

**Ontario Ministry of Education's Policy/Program Memorandum 140: A
Review and Critique of Current Resource Allocation and Practices for
Supporting Autistic Students in Elementary Classrooms**

by

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PROJECT REVIEW INFORMATION

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Ontario Ministry of Education's Policy/Program Memorandum 140: A Review and Critique of Current Resource Allocation and Practices for Supporting Autistic Students in Elementary Classrooms

The Project was approved on December 6, 2023, by the following review committee:

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The above review committee determined that the Project is acceptable in form and content and that a satisfactory knowledge of the field was covered by the work submitted. A copy of the Certificate of Approval is available from the School of Graduate and Postdoctoral Studies.

ABSTRACT

A review of recent literature on Applied Behaviour Analysis (ABA) and alternative evidence-based therapies for autistic students, as well as data extracted from Ontario school boards' recent financial reports. Information from this review is used to conduct a critique of Ontario's Policy/Program Memorandum 140 (PPM 140) by scrutinizing current funding models to determine whether they allow the policy to be implemented in a way that facilitates execution of Applied Behaviour Analysis (ABA) methods that align with best practice recommendations. The critique determines that most of Ontario's school boards are currently underspending from their Behaviour Expertise Amount (BEA) allocations, which are intended to fund ABA training for educators, ASSD programs for students, and school board hiring of behaviour experts. Data reviewed as part of this critique revealed that half of Ontario's school boards employ two or fewer full-time behaviour experts. Based on best-practice guidelines, this behavioural expert-to-student ratio makes the mandated requirement of integrating ABA methods into the IEPs of students unsustainable and likely means that autistic students are not receiving the required support. Underspending in ABA training for educators indicates that limited teacher-focused educational opportunities are available, creating a divide between policy and practice. The current approach to PPM 140 in Ontario schools renders genuine and authentic application of ABA principles difficult, if not impossible, to implement and indicates a need for improvements moving forward. This critique and review of the literature reveals that PPM 140 could be more efficient if new oversight and monitoring protocols could be developed, including standards and quality indicators used to establish training requirements for education staff, behaviour expert hiring practices that align with board enrollment numbers, and accessible data collection protocol to monitor implementation and to measure student outcomes.

Keywords: ABA; Autism Spectrum Disorder; education; funding; Ontario; PPM 140

AUTHOR'S DECLARATION

I hereby declare that this project consists of original work of which I have authored. This is a true copy of the work, including any required final revisions, as accepted by my committee.

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KATHLEEN CONWAY

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LIST OF ABBREVIATIONS AND SYMBOLS

ABA	Applied Behaviour Analysis
AIP	Autism Intervention Program
AQ	Additional Qualification
ASD	Autism Spectrum Disorder
ASDQ	ABA Service Delivery Quality
ASSD	After School Skill Development
BACB	Behaviour Analyst Certification Board
BCaB	Board-Certified Assistant Behaviour Analyst
BCBA	Board-Certified Behaviour Analyst
BCBA-D	Board-Certified Behaviour Analyst – Doctoral
BEA	Behaviour Expertise Amount
BST	Behavioural Skills Training
CFS	Connections for Students
CPBAO	College of Psychologists and Behaviour Analysts of Ontario
CPO	College of Psychologists of Ontario
EA	Educational Assistant
FBA	Functional Behaviour Assessment
FAO	Financial Accountability Office
FTE	Full-time Equivalent
IBI	Intensive Behavioural Intervention
IEP	Individual Education Plan
IPRC	Identification, Placement, and Review Committee
IST	In-Situ Training
KMb	Knowledge Mobilization
KPI	Key Performance Indicators
MCYS	Ministry of Children and Youth Services
MOE	Ministry of Education

ONTABA	Ontario Association of Behaviour Analysts
OAP	Ontario Autism Program
PABAA	Psychology and Behaviour Analysis Act
PHAC	Public Health Agency of Canada
PPM	Policy/Program Memorandum
PRT	Pivotal Response Training
QALY	Quality-Adjusted Life Years
QMS	Quality Management Systems
RBT	Registered Behaviour Technician
RQ	Research Question
SEA	Special Education Amount
SEAC	Special Education Advisory Committee
SIP	Special Incidence Portion
SSP	School Support Program
TQM	Total Quality Management

Chapter 1. Introduction

1.1 Background

During the 2020-2021 school year, 2.03 million children and youth were registered students in Ontario's public school system (Statista, 2022). Data from the Public Health Agency of Canada's (PHAC) autism spectrum disorder (ASD) surveillance system suggests that one in every 66 Canadians between the ages of five and seventeen are diagnosed with ASD (PHAC, 2018). A higher approximation of autistic children and youth in Ontario is put forth by the Financial Accountability Office (FAO) of Ontario, which posits that Ontario is home to approximately 42,000 autistic students (FAO, 2020).

In 2007, Ontario's provincial government implemented *Policy/Program Memorandum 140* (PPM 140) as a framework for school boards to follow when supporting autistic students. PPM 140 requires that all students identified with ASD as an exceptionality must have applied behaviour analysis (ABA) methods incorporated into their Individual Education Plan (IEP), where appropriate. PPM 140 states that ABA is an effective and evidence-based practice that can meet the range of needs presented by autistic students. Per PPM 140, the objectives of ABA are to develop positive behaviours, learn new skills, and transfer a positive behaviour or response from one situation to another (MOE, 2007).

Although this policy was introduced in 2007, the province of Ontario had yet to regulate the profession of behaviour analysts as of May 2023. In 2022, the province announced that they would permit the College of Psychologists of Ontario (CPO) to establish a regulatory body for behaviour analysts, so the regulation of the profession in Ontario may be imminent. This potential change is contingent on the proclamation of the

Psychology and Applied Behaviour Analysis Act (PABAA), 2021 (CECE, 2023), to enable the CPO to become the College of Psychologists and Behaviour Analysts of Ontario (CPBAO).

PPM 140 is a policy with a broad reach as evidenced by the FAO's estimate of 42,000 autistic school-age children and youth residing in Ontario. To support these students and enable implementation of PPM 140, Ontario has established education funding earmarked specifically for behaviour expertise in the field of ABA. Most recently, the funding for such behaviour expertise has been set at \$39 million for the 2023-2024 school year (Ontario, 2023d).

1.2 Purpose

This project aims to examine empirical research and data published since the introduction of PPM 140 to investigate whether ABA remains the “gold standard” when held against alternative therapy options. Ontario's special education funding models will also be reviewed to determine whether current funding allows school boards to effectively deliver ABA-based programming to students and ABA training to educators. As a result of this literature review, this project will consider whether an updated approach addressing PPM 140 may be worthy of consideration moving forward from a perspective that takes into account best practices and existing cost-benefit analyses.

1.3 Research Questions

The purpose of this project is to examine PPM 140 as it relates to resource allocation and current best practices for supporting autistic students in public schools, and

to determine whether the status quo approach is sufficient. Three research questions have emerged to address this objective:

- Research Question 1 (RQ1): How does the province of Ontario currently allocate funding and resources to support PPM 140, and how is that funding used by school boards?
- Research Question 2 (RQ2): Does PPM 140 reflect updated research on best practices for supporting autistic students in a classroom environment?
- Research Question 3 (RQ3): Is it possible for PPM 140 to be implemented successfully given current funding and resource allocations in a way that aligns with current best practices?

Chapter 2. Policy and Program Memorandum 140 (PPM 140)

2.1 Emergence of PPM 140

In 2003, the Ministry of Education (MOE) held a conference to review research on evidence-based practices for students with ASD and promptly established the ASD school support program (SSP) in 2004. This program allowed school boards to request service or training from an autism consultant to a teacher for a defined period and included resources and coaching around implementation of ABA methods in the classroom (Melim, 2014).

In 2006, the MOE offered training workshops for teachers and educational assistants (EAs) working with autistic students. This training was conducted by the Geneva Centre for Autism and additional summer training institutes were funded annually, with some paid registrations available to each board based on student

population (Melim, 2014). Historically, the Geneva Centre also offered a biannual, summer symposium with keynote speakers, workshops, and round table discussions with researchers and autistic individuals. However, the MOE did not fund attendance at this event; individual school boards were required to use their own funds to send teachers if there was interest (Melim, 2014).

It is worth noting that the original training delivery model has changed since its inception. Instead, in January 2021, the MOE allocated funding to deliver optional online courses and training through the Geneva Centre for Autism to teachers and EAs across all school boards. Additional funding was made available through subsidies for educators to take ASD-specific additional qualification (AQ) courses. The rationale for this adjusted approach was the MOE's claim that access to this training format would allow educators to increase their understanding of ASD and ABA approaches through specialized training (Ontario, 2021). The timing of this change aligned with the COVID-19 pandemic and the societal shift to more online-based learning modalities, which may have played a role in this decision, as well.

In 2006, the MOE also established the Minister's ASD Reference Group with the purpose of providing recommendations to the MOE and Ministry of Children and Youth Services (MCYS). The group sought to identify effective, evidence-based educational practices that would meet the needs of autistic students (Ontario, 2007) and in 2007, the group released a report on supporting students with ASD in Ontario schools, which ultimately led to the implementation of PPM 140.

2.2 Introduction of PPM 140

PPM 140 was introduced to establish a policy framework that would direct school boards regarding their use of ABA methods, primarily with students who have a diagnosis of ASD. The policy outlines ABA as a method to identify and record undesirable behaviours or sets of behaviours, analyse their antecedents and possible reinforcers, and develop adaptive behaviours. Among other requirements, the policy states that educators must, “measure a student’s progress in the identified target behaviour, analyse the data on an ongoing basis, determine the effectiveness of the program and alter the program as necessary to maintain or increase a student’s success” (MOE, 2007). This description of an educator’s duties per PPM 140 is closely aligned with the ONTABA’s suggested best practices in ABA implementation (ONTABA, 2017), with the exception that the ONTABA indicates such duties are performed by credentialed behaviour analysts, not classroom teachers.

2.3 Implementation and Oversight of PPM 140

During the IEP development process, the school principal is responsible for ensuring that staff incorporate relevant ABA methods, where appropriate, and use functional behavioural assessments (FBAs) to identify students’ areas of need (MOE, 2007).

To implement PPM 140, educators must understand best practices as established by research, and failure to do so may result in poor execution of the policy. PPM 140 explains ABA as interventions based on behaviour principles that are designed to develop appropriate behaviours. Educators are expected to collect and analyse student data to determine effectiveness of ABA programming and to alter programming to maximize

student success (Ontario, 2023). Within PPM 140, the MOE provides a list of five resources to support educators with implementation, which provide information on generic IEP-related procedures (Ontario, 2023), not autism or ABA-specific practices.

To monitor how PPM 140 is being implemented, the MOE conducts an annual survey through each school principal in the province, which is used by board offices to guide future implementation of PPM 140, including necessary professional development opportunities (Melim, 2014). Additionally, PPM 140 states that school boards should develop a plan to implement the memorandum in consultation with the board's Special Education Advisory Committee (SEAC), whom should be consulted on an annual basis regarding the monitoring of how PPM 140 is being implemented by the board (MOE, 2007). The MOE also integrates monitoring the implementation of PPM 140 into existing reporting mechanisms, like financial reporting requirements. Finally, the Minister's Advisory Council on Special Education, as well as members of the Ministers' Autism Spectrum Disorders Reference Group who wish to be involved, should be consulted at least twice yearly regarding the implementation of ABA methods by school boards (MOE, 2007).

2.4 Programs and Funding Associated with PPM 140

With the introduction of PPM 140 came accompanying initiatives. Once such initiative brought forth by the MOE in 2010 was called Connections for Students (CFS), which served as an intermediary to bridge transitions for autistic children under 5-years old from intensive behavioural intervention (IBI) programs provided through the MCYS to school-based ABA programming. CFS has since been parceled into the more recent Ontario Autism Program (OAP), specifically the School Support Program (SSP), which

is accessible by school boards through negotiated agreements between the OAP recipient and the school board (Ontario, 2023). This differs from the original format of CFS, which mandated that educators and Autism Intervention Program (AIP) providers offer support to students moving from IBI to full-time school with a direct focus on implementing ABA strategies in the classroom (Melim, 2014).

2.4.1 Behaviour Expertise Amount

Also in 2010, the MOE introduced the Behaviour Expertise Amount (BEA). The BEA can be used by boards solely for ABA-related purposes and, for this reason, it is the funding source that will be the primary focus of this project. The BEA's intended purpose is directly tied to PPM 140's directive to incorporate ABA methods into the IEPs of Ontario's autistic students.

Currently, the BEA is set at \$39 million per year, which includes \$26.5 million for boards to hire ABA professionals with qualifications in behaviour analysis. An additional \$6.1 million is earmarked for ABA training to enable boards to offer professional development in ABA, to procure ABA resources, or to provide release time to staff who wish to engage in training opportunities. Lastly, \$6.4 million is set aside for the After-School Skills Development (ASSD) program, which offers targeted skills development opportunities to autistic students for whom such programming may further equip them for classroom success, and to improve social and communication skills (Ontario, 2023b).

One component of the literature review that addresses RQ1 of this project is an examination of each school board's BEA allocations and subsequent spending to

determine how this funding is currently being applied across Ontario. This data is discussed in Chapter 5 and summarized in Table 5.3.

Chapter 3. Applied Behaviour Analysis (ABA)

The Behaviour Analyst Certification Board (BACB) defines behaviour analysis as the science of behaviour guided by the philosophy of behaviourism. The foundation of behaviourism is the notion that, “attempts to improve the human condition through behaviour change will be most effective if behaviour itself is the primary focus” (BACB, 2023, para. 1). The ONTABA defines behaviour as anything you can say or do, including behaviours deemed helpful (e.g., reading, self-care) or unhelpful (e.g., self-injury, off-task behaviour) (ONTABA, 2020).

Behaviour analysts’ perspective has led to the development of techniques and treatment approaches to analyze and change behaviour with the intention to improve lives, resulting in an ABA approach based on behaviour and its consequences (BACB, 2023). Research in the last few decades has provided substantial meaningful evidence pointing to the positive impact ABA interventions have on autistic individuals. This consensus on the efficacy of ABA has led nearly all North American countries to set laws mandating the availability of ABA-based interventions through their health care systems (Keenan & Dillenburger, 2018).

3.1 ABA Techniques and Interventions

ABA techniques typically involve teaching more effective ways of behaving through positive reinforcement and working to change the social consequences of existing behaviour (BACB, 2023). To develop appropriate interventions, behaviour

analysts conduct assessments to determine the functional relationship between environmental influences and behaviour. They look at motivating operations, antecedents, the behaviour itself, and its consequences, and use this information to employ treatment that modifies features of the environment and monitors how these modifications impact the behaviour (ONTABA, 2020).

Any treatment goals selected should be meaningful to the individual receiving ABA services and should adhere to best practice recommendations which include,

ongoing comprehensive behavioural assessments, individualized evidence-based intervention strategies, consistent ongoing data collection, function-based intervention plans for behavioural excesses, comprehensive supervision that integrates data-based decisions, structured and naturalistic methods, the systematic breaking down of goals into smaller steps, strategies to enhance generalization, opportunities for caregiver involvement and collaboration with other professionals (ONTABA, 2017, p.83).

