ATHABASCA UNIVERSITY

EXPERIENCES OF AUTISTIC STUDENTS IN A

NEURO-AFFIRMING BLENDED-LEARNING CENTRE IN CANADA

BY

CARRIE L. FERGUSON

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CENTRE**

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Carrie Ferguson

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and the oral examination is approved

Supervisor:
Dr. Cynthia Blodgett-Griffin
Athabasca University

Dr. Constance Blomgren
Athabasca University

External Examiner:
Dr. Susan Moisey
Athabasca University

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Dedication

To Gord, for the endless support, dinners, and love.

To Charlie, for pushing me down the thesis path.

To Tucker, the Padawan who started this all.

And to Mom and Dad, for the footsteps I followed, and the belief that I could.

Abstract

This phenomenological study explored the experiences of five Autistic students who attended a Canadian neuro-affirming blended-learning centre and assessed its impact on their mental wellness. Specifically, the study aimed to answer two main questions: 1) What was the experience of K-12 autistic students who withdrew from brick-and-mortar public schools and then attended a neuro-affirming blended-learning centre?; and 2) How was the mental well-being of autistic students affected when they withdrew from brick-and-mortar public schools and then attended a neuro-affirming blended-learning centre? Findings indicate that participants had positive experiences, would recommend the program, and reported improved mental health. Despite a limited sample size, the research suggests that prioritizing mental health and utilizing multidisciplinary approaches are crucial steps to reducing suicidal ideation and self-harm among Autistic youth. The participants' voices highlight the importance of choice and support in educational settings, opening pathways for further research into best practices for the well-being of autistic students.

Keywords: Autistic, autism, phenomenological, blended-learning, K-12, mental well-being

Table of Contents

List of Tables

Experiences Of Autistic-Students in a

Neuro-Affirming Blended-Learning Centre in Canada

Chapter One: Introduction

Autism Spectrum Disorder is a complicated neurological condition that affects people from birth to death: its core triad of fundamental areas of challenge is communication, social skills, and restricted interests (Public Health Agency of Canada, 2024b, 2024c; Williams et al., 2023). There are no definitive medical tests for autism, which has a heritability rate of approximately 70%, meaning that diagnoses are made based on behavioural observations and cognitive tests (Geschwind, 2011). A famous quote by Autistic advocate, Dr. Stephen Shore, is "If you've met one person with autism, you've met one person with autism."(Flannery & Wisner-Carlson, 2020) Because each Autistic person is so unique, and diagnoses must be made primarily due to behavioural observations, many Autistic people do not receive an official diagnosis until late in life (or not at all). Although autism presents differently in each individual, there are common co-occurring diagnoses and challenges: anxiety disorders, attention disorders, sensory-processing disorders, epilepsy, executive-function challenges, self-regulation challenges, learning disorders, depression, self-harm, and suicide (Cai et al., 2018; Lai et al., 2023; Newell et al., 2023; Public Health Agency of Canada, 2024b, 2024c; Tomchek & Dunn, 2007; Zahid & Upthegrove, 2017). While each of these conditions is a separate diagnosis, their effects often overlap and exacerbate each other. The challenges may arise in multiple contexts, resulting in a substantial impact on an individual's quality of life and mental well-being.

In the past, autism was viewed through a medical lens, with accompanying research, resources, and interventions, constructed through a deficit-based model (Mertens, 2009). The current movement in disability research has moved away from a medical-model to a social-

model, which views the challenges faced by disabled people as outcomes of living in a physical- and social-world that was not designed for their needs, as opposed to the more traditional deficit-based view (Hogan, 2019), and where success of the individual is determined by the setup of the environment (Kapp, 2020). Along with the shift away from the medical model, there has been a shift from "person-first" language to "identity-first" language: the preference is to be known as an Autistic, or Autistic person, rather than a person with autism or a person on the Autism Spectrum (Bury et al., 2023; Kenny et al., 2016). Language preference is personal, however, and so as with pronouns, each person should be addressed according to their individual preference.

