in K-12 school, 19% did not attend postsecondary. This figure jumps to over half (51%) of non-disabled students who have been suspended. In the absence of suspension, disability close to doubles PSE non-attendance. PSE non-attendance jumps from 19% to 38% when disability is included, and jumps to 65% for students who were also suspended. It is important to note that the experience of suspension, itself, may not be the incident that makes the difference, but the outcome of suspension may be indicative of a challenging relationship with the school. (See Figure 4.)



There is a clear linear relationship between PSE participation and income. There is a sustained 24–25% difference in PSE access between students with and without disability up to the 5th decile of income. As income levels rise, the gap in access for disability status shrinks to a 14% difference for the highest income decile. This supports the research literature that shows how wealth can play a tremendous role in students' access to PSE. (See Figure 5.)

Figure 5: Income and Disability across PSE Attendance



	Lowest Decile of Income	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Highest Declie of Income
Attended postsecondary No disability	0.65	0.66	0.70	0.73	0.73	0.75	0.76	0.78	0.81	0.86
Attended postsecondary Disability	0.41	0.41	0.45	0.48	0.47	0.51	0.55	0.56	0.64	0.72
Did not Attend Postsecondary No Disability	0.35	0.34	0.30	0.27	0.27	0.25	0.24	0.22	0.19	0.14
Did not Attend Postsecondary Disability	0.59	0.59	0.55	0.52	0.53	0.49	0.45	0.44	0.36	0.28

Pathways to and through postsecondary education

Table 1 presents the results for the cross-tabulation between disability status and school-to-work transition pathway. The results of this table reveal that among the TDSB students who completed their programs in 2004 through 2006, those with disability are nearly twice as likely than those without disability (49% versus 26%) to not attend a postsecondary institution (college or university) during the study period. They were also nearly twice as likely to attend, but not complete, a community college program (13.54% versus 7.5%). In contrast, those without disability are more likely than those with disability to attend university, but not complete their programs (11.66% versus 7.28%). Likewise, those with disability are more likely to graduate from college (15.66%), compared with those without disability (12.14%). However, the most remarkable comparison is observed among university graduates, where TDSB graduates without disability are almost three times more likely to complete university than those with disability. Approximately, 44% of the study population without disability completed university, compared to just under 15% of those with disability.

Table 1: Disability status by transition pathway

	Disability Status	
Pathway	***No Disability***	***Disability***
No postsecondary in Canada	25.76%	48.89%
College but did not graduate	7.50%	13.45%
University but did not graduate	10.66%	7.28%
Graduated College	12.14%	15.66%
Graduated University	43.94%	14.72%

Graduation from Postsecondary Education

A study recently completed for the Ontario Council of Articulation and Transfer (Parekh et al., 2022) examined postsecondary[8] pathways and graduation rates with a focus on students with disability. The results revealed the importance of integrating students' sociodemographic, program, and school-based variables into the analysis in order to accurately identify the gap in graduation between students with and without disability. For instance, when only examining whether students transferred between postsecondary institutions and disability, the gap in graduation was 14%, with 62% of students with disability graduating compared to 76% of their non-disabled peers. Accounting for students' sociodemographic characteristics, this gap dropped to 11% and then again to 6% with the control for students' field of study. When students' school-based, largely secondary school, variables were accounted for, the gap in graduation between students with and without disability was reduced to 1% (or negligible).

Further, following the control for students' sociodemographic, program, and school-based variables, there were key indicators that remained significant in relation to students' graduation from postsecondary education. These were:

- Whether or not students transferred between postsecondary education institutions
- Whether students spoke another language other than English
- Whether students were born outside of Canada
- Gender
- Neighbourhood decile of income
- When students started postsecondary education in relation to graduating from high school
- Field of study students' pursued
- Whether students had ever been suspended in their K-12 schooling
- Students' academic program of study in Grade 9
- The proportion of absenteeism in Grade 9
- Grade 9 average marks

Interestingly, disability was a significant variable until students' school-based variables were integrated into the regression model, then lost significance entirely.