3.2 Applied Behaviour Analysis in Ontario

As noted, the province of Ontario does not currently regulate the practice of behaviour analysis. The accepted standard for education and training of Ontario's behaviour analysts aligns with the standards established by the BACB (ONTABA, 2020). In Ontario, this means that behaviour analysts have completed graduate level education in behaviour analysis or a related field, including extensive supervised experience in behaviour analysis (ONTABA, 2020). Under BACB guidelines, these practitioners are considered either a Board-Certified Behaviour Analyst (BCBA), who hold a graduate-level certification in behaviour analysis, or a Board-Certified Behaviour Analyst-Doctoral

(BCBA-D), who have doctoral training in behaviour analysis. Both designations are permitted to practice autonomously (ONTABA, 2020).

There are other levels of certification available through the BACB as well, which require less education and training. For example, a Registered Behaviour Technician (RBT) would have high-school level education and work as a paraprofessional and a Board-Certified Assistant Behaviour Analyst (BCaB) would have an undergraduate level certification in behaviour analysis. Both types of practitioners are only permitted to practice under the supervision of a BCBA or BCBA-D (ONTABA, 2020).

The practice of ABA requires specialized training to be authentic and effective. Individuals supervising behaviour analysis implementation must be professionals with specialized graduate-level credentials and professional certification. While the integration of ABA approaches into other disciplines may occur, it is not commensurate with the professional practices of ABA (APBA, 2017). Ontario has made strides in recent years with the creation of the ONTABA as a professional body to develop practice guidelines, standards of practice, and to advocate for regulation of the profession (ONTABA, 2020).

The advocacy of ONTABA has been acknowledged by the province of Ontario and, in April 2021, the government declared their intention to regulate behaviour analysts. As of March 2023, the CPO has been given the authority to regulate behaviour analysts in Ontario, which is expected to take effect when the *Psychology and Applied Behaviour Analysis Act (PABAA), 2021* is proclaimed (CECE, 2023).

The PABAA would require any individuals practicing as behaviour analysts to register with what will become the CPBAO. Registered behaviour analysts will have a

code of ethics to adhere to. Complaint, discipline, and fitness to practice processes like other regulated professions would also be established (OSSTF, 2021). Under the new PABAA, behaviour analysis will be defined as, “the assessment of covert and overt behaviour and its functions through direct observation and measurement, and the design, implementation, delivery and evaluation of interventions derived from the principles of behaviour in order to produce meaningful improvements” (OSSTF, 2021, para. 3).

A second component of this literature review project, which responds to RQ2, examines the role of behaviour analysts in education. This specifically looks at the latest data on implementation of ABA methods in a school setting, practicality, and efficacy of having BCBA's oversee educator implementation of such methods, and whether there have been any updated recommendations for school-level implementation of ABA therapy since the inception of PPM 140.

Chapter 4. Previous Literature Reviews

Through an auxiliary search of Ontario Tech University’s library, it became apparent that few publications exist that explicitly examine PPM 140 implications in Ontario schools. Only two relevant papers appeared in a search of the literature. The first study, *The Case of a Knowledge Mobilization Intermediary, Connections for Students, in an Education Practice Setting Connecting Policy to Practice* (Melim, 2014), seeks to understand knowledge mobilization (KMb) efforts using the KMb intermediary CFS, to support students with ASD. This paper also investigated the awareness and implementation of PPM 140 by teachers and the teachers’ perceptions of KMb strategies, including the enablers and barriers to KMb that they identified within CFS.

The second study, *The Spectrum of the Journey: Narrating Identities during Professional Learning in Pivotal Response Treatment for Novice Elementary Teachers of Students with Autism Spectrum Disorder* (Popovic, 2023), examines whether educators use evidence-based practices, like Pivotal Response Treatment (PRT), based on ABA principles, in their teaching and how professional training in such practices may influence novice elementary teachers.

These studies reveal existing gaps in the literature regarding PPM 140. Each study identified staff concerns around training resources and availability, as well as educator competency in implementing ABA methods in a classroom setting. Neither study highlighted ways in which MOE funding is currently used to support training or staffing needs to address those identified staff concerns. These gaps in the literature largely inspired the research questions for this paper.

4.1 Knowledge Mobilization and Intermediaries

The Social Science and Humanities Research Council of Canada defines *knowledge mobilization* as a broad term that covers activities relating to the production and use of research, including dissemination, exchange, and co-creation by researchers and knowledge users (SSHRC, 2019). As it pertains to education specifically, the Ontario Ministry of Education (MOE) defines KMb as, “the ways in which well-validated bodies of knowledge about education, resulting from extensive empirical enquiry, are connected to, or influence, policy and practice in the education system”. In relation to PPM 140, knowledge mobilization of concepts and practices like those referenced in *Evidence-Based Practices for Children and Adolescents with Autism Spectrum Disorder: A Review*

of the Literature and Practice Guide (Perry & Condillac, 2003), used to develop PPM 140, is the intended goal in supporting autistic students in the classroom.

Melim's paper reports on a qualitative multi-case study, which used the experiences of six teachers across multiple school sites to better understand KMb efforts in real practice settings. The study focused on educators' awareness and implementation of PPM 140, their perceptions of KMb strategies in general, and their perceptions of enablers and barriers to KMb efforts that exist within CFS and how these elements impact professional practice (Melim, 2014). Since CFS caters specifically to autistic students departing IBI programming and transitioning into the public school system, some of the data gathered in this study may be unique to the population of pre-kindergarten aged autistic students with more extensive support needs. However, educator sentiments, identified enablers, and identified barriers to PPM 140 implementation may generalize to the broader educator experience.

4.1.2 Findings

Throughout Melim's paper several studies are referenced, and they unanimously agree that mobilizing research-based knowledge in education requires the use of specific strategies and dissemination mechanisms. One of these studies defines an intermediary as an organization that occupies the space between at least two other parties and functions to manage change in those parties (Honig, 2004). In the case of CFS's intermediary role in KMb, CFS serves to manage change between education services and children and youth services as students transition from IBI programs to publicly funded classrooms (Melim, 2014). CFS enables the transfer of ABA-specific knowledge and expertise from those familiar with a student and their needs into a new context: the classroom environment.

When applied to the aims of this project, the mobilization of research-based knowledge from experts, like BCBAAs, to classroom-level educators is necessary for proper implementation of PPM 140, but precisely who or what the intermediary is in the context of PPM 140 needs to be further explored.

Honig's research also found that intermediaries whose focus is policy implementation are primarily involved with providing resources to enable a policy to be actioned. This is made easier when policymaker and implementer relationships are coordinated and made more challenging by fiscal constraints, weak leadership, and poorly defined relationships (Honig, 2004). Similarly, Cooper (2014) discusses targeting resources and dissemination mechanisms and the associated human and financial resources required for KMB to be effective and impactful.

These findings align with Melim's analysis of data, which indicates that many factors may influence the implementation of PPM 140. Leadership, multidisciplinary expertise, and resource availability were found to be integral to effectively mobilizing knowledge. Factors that impeded KMB efforts included poor interpersonal relationships, misunderstandings of roles and contexts, and perceived inequity of PPM 140 (Melim, 2014).

4.1.3 Effective Approaches to KMB

Cooper (2014) found that most intermediary organizations focus on creating research-based products, like reports or fact sheets, rather than event or network strategies, like workshops or conferences. Cooper (2014) noted that, despite the recognition of the value of KMB intermediaries to bring research from policy to practice, KMB is still poorly understood as it pertains to the field of education. Through an

examination of the literature, Melim (2014) also noted the effective nature of networking as a KMb strategy. Networks allow for research and practice to come together through collaborative opportunities where participants can share knowledge and expertise while events can be used to facilitate partnerships and bridge the gap between research and practice. This can take the form of professional development sessions, conferences, or workshops. Another effective KMb strategy identified by Melim (2014) is the use of products or tools, which are research-based artifacts that can be applied in a practical setting to disseminate research knowledge with minimal interaction.

Melim's analyses indicate that targeted and accessible resources - human, material, and financial, paired with proven effective dissemination techniques, like networking opportunities or practical artifacts, need to be a top consideration when determining how to successfully implement a policy like PPM 140.

4.2 KMb and PPM 140

Findings on the benefit of events and networking strategies oppose what the MOE has implemented regarding educator training opportunities. As noted, the MOE formerly held ABA training workshops for educators, and school boards could subsidize teachers' attendance and the Geneva Centre's biannual summer symposiums, which included workshops and round table discussions with experts in the field. However, the 2021 shift to online training delivery moves away from the evidence-based benefits of workshops and networking to less impactful means of KMb, despite the MOE's claim that the newer training format would allow educators to increase their understanding of ASD and ABA approaches through specialized training (Ontario, 2021). Currently, there is little data to demonstrate how often educators implement evidence-based strategies in their

classrooms with many reporting that they feel less than able to serve the needs of autistic students (Martens et al., 2011, Busby et al., 2012; Simpson & Smith Myles, 2007), indicating an apparent need for effective KMB in the field of education to bridge the gap between policy and practice.

4.3 Pivotal Response Training (PRT) for Classroom Teachers

In her 2023 article, Popovic identifies how inclusive policies, like PPM 140, can be difficult to realize without proper training. Popovic's study examines the importance that professional learning opportunities offer to novice teachers as they navigate their way through their first years of teaching and build their identities as educators.

This study used qualitative data from interviews, journals, and focus groups to identify how physical objects (identified as tangible resources or lack thereof) and social objects (interactions with others) had a direct impact on what Popovic labelled "abstract objects", like teacher identities (Popovic, 2023). The author queried how professional development in Pivotal Response Treatment (PRT), can impact the identity of novice educators. PRT modifies principles of ABA to include naturalistic environments and motivational elements and targets pivotal behaviours like motivation, responding, self-management, and social initiations (Popovic, 2023) to facilitate broad learning gains.

Motivation, a cornerstone of PRT, is key to engaging students and maximizing the potential of an inclusive classroom. Despite the value of motivation, Popovic referenced study findings revealing that anywhere from 56% to 82% of in-service teachers had no explicit training in PRT and only 14.49% having received direct teaching of PRT (Hsiao & Sorensen Peterson, 2018; Knight et al., 2019).

4.3.1 The Impacts of Professional Development Opportunities

Novice educators detailed the importance of accessibility to tangible resources and in-class training from specialists, motivation and accountability, and identified the barriers of time, staffing practices, classroom size, and needs within a classroom (Popovic, 2023). Social objects discussed included interpersonal relationships with students, communication with colleagues and parents, and support from administrators (Popovic, 2023). Interestingly, the physical and social objects identified by the participants in Popovic's study align with the themes Melim identified in her study as being necessary for effective KMB to occur.

Popovic highlights how, when educators can interact with various objects, they begin to devote energy to formulating their own teacher identity (2023). For example, having highly motivating material specific to an autistic student coupled with relevant in-class training by a behaviour specialist helps the educator understand, feel motivated, and be accountable (Popovic, 2023).

In contrast, barriers like lack of time and staffing challenges were brought forth as obstacles. For educators, a lack of time to devote to professional development can have a negative impact, as many teachers must allocate personal time to engage in professional learning. Popovic questions whether there are equity issues with this model as educators may or may not have personal time to commit to such undertakings (2023). From this perspective, the MOE's latest approach to educator training through subsidized, optional ASD-focused AQ courses and optional online courses in ABA may not be accessible for many educators, as both are often completed outside of working hours.

Staffing challenges in the form of shortages and reduced funding were also noted as impactful to novice teachers' classroom practice. Educators alluded to the benefit specialized staff and reduced class sizes could provide in the classroom setting. Novice educators noted that, even with their PRT training, they felt that knowledge was overshadowed by doubts cast by barriers like staff shortages and large class sizes and the impact they have on the ability to foster strong student-teacher relationships (Popovic, 2023).

Chapter 5. Review of the Literature

5.1 Procedure

To sufficiently address these research questions, it was necessary to explore two separate avenues to gather adequate evidence-based research and data. To address RQ1, data published by the province of Ontario, auditor general's reports, and additional sources of relevant data were reviewed to establish current funding expenditures and accountability measures.

To address RQ2, a thorough review of academic literature was undertaken. To guide this review, a consultation with Ontario Tech University's subject librarian for the Faculty of Social Sciences and Humanities occurred to determine appropriate search terms and inclusion criteria, which are presented in Table 5.1. At the librarian's advice, the literature search was extended to include psychology databases as well as education databases, specifically *ERIC*, *Education Source*, and *PsychINFO*, to access a broad range of relevant scholarly articles including peer-reviewed empirical studies. Within these databases, three specific categories were identified to search the literature: therapies (keyword category 1), autistic students (keyword category 2), and best practices

(keyword category 3). The specific keyword search terms for each keyword category are outlined in Table 5.2.

Table 5.1

Literature Inclusion Criteria

	Inclusion Criteria	Exclusion Criteria
Literature Type	Empirical studies based on qualitative, quantitative, or mixed methods data, literature reviews	Commentaries, perspective-based literature, theoretical literature, technical reports, conference papers, working papers, theses, dissertations
Publication Source	Peer-reviewed journals published from 2007 and beyond	Book chapters, conference proceedings
Participants	(a) Autistic students in Pre-K to 12 of any gender, learning difficulty (or not), geographical location, and socioeconomic status, receiving some level of intervention in the classroom, and/or (b) educators and/or practitioners implementing interventions for autistic students	(a) Non-autistic students in Pre-K to 12 and/or (b) educators and/or practitioners who do not implement interventions for autistic students.

Table 5.2

Literature Search Keywords

Keyword Category	Inclusion Criteria
1. Therapies	Studies focusing on ABA or ABA and at least one other type of therapy in the context of autism intervention, including keywords: “ABA”, “Applied Behaviour Analysis”, “Behaviour Analysis”, “ABA Alternative”, “alternative therapy”, “supplemental therapy”
2. Autistic Students	Studies investigating the use of intervention therapies with Pre-K-12 autistic students and/or studies investigating use of or experience with

	intervention therapies with autistic students by educators or practitioners, including keywords: “autism” or “ASD” or “Autism Spectrum Disorder”
3. Best Practices	Studies investigating current best practices to support students with autism in a classroom setting, including keywords: “best practice” and/or “evidence-based” and/or “research-based”

To address RQ3, a comparison of research-based findings and best practice recommendations gleaned from a review of the literature was cross-referenced with Ontario school boards’ current use of funding to help determine whether adequate financial resources and human resources are being deployed to meet the requirements of PPM 140.

5.2 Findings

A total of 525 results were identified, of which 391 were eliminated after a cursory review of abstracts due to not meeting inclusion criteria. To manage the remaining search results, the *EndNote* platform was used to facilitate the elimination of any duplicates, the deeper review of abstracts, and the exclusion of any remaining articles that did not meet inclusion criteria. This process resulted in the exclusion of 115 additional articles. Next, a thorough full-text review was undertaken for the remaining 19 articles. A hand search of the remaining articles’ references was also completed to identify other potential sources and yielded 13 articles. An automated alert was also established for each database if new articles meeting the review criteria were uploaded to ensure they could be considered for inclusion. Ultimately, a total of 32 articles meeting inclusion criteria were examined as part of this literature review.