Due to its broad-reaching effects, autism research is conducted by a diverse range of professionals (including speech-and-language pathologists, occupational therapists, psychologists, educators, and self-advocates): each offers guidance and best practices to support Autistic individuals; however, the information remains siloed. Suggested strategies, interventions, and supports include the physical design of spaces, communication approaches, mental health approaches, and assistive technology. There are gaps both in 1) the synthesis of the multi-disciplinary best-practice approaches (Public Health Agency of Canada, 2024b, 2024c), and 2) between research and the practical implementation of said best-practices (Hallinan, 1996; Public Health Agency of Canada, 2024b, 2024c), or rather, a lack of organized and implemented common sense (Punch, 2014).

The academic abilities of Autistic students vary greatly, from severely limited to exceptionally gifted, with many students having both learning disabilities and academic abilities in the gifted range (an intelligence quotient at or above 120) (Pezzuti et al., 2022). 0-70% of Autistic students have a co-occurring specific learning disorder (Public Health Agency of Canada, 2024a), and many show processing speed and/or learning disorder traits at a sub-

clinical level (Public Health Agency of Canada, 2024a). Additionally, Attention Deficit Hyperactivity Disorder (ADHD)is diagnosed in 50-80% of Autistic people (Public Health Agency of Canada, 2024a), with many others displaying traits at a sub-clinical level (Public Health Agency of Canada, 2024a). According to Beardon's Golden Equation, autism plus the environment equals the outcome, where the environment encompasses the physical environment, the products and approaches used, and the people (Beardon, 2019, pp. 29-30). Whereas many Autistic students achieve great success in traditional brick-and-mortar schools, others require access to alternative physical spaces, asynchronous online learning options with embedded technical supports, and educators with specialized training to achieve mental well-being.

Traditional brick-and-mortar schools can act as a systemic barrier to Autistic students, as many students feel overwhelmed due to social expectations and sensory-overload (Haas et al., 2022; McVey et al., 2023; Moyse, 2021; Rizzo et al., 2012; *Walk In My Shoes*, 2020). According to a recent review, the top five reasons parents give for removing their Autistic children from the traditional brick-and-mortar system were identified as schools' inflexible policies, lack of proper staff training, high rates of exclusion, high rates of bullying, and poor mental health (Haas et al., 2022). Autistic students with low support-needs who remain in the traditional system have an increased risk of self-harm, school refusal, school drop-out, unemployment, family stress, and lower mental well-being. Neuro-affirming, asynchronous blended-learning centres, or "click-and-brick centres", that offer a range of multi-tiered supports from a multi-disciplinary team, can remove barriers and improve Autistic students' quality of life (Rivera, 2017).

The development of the innovative program studied in this thesis was an attempt to synthesize a considerable body of knowledge from autism research, learning science, psychology, and brain science, and put that knowledge into practice. The learning centre program

is not a school, nor an attempt to replicate one. The 20th-century education system was not designed with knowledge of the developing brain, nor with consideration for the profound effects of toxic stress on that brain. Schools have a responsibility to be emotionally, physically, and intellectually safe environments for all students: unfortunately, in some situations, that is not what students experience. Whether in brick-and-mortar or online digital delivery, when educators can integrate social, emotional, affective, and cognitive learning support, they can support the whole child. As part of this support, online courses designed to be asynchronous offer another effective and neuro-affirming method of meeting the academic needs of Autistic students.

A New Approach

I was given the opportunity to create a stand-alone learning centre in British Columbia, informed by knowledge of the developing autistic brain, such that those brains felt nurtured and supported. Traditional approaches did not suffice for Autistic students entrenched in adversity, trauma, and overwhelm: a more nuanced and neuro-affirming framework to effectively meet their educational and emotional needs was needed. A recent summary of best practices for supporting Autistic learners found that 1) collaboration (with family and a multi-disciplinary team), 2) the structure of the environment, and 3) flexibility around curriculum and instruction were most important, followed by 4) the availability of appropriate resources for staff and students, and 5) proper staff training (Roberts & Webster, 2022). A Finnish research team, Vellonen et al. (2013), found that a strength-based technology-enhanced learning environment has remarkably positive impacts on Autistic learners.

I created an autism-focused blended-learning program based on research, evidence, and best practices gathered from around the globe. The Learning Centre is a registered charity with a fee-for-service structure, intended to offset operational costs without imposing a financial barrier

on families. The financial model is based upon three streams of funding, including 1) per-student funding from a provincial online public school within the British Columbia public education system, 2) student program fees, and 3) fundraising.