Table 2: Predicted Probabilities of Student Graduating from Postsecondary Education, by Disability Status (n=33,865)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Disability	Margins	95% CI		Margins	95% CI		Margins	95% CI		Margins	95% CI		Margins	95% CI	
No	-	-	-	0.76	0.76	0.77	0.76	0.75	0.76	0.75	0.75	0.76	0.75	0.74	0.75
Yes	-	-	-	0.62	0.61	0.64	0.65	0.63	0.66	0.69	0.67	0.70	0.74	0.73	0.75

[8] Note that postsecondary education refers to college and university programs.

Table 3: Logistic Regression Predicting Graduation from Postsecondary Education (n=33,865)

	Model 1			Model 2			Model 3			Model 4			Model 5		
Variables	**b**	**SE(b)**	**p**	**b**	**SE(b)**	**p**	**b**	**SE(b)**	**p**	**b**	**SE(b)**	**p**	**b**	**SE(b)**	**p**
Transfer															
No (ref)															
Yes	-1.017	0.032	***	-1.010	0.032	***	-1.018	0.033	***	-1.072	0.034	***	-1.010	0.035	***
Disability															
No (ref)															
Yes				-0.687	0.038	***	-0.588	0.039	***	-0.397	0.041	***	-0.070	0.044	
Language															
English (ref)															
Another Language							0.349	0.031	***	0.183	0.033	***	0.078	0.034	*
Country of Birth															
Canada (ref)															
Outside Canada							-0.049	0.033		-0.132	0.035	***	-0.114	0.036	***
Gender															
Female (ref)															
Male							-0.597	0.026	***	-0.618	0.028	***	-0.470	0.030	***
Age															
14 or Younger (ref)															
15 or Older							-0.507	0.071	***	-0.341	0.076	***	-0.130	0.078	
Neighbourhood Income Decile							0.086	0.005	***	0.063	0.005	***	0.037	0.005	***
Start of Postsecondary												***			***
2009 or Prior (ref)															
2010										-0.401	0.033	***	-0.325	0.033	***
2011 or after										-1.624	0.034	***	-1.146	0.037	***
Field of Study												***			***
Liberal Arts (ref)															
Business										0.129	0.038	***	0.147	0.039	***
STEM										0.395	0.038	***	0.197	0.039	***
Health										0.407	0.056	***	0.357	0.057	***
Other										-0.332	0.049	***	-0.146	0.051	**
Suspended in Public School															
Never (ref)															
At Least Once													-0.257	0.037	***

First OSSLT Attempt										
Passed (ref)										
Did Not Pass									-0.042	0.043
Grade 9 Credits										
Seven (ref)										
Eight									-0.066	0.049
Nine									0.070	0.074
Grade 9 Academic Level										
Academic POS (ref)										
Non-academic POS									-0.285	0.041 ***
Percent Absent									-0.055	0.016 ***
Grade 9 Grade 9 Average									0.047	0.002 ***
Constant	1.263	0.014	1.343	0.015	0.998	0.038	1.667	0.047	-1.530	0.143
Log Likelihood	-18662.02		-18505.49		-18018.97		-16601.48		-15802.24	
LR χ^2	982.69		1295.76		2268.79		5103.77		6702.25	
Prob > χ^2	***		***		***		***		***	

Benefitting from Postsecondary Education

Regression Results

Table 4 presents the bivariate regression results comparing the earnings of those with and without disability. The results reveal that in 2017, workers with disability who entered secondary school in the TDSB between 2004 and 2006, earned approximately $30,000 per year in 2017. In comparison, workers without disability earned approximately $41,000. Hence, those with a disclosed disability earn approximately $11,000 less than their counterparts.