5.3 Research Question 1

RQ1 prompted a look at how the province of Ontario currently allocates funding and resources to support PPM 140, and how school boards make use of this funding. To address these questions, data published in Ontario's data catalogue, auditor general's recent reports, and other relevant data were explored to establish current funding expenditures and accountability measures.

5.3.1 Overview of Funding and Resource Allocation

The *Education Act* requires that all school boards provide special education programs and services to all students who have an IEP, regardless of whether they have been identified as exceptional through the Identification, Placement and Review Committee (IPRC) process. As of the 2020-2021 school year, 17.3% of Ontario's elementary and secondary students had an IEP, of which 47% of students were formally identified as exceptional through an IPRC and 53% were not (Ontario, 2022). To support these students, the provincial government provides funding through the Special Education Grant to school boards for the additional costs of programs, services and equipment required by special education students (Ontario, 2022).

5.3.2 Funding & Resource Accountability

In Ontario, the province is accountable for the public education system and the policy decisions surrounding school board funding. At the local level, school boards are accountable to students, parents, the MOE, and others with a stake in public education and have a specific responsibility to ensure effective use of resources, like funding (Ontario, 2023e).

To encourage accountability among school boards, special education funding may only be used for costs associated with special education, like intensive support resources or staffing, specialized equipment, and assistive technology (Naylor, n.d.). School boards must report to the ministry on their special education expenditures three times per year and any unspent funding must be held in reserve at the school to be spent on special education in future years (Ontario, 2022).

5.3.3 Ontario's Use of BEA Allocations

The Ontario data catalogue publishes reports submitted by school boards, including financial projections and final reports. To support this project's analysis of Ontario's current funding allocations, the financial report for the 2021-2022 school year was downloaded and exported as a .csv file, then viewed as a spreadsheet. All relevant financial data was extrapolated, and a smaller dataset was generated (Appendix A1). Using this dataset, trends were identified in how funding is used across Ontario's publicly funded school boards.

Table 5.3 presents data on the employment of BCBAAs or equivalents by school boards across Ontario. The data is sorted into categories based on school board size and displays how many full-time equivalent (FTE) BCBAAs are employed. This FTE data is presented as a range and as a mean for all publicly funded Ontario school boards, sorted by size into five distinct groups. The mean number of FTE BCBAAs trends upward as board size increases, but this growth trend is not consistent or proportionate to board size. Similarly, the mean number of FTE BCBAAs demonstrates a general upward trend as board size increases, but the range of how many FTE BCBAAs work within each board remains quite consistent, regardless of board size.

Table 5.3*Number of FTE Behaviour Experts by School Board Size*

<i>School Board Size (by student enrollment)</i>	<i>Number of School Boards</i>	<i>Range of FTE Behaviour Experts</i>	<i>Mean number of FTE Behaviour Experts</i>
<i>< 22,000</i>	<i>46</i>	<i>0-8</i>	<i>2.75</i>
<i>22,000-38,000</i>	<i>13</i>	<i>1-8</i>	<i>3.86</i>
<i>38,000-64,000</i>	<i>5</i>	<i>0-6</i>	<i>3.7</i>
<i>64,000-95,000</i>	<i>5</i>	<i>0-13</i>	<i>6</i>
<i>>95,000</i>	<i>3</i>	<i>6-16</i>	<i>11.3</i>

In all but the largest school board category, there were instances where boards had no BCBAs on staff at all. In fact, when referring to the full dataset in Appendix A1, 49 per cent of all school boards had two or fewer full-time BCBAs on staff (Ontario, 2023a). If PHAC's estimate that 1 in every 66 students has a diagnosis of ASD is applied to a school board of 20,000, this would equate to approximately 300 autistic students in a board that size. When there is a mandated requirement for the integration of ABA methods into the IEPs of this scale of students, the number of behaviour experts presented in Table 5.3 is unsustainable and it is likely that autistic students have not received required support. This judgment is made based on the best-practice guidelines recommend that BCBAs should supervise ABA implementation for 1-2 hours for every 10 treatment hours (BACB, 2014; BACB, 2012; Dixon et al., 2016) and maintain a caseload of 6 to 12 children (BACB, 2014).

A potential approach to offset the demand placed on board employed BCBAs would be to ensure that most frontline school staff, like teachers and EAs, are properly trained and credentialed in ABA. The BEA includes a funding envelope specifically for the training of educators in ABA, the use of which is reported in Ontario's data

catalogue. A summary of this dataset is presented in Table 5.4 and more extensive data is included in Appendix A1.

In the 2021-2022 school year, a quarter of Ontario school boards used 40% or less of their ASSD programming allocation, deferring any unused portions to be used in future years (Ontario, 2023a). For ABA Training allocations, 40.2% of school boards spent 40% or less of their available funding (Ontario, 2023a). Overall, only 63.8% of boards spent above 60% of their allocated funding for ASSD programming, while 54.1% of boards spent above 60% of their allocated funding for ABA Training. The data suggests that roughly half of all school boards are leaving a significant amount of money on the table annually, which may indicate the presence of one or more barriers to spending allocated funds effectively.

Table 5.4

School Board Use of BEA Funding: ABA Training and ASSD Allocations

Percent of ASSD funding allocation spent in 2021-2022	80%-100%+	60%-80%	40%-60%	20%-40%	0-20%
Number of School Boards	36	10	8	9	9
Percent of ABA Training allocation spent in 2021-2022	80%-100%+	60%-80%	40%-60%	20%-40%	0%-20%
Number of School Boards	38	1	4	14	15

5.4 Research Question 2

RQ2 sought to answer if PPM 140 aligns with updated research on best practices for supporting autistic students in a classroom environment. To address RQ2, a thorough review of academic literature was completed. The search and inclusion criteria used for this literature review was detailed previously.

To answer RQ2, it is necessary to break PPM 140 down into its base elements. The policy mandates, where appropriate, the incorporation of ABA strategies within student IEPs and, therefore, the implementation of ABA methods in the classroom by educators. The notion of training delivery methods, ABA credentials and qualifications, and incorporation of ABA strategies at the school level emerged as themes within the literature, as outlined in Appendix A2.

5.4.1 Training Educators in ABA

Recently published research on ABA has looked closely at the theme of educator training, specifically whether educators are equipped to implement ABA strategies in mainstream classrooms. Also examined in the literature is the question of which training methodologies are most effective, and how educator attitudes and knowledge of ABA impact their willingness to incorporate different methodologies into their classrooms.

Several studies found that educators require effective training to foster positive attitudes towards ABA, and that training sessions as brief as a single afternoon can be effective at increasing educators' knowledge and favourability of ABA (Allen & Bowles, 2014; Smyth et al., 2017; Grindle et al., 2012). However, becoming proficient in the actual implementation of ABA methods requires more extensive training, as evidenced in a 2012 study that looked at training delivery models.

In this study, a consultant delivered ABA training either directly to staff or to a staff supervisor. When the consultant trained staff directly, there was no follow-up supervision or feedback available. However, when the supervisor was trained by the consultant and subsequently trained their staff, this training delivery approach afforded the opportunity for ongoing feedback between supervisor and staff. As a result, the study concluded that staff training in general ABA principles may not be sufficient to facilitate lasting change unless ongoing, systematic feedback is also incorporated (Haberlin et al., 2012).

A separate study looked at teaching caregivers of autistic children how to implement Behavioural Skills Training (BST) at home. BST is an instructional approach used in ABA. This study concluded that, while caregivers were able to demonstrate mastery during sessions where they learned BST principles, they were unable to generalize their skills in the natural environment. To achieve successful implementation of BST procedures in a novel environment, caregivers required additional in situ training (IST) (Hassan et al., 2018).

In third study, a group of school-based paraprofessionals completed a 40-hour online training course, which included competency testing and an examination, and earned their Registered Behaviour Technicians (RBTs) accreditation. As noted in Chapter 3, RBTs practice under the close supervision of a BCBA and are responsible for implementing behaviour analytic services, not designing assessment or intervention plans (ONTABA, 2020; Luiselli et al., 2017). Additionally, RBTs are required to receive ongoing supervision from a BCBA, including direct, face-to-face, observation monthly (Luiselli et al., 2017). In this study, the RBTs completed a survey approximately three

months after their accreditation which revealed several identified training weaknesses and professional duties that the RBTs lacked confidence in implementing themselves, including skill acquisition programming, procedural implementation of specific behaviour reduction procedures, and functional assessment (Luiselli et al., 2017), which are areas that could be addressed with the assistance of their supervisors.

The evidence presented in the literature suggests that theory-based training opportunities are sufficient to provide participants with a base understanding of and appreciation for ABA from a broad perspective. However, research indicates that additional learning opportunities, like IST, structured supervision plans, and systematic ongoing feedback from a qualified professional are essential to building competency in the actual practice of implementing ABA methods (Haberlin et al., 2012; Hassan et al., 2018; Luiselli et al., 2017).

5.4.2 Supervision and ABA Implementation

The next theme that arose in the literature was the role that behaviour analysis experts play in the implementation of ABA methods. Usually, this is examined through the lens of treatment intensity and/or duration on measurable student outcomes. For children receiving individualized ABA therapy, studies have identified a relationship between treatment intensity and the number of mastered learning objectives (Linstead et al., 2017a; Linstead et al., 2017b) especially in the academic and language domains. Though, intervention duration appeared to be more impactful than intervention intensity, according to Linstead et al. (2017a). It is apparent from the literature that consistent and prolonged implementation of ABA methods yields positive outcomes in mastered learning objectives for autistic children.

This leads to further questions about how this intensity and duration can be met beyond the walls of a clinical setting. To properly address the needs of students, systems for collaborating between agencies, educational teams, and other service providers are essential, but often lacking due to financial constraints, oversight challenges, and time constraints (McIntyre & Barton, 2010; Melim, 2014). These barriers can lead to inconsistent implementation of public policies, like PPM 140.

Evidence from previous studies suggests that variables related to the supervision of ABA-based treatment significantly contribute to treatment outcomes. For example, Mudford et al. (2001) found that parental implementation of an ABA-based program with only limited clinical oversight yielded poor treatment outcomes, while work by Hayward et al. (2009) suggested that increased supervisor intensity can improve treatment outcomes. This relationship between supervision intensity and ABA treatment outcomes is an important consideration for school boards determining how to make best use of their human resources to meet the requirements PPM 140 in such a way that allows autistic students to successfully achieve targeted outcomes.

Since supervision intensity and duration play an integral role in successful implementation of ABA, it is relevant to understand what adequate supervision looks like. The BACB updated its best practice recommendations in 2014 to include 2 hours each week of direct supervision by BCBA's for every 10 hours of treatment administered, and a caseload of six to 12 children per supervisor (BACB, 2014).

Dixon et al. (2016) sought to determine whether the BACB's recommended best practice guidelines are appropriate. They found a significant relationship between mastery of learning objectives and supervisor credentials, indicated by a 73.7% greater

mastery per hour when supervisors hold BCBA accreditation compared to those without BCBA credentials (Dixon et al., 2016). There was limited evidence, however, to suggest that more hours of weekly direct supervision or lower caseloads per supervisor played a significant role in the number of mastered learning objectives (Dixon et al., 2016).

Authors suggested that the BACB's original recommendation of 1-2 weekly supervision hours (BACB, 2012) might be more appropriate than the 2014 recommendation of a 2-hour minimum.

The findings of this study could have funding implications, whereby reallocating funds from supervision hours to treatment hours and funding professional development to ensure supervisor qualifications meet the BCBA standard could yield better outcomes overall (Dixon et al., 2016).

5.4.3 Supporting Autistic Students in a School Setting

How these clinic-based findings may translate to school-based interventions proved to be a minimally researched topic. One analysis by Eikeseth et al. (2002) found that ABA interventions in a specialized elementary school setting resulted in higher standardized IQ and adaptive behaviour scores than more eclectic approaches to intervention. Lotfizadeh et al. (2020) also found that a treatment group receiving ABA-only intervention produced greater gains in language, social, and adaptive behaviour skills compared to a group receiving a range of interventions, but less ABA.

A third study compared eclectic approaches with ABA and highlighted the financial and societal costs to countries that have opted to adopt eclectic models instead of promoting ABA (Dillenburger, 2011). The author quotes Chasson et al. (2007), who

estimate that the use of ABA interventions during a student's 18 years of schooling would minimize the need for special education and ultimately save over \$200,000 USD per child. To substantiate the empirical support behind ABA, Dillenburger quotes the Ontario Ministers' Autism Spectrum Disorders Reference Group (2007) who concluded that, "research indicates that ABA-based practices are the only practices that meet the criterion of effectiveness evidenced in randomized or non-randomized controlled trials". This sentiment is supported and echoed throughout the literature, including a meta-analysis of five educational interventions for children with ASD, which concluded that ABA yielded the most significant results with the strongest methodology in most studies (Fani-Panagiota, 2015).

Research supports the notion that ABA's evidence-based interventions make it a top candidate for supporting autistic students in a school setting. To investigate the shift from clinic-based to school-based implementation, Grindle et al. (2012) sought to study ABA methods in a mainstream school setting model. In this model, 11 autistic students attending a mainstream school were enrolled in an "ABA Class" designed to approximate a typical classroom. The program was aligned with UK curriculum requirements and was delivered by a team of therapists trained specifically in behaviour analytic procedures and supervised by more experienced staff. A consultant behaviour analyst took the lead on designing and implementing all instructional targets to be implemented by the therapy team. Ongoing monitoring occurred via twice-monthly team meetings to assess progress and set new goals. Additionally, regular in-service training and professional development opportunities were coupled with direct feedback from supervisors. The results indicated that this school-based approach to ABA produced moderate to large effect sizes

comparable with traditional home and centre-based ABA intervention models (Grindle et al., 2012), suggesting that implementing ABA strategies in a mainstream classroom can be effective when well-executed.

The challenge in most mainstream schools might be finding a way to implement ABA strategies in a well-executed manner. A typical mainstream classroom has many more students with a wide range of needs and a higher educator-to-student ratio. Aside from these obvious differences that may pose a challenge to well-executed school-based ABA, there is also the additional challenge of reliable implementation of ABA procedures by school staff. Stahmer et al. (2015) reported that even extensively trained special education professionals with ongoing mentorship opportunities and time to manage interventions typically achieved only a moderate level of procedural fidelity when implementing ABA strategies. Consistent use of evidence-based practice is unlikely unless an individual has received explicit training in empirical practices at a graduate level (Stahmer et al., 2015). Another motivating factor to highly accurate implementation is supervisor expectation, as organizations that monitor implementation closely are more likely to achieve higher fidelity (Layden et al., 2018).

The risk of non-sustained implementation is an increase in student disruptive and maladaptive behaviours, typically returning to or declining below baseline levels, rendering the intervention ineffective (Hagermoser-Saneeti et al., 2018). Max and Lambright's study found a lack of implementation fidelity when ABA is attempted in public schools, even when training to staff is provided. Training reportedly occurred infrequently and inconsistently, often due to lack of resources and support from

administrators, which presents as a lack of understanding of the true nature of ABA among school staff (Max & Lambright, 2022).