The organization is not a school and does not attempt to recreate a traditional school, in physical design, program design, or policies. The organization partners with a provincial online public school, and its staff members work closely with the school to ensure that individual accommodations, support, and adaptations are in place. This support goes well beyond what a traditional school has the capacity to offer. The education provided goes well beyond conventional academics, which are necessary, but not sufficient for Autistic students: lessons related to adaptive skills, executive function skills, and social-competency skills that students will need throughout their lives (for instance, specialized sexual health classes, classes on how to interact with the police, how to access low-barrier counseling safely, and where to access gender-affirming care). At all times, the mental health of the students is the top priority, and in keeping with that focus, assignment and course deadlines are adjusted as necessary to reduce stress. A primary focus of the learning centre is helping its students learn about themselves, so that they can positively impact their own mental well-being. When students recognize when they start to become dysregulated and understand the reasons behind it, they are in a better position to self-select what they need to re-regulate themselves (such as space away from others, water, or food).

The learning centre operates within approximately 500 square meters of leased space in a quiet, two-storey commercial building. The small classrooms are designed to accommodate three students; however, due to various factors, the classrooms may have between two and five students. Supporting spaces include a small gymnasium with a climbing wall, multiple retreat spaces, a boardroom, a library, gender-neutral washrooms, a teaching kitchen, student lounges, a

Maker Space, and rooms for therapeutic services (counselling, occupational therapy, speech and language therapy, and physical therapy).

To further explore the impact of this blended-learning program, it has been incorporated into this research. This study aimed to gather the experiences of five graduates from the blended program and bring their voices forward. Their insights, perspectives, and feedback will be invaluable in shaping future practices.

Background

Autism is a neurodevelopmental condition characterized by differences in social communication, social interactions, and restricted and repetitive behaviour (American Psychiatric Association, 2022). There is increased awareness and concern from parents, researchers, practitioners, and self-advocates that mental health is a key component of health, well-being, and mortality in autism (Stewart et al., 2022). Current estimates from the American Psychiatric Association (American Psychiatric Association, 2022) are that approximately 70% of Autistic individuals have co-occurring disorders, the most common being attention-deficit/hyperactivity disorder (ADHD), anxiety disorders, and depression (Micai et al., 2023). Suicide is a leading cause of early death for Autistic people and is considered an epidemic in the Autistic community. Autistic individuals are more than three times more likely than neurotypical individuals to experience non-suicidal self-injurious behaviour (63.6%), suicidal ideation (34.2%), attempted suicide (24.3%), or death by suicide (Blanchard et al., 2021; Lai et al., 2023; Moseley et al., 2020). Several medical causes lead to an increased risk of premature mortality in Autistic individuals, but co-occurring psychiatric conditions are the most critical risk factor (Hirvikoski et al., 2016; Newell et al., 2023). As a neurodivergent parent of an Autistic child who

struggles with bullies and suicidal tendencies, I understand firsthand the stress and trauma that can affect the mental health and mental well-being of Autistic people.

Bullies are becoming increasingly proficient, and combined with the ability to inflict abuse online 24 hours per day, they have had a life-ending impact on victims. Bullying has become a serious public health issue and point of discussion in disability communities worldwide (Gini & Pozzoli, 2009). While many groups are vulnerable to bullies, research suggests that due to profound differences in social competencies, Autistic students with low support needs may be particularly susceptible to victimization (Heinrichs, 2003). It is a heartbreaking reality as a parent to realize that your Autistic child's loving nature and social naivety make them an ideal bully target, or, in the words of Klin et al. (2000), a perfect victim.

Inclusive education, whereby all students learn in the same brick-and-mortar classroom, has become one of the key priorities of the British Columbia Ministry of Education. A well-known phrase in the disability circles is that "The road to inclusive education was paved with good intentions, but riddled with cracks" ("Educating Grayson," 2019, para. 16).