Table 4: Income by disability status, entire sample

	Earnings	**95% Interval**	
Disability			
No	$40,940.48	$ 40,592	$ 41,289
Yes	$29,715.96	$ 28,832	$ 30,599

The estimates in Table 5 are predicted earnings, with corresponding 95% confidence intervals, for the interaction between disability status and postsecondary pathway variables, across three models.[9] For all models, those with disability report lower earnings than those

[9] To preserve space, the estimates for the control variables are removed, but are available upon request.

without disability; however, the earnings gap fluctuates across pathways. The results from Model 1 (without controls) reveal that among workers without a postsecondary education, those with disability earn approximately $3,000 less than those without disability. The gap drops to approximately $2,300 for those who have some college education; but increases to approximately $5,600 among those with some university education. Among college graduates, those with disability earn approximately $5,400 less than their non-disabled counterparts, while the greatest gap in earnings is observed among graduates with a university degree; university graduates with disabilities earn just over $9,000 less than their non-disability counterparts ($41,175 versus $50,270).

Table 5: Income by disability and PSE status (full sample) with and without controls

Table 5: Income by disability and PSE status (full sample) with and without controls

	Model 1 (Zero order)			Model 2 (Sociodemographic)			Model 3 (School-based variables)		
	Earnings	**95% Interval**		***Earnings***	**95% Interval**		***Earnings***	**95% Interval**	
No Disability									
No postsecondary in Canada	**$28,065.95**	$ 27,302	$ 28,830	**$28,058**	$ 27,287	$ 28,828	**$ 33,033**	$ 32,184	$ 33,882
College/Did not graduate	**$30,061.62**	$ 28,849	$ 31,274	**$29,965**	$ 28,760	$ 31,170	**$ 32,914**	$ 31,708	$ 34,120
University/Did not graduate	**$31,038.20**	$ 29,983	$ 32,094	**$30,445**	$ 29,396	$ 31,493	**$ 29,656**	$ 28,612	$ 30,700
Graduated College	**$36,880.46**	$ 36,000	$ 37,761	**$37,415**	$ 36,541	$ 38,289	**$ 38,278**	$ 37,410	$ 39,145
Graduated University	**$50,270.32**	$ 49,808	$ 50,733	**$50,315**	$ 49,845	$ 50,786	**$ 46,685**	$ 46,152	$ 47,217
Disability									
No postsecondary in Canada	**$24,981.61**	$ 23,665	$ 26,299	**$24,840**	$ 23,511	$ 26,168	**$ 32,173**	$ 30,721	$ 33,624
College/Did not graduate	**$27,770.79**	$ 25,565	$ 29,976	**$27,548**	$ 25,355	$ 29,742	**$ 32,426**	$ 30,213	$ 34,639
University/Did not graduate	**$25,399.96**	$ 22,295	$ 28,505	**$24,724**	$ 21,646	$ 27,801	**$ 26,523**	$ 23,485	$ 29,561
Graduated College	**$31,429.55**	$ 29,557	$ 33,302	**$31,775**	$ 29,916	$ 33,634	**$ 35,029**	$ 33,159	$ 36,899
Graduated University	**$41,175.93**	$ 39,250	$ 43,102	**$40,482**	$ 38,570	$ 42,393	**$ 39,291**	$ 37,402	$ 41,179

The earnings estimates and corresponding confidence intervals displayed in Model 2 and Model 3 are derived after adding control variables in stages and are calculated by holding the control variables constant at typical values (means are used for quantitative variables and proportions are used for categorical variables). When adding the sociodemographic control variables in Model 2, the predicted earnings are very similar to those provided in Model 1. However, when adding students' school-based variables relating to secondary school disruption and performance available in the TDSB data set, the earnings gap between those with disability and those without closes substantially across the pathways. For example, the earnings gap among those who do not attend PSE between those with a disability and those without a disability drops from approximately $3,100 (Model 1) to $860 when students' school-based variables are added in Model 3. Likewise, among those with some college education, the difference in earnings between those with and without disability is not statistically significant when students' school-based variables are taken into consideration. Among those with some university education, students without disability earn approximately $3,100 more than their counterparts without disability. Likewise, when adding students' school-based variables to the model, the predicted earnings for college graduates with disability is approximately $3,250 less than it is for college

graduates who do not have disability ($35,029 versus $38,278). Finally, among university graduates, the discrepancy in earnings between those with and without disability, which was approximately $9,000 in Model 1, is reduced to approximately $7,400 ($46,685 versus $39,291) when all the variables are included in the model. The regression estimates in Table 4 also control for field of study. Thus, this model applies only to students with at least some postsecondary schooling.[10] The predicted earnings displayed in this table reveal that field of study captures only a very modest amount of difference in earnings between non-disabled workers and their counterparts. The most substantial change is observed among university graduates, where graduates with disability earn approximately $5,900 less than those without disability.