A separate study looked at educators who practice ABA in school settings. This study used data from 14 ABA schools and specialized classes across the UK with an average staff to student ratio of 1:4, where all staff held advanced academic qualifications, mostly at a graduate level (Griffith et al., 2012). The study looked at different staff roles: (a) ABA consultants: senior staff members responsible for ABA program writing, (b) supervisors: staff members in an ABA supervisory role within a classroom, but may also work as ABA therapists as part of their role, (c) ABA trainee: staff members who provide 1:1 ABA therapy for children, but do not have a supervisory role, and (d) non-ABA staff: professionals and teachers whose primary role is not ABA based. Research has found that 92.5% of ABA consultants had some formal ABA credentials, but only 27.5% had the highest available BCBA qualifications or equivalent. 53% of supervisors had behaviour analysis credentials and 35% and 14% of ABA trainees and non-ABA staff held any ABA credentials, respectively (Griffith et al., 2012). In the case of this study, the individuals working most closely with autistic students were the least likely to hold ABA credentials, indicating an apparent gap in the training approach for frontline educators.

Up to this point in the literature review, any research that examines a school-based ABA implementation model has used data from specialized ABA schools or classrooms in mainstream schools designed explicitly for the purpose of implementing ABA strategies in a class comprised exclusively of autistic students. Such classroom environments are not equivalent to an average Ontario classroom. Most of Ontario's

autistic students are enrolled in mainstream classes in the interest of inclusive education. This means students with atypical development and learning exceptionalities are integrated with their typically developing peers. Educators are generally ill-prepared for the challenging task of teaching in an inclusive classroom, suggesting that more theoretically informed approaches, like ABA, are needed if an inclusive approach to education is to be successful (Dillenburger & Coyle, 2018; Florian, 2014).

5.5 Research Question 3

RQ3 posed whether it is possible for PPM 140 to be implemented successfully given current funding and resource allocations in a way that aligns with best practices according to current research. To address this question, a comparison of research-based findings and best practice recommendations gleaned from a review of the literature was cross-referenced with Ontario school boards' current use of funding to help determine whether adequate financial resources and human resources are being deployed to meet the requirements of PPM 140.

5.5.1 Existing Cost-Benefit Analyses

The economic costs to society that have been associated with autism have been calculated at \$38.8 billion USD annually in the UK and \$180 billion USD annually in the United States (Buescher et al, 2014), countries with populations of 67 million and 333.2 billion, respectively (Office for National Statistics, 2022; US Census, 2023). To support an individual with ASD during their lifespan, it would cost \$1.4 million USD (Buescher et al., 2014). The largest expenses for children with ASD are special education services and the loss of productivity for parents. The largest expenses for supporting autistic

adults include residential care or supported living arrangements as well as individual productivity losses and higher medical costs (Beuscher et al., 2014).

Some costs are more difficult to quantify and fall under the categories of social and personal costs, including an increased likelihood of negative impacts on autistic individuals and their families compared to those in neurotypical situations (Keenan & Dillenburg, 2018). These negative impacts are more likely to arise amongst autistic children who have been excluded from the opportunity to access learning, which can deprive them of essential skills, increase the likelihood of social isolation, and a loss of ability to exercise the rights and freedoms to which they are entitled as Canadians (Makin, 2005). It is apparent that autism has substantial direct and indirect economic effects across many different service systems, including education, social services, and health care. These economic effects can be mitigated through effective interventions (Beuscher et al., 2014).

5.5.2 Ontario's PPM 140: Use of Funding and Best Practices

The province monitors the implementation of PPM 140 and associated ABA strategies in several ways. First, direct feedback is collected from schools by means of an annual survey conducted by the MOE, which is completed by principals of each school. The results of this survey are intended to be used by school boards to guide their implementation of PPM 140, including professional development offerings (Melim, 2014).

Additional oversight mechanisms include the recommendation for school boards to work in consultation with their SEACs to generate a plan for board-wide implementation of PPM 140. Additionally, boards should ensure annual follow-up

discussions with their SEACs to ensure monitoring of PPM 140 implementation. Also advised are biannual consultations between school boards and the Minister's Advisory Council on Special Education and members of the Ministers' Autism Spectrum Disorder Reference Group, if they wish to be involved (Ontario, 2023b).

With respect to what oversight data is available to the public, funding reports are readily accessible and can be used to interpret school board priorities and approaches to implementation of PPM 140. In the most recent school board financial report, which summarizes spending for the 2021-2022 school year, indicated that 51.5% of school boards left at least 20% of their BEA funding for ABA Training and ASSD programming unspent and that 49% of school boards at two or fewer full-time BCBA's on staff. These numbers reflect that school boards are not motivated to make use of their annual BEA allocations, resulting in less ABA training being available to staff, less ASSD programming for autistic students, and high BCBA-to-student ratios that make effective implementation of ABA strategies unrealistic for most school boards.

The review of the literature offered clarity on how ABA in public education may be more impactful. Research indicates that most educators are ill-equipped to assess student needs through the lens of functional behaviour analysis, develop ABA programs, implement ABA strategies, or engage in ongoing monitoring, analysis, and adaptation of programming in a way that aligns with ABA methods. Such skills depend on specialized and extensive graduate-level training that educators do not receive as part of their teacher education programs. Strategic opportunities for feedback and observation by BCBA-credentialed supervisors would be essential if educators are expected to fulfill the duties outlined in PPM 140 in a way that truly aligns with best practices.

In a school setting, this level of BCBA involvement would require a significant increase in human resources at the board level. It would also require educators to reach a baseline competency level comparable with the BACB's BCaB or RBT designations, which enable the practice of some ABA methods while engaged in a supervisory relationship with a BCBA or BCBA-D. To get educators to reach this level of qualification, more in depth training opportunities would be needed.

Currently, the MOE funds enrollment in online courses offered through the Geneva Centre and subsidizes ASD-related AQ courses. The Geneva Centre offers a 40-hour, 5-day course to become a RBT (Sonderly, 2023), though whether this course is included in the MOE's covered online courses is unclear. Other course offerings address skills and duties outlined in PPM 140, but without formal credentials or ongoing feedback opportunities upon completion. The Ontario College of Teachers offers AQ courses through many providers across the province, however, only one is specifically aimed at supporting autistic students. The AQ, titled *Teaching Students with Communication Needs (Autism Spectrum Disorders)* is the only offered AQ of over 300 that specifically focuses on autistic students. A handful of other AQ courses, including *Special Education: Part 1*, *Special Education: Part 2*, *Special Education: Specialist*, *Special Education Support for Administrators*, *Teaching Students with Multiple Needs*, and *Teaching Students with Behavioural Needs* may also address autism to some extent (OCT, 2023). This translates to roughly 0.3% of available AQs being directly related to ASD and 1.6% of the remaining AQs having a potential link with ASD.

Considering autism's prevalence amongst 42,000 Ontario students (FAO, 2020) who are supposed to have ABA methods incorporated into their IEPs, the limited relevant

and available teacher-focused educational opportunities present a large gap between research-based policy and what can realistically be put into practice.

Chapter 6. Discussion

6.1 Summary

This project set out to evaluate the policy requirements set by PPM 140 and compare them with recent literature on the authentic use and efficacy of ABA as well as the training and oversight recommended for its successful implementation. Best practice recommendations were then cross-referenced with school board financial reporting data to explore whether Ontario's current approach to funding ABA-based interventions is an effective use of finite financial and human resources.

6.1.1 Authentic and Effective Implementation of ABA

This literature found that, since the implementation of PPM 140, empirical support for some alternative therapies have emerged. However, ABA continues to yield the most impactful results. The consensus on the efficacy of ABA for autistic individuals has resulted in laws mandating the availability of ABA-based treatments in healthcare systems in most North American countries (Keenen & Dillenburger, 2018). To be authentic and effective, facilitators of ABA require specialized training, which is attained through specialized education in behaviour analysis methods. If one wishes to practice the principles of behaviour analysis autonomously, they must be designated as a BCBA or BCBA-D, achieved through post-graduate or doctoral studies. For individuals who hold lesser credentials (e.g., RBT, BCaB), but who practice the implementation of ABA techniques, ongoing supervision is required (ONTABA, 2020). The stringent nature of effective and authentic ABA implementation means that, while the integration of ABA

approaches into other disciplines like education, may occur, it is not commensurate with the professional practices of ABA (APBA, 2017).

The accepted standard for education and training of Ontario's behaviour analysts aligns with the standards established by the BACB (ONTABA, 2020). In Ontario, this means that behaviour analysts have completed graduate level education in behaviour analysis or a related field, including extensive supervised experience in behaviour analysis (ONTABA, 2020). A professional designation of BCBA or equivalent is the desired qualification for those hired to fulfill the role of behaviour analysis expert when school boards use their BEA funding to hire board-level ABA professionals. Despite the value PPM 140 places on ABA implementation and ABA staff training, the province of Ontario has not regulated the profession of behaviour analysts since PPM 140 was introduced sixteen years ago. This disconnect may be rectified soon, as an imminent proclamation of the PABAA would enable the regulation of behaviour analysts are part of the College of Psychologists of Ontario (CECE, 2023).

Simply being designated as a BCBA is not adequate to be proficient in implementing ABA strategies with autistic students. The BACB notes in their recommendations that certification as a BCBA does not imply competency in ASD treatment and states additional training and certifications in ABA specifically for ASD are encouraged (BACB, 2014).

Aside from additional training and certifications, behaviour analysts also need to fulfill extensive duties to ensure effective execution of ABA. These duties include conducting FBAs to determine the relationship between environmental influences and behaviour, looking for motivating operations, antecedents, and behaviour and its

consequences. Then, they must use this information to design a treatment plan that is meaningful to the autistic individual and adheres to best practice recommendations, like conducting ongoing comprehensive behavioural assessments, individualized evidence-based intervention strategies, consistent ongoing data collection, function-based intervention plans for behavioural excesses, comprehensive supervision, structured and naturalistic methods, chunking of goals, employing strategies to enhance generalization, and providing opportunities collaboration with caregivers and other professionals (ONTABA, 2017).

Many of the duties of a BCBA for successful ABA implementation are presented in Ontario's PPM 140. The policy states that educators must measure a student's progress in the identified target behaviour, analyse the data on an ongoing basis, determine the effectiveness of the program and alter the program as necessary to maintain or increase a student's success (Ontario, 2023), and that principals should ensure that FBAs have been used by educators to identify students' areas of need when preparing IEPs. (MOE, 2007). These expectations of PPM 140 make no mention of the involvement of a BCBA or equivalent in the process of IEP development or the development of individualized ABA programs for autistic students. It also implies educator competency in measuring and analysing student data through a behaviour analysis lens and assumes that educators are trained in the completion of FBAs.

Educators are likely ill-equipped to play the role of a behaviour analyst when it comes to completion of FBAs or data collection and analysis. The MOE hints at this likelihood in PPM 140, expressing that educators must understand best practices as established by research, and failure to do so may result in poor execution of the policy.

Unfortunately, the resources provided for educators and shared alongside PPM 140 only include information on generic IEP-related procedures (Ontario, 2023) rather than autism or ABA-specific practices. As such, they are unlikely to provide educators with the information needed to truly understand ABA or best practices for implementing it, thus resulting in poor execution of the policy.

6.1.2 Gaps: Educators Are Not Behaviour Analysts

PPM 140 defines ABA, presents the necessary elements required for effective ABA implementation, and assigns the responsibility to meet these requirements to educators. If education staff are meant to be the frontline workers responsible for this policy's implementation, they need specialized training and supports that are comparable to that which BCBA's experience when honing their skills. This will be especially true if PABAA is proclaimed, resulting in the regulation of the BCBA profession because the PABAA would require any individuals practicing as behaviour analysts to register with what will become the CPBAO and registered behaviour analysts will have a code of ethics to adhere to. This raises questions regarding whether educators untrained in ABA could be expected to create and implement ABA treatment plans, or if PPM 140's expectations would be out of line given the professional rigor and ethical responsibilities that will be tied to such duties as per the CPBAO's forthcoming code of ethics.

A possible solution could be to adapt a training model for frontline education staff like the BACB's RBT or BCaB designations. As outlined in the literature, RBTs and BCaBs practice under the close supervision of a BCBA and are responsible for implementing behaviour analytic services, not designing assessment or intervention plans (ONTABA, 2020; Luiselli et al., 2017). Additionally, RBTs are required to receive

ongoing supervision from a BCBA, which includes monthly observations (Luiselli et al., 2017). Supervisory intensity and qualification standards of BCBA or greater have been found to improve treatment outcomes and mastery of learning objectives for autistic individuals (Hayward et al., 2009; Dixon et al., 2016). Considering the use of board-staffed BCBA's as supervisors for RBT- or BCaB-credentialed frontline staff may be a valuable consideration for school boards trying to optimize their use of human resources and BEA funding allocations.

6.2 Potential Contributing Factors

Though the provincial funding data presented in this paper does not indicate reasons for underspending, a few possibilities might be considered. First, this financial report is from the 2021-2022 school year, which aligns with the third school year affected by the COVID-19 pandemic. After longstanding restrictions on extracurriculars, the rise of virtual learning, and the growth in work-from-home models, the transition back to a more typical school year may have had an impact on school board hiring practices and extracurriculars, like ASSD programming. Ongoing monitoring of financial reporting will be helpful in determining whether underspending may have been related to the pandemic or whether it is an ongoing trend.

Another possible explanation for underspending is a lack of available human or material resources. To spend money on ASSD programming, boards need to have staff capable and willing to facilitate such programming, a favourable location, and available transportation for any students who usually rely on school bus or van transportation home at the end of the school day. Without these basic elements, ASSD programming might be difficult to offer, especially at multiple sites within a board. This is reflected in the

dataset presented in Appendix A1, which shows 25% of school boards had no students registered in ASSD programming.

ABA Training allocations may be underspent for a several reasons, as well. Accessibility to training opportunities may be limited due to the geographic location of certain school boards. Other limitations could be related to time and staffing, both barriers that emerged in the literature (Melim, 2014; McIntyre & Barton, 2010; Popovic, 2023). For educators to complete AOs or online courses, they must use their personal time, which is not always possible. To complete training during working hours, release time and occasional teachers would be required. Ontario is currently experiencing a critical shortage of qualified occasional teachers (McIntyre, 2021), which may make administrators reluctant to offer training opportunities to staff knowing that filling their absence could prove quite challenging.

Evidently, several potential barriers contribute to challenges in executing PPM 140 as intended. Accessibility to behaviour analysis expertise is limited due to low numbers of FTE BCBA's within many school boards, which leads to fewer opportunities for educators to access the resources and supports they need to plan, implement, monitor, and adapt ABA-based strategies in their classrooms. Additional underspending on ABA training opportunities could further exacerbate the gap between policy and practice as boards are not finding ways to engage staff in professional development that would upgrade their skills in ABA.

6.3 Short and Long-Term Educational Implications

If PPM 140 can be translated from policy into practice and executed in a way that aligns with best practices, the use of ABA methods with autistic students could be quite

beneficial. It is apparent from the literature that consistent and prolonged implementation of ABA methods yield positive outcomes in mastered learning objectives for autistic children.