While in theory the idea of children learning side-by-side, gaining empathy for and understanding of difference is endearing, the lack of empirical evidence of its effectiveness in creating a positive school experience for the disabled children has been questioned (Chan et al., 2018). Chan's study found that children with invisible disabilities and ADHD were victimized at a higher rate than children with other disabilities. Chan furthered that the student's risk of victimization was directly related to the school environment, such that the risk was lower in specialized schools designed for their disabilities, and the risk increased when placed in inclusive education environments with neurotypical peers. As a parent-educator who has struggled to

navigate the system, I have a deep understanding of the chasm between inclusive education ideals and our students' lived experiences.

Patrick Dwyer, Ph.D., is an Autistic researcher-author and former B.C. public school student who left brick-and-mortar schools due to their inability to meet his sensory and social needs. He and his family turned to distributed education, but without a learning centre to attend for support, he likened it to homeschooling: he was assisted at home by his mother, who had to leave the workforce. Dwyer and I share the frustration that adults are allowed to self-select their surroundings, but children are not allowed to do the same (Dwyer, 2023). Adults, for example, can choose their employment setting (e.g., indoor versus outdoor) and context (e.g., busy customer-service desk versus quiet desk in a small office), yet educators expect all students to find success in the same busy, loud setting. Dwyer and I also both agree that students should not be excluded from public schools, yet they should not be compelled to attend, either. He explained his term "free inclusion" in *Inclusion and Diversity: Communities and Practices Across the World*:

> (1) disabled students and their families should have an absolute right to an educational placement in the mainstream if that is their preference, (2) that mainstream teachers should accordingly receive considerably greater mandatory special education training, including training in disability pride and disability cultures, and (3) that every effort should be made to provide disabled students and their families with a variety of alternative options if they do not desire a mainstream placement. (p. 176)

The World Health Organization defines Quality of Life (QoL) as a contextually based, culture- and value-driven assessment of one's own perception of their life in relation to their individual goals, expectations, standards, and concerns (The World Health Organization, 2022).

The WHO's definition of QoL highlights the multidimensionality of QoL and how the various aspects and interpretations of an individual's life are impacted by their cultural and environmental context (Backman et al., 2023). The WHO (2022) defines mental health as a dynamic state of mental well-being that affects one's ability to deal with the general stresses of life, such as work and school, realize one's abilities, form friendships, and make decisions. The London-based New Economics Foundation published a guidebook for practitioners to measure mental well-being, describing it as a general sense of how people feel they function both individually and socially, as well as their perceptions of their lives overall. (Michaelson et al., 2012) As the separate yet interrelated themes of quality of life, mental health, and well-being are entirely subjective, consistent definitions and conceptualizations amongst different fields of research remain elusive (Jarden & Roache, 2023). Although multiple overlapping theoretical, conceptual, and operational models of mental well-being have been developed by research teams in a variety of fields, the only consensus amongst the researchers is that the concept is multi-dimensional. (Hone, n.d.; Rapley, 2003).

Research suggests that for Autistic students to achieve mental well-being, educators must collectively shift their focus from existing compliance-based approaches, pre-set norms, and deficit-based thinking to collaborating across disciplines and empowering autistic voices to ensure that every person feels seen, heard, and valued (see Appendix I) (Public Health Agency of Canada, 2024b, 2024c). Research suggests that this personalized approach validates a student's individuality and fosters a deeper connection between students and educators, as well as between students and students. It moves from a culture of trying to change to fit in to a culture of safety, belonging, and respect. According to Maslow's Hierarchy of Needs (Maslow, 1943), without true acceptance of and respect for one's own (autistic) identity, from self and others, a(n) (Autistic)

person will never reach a level of self-actualization. This approach acknowledges the uniqueness of each student's abilities, perceptions, and experiences, and fosters a more accepting and responsive environment for their mental well-being.

My study revolves around the phenomenon of individually perceived mental well-being, and how it has been experienced and interpreted by my Autistic research participants, specifically in the context of a neuro-affirming blended-learning centre (Creswell, 2016). To achieve my goal of informing and transforming social policy (Mertens, 2009), I undertook an interpretive hermeneutical phenomenological study (Creswell & Creswell, 2018), with individual qualitative interviews (Creswell & Poth, 2018), which was then be evaluated through a disability theory lens (Mertens, 2009).

Statement of the Problem

In the field of autism research, there is a gap