Table 6: Income by disability by PSE education (only students who entered PSE)

	Model (All Controls)		
	Earnings	**95% Interval**	
No Disability			
College/Did not graduate	**$36,581.53**	$ 35,239	$ 37,924
University/Did not graduate	**$33,279.38**	$ 32,200	$ 34,358
Graduated College	**$40,596.85**	$ 39,674	$ 41,520
Graduated University	**$47,043.10**	$ 46,523	$ 47,564
Disability			
College/Did not graduate	**$35,682.14**	$ 33,305	$ 38,059
University/Did not graduate	**$30,496.17**	$ 27,363	$ 33,629
Graduated College	**$37,392.21**	$ 35,404	$ 39,380
Graduated University	**$41,120.62**	$ 39,181	$ 43,061

In sum, the regression analyses reveal that students with disability have lower earnings across all pathways; however, the largest gap in earnings is among university graduates, followed by graduates of community colleges (Table 6). Thus, not only are TDSB graduates with disability far less likely to complete university (see Table 1), but those who manage to graduate from university are not able to achieve earnings parity with their counterparts without disability. While the students' school-based variables play a significant role in reducing the earnings gap between workers with and without disability, a sizeable gap remains in the first few years after graduation, particularly among university graduates.

Discussion/Conclusion

The results of the literature review, provincial and territorial scan, as well as the quantitative study urge immediate action and attention to the barriers disabled students face along their journey to and through K-12 schooling, postsecondary education, and the workforce. According to the World Health Organization (2021), disability is a result of the interaction

[10] The higher overall earnings in this table are attributable to the values of the control variables being held constant for this subsample, as students who enter PSE are likely in advantaged positions with respect to many of the sociodemographic and school-based variables.

between an individual's impairment and the social, economic, and environmental conditions in which they live. Critical approaches to disability emphasize how disability is produced by social, environmental, and economic factors that limit participation and opportunities that result in social and material inequity (Oliver, 1990).

Disability discrimination can take many forms, however, the privileging of ability, that is pervasive in education sectors, can lead to the belief that disabled students have lower status than their non-disabled peers (Silvers & Francis, 2005). In fact, many disabled students have faced stigma and reduced academic opportunities traced back through their educational pathways from the early years to postsecondary (Lindsay, et al, 2018; Chatoor, 2021; Cooc & Kiru, 2018; Finnie et al., 2011). For instance, many students have had their academic pathways significantly altered through special education identification and academic streaming resulting in limited postsecondary education opportunities. Disability is not experienced in isolation. Research has demonstrated how ability-based identification and placement decisions can be shaped by biased understandings of race, gender, and class (Connor, 2017; De Valenzuela et al., 2006; Erevelles et al., 2006; Ferri & Connor, 2005; Reid & Knight, 2006). Black students (Domina et al., 2017; James & Turner, 2017), Indigenous students (Swarup & Strangway, 2021), and students identifying as 2SLGBTQ+ (Yau et al., 2015) continue to be disproportionately overrepresented within special education identification categories and programming.

This report highlights evidence of the critical factors that collude to *disable* students' participation in postsecondary education. From the literature review, there are clear barriers embedded within the K-12 education system. In particular, practices that involve ability-grouping students early on in their education journey significantly impact students' academic achievement, social belonging, and engagement in school (Barron et al., 2022). Additionally, program decisions and perceptions of ability in elementary school have been linked to students' future access to postsecondary education (Brown et al., 2020; Parekh et al., 2018). Streaming, or organizing students along ability-based pathways, is counter-evidential (Archer et al., 2018), yet this continues to be a common practice in K-12 education systems. Ability-grouping and streaming, as well as other key school-based variables such as suspension, absenteeism, and achievement have shown to be predictive of students' future access to postsecondary education (Brown et al., 2020; Brown & Parekh, 2013).