However, the risks associated with poor execution of PPM 140 are best avoided, if possible. When untrained individuals try to incorporate ABA methods into their teaching approach, it can result in inconsistent and inaccurate implementation. This can increase autistic students' disruptive and maladaptive behaviours, typically returning to or declining below baseline levels, rendering the intervention ineffective (Hagermoser-Saneeti et al., 2018). This lack of reliable implementation has been found to be prominent in mainstream school settings, even after staff training has been provided (Max & Lambright, 2022). This may be a result of infrequent, inconsistent, and underfunded training, which presents as a lack of understanding of ABA among school staff (Max & Lambright, 2022).

Long-term risks of inadequately trained educators include social and personal costs. Autistic students and their families are more likely to experience negative impacts, especially when autistic children have been excluded from the opportunity to access learning. This results in negative impacts including a deficit in essential skills, increased likelihood of social isolation, and potential impacts on their ability to exercise their rights and freedoms as Canadians (Makin, 2005).

6.4 Using KMb to Realize PPM 140's Potential.

The MOE refers to KMb as knowledge as means by which validated bodies of knowledge about education, resulting from extensive empirical enquiry, are connected to, or influence, policy and practice in the education system (Ontario Education Research

Panel, n.d.). The mobilization of research-based knowledge from experts, like BCBAAs, to classroom-level educators is necessary for proper implementation of PPM 140, but precisely who or what the intermediary is in the context of PPM 140 needs to be clearly defined.

Honig (2004) suggests that a coordinated effort and positive relationship between policymaker (MOE) and implementer (school boards) is key to enabling a policy to be operable and actioned. In contrast, challenges like fiscal constraints, weak leadership, and poorly defined relationships can impede KMb efforts. Identifying relevant resources, making them accessible, and selecting appropriate dissemination techniques (e.g., in-class training from specialists) are key to effective and impactful KMb (Cooper, 2014; Popovic, 2023).

There is limited evidence to suggest what the best approach(es) may be for KMb in education, but Melim's analysis indicates that leadership, multidisciplinary expertise and resource availability were integral to effectively mobilizing knowledge. Factors that impeded KMb efforts included poor interpersonal relationships, misunderstandings of roles and contexts, and perceived inequity of PPM 140 (Melim, 2014). Overall, targeted and accessible human, material, and financial resources coupled with proven effective dissemination techniques, like networking opportunities or practical artifacts (Melim, 2014), need to be a top consideration when determining how to successfully implement a policy like PPM 140.

Despite what the literature outlines as best practice when it comes to dissemination of knowledge and resources, the MOE opted to alter its funded training model in 2021. Instead of continuing to offer on-site training workshops, or conference

and networking events, they began funding optional online courses and ASD-specific AQ courses. While the MOE claims this change will allow educators to increase their understanding of ASD and ABA approaches through specialist training (Ontario, 2021), this claim does not align with the findings on what enables effective KMB. Furthermore, basic training in ABA principles may not be substantial enough to facilitate lasting change due to a lack of ongoing feedback. Training models with additional opportunities for feedback and in-situ training approaches may be more effective (Haberlin et al., 2012; Hassan et al., 2018).

Currently, the MOE states that ABA training is made available to Ontario's educators in the form of online learning and AQs. Of the online course offerings, only one provides educators with actual credentials in the field of ABA. The RBT credential course, offered by the Geneva Centre which hosts Ontario's online learning options, is a 40-hour online course that must be completed over a 5-day time frame. Of the over 300 AQ courses offered in the province of Ontario, only one focuses on teaching autistic students, and it examines ASD-related communication needs, not necessarily behaviour analysis. A handful of other AQ courses cover topics that may also address autism to some extent, but they represent fewer than 2% of Ontario's AQ offerings.

Considering autism's prevalence amongst 42,000 Ontario students (FAO, 2020) who are supposed to have ABA methods incorporated into their IEPs, the limited available teacher-focused educational opportunities present a large gap between policy and what can be put into practice.

6.4 Looking Ahead

This critique has revealed the challenges that exist in bringing a policy like PPM 140 into practice in a way that is effective for students and aligns with current best practice recommendations. The BACB has established a set of recommendations for effective implementation of ABA therapies, including recommendations on supervision frequency, supervisor credentials, caseload sizes, and additional training in ASD for practitioners working with autistic children. However, Ontario's recent financial report does not indicate that school boards are using funding in such a way that meets the BACB's recommendations.

This suggests a need for organizational level quality control measures beyond the existing reporting and accountability measures. Sillbaugh and Fattal (2021) address the issue of quality assurance in the ABA service delivery industry and posit that if ABA service delivery quality (ASDQ) is poorly defined, it is difficult to control ABA intervention quality or to measure success. They indicate a need to define and empirically evaluate the quality of ABA services, especially at an organizational level.

This is not a novel concept in the field of education. The New Jersey Department of Education published its own Autism Program Quality Indicators report in 2004, which served as a model to identify successful school-based programs for autistic elementary students and was broken into two components: Program Considerations and Student Considerations. The Program Consideration model incorporates seven indicators of quality: program characteristics, personnel, curriculum, methods, family involvement, community collaboration, and program evaluation. The Student Consideration model closely mirrors Ontario's IPRC process and includes individual student assessments

conducted by multidisciplinary teams with knowledge of ASD, review and incorporation of student medical and developmental history, students' skills, strengths, and needs are indicated, recommendations for support align with multidisciplinary report, and parent involvement in creating the documentation (Ontario, 2023f; Sillbaugh & Fattal, 2021)

For organizations providing ABA methods to autistic individuals, Sillbaugh and Fattal (2021) issue a call to action. They propose a six-step approach to work toward high ASQD:

1. Identify key performance indicators (KPIs) and strategies that could support the attainment of KPI targets.
2. Establish quality dependent KPIs, tied to performance and outcome standards to allow an organization to hold itself accountable for its ASDQ by identifying metrics and benchmarks that allow them to assess their progress.
3. Create an easily accessible monitoring system where executives, like school boards, can actively monitor progress toward goals.
4. Establish professional (e.g., teachers, EAs) and service recipient (e.g., student) performance and outcome standards based on current research and best practices.
5. Design and implement a total quality management (TQM) system for promoting standards attainment on an ongoing basis while monitoring quality dependent-KPIs (Sillbaugh & Fattal, 2021), which allow for quality management and emphasize not only statistics, but approaches that embrace an entire organization, as well (ASQ, 2023).

A top-down approach from leaders, like the MOE, could be a helpful start to establishing a province-wide standard regarding ABA delivery in Ontario's public schools. To make most effective use of finite resources while aiming to deliver ABA in a way that aligns with best practices and, imminently, allows BCBA's to practice in a way that aligns with the profession's code of ethics as set by the CPBAO, establishing clear quality control metrics would be a reasonable first step. Province-wide benchmark targets surrounding BCBA hiring by board size, credential-focused staff training, and supervision frequency would all be quality control metrics worthy of consideration.

6.5 Conclusions

PPM 140 emerged in the years following a handful of autism-based initiatives, including a 2003 conference on evidence-based practices for autistic students, the 2004 SSP, and training workshops for teachers and EAs working with autistic students. Around this time, the Minister's ASD Reference Group was established and provided recommendations that ultimately led to the implementation of PPM 140.

The original intent of the policy was to provide a framework from which school boards could structure their use of ABA methods with autistic students. The policy places responsibility on school level staff to identify undesirable behaviours, determine their functions, and develop an interventions program; then collect data to monitor and analyze its effectiveness. These responsibilities align closely with those outlined by the BACB as duties of a BCBA and the present literature reviewed throughout this critique substantiate the notion that ABA techniques are inconsistently implemented, not effective, and in some cases detrimental, when they are not overseen by a qualified behaviour analyst.

Current funding allocations are not being utilized in the case of many schools. Underspensing from the BEA allocations, including ABA training for educators and ABA ASSD programming for students, was prevalent among most Ontario's school boards. Similarly, most school boards employed two or fewer full-time BCBAs, or behaviour experts.

The literature indicates that, for ABA to be effectively implemented, adequate and qualified supervision is required. This includes regular supervision of therapy sessions, opportunities for in-service or in situ training and ongoing, systematic feedback for ABA therapists or others, like teachers, implementing ABA programs ideally designed by qualified behaviour analysts.

For Ontario to effectively implement PPM 140 in a way that aligns with best practices revealed in the literature and by the BACB while making use of finite financial resources, like the BEA allocation, new oversight and monitoring protocols could be developed. Such standards and quality indicators should serve to establish training requirements for frontline education staff, BCBA hiring practices that align with board enrollment numbers, and accessible data collection protocol to monitor implementation and to measure student outcomes.

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APPENDICES

6.2 Extrapolated Data Set from Ontario Data Catalogue's School Board Funding Reports for 2021-2022 School Year

School Board:	DSB Ontario North East	Algoma DSB	Rainbow DSB	Near North DSB	Keewatin-Patricia DSB	Rainy River DSB
Board Size:	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)
Sector:	Public	Public	Public	Public	Public	Public
Language:	English	English	English	English	English	English
Urban/Rural:	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Northern Ontario Rural	Northern Ontario Rural
After School Skills Development Program						
Beginning Balance (deferred from previous years)	0	0	23709	40849	0	0
Current Year Allocation (2021-2022)	58006	61909	42135	20814	55156	52481
Total Funding (2021-2022)	58006	61909	65844	61663	55156	52481
Expenditures	58006	61909	42135	20814	55156	68379
Balance (as of Aug 21, 2022)	0	0	23709	40849	0	-15898
% of ASSD funding spent	100%	100%	63.90%	34%	100%	130.00%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	7	0	65	24	37	30
ABA Training						
Beginning Balance (deferred from previous years)	0	0	12635	68630	0	15534
Current Year Allocation (2021-2022)	20858	30296	39812	29702	13967	7500

Total Funding (2021-2022)	20858	30296	52447	98332	13967	23034
Expenditures	20858	30296	14340	0	13967	0
Balance (as of Aug 21, 2022)	0	0	38107	0	0	0
% of ABA Training funding spent	100%	100%	27%	0%	100%	0%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	2	4	2	1	1.8	8
Total Behavioural Expertise amount (Elementary)	196310.2055	225093.906	250290.1513	231078.8935	179515.6397	163164.6339
Total Behavioural Expertise amount (Secondary)	103278.414	106968.4205	114513.5377	98939.3245	96363.8993	90463.1616
Total Behavioural Expertise amount (Elementary & Secondary)	299588.6195	332062.3265	364803.689	330018.218	275879.539	253627.7955
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	220724.6195	239857.3265	308328.689	309204.218	206756.539	185248.7955
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	141860.6195	147652.3265	251853.689	288390.218	137633.539	116869.7955

School Board:	Lakehead DSB	Superior-Greenstone DSB	Bluewater DSB	Avon Maitland DSB	Greater Essex County DSB	Lambton Kent DSB
Board Size:	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	2 (22k to 38k)	2 (22k to 38k)
Sector:	Public	Public	Public	Public	Public	Public
Language:	English	English	English	English	English	English
Urban/Rural:	Northern Ontario Rural/Urban mix	Northern Ontario Rural	Southern Ontario Rural	Southern Ontario Rural	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix

After School Skills Development Program						
Beginning Balance (deferred from previous years)	0	51450	22794	53348	20546	65134
Current Year Allocation (2021-2022)	60443	0	49279	14657	73185	10618
Total Funding (2021-2022)	60443	51450	71073	68005	93731	75752
Expenditures	60858	0	49279	14657	73185	10618
Balance (as of Aug 21, 2022)	-415	51450	21794	53348	20546	65134
% of ASSD funding spent	100.60%	0%	69%	22%	78%	14%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	80	0	39	16	0	143
ABA Training						
Beginning Balance (deferred from previous years)	0	7293	100792	78848	59082	34771
Current Year Allocation (2021-2022)	26752	5006	52455	45036	107243	63770
Total Funding (2021-2022)	26752	12299	153247	123884	166325	98541
Expenditures	26752	1246	195783	6293	18782	24202
Balance (as of Aug 21, 2022)	0	11053	-42536	117591	147543	74339
% of ABA Training funding spent	100%	10%	128%	5.10%	11.30%	9.30%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	1	2	2	2	7	3
Total Behavioural Expertise amount (Elementary)	231102.9238	141321.3383	303338.1832	264736.5795	407260.6205	306706.4855

Total Behavioural Expertise amount (Secondary)	88762.6552	103726.3577	104965.7668	118041.3385	189549.637	140528.094
Total Behavioural Expertise amount (Elementary & Secondary)	319865.579	245047.696	408303.95	382777.918	596810.2575	447234.5795
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	232255.579	243801.696	163241.95	361827.918	504843.2575	412414.5795
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	144645.579	242555.696	-81820.05	340877.918	412876.2575	377594.5795

School Board:	Thames Valley DSB	Toronto DSB	Durham DSB	Kawartha Pine Ridge DSB	Trillium Lakelands DSB	York Region DSB
Board Size:	4 (64k to 95k)	5 (over 95k)	4 (64k to 95k)	2 (22k to 38k)	1 (under 22k)	5 (over 95k)
Sector:	Public	Public	Public	Public	Public	Public
Language:	English	English	English	English	English	English
Urban/Rural:	Southern Ontario Rural/Urban mix	Toronto urban	GTA urban excluding Toronto	Southern Ontario Rural/Urban mix	Southern Ontario Rural	GTA urban excluding Toronto
After School Skills Development Program						
Beginning Balance (deferred from previous years)	86419	5871	72866	0	26219	0
Current Year Allocation (2021-2022)	61449	325762	67528	91696	44198	202265
Total Funding (2021-2022)	147868	331633	140394	91696	70417	202265
Expenditures	61449	325762	67528	91696	44198	202265
Balance (as of Aug 21, 2022)	86419	5871	72866	0	26219	0
% of ASSD funding spent	42%	98%	48%	100%	63%	100%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	52	4097	38	45	75	300

ABA Training						
Beginning Balance (deferred from previous years)	21071	1005276	20538	0	52398	0
Current Year Allocation (2021-2022)	238148	682498	220077	102321	50869	369682
Total Funding (2021-2022)	259219	1687774	240615	102321	103267	369682
Expenditures	70070	743415	29607	102321	88020	369682
Balance (as of Aug 21, 2022)	189149	944359	117591	0	15247	0
% of ABA Training funding spent	27%	44%	12.30%	100%	85%	100%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	13	16	6	2	3	12
Total Behavioural Expertise amount (Elementary)	746996.2887	1809213.762	697579.1588	421570.6347	277754.5879	1023443.296
Total Behavioural Expertise amount (Secondary)	300216.0573	766862.7357	287455.7082	158306.3778	125090.1846	476336.7424
Total Behavioural Expertise amount (Elementary & Secondary)	1047212.346	2576076.498	985034.867	579877.0125	402844.7725	1499780.039
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	915693.346	1506899.498	887899.867	385860.0125	270626.7725	927833.039
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	784174.346	437722.498	790764.867	191843.0125	138408.7725	355886.039