Even when students with disabilities access and arrive to their selected postsecondary programs, there are barriers that disproportionately impact access to course material, services and supports, and mobility through campus. The process of acquiring accommodations is often fraught with challenges related to assessment, documentation, implementation, cost, and feasibility (see Jacob & Parekh, 2022, for more information). A scan of provincial and territorial investments into disability-related supports for postsecondary students revealed that financial aid, the primary form of investments, is often tenuously and conditionally tied to other factors. For instance, financial aid could be tied to student loans or to work-focused programs and only cover particular aspects of students' costs. Depending on where students live, there could also be interactions between disability support programs and student loans (see Collis, 2022, for more information). As other research has noted, initiating access to financial support and debt-reduction programs can be highly bureaucratic and time consuming (Deller & Tamburri, 2019).

The research study lends important evidence to the ongoing inequity disabled students face in accessing and completing their postsecondary programs. Students with disability are almost twice as likely to not participate in postsecondary education as their non-disabled peers. Overall, students with disability may have been more likely to graduate from college, compared

with those without disability, but non-disabled students were almost three times more likely to complete university. In the end, should students with disability make it through their postsecondary program, they are unlikely to reach income parity with their non-disabled peers. In all, this report has outlined the pervasiveness of ableism and disability discrimination that is structurally embedded within myriad educational, financial aid, and employment policies and practices.

Students with disability are almost twice as likely not to access PSE compared to their non-disabled peers (49% to 26%, respectively). Of students with disability, only 15% have graduated with a university degree compared to 44% of students without disability. In addition to disability status, access to postsecondary education is highly related to other intersecting variables such as gender, language, and income. Female students have accessed PSE at greater rates. When disability status has been included, the gap between male and female students' access to PSE has grown from 11% to 16%. Similarly, students who speak another language at home other than English are more likely to access PSE. When disability as a variable is included, the gap grew from 12% to 16%.

In terms of income, there is a sustained 24–25% difference in PSE access between students with and without disability from the lowest income decile until the 5th decile. As income levels rise, the gap in access for disability status shrinks to a 14% difference for the highest income decile. School-based variables also have a notable relationship with PSE access. Only 35% of students with disability who had experienced suspension from school went on to PSE compared to 81% of their non-disabled peers who had not been suspended. Interestingly, the difference in disability status and access to PSE was not so pronounced in relation to students' academic program in Grade 9. It appears as though disability may be an organizing factor in relation to students' high school programs, potentially exacerbating limited opportunities for disabled students to access PSE.

The results related to PSE graduation were very interesting. Although there was an initial gap in graduation (14%), with 62% of students with disabilities graduating compared to 76% of their non-disabled peers, this gap dropped to 1% (or negligible) when accounting for students' sociodemographic, program and, importantly, school-based variables. This is important as disability, as an isolated variable, was no longer significant in predicting postsecondary graduation. This finding suggests that much of what explains the initial gap in graduation across disability status is explained by the experiences students have had in public school.

Unfortunately, this study does not support the narrative that postsecondary education has the potential to be the great equalizer for disabled students. After controlling for the sociodemographic and school-based predictors, the results of this study reveal that workers with disability are more likely to achieve earnings parity with their non-disabled counterparts, only if they do *not* obtain postsecondary education credentials. Although achieving PSE credentials resulted in an overall increase in earnings, a postsecondary credential, particularly a university degree, improved earnings for non-disabled workers more than their disabled colleagues. It is imperative that funding institutions recognize the ongoing ableism and discrimination disabled students face when entering the workforce (Chatoor, 2021), particularly when strategizing plans for student debt repayment.

Recommendations

Tackling ableism within the education sector requires targeted intervention across all levels of study. As such, we have devised a number of recommendations for consideration:

- Disability, in relation to public and postsecondary education, has to be reconceptualized. There is tremendous inconsistency and fragmentation across the early years, K-12, and postsecondary education sectors in terms of how disability is understood and how systems respond (Parekh & Brown, 2020; Parsons et al., 2021).

- Recognizing that postsecondary access as an equity issue that has implications in students' long-term health (Raphael, 2015).

- Greater tracking and accountability for program access and outcomes that disproportionality affect students with disabilities along the K-12 and postsecondary trajectories (e.g., special education, academic streams, specialized programming) (Deller & Tamburri, 2019; Parekh, 2014; Quan & James, 2017).

- New and existing programs designed to support students with disabilities should be reviewed by an established youth advisory table or through ongoing partnerships with disabled youth and their families (Provincial Advocate for Children and Youth, 2016).

- Tutoring programs can be a useful tool in supporting student achievement (Yau, Mundy, Gallagher-Mackay, & Ta, 2022). Based on research undertaken in Toronto, effective tutoring program characteristic include holding a robust connection to school curriculum, offer frequent access, commitment to developing relationships between tutors and students, support and training for tutors, and ongoing formative assessments for students (Robinson & Loeb, 2021; as cited in Yau, et al, 2022). Examinations of meta-analyses, as seen in Gallagher-Mackay, Mundy, Feitosa de Britto, & Asim (2021) support the effectiveness of high-dosage tutoring programs. Yet, there is often a lack of coordination between community based as many adopt different models and are funded through various agencies and organizations (Yau, et al, 2022). Supporting high-dosage, community-based tutoring programs is important as would be the development of an infrastructure that would enable coordination across programs.

- Investments into community-based early intervention, transition, and bridging programs, particularly between K-12 and postsecondary education sectors, has been found to be effective (Deller & Tamburri, 2019). For instance, as Deller (2018) describes, there are many shared characteristics across "good" early intervention programs looking to support low-income students. These include financial supports, multi-service opportunities for counselling, and soft-skill training, but may also require keenly motivated students as determined by admission processes. Evidence has shown that early intervention programs can really help students access postsecondary programs, but there is little evidence that they help students "get through" them. Therefore, our recommendations would be to invest in both early intervention programs as well as additional supports for students with disabilities as they move through their postsecondary programs.

- Chatoor (2021) suggests that bridging programs between PSE institutions and the workforce be put in place to support PSE graduates as they transition from PSE to employment. "This programming should consider the health needs of these individuals,

particularly students with learning, physical and mental health disabilities" (para. 9). As noted in the research, accessing accommodations and supports can be difficult to navigate through institutional accessibility offices. Providing students with funding for further supports related to their studies could be helpful. For instance, grants for which students can determine their use could benefit students' access to tutors, editing services, scribes, technology, and academic or support counselling services.

- Financial investments are critically important to ensuring that students with disabilities can access and succeed in postsecondary education. It is clear from the literature and from the study that students with disabilities are grappling with low income, face significant expenses related to mobility and accommodation devices, as well as face systemic barriers in accessing equitable employment. Investing in further disability-related grants or working with student load agencies to convert more loans into grants appear to be of significant importance. However, the best way to improve access is to offer financial aid to disabled people in a way that they can self-direct/self-manage costs (e.g., see Fleming, 2019).

- Debt-repayment assistance plans should be set up to automatically enroll students (Deller & Tamburri, 2019) and take into account the structural ableism embedded in the workforce that disabled students will encounter once they leave school (Chatoor, 2021).

- In order to access and succeed in postsecondary education, students with disabilities are often required to navigate a number of different systems to secure funding assistance, assessments, accommodations, and services. As supports are typically offered through disparate organizations and programs, it would helpful for students and their families if there was further coordination. The development of a central or federal system through which students with disabilities and their families could access key information on what is available in their area, particularly in relation to access, support through and into the workforce, as well as the requirements to pursue different funding and support opportunities would be an important resource.

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