School Board:	Simcoe County DSB	Upper Grand DSB	Peel DSB	Halton DSB	Hamilton-Wentworth DSB	DSB of Niagara
Board Size:	3 (38k to 64k)	2 (22k to 38k)	5 (over 95k)	3 (38k to 64k)	3 (38k to 64k)	2 (22k to 38k)
Sector:	Public	Public	Public	Public	Public	Public

Language:	English	English	English	English	English	English
Urban/Rural:	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	GTA urban excluding Toronto	GTA urban excluding Toronto	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix
After School Skills Development Program						
Beginning Balance (deferred from previous years)	0	14809	63397	84094	74020	97903
Current Year Allocation (2021-2022)	116213	77813	170434	46186	36628	0
Total Funding (2021-2022)	116328	92622	233740	130280	110648	97903
Expenditures	116213	77813	170434	46186	36628	0
Balance (as of Aug 21, 2022)	115	14809	63306	84094	74020	97903
% of ASSD funding spent	100%	84%	73%	35%	33%	0%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	197	0	146	48	0	0
ABA Training						
Beginning Balance (deferred from previous years)	210466	22183	487907	0	279509	27426
Current Year Allocation (2021-2022)	161884	104562	445789	195619	148150	117332
Total Funding (2021-2022)	372350	126745	933696	195619	427659	144758
Expenditures	188554	19126	200761	195619	42767	73877
Balance (as of Aug 21, 2022)	183796	107619	732935	0	384892	70881
% of ABA Training funding spent	51%	15.10%	21.50%	100%	10%	51%
BEA Allocation						

FTE of ABA Expertise Professionals (Elementary & Secondary)	5	4	6	6	0	6
Total Behavioural Expertise amount (Elementary)	556800.0656	407109.1268	1277624.363	627858.3873	536263.375	439343.4902
Total Behavioural Expertise amount (Secondary)	228011.1309	180478.5362	484015.0184	273025.0627	201294.0905	192179.5643
Total Behavioural Expertise amount (Elementary & Secondary)	784811.1965	587587.663	1761639.381	900883.45	737557.4655	631523.0545
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	480044.1965	490648.663	1390444.381	659078.45	658162.4655	557646.0545
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	175277.1965	393709.663	1019249.381	417273.45	578767.4655	483769.0545

School Board:	Grand Erie DSB	Waterloo Region DSB	Ottawa-Carleton DSB	Upper Canada DSB	Limestone DSB	Renfrew County DSB
Board Size:	2 (22k to 38k)	3 (38k to 64k)	4 (64k to 95k)	2 (22k to 38k)	1 (under 22k)	1 (under 22k)
Sector:	Public	Public	Public	Public	Public	Public
Language:	English	English	English	English	English	English
Urban/Rural:	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Southern Ontario Rural	Southern Ontario Rural/Urban mix	Southern Ontario Rural
After School Skills Development Program						
Beginning Balance (deferred from previous years)	12354	10654	0	30322	32672	36361
Current Year Allocation (2021-2022)	69074	117612	139508	51551	40961	24491
Total Funding (2021-2022)	81428	128266	139508	81873	73633	60852
Expenditures	69074	117612	139508	51551	40961	24491
Balance (as of Aug 21, 2022)	12354	10654	0	30322	32672	36361
% of ASSD funding spent	85%	92%	100%	63%	56%	40%

Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	175	43	0	20	8	37
ABA Training						
Beginning Balance (deferred from previous years)	0	233587	0	134178	62275	42242
Current Year Allocation (2021-2022)	77494	190751	217934	78570	58645	27740
Total Funding (2021-2022)	77494	424338	217934	212748	120920	70255
Expenditures	128920	110399	217934	52126	45146	11354
Balance (as of Aug 21, 2022)	-51426	313939	0	160622	75774	58901
% of ABA Training funding spent	166%	26%	100%	24.50%	37.30%	16%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	1	5.5	0	3	1	2
Total Behavioural Expertise amount (Elementary)	356588.7217	609891.5073	667727.9957	346854.0201	300936.1409	221532.8739
Total Behavioural Expertise amount (Secondary)	137864.9773	274242.0067	309934.0128	151301.9929	128662.8136	101732.2446
Total Behavioural Expertise amount (Elementary & Secondary)	494453.699	884133.514	977662.0085	498156.013	429598.9545	323265.1185
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	296459.699	656122.514	620220.0085	394479.013	343491.9545	287420.1185
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	98465.699	428111.514	262778.0085	290802.013	257384.9545	251575.1185

School Board:	Hastings & Prince Edward DSB	Northeastern Catholic DSB	Nipissing-Parry Sound Cath DSB	Huron-Superior Catholic DSB	Sudbury Catholic DSB	Northwest Catholic DSB
Board Size:	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)
Sector:	Public	Catholic	Catholic	Catholic	Catholic	Catholic
Language:	English	English	English	English	English	English
Urban/Rural:	Southern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Northern Ontario Rural
After School Skills Development Program						
Beginning Balance (deferred from previous years)	0	0	0	0	32717	52451
Current Year Allocation (2021-2022)	68057	52723	53301	54900	25000	0
Total Funding (2021-2022)	68057	52723	53301	54900	57717	51451
Expenditures	68057	52817	53303	54900	25000	0
Balance (as of Aug 21, 2022)	0	-94	-2	0	32717	51451
% of ASSD funding spent	100%	100.20%	100%	100%	43%	0%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	40	0	8	22	52	0
ABA Training						
Beginning Balance (deferred from previous years)	0	0	0	0	40074	0
Current Year Allocation (2021-2022)	45162	8085	9483	13347	20159	5008
Total Funding (2021-2022)	45162	8085	9483	13347	60233	5008
Expenditures	45162	8312	9488	13347	0	0
Balance (as of Aug 21, 2022)	0	-227	-5	0	60233	5008

% of ABA Training funding spent	100%	103%	100.05%	100%	0%	0%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	3.9	3	2	2	3	1
Total Behavioural Expertise amount (Elementary)	272377.2265	222258.2644	178966.7101	226538.2003	208497.0776	245051.35
Total Behavioural Expertise amount (Secondary)	110832.6755	33381.97165	81483.50942	47208.01167	88684.67243	0
Total Behavioural Expertise amount (Elementary & Secondary)	383209.902	255640.236	260450.2195	273746.212	297181.75	245051.35
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	269990.902	194511.236	197659.2195	205499.212	272181.75	245051.35
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	156771.902	133382.236	134868.2195	137252.212	247181.75	245051.35

School Board:	Kenora Catholic DSB	Thunder Bay Catholic DSB	Superior North Catholic DSB	Bruce-Grey Catholic DSB	Huron-Perth Catholic DSB	Windsor-Essex Catholic DSB
Board Size:	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	2 (22k to 38k)
Sector:	Catholic	Catholic	Catholic	Catholic	Catholic	Catholic
Language:	English	English	English	English	English	English
Urban/Rural:	Northern Ontario Rural	Northern Ontario Rural/Urban mix	Northern Ontario Rural	Southern Ontario Rural	Southern Ontario Rural	Southern Ontario Rural/Urban mix
After School Skills Development Program						
Beginning Balance (deferred from previous years)	0	0	14851	0	0	0
Current Year Allocation (2021-2022)	51504	58424	35893	55610	55582	74968
Total Funding (2021-2022)	51504	58424	50744	55610	55582	74968

Expenditures	51504	58424	35893	55640	59189	74968
Balance (as of Aug 21, 2022)	0	0	14851	-30	-3607	0
% of ASSD funding spent	100%	100%	71%	100.05%	106.50%	100%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	0	15	38	39	3	116
ABA Training						
Beginning Balance (deferred from previous years)	0	0	0	0	0	0
Current Year Allocation (2021-2022)	5138	21871	3300	15065	14998	61873
Total Funding (2021-2022)	5138	21871	3300	15065	14998	61873
Expenditures	5138	21871	0	142692	20271	71955
Balance (as of Aug 21, 2022)	0	0	3300	-127627	-5273	-10082
% of ABA Training funding spent	100%	100%	0%	947.20%	135%	116.30%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	1	1	0	2	2.5	2
Total Behavioural Expertise amount (Elementary)	181462.9583	214006.5917	239174.703	186343.5727	196030.1035	285035.1741
Total Behavioural Expertise amount (Secondary)	64036.61566	89065.10181	0	93312.27382	83395.23654	155670.4179
Total Behavioural Expertise amount (Elementary & Secondary)	245499.574	303071.6935	239174.703	279655.8465	279425.34	440705.592
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	188857.574	222776.6935	203281.703	81323.8465	199965.34	293782.592

BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	132215.574	142481.6935	167388.703	-117008.1535	120505.34	146859.592
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School Board:	London Dist. Catholic School	St. Clair Catholic DSB	Toronto Catholic DSB	PVNC Catholic DSB	York Catholic DSB	Dufferin-Peel Catholic DSB
Board Size:	1 (under 22k)	1 (under 22k)	4 (64k to 95k)	1 (under 22k)	3 (38k to 64k)	4 (64k to 95k)
Sector:	Catholic	Catholic	Catholic	Catholic	Catholic	Catholic
Language:	English	English	English	English	English	English
Urban/Rural:	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Toronto urban	Southern Ontario Rural/Urban mix	GTA urban excluding Toronto	GTA urban excluding Toronto
After School Skills Development Program						
Beginning Balance (deferred from previous years)	0	0	91439	56241	18273	0
Current Year Allocation (2021-2022)	77452	60528	61080	11651	93111	139441
Total Funding (2021-2022)	77452	60528	152519	67892	111384	139441
Expenditures	77452	60528	61080	11651	93111	139445
Balance (as of Aug 21, 2022)	0	0	91439	56241	18273	-4
% of ASSD funding spent	100%	100%	40%	17%	8%	100%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	23	12	8	12	150	80
ABA Training						
Beginning Balance (deferred from previous years)	0	26079	597729	81473	0	0
Current Year Allocation (2021-2022)	67880	26956	249394	44764	149928	217772

Total Funding (2021-2022)	67880	53035	847123	126237	149928	217772
Expenditures	67880	19123	985926	28522	127581	217775
Balance (as of Aug 21, 2022)	0	33912	-138803	97715	22347	-3
% of ABA Training funding spent	100%	36.10%	116.40%	22.60%	85.10%	100.01%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	7	3	6	2	2	5
Total Behavioural Expertise amount (Elementary)	302927.7905	229693.6135	749609.9178	264280.422	475311.4342	580786.1476
Total Behavioural Expertise amount (Secondary)	158446.8555	90876.27399	336297.1717	117559.9405	268366.0753	396317.6109
Total Behavioural Expertise amount (Elementary & Secondary)	461374.646	320569.8875	1085907.09	381840.3625	743677.5095	977103.7585
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	316042.646	240918.8875	38901.09	341667.3625	522985.5095	619883.7585
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	170710.646	161267.8875	-1008104.91	301494.3625	302293.5095	262663.7585

School Board:	Simcoe Muskoka Catholic DSB	Durham Catholic DSB	Halton Catholic DSB	Hamilton-Wentworth Cath DSB	Wellington Catholic DSB	Waterloo Catholic DSB
Board Size:	1 (under 22k)	2 (22k to 38k)	2 (22k to 38k)	2 (22k to 38k)	1 (under 22k)	1 (under 22k)
Sector:	Catholic	Catholic	Catholic	Catholic	Catholic	Catholic
Language:	English	English	English	English	English	English
Urban/Rural:	Southern Ontario Rural/Urban mix	GTA urban excluding Toronto	GTA urban excluding Toronto	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix

After School Skills Development Program							
Beginning Balance (deferred from previous years)	7754	51947	46236	76225	42841	0	
Current Year Allocation (2021-2022)	69296	24233	47494	9475	17049	79562	
Total Funding (2021-2022)	77050	76180	93730	85700	59890	79562	
Expenditures	69296	24233	47494	9475	17049	79562	
Balance (as of Aug 21, 2022)	7754	51947	46236	76225	42841	0	
% of ASSD funding spent	90%	32%	51%	11%	28%	100%	
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	40	0	41	22	17	23	
ABA Training							
Beginning Balance (deferred from previous years)	11089	70997	115257	46773	37888	0	
Current Year Allocation (2021-2022)	66908	64804	107240	87824	25414	72983	
Total Funding (2021-2022)	77997	135801	222497	134584	63302	72983	
Expenditures	60700	40844	60641	30475	13050	72983	
Balance (as of Aug 21, 2022)	17297	94957	161856	104109	50252	0	
% of ABA Training funding spent	77.80%	30.10%	27.30%	22.60%	20.60%	100%	
BEA Allocation							
FTE of ABA Expertise Professionals (Elementary & Secondary)	2.8	0	6	3.2	1	1	
Total Behavioural Expertise amount (Elementary)	323732.933	316294.5468	379094.0376	345138.8441	228162.1239	338236.8917	

Total Behavioural Expertise amount (Secondary)	134299.2165	134496.7957	217706.1714	184858.8354	87099.61809	140695.1228
Total Behavioural Expertise amount (Elementary & Secondary)	458032.1495	450791.3425	596800.209	529997.6795	315261.742	478932.0145
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	328036.1495	385714.3425	488665.209	490047.6795	285162.742	326387.0145
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	198040.1495	320637.3425	380530.209	450097.6795	255063.742	173842.0145

School Board:	Niagara Catholic DSB	Brant Haldimand Norfolk CDSB	Cath DSB of Eastern Ontario	Ottawa Catholic DSB	Renfrew County Catholic DSB	Algonquin & Lakeshore Cath DSB
Board Size:	2 (22k to 38k)	1 (under 22k)	1 (under 22k)	2 (22k to 38k)	1 (under 22k)	1 (under 22k)
Sector:	Catholic	Catholic	Catholic	Catholic	Catholic	Catholic
Language:	English	English	English	English	English	English
Urban/Rural:	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Southern Ontario Rural	Southern Ontario Rural/Urban mix	Southern Ontario Rural	Southern Ontario Rural/Urban mix
After School Skills Development Program						
Beginning Balance (deferred from previous years)	64403	25570	19314	0	0	0
Current Year Allocation (2021-2022)	10466	37806	46796	104550	55785	63438
Total Funding (2021-2022)	74869	63376	66110	104550	55785	63840
Expenditures	10466	37806	46796	105536	55949	63438
Balance (as of Aug 21, 2022)	64403	25570	19314	-986	-164	402
% of ASSD funding spent	14%	60%	71%	101%	100%	99%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	19	15	65	39	29	110

ABA Training						
Beginning Balance (deferred from previous years)	121218	39428	0	14353	0	34705
Current Year Allocation (2021-2022)	61635	33843	40453	133403	15489	34965
Total Funding (2021-2022)	182853	73271	40453	147756	15489	69670
Expenditures	5278	14936	40453	128177	16477	39281
Balance (as of Aug 21, 2022)	177575	58335	0	19579	-988	30389
% of ABA Training funding spent	1.90%	20.40%	100%	86.70%	106.40%	56.40%
BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	8	2	1	5	2	2.6
Total Behavioural Expertise amount (Elementary)	306420.4165	229112.3045	261042.6135	475612.9905	217087.2991	240701.2782
Total Behavioural Expertise amount (Secondary)	133467.187	115152.758	105966.569	211205.5385	64027.7114	107423.3218
Total Behavioural Expertise amount (Elementary & Secondary)	439887.6035	344265.0625	367009.1825	686818.529	281115.0105	348124.6
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	424143.6035	291523.0625	279760.1825	453105.529	208689.0105	245405.6
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	408399.6035	238781.0625	192511.1825	219392.529	136263.0105	142686.6

School Board:	CSP du Nord-Est de l'Ontario	CSP du Grand Nord de l'Ontario	Conseil scolaire Viamonde	CEP de l'Est de l'Ontario	CSD cath. des Grandes Rivieres	CSD catholique Franco-Nord
Board Size:	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)

Sector:	Public	Public	Public	Public	Catholic	Catholic
Language:	French	French	French	French	French	French
Urban/Rural:	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Northern Ontario Rural	Northern Ontario Rural/Urban mix
After School Skills Development Program						
Beginning Balance (deferred from previous years)	26234	12726	60374	53598	44753	0
Current Year Allocation (2021-2022)	26235	40482	5614	16935	11949	53093
Total Funding (2021-2022)	52469	53208	65988	70533	56702	53093
Expenditures	26235	40482	5614	16935	11949	0
Balance (as of Aug 21, 2022)	26234	12726	60374	53598	44753	0
% of ASSD funding spent	50%	76%	9%	24%	21%	100%
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	0	10	56	0	0	0
ABA Training						
Beginning Balance (deferred from previous years)	0	0	0	115615	0	0
Current Year Allocation (2021-2022)	7471	9256	40160	51149	17706	8978
Total Funding (2021-2022)	7471	9256	40160	166764	17706	8978
Expenditures	7471	9256	40161	0	17706	8978
Balance (as of Aug 21, 2022)	0	0	-1	166764	0	0
% of ABA Training funding spent	100%	100%	100%	0%	100%	100%

BEA Allocation						
FTE of ABA Expertise Professionals (Elementary & Secondary)	4	2	8	3	1	2
Total Behavioural Expertise amount (Elementary)	207809.4657	193635.6576	298854.2089	305167.3684	207086.8994	182783.2074
Total Behavioural Expertise amount (Secondary)	45716.82983	66034.53435	67145.25164	98640.84207	81655.83611	75930.0426
Total Behavioural Expertise amount (Elementary & Secondary)	253526.2955	259670.192	365999.4605	403808.2105	288742.7355	258713.25
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	219820.2955	209932.192	320224.4605	386873.2105	259087.7355	249735.25
BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	186114.2955	160194.192	274449.4605	369938.2105	229432.7355	240757.25

School Board:	CSD cath. du Nouvel-Ontario	CSD cath. des Aurores boreales	CSC Providence	CSC Mon Avenir	CSD cath. de l'Est ontarien	CSD cath. Centre-Est de l'Ont.	Totals
Board Size:	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	1 (under 22k)	
Sector:	Catholic	Catholic	Catholic	Catholic	Catholic	Catholic	
Language:	French	French	French	French	French	French	
Urban/Rural:	Northern Ontario Rural/Urban mix	Northern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Southern Ontario Rural/Urban mix	Southern Ontario Rural	Southern Ontario Rural/Urban mix	
After School Skills Development Program							
Beginning Balance (deferred from previous years)	0	0	0	55722	0	0	
Current Year Allocation (2021- 2022)	57303	50994	61548	14148	62700	81122	4,259,350.00
Total Funding (2021-2022)	57303	50994	61548	69870	62700	81122	
Expenditures	57303	50994	61548	14148	62700	81122	

Balance (as of Aug 21, 2022)	0	0	0	55722	0	0	
% of ASSD funding spent	100%	100%	100%	20%	100%	100%	
Number of Students Enrolled in ASSD Programs (Elementary & Secondary)	0	12	0	0	16	57	
ABA Training							
Beginning Balance (deferred from previous years)	29358	0	0	49277	0	0	
Current Year Allocation (2021-2022)	19160	3904	29423	49545	32209	76754	6,001,321.00
Total Funding (2021-2022)	48518	3904	29423	98822	32209	76754	
Expenditures	9899	3904	29423	79117	32209	76754	
Balance (as of Aug 21, 2022)	38619	0	0	19705	0	0	
% of ABA Training funding spent	20.40%	100%	100%	80.10%	100%	100%	
BEA Allocation							
FTE of ABA Expertise Professionals (Elementary & Secondary)	4	1	2	5	11	4	
Total Behavioural Expertise amount (Elementary)	216248.7778	201944.5841	260346.227	302912.1901	250439.5158	366425.7423	
Total Behavioural Expertise amount (Secondary)	77494.9642	39308.12836	68710.88754	95378.7849	88203.76622	125483.1487	
Total Behavioural Expertise amount (Elementary & Secondary)	293743.742	241252.7125	329057.1145	398290.975	338643.282	491908.891	37,051,794.88
BEA (with 2021-2022 ABA Training & ASSD Allocations deducted)	226541.742	186354.7125	238086.1145	305025.975	243734.282	334032.891	

BEA (with 2021-2022 ABA Training & ASSD expenditures deducted, including deferred revenue and 21/22 allocations)	159339.742	131456.7125	147115.1145	211760.975	148825.282	176156.891	
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6.3 Summary of Articles Reviewed

Article, Author, Year	Methods:	Findings:	Implications:	Theme:
Examining the effects of brief training on the attitudes and future use of behavioural methods by teachers. Allen & Bowles (2014)	187 elementary educators provided professional training and experience data via questionnaires. Participants attended a 2-hour seminar presenting information on the applications of ABA in a mainstream classroom, including a historical perspective of ABA.	Prior to seminar, teacher attitudes toward ABA fell within the negative range. Teachers' attitudes improved following seminar, but this shift did not reach the positive range. Authors interpreted neutral attitude as educators being not quite convinced about ABA. Teachers more likely to consider using a behavioural approach following seminar.	Shorter intervention can lead to a significant increase in teachers' positive attitudes towards ABA, which could have implications for teacher education programs. Positive attitudes toward behavioural techniques have a strong influence on whether it's used in the future. Training that results in positive attitudes toward ABA is more likely to result in ABA implementation in the classroom. Being mindful of how ABA is communicated and marketed to teachers will influence whether they will implement techniques in the classroom.	Educator training in ABA
Costs of autism spectrum disorders in the United Kingdom and the United States Buescher et al. (2014)	Literature review of US and UK studies on individuals with ASD and their families to assess medical, nonmedical, and indirect economic costs and lifetime costs associated with ASD.	Cost of supporting an individual with ASD was \$1.4 million in both countries. Largest costs for children were special education services and parental productivity loss. Largest costs in adulthood were residential care/supported living and individual productivity loss. Medical costs were higher for adults than children.	Substantial costs highlight need to continue to identify and employ effective interventions that make best use of limited societal resources. Distribution of economic impact across different systems (medical, education, social) indicates a need to streamline and coordinate across sectors. Impact on families also worthy of consideration during policy development.	Costs of ASD
Teaching elementary children with autism: Addressing teacher challenges and preparation needs. Busby (2012)	Evaluation of a teacher education program at Troy University meant to prepare teachers to be effective in mainstream classes and with students with disabilities (ASD in particular).	Teacher candidates identified 5 perceived challenges in teaching children with autism, including a need for highly specialized training and for specific qualities as a teacher, the time consuming and difficult nature of collaboration with others, an assumption that children with ASD are atypical, disruptive, and a	Existing teacher education programs do not adequately prepare educators to address challenges associated with teaching autistic students in a mainstream, inclusive classroom. Coursework should:	Training for educators

		<p>complex, a belief that the IEP process is extensive and redundant, a belief that most general education teachers lack basic knowledge and skills needed to support ASD students.</p> <p>Teacher candidates identified perceived needs for more information on processes and procedures around teacher and family collaboration, more case- and field-based experiences for pre-service teachers, and increased access to current research and best practice teaching strategies.</p>	<ul style="list-style-type: none"> - present inclusion of children with disabilities as common practice and the preferred norm and a readily achievable educational outcome. - share best practice procedures that promote inclusive outcomes and benefit all students should be incorporated into teacher education programs and competency assessments. - provide case-based tutorials using real teacher-student examples so pre-service teachers can observe effective teaching of autistic students. - multiple opportunities to engage in successful inclusive education (e.g., observations, field assignments, supervised teaching internships) - multiple opportunities to meet and engage with parents and family members of children with disabilities to promote partnerships 	
<p>Knowledge mobilization intermediaries in education: A cross-case analysis of 44 Canadian organizations</p> <p>Cooper (2014)</p>	<p>44 Canadian research brokering organizations in the education sector were measured using a tool to measure KMb efforts of organisations</p>	<p>Tool identified typology of research brokering organizations (e.g., governmental, not-for-profit, etc.), organisational features (e.g., mission statements, target audiences, size, scope, operating expenses), and brokering functions (e.g., linkage and partnerships, awareness, accessibility, engagement, capacity building, implementation support, organisational development, and policy influence)</p> <p>Data suggests a focus on passive transmission rather than capacity building or actionable messages and minimal attention given to measuring or evaluating KMb efforts.</p>	<p>More active KMb strategies are needed across various organizations for research-to-practice to occur in education sector.</p> <p>Evaluation measures must also be developed to assess progress of various KMb initiatives.</p>	<p>ABA policy-to-practice in education sector</p>
<p>Education for all: The good inclusion game</p>	<p>ABAC procedure in 8 mainstream classrooms and 1 specialized class. 20 children with identified special needs and</p>	<p>Behaviour of identified children reduced significantly during game. Disruptive behaviour also reduced for the non-identified peers. Inclusive behaviours also</p>	<p>Exposing all students to same contingencies, regardless of ability level is beneficial and offers opportunities for inclusion.</p>	<p>ABA in education</p>

Dillenburger & Coyle (2018)	73 without identified needs between 9-15 years of age. Students were split into teams and played the “Good Inclusion Game”	increased significantly during game, for both groups.		
An evaluation of the impact of supervision intensity, supervisor qualifications, and caseload on outcomes in the treatment of autism spectrum disorder. Dixon et al. (2016)	836 children between 18 months and 12 years, diagnosed with ASD, receiving ABA services from community-based provider over a 12-month period to determine relationship between mastered learning objectives and number of supervision hours.	Significant correlation between supervisors with BCBA certification and greater mastery of learning objectives compared to those without BCBA credentials. Supervisor caseloads did not have a significant relationship to the number of mastered learning objectives.	Results indicate that 1-2 hours per everyone 10 hours of treatment is adequate. BCBA certification is a valuable asset for someone in a supervisory role. Additional training in ASD may enable supervisors to take on larger caseloads. Funding resources may be better used if shifted from supervision hours to direct treatment hours.	Supervision of ABA implementation.
Teaching strategies for children with autism. Fani-Panagiata (2015)	Review of 5 treatment programs: ABA, TEACCH, LEAP, DHSCP, and ESDM.	Most programs revealed positive results in language, adaptive, cognitive, and educational outcomes, but most studies had weaknesses. ABA is the only method of instruction with consistent, empirically sound approaches.	Future diagnoses of ASD might warrant specified treatment prescriptions because on presentation of ASD, but currently ABA is recognized as most consistent in addressing core deficits of ASD.	ABA and alternative therapies.
Applied behaviour analysis: What do teachers of students with autism spectrum disorder know. Fennell & Dillenburger (2016)	165 teachers of students with ASD completed surveys to assess self-perceived knowledge of ABA and actual participant knowledge of ABA.	38.5% of teachers thought their knowledge of ABA was “good” or “very good” while 50.3% indicated they only had minimal knowledge (“very little” or “somewhat”). Teachers’ self-perceived knowledge of ABA was not an accurate predictor of their performance on the ABA knowledge assessment, regardless of whether they had received government funded training in the past.	Participant satisfaction surveys and self-reports of knowledge following professional development programs are not an accurate representation of whether participants met desired outcomes. Reliance on subjective measures (e.g., self-surveys) are inadequate and empirical methods of data collection must become required components of teacher training programs.	

<p>What counts as evidence of inclusive education?</p> <p>Florian (2014)</p>	<p>A case study to determine whether the levels and key characteristics within a theoretical model for implementing inclusive education were relevant in practice.</p>	<p>Case study demonstrated that all levels and key characteristics of the theoretical model were also relevant in practice.</p>	<p>Need for theory-based frameworks to further build knowledge on inclusive education</p>	<p>ABA in education</p>
<p>A national UK census of Applied Behavior Analysis school provision for children with autism</p> <p>Griffith et al. (2012)</p>	<p>14 schools with ABA components were sent a census survey instrument to complete, including sections on school structure, child information, and staff information.</p>	<p>10 ABA schools, 2 ABA classrooms in specialized schools, and 2 ABA classrooms in mainstream school. Students ranged from 3 to 19 years with an average of 18.4 children per class. Staff to child ratio was 1.6 staff members to 1 child.</p> <p>Overall small number of children in UK receiving ABA in a school setting. 92.5% of ABA consultants had formal ABA credentials with 27.5% holding BCBA. 35% of supervisors and 14% of ABA therapists held any ABA credentials.</p>	<p>Gap in credentials of supervisory-level staff and those implementing therapy programs directly. Indicates differences in employment and training practices. Service providers may not require ABA credentials to employ supervisors and there are few BCaB training opportunities available in UK.</p>	<p>ABA training in education.</p>
<p>Outcomes of a behavioural education model for children with autism in a mainstream school setting.</p> <p>Grindle et al. (2012)</p>	<p>11 children 3-7 attending ABA classroom in a mainstream school. Children received one-to-one ABA sessions (max. 3 hr 45 min daily), participated in small-group activities, and attended mainstream classes. ABA class was structured and organized to approximate a typical classroom. Team of 3 therapists trained in ABA and supervised by more experienced staff, including a consultant BCBA-D. Supervision occurred via regular team meetings, in-service teaching, and PD.</p>	<p>ABA-based intervention models produced moderate to large effect sizes in standardized test outcomes after 1 year of intervention despite lower overall total one-to-one intervention hours than home- and center-based comprehensive ABA models.</p> <p>Clinical advantages of locating ABA class in mainstream school, including daily opportunities for inclusion, first hand opportunities for peers and teachers to learn about ASD and ABA methods.</p>	<p>ABA can be incorporated into a mainstream class where full curriculum is taught.</p> <p>Low educator-to-student ratios and highly trained therapists and supervisors contributed to success of this model. Such ratios and training are not replicated in mainstream school settings.</p>	<p>ABA in a school setting.</p>

		No significant compromise when ABA methods were used while still adhering to national curriculum.		
Increasing in-service teacher implementation of classroom management practices through consultation, implementation planning, and participant modeling. Hagermoser-Saneeti et al. (2018)	Randomized multiple treatment embedded within multiple baseline design across participants was used to assess teachers' adherence to classroom management plans, quality of plan implementation, and student disruptive behavior in the classroom immediately and at follow-up	Teacher adherence and quality increased with both implementation planning and participant modeling. However, improvements were not fully maintained at 1- and 2-month follow-ups. A similar pattern appeared regarding student disruptive behavior.	Ongoing implementation support is needed for behavioral interventions in schools.	ABA in education
An evaluation of behavioural skills training for teaching caregivers how to support social skill development in their child with autism spectrum disorder. Hassan et al. (2018)	Caregivers of children 6-8 years old trained in BST protocol to accompany child's pre-existing 8-week social skills program. Caregivers received a individual session (50-60 minutes), a group BST session (50 minutes) that included modeling and role plays, and in-situ training during free play component of child's social skills program. All training models supervised by BCBAs.	BST with IST lead to more efficacious and generalized training outcomes than BST alone. BST accuracy increased after receiving IST with corresponding increase in child's social skills.	Teaching caregivers to use BST with a general case analysis approach versus training a specific set of skills may contribute to caregiver and child skill maintenance and generalization. Merit to teaching caregivers ways to support their child in ecologically valid settings.	Training caregivers in BST.
A comparison of pyramidal staff training and direct staff training in community-based day programs.	44 direct care staff and 4 supervisory staff from community-based day programs were trained in Positive Behaviour Support (via pyramidal training or consultant-led training)	Improved teaching procedures post-training, but pyramidal group demonstrated larger increase that was more sustained at 3-month follow up.	Training in general ABA without systematic feedback appears insufficient to facilitate durable staff behaviour change. Ongoing opportunities for observation, supervision, and feedback are key to competent staff implementation.	ABA training

Haberlin et al. (2012)				
Assessing progress during treatment for young children with autism receiving intensive behavioral interventions.	Non-concurrent baseline design across participants used to examine autistic children's progress 1-year following ABA treatment (mean 36 hours weekly, one-to-one delivery). Comparisons made between an intensive clinic-based treatment model with all treatment personnel and an intensive parent managed treatment model with intensive supervision only.	Between intake and follow-up, children in both groups improved significantly on IQ, visual-spatial IQ, language comprehension, expressive language, social skills, motor skills and adaptive behaviour. There were no significant differences between the two groups on any of the measures at follow-up..	ABA treatment offers comparable gains in various settings (e.g., clinic, home) when appropriate supervision models are in place.	ABA in education
Hayward et al. (2012)				
Intensive behavioural interventions based on applied behaviour analysis (ABA) for young children with autism: A cost-effectiveness analysis.	De novo economic analysis to compare early intensive ABA interventions with treatment as usual approach.	Early intensive ABA therapies were associated with greater incremental costs and greater benefits. Intensive early ABA are unlikely to represent value for money based on UK's quality-adjusted life years threshold for funding.	ABA interventions would need to generate a further quality-adjusted life years to meet UK threshold to be cost-effective. Intensive ABA-based intervention might generate higher incremental quality-adjusted life years than treatment as usual approach. Barriers to effective intensive ABA include challenges of recruiting and training therapists in ABA on a scale that could be required to implement a nationwide ABA strategy. Diagnosis of children in appropriate time frame for early intervention to occur is another challenge.	Cost-benefit analysis of ABA
Hodgson et al. (2021)				
The new middle management: Intermediary organizations in education policy implementation.	Examination of research-practice gap through lens of organizational ecology theory and findings from a comparative case study of four intermediary organizations that helped with collaborative policy implementation.	Case study analysis leads to theory about intermediary organizations' importance as participants in contemporary policy implementation.	Intermediary organizations are essential element in research-to-practice process to enable effective policy implementation.	Policy to practice
Honig (2004)				

<p>Evidence-based practices provided in teacher education and in-service training programs for special education teachers of students with autism spectrum disorder.</p> <p>Hsiao & Sorensen Peterson (2018)</p>	<p>Questionnaire completed by 63 participants from two teacher training programs to investigate to what extent 25 evidence-based practices were provided in teacher education and in-service training programs for special education teachers of students with autism spectrum disorder. A total of 63 participants completed the online questionnaire</p>	<p>Approximately 60% of the participants reported that the identified evidence-based practices were taught either directly or discussed as part of their teacher education programs and in-service professional development.</p> <p>In total, these two training programs addressed only 40% of the identified practices.</p>	<p>Teacher education programs may consider increasing content and opportunities for direct experience with a wider range of evidence-based practices to support autistic students.</p>	<p>Training for educators</p>
<p>Instructional practices, priorities, and preparedness for educating students with autism and intellectual disability.</p> <p>Knight et al. (2019)</p>	<p>Survey of 535 special education teachers of students with ASD and/or intellectual disability. Survey addressed educators' implementation of 26 instructional practices, recent access to training and resources on those practices, factors they consider when deciding which practices to use, importance they place on various instructional areas, and their preparedness to provide that instruction</p>	<p>Educators reported implementing a range of evidence-based practices. They reported fairly limited access to training and resources. Many factors were identified that informed educators' instructional decision making, placing emphasis on student needs and professional judgment.</p>	<p>Teacher education programs should emphasize instructional strategies that are effective across a range of skill domains, for varied populations, and in various settings.</p> <p>Provision of incentives could be considered for attending conferences to ensure special educators are using the best available methods.</p> <p>PD should be available in diverse formats including online and live delivery. Intensive and ongoing support should also be a key component when planning PD opportunities</p>	<p>Educator training</p>
<p>Moderate effects of low-intensity behavioral intervention.</p> <p>Lotfizadeh et al. (2020)</p>	<p>Retrospective group design to examine direct 1:1 ABA therapy and direct on-site supervision over 2-year span. Multi-tier service delivery model used in most cases, including a BCBA supervisor, master's level program managers, and a team of ABA therapists. At least two therapists served each participant during separate sessions. Therapists received 5 days of</p>	<p>Results support idea of a dose-response relationship between intervention intensity and outcomes, and for a wide age range. Participants receiving 10.6 weekly hours of ABA versus to 5.7 lead to greater gains.</p>	<p>When there are limited resources, slightly more ABA intervention hours over no ABA or over other interventions.</p>	<p>ABA intensity and duration</p>

	<p>class and computer-based training, followed by therapist-in-training worked alongside an experienced therapist for at least 20 hours. Additional feedback was provided, then individual caseloads were assigned to the newly trained therapists once they reached 80%+ accuracy in implementation of targeted skills. Additional 10 days of computer-based programming occurred next. All ABA therapists held a bachelor's degree in psychology or similar and has prior experience working with individuals with ASD.</p>			
<p>Brief report: Assessment of training and supervision needs among registered behaviour technicians.</p> <p>Luiselli et al. (2017)</p>	<p>11 public school paraprofessionals serving special education students who had recently completed RBT certification completed a questionnaire on RBT tasks and rated their confidence in each.</p>	<p>Between 1 and 5 (9% - 45%) of RBTs surveyed identified further training needs in order to gain competency in most (89%) of the RBT tasks.</p>	<p>40-hour online training course, competency test, and examination were not sufficient to establish competency and confidence in implementation in a school-based natural setting.</p> <p>Additional training/supervision opportunities warranted.</p>	<p>Paraprofessional training in ABA</p>
<p>An evaluation of the effects of intensity and duration on outcomes across treatment domains for children with autism spectrum disorder</p> <p>Linstead et al. (2017a)</p>	<p>18-months to 12-year-old children (mean age 7.57 years) receiving at least 20 hours of ABA monthly (average 58.8 hours/month).</p> <p>Sample size of 1468 participants with diagnosis of ASD or PDD-NOS.</p>	<p>Strong linear relationship between skill acquisition (all 8 domains – social, play, motor, language, executive function, cognitive, adaptive, academic) and both treatment intensity and duration.</p> <p>Dose-response relationship stronger in some domains than others.</p> <p>Increase in treatment hours predicted more mastered learning objectives,</p>	<p>To achieve greater treatment outcomes, clinicians should target academic and language skills at high intensity over longer periods.</p> <p>High treatment dosage yields positive treatment outcomes for children across wide range of ages.</p>	<p>Intensity and duration of ABA</p>

	All participants received ABA from community-based service provider.	especially in language, cognitive & academic domains. Duration had stronger impact than intensity on outcomes.		
Intensity and learning outcomes in the treatment of children with autism spectrum disorder Linstead et al. (2017b)	Retrospective collection of treatment data from archival databases. Pool of 1,258 children receiving behavioural intervention services in community-based agencies. Examined treatment intensity and mastery of learning objectives.	Linear relationship between treatment hours and mastery of learning. Treatment intensity, even with low treatment hours, and mastery of learning also showed a correlation, but less so for older children.	Funding sources can play a role in determining treatment intensity and duration. Decisions around access to ABA at the proper dosage and intensity should be determined by clinician. Study did not check for how many hours were supervised. Future research could evaluate whether amount of supervision impacts learning rate. Also unclear is whether or how much training/experience is needed for therapists to impact children with ASD.	Intensity and duration of ABA
Behavioral approaches to education. Martens et al. (2011)	Examines behavioural approaches to education and strategies for effective teaching.	Many citations attributing failure to adopt evidence-based practices as a reason for ineffective US education system with low-achieving students. Effective teaching methods based on principles of behaviour analysis are available to educators and recent changes in legislation has created opportunities for behaviour analysts to become more active in promoting the adoption of ABA practices.	Availability of BCBA's within the school system for dissemination of knowledge, provision of expertise, support in designing and implementing behaviour analysis-based programming may benefit educators.	ABA in education
Board certified behavior analysis and school fidelity of Applied Behavior Analysis services: qualitative findings. Max & Lambright (2022)	Open-ended survey questions used to collect qualitative data from BCBA's consulting with school administrators and educators to provide ABA services to autistic students.	14 patterns emerged within 3 themes: 1) Train, develop, and implementation of programs, 2) use of ABA principles, and 3) lack of administrative support, lack of resources, and lack of understanding/buy-in.	ABA being implemented in schools is inconsistent for many reasons. Staff require adequate resources and support for training. Collaboration of ABA procedures would be beneficial to staff working with autistic students.	ABA in education & ABA educator training

<p>Early childhood autism services: How wide is the research to practice divide?</p> <p>McIntyre & Barton (2010)</p>	<p>73 caregivers and their children (2-6 years, ASD diagnosis). Data collected on family demographics, current services received, adaptive behaviour, atypical behaviour, & symptomology scales were completed to gather data.</p>	<p>Children's services were initiated an average of 12.64 months before ASD diagnosis, at which point services increased. Children with ASD received an average of 5.42 different services simultaneously, most common was occupational therapy with sensory integration. 19.2% received ABA-based services.</p>	<p>Formal diagnosis may be important in accessing additional services.</p> <p>Most common, occupational therapy with sensory integration, lacks empirical support. Less common, ABA, has lots of empirical support.</p> <p>Research to practice gap is significant and discrepancies exist for both quality (type of intervention) and quantity of services.</p> <p>Systems for collaboration between agencies, education teams, etc. are often lacking. Better systems would increase quality of care for autistic children.</p>	<p>Access to/Use of ABA and alternative interventions.</p>
<p>The case of a knowledge mobilization intermediary, Connections for Students, in an education practice setting: Connecting policy to practice.</p> <p>Melim (2014)</p>	<p>Qualitative multi-case study to examine interactions between policy, KMB efforts, and practice.</p>	<p>Identified factors influencing implementation of PPM 140: role of parents, time availability, human resource availability, perception of policy. Enablers (leadership, availability of expertise, availability of resources) and barriers (relationships, misunderstood roles, and inequity concerns)</p>	<p>Identifies KMB approaches most suited to education and highlights what aids and hinders when bringing policy into practice. Study provides suggestions of how to intentional plan at system, organizational, and individual levels to make KMB more effective.</p>	<p>ABA in education, training of educators</p>
<p>Parent-managed behavioral treatment for preschool children with autism: Some characteristics of UK programs.</p> <p>Mudford et al. (2001)</p>	<p>A summary of data on 75 children receiving early intensive behaviour intervention in the UK to determine whether participants were comparable with those in Lovaas' 1987 study.</p>	<p>57% of children from the dataset started treatment later than in Lovaas' study, 16% did not exceed his minimum IQ criterion.</p> <p>Children experienced fewer hours of treatment (32 vs. 40 weekly) and their programs involved relatively infrequent supervision compared to Lovaas' study.</p>	<p>Lovaas reported 47% of his experimental group receiving early intensive behavioural intervention for ASD attained normal functioning.</p> <p>Home-based early intensive intervention yielded fewer hours and less supervision than Lovaas' clinical study, making comparable results unlikely.</p>	<p>ABA in education</p>

		<p>21% of programs received supervision from individuals currently accredited as competent by Lovaas' standard.</p> <p>No child started intervention early enough, and received 40 hours per week, and had accredited supervision</p>	<p>Ensuring adequate intervention hours and supervision is important to outcomes.</p>	
<p>The spectrum of the journey: Narrating identities during professional learning in pivotal response treatment for novice elementary teachers of students with autism spectrum disorder</p> <p>Popovic (2023)</p>	<p>Narrative inquiry design to explore how professional learning in Pivotal Response Treatment in Ontario may influence novice educators' identities.</p>	<p>Interviews, journals, and focus groups revealed themes of physical objects (accessibility to resources/training, motivation, time barriers), social objects (relationships, communication), and abstract objects (identity)</p>	<p>Identification of barriers (human resources, funding, time, training) could inform organizational-level approaches to staff training and resource allocation for successful implementation of ABA.</p>	<p>Training educators</p>
<p>Evidence-based practices and students with autism spectrum disorder.</p> <p>Simspon & Smith-Myles (2007)</p>	<p>Article examines factors that contribute to identifying and using effective practices with autistic students.</p>	<p>Authors examine effective, evidence-based approaches and ineffective or unsupported approaches and offer recommendations to professionals and parents.</p>	<p>Individuals can ask these questions when selecting a method to use with an autistic student:</p> <ol style="list-style-type: none"> 1. What are the efficacy and anticipated outcomes of a practice, and do they align with student needs? 2. What are potential risks associated with the practice? 3. What is the most effective way to evaluate successful implementation of the chosen approach? <p>Such questions may be helpful when determining behavioural approaches to use in a classroom setting as well as how to monitor and assess progress and efficacy.</p>	<p>ABA in education</p>

<p>Exploring quality in the Applied Behavior Analysis science delivery industry.</p> <p>Sillbaugh & Fattal (2022)</p>	<p>Investigation into the need for ABA service delivery quality standards.</p>	<p>Assess current views of quality in ABA research and the industry, including limitations.</p>	<p>Theoretical framework is presented to allow for a more empirical approach at an organizational level to improve ABA service delivery quality.</p>	<p>ABA in education</p>
<p>The impact of staff training on special education needs professionals' attitudes toward and understanding of applied behaviour analysis.</p> <p>Smyth et al. (2019)</p>	<p>Staff members from special education schools without formal ABA training. Mixed within-between participants design used to examine effects of training module on knowledge and attitudes toward ABA.</p>	<p>A single afternoon training session for teachers and classroom assistants led to increased knowledge of ABA and more positive attitudes toward ABA.</p>	<p>Special needs training for educators in areas where ABA techniques and principles are not the main approach may be important and effective to provide base awareness and challenge attitudes about ABA.</p>	<p>Training educators</p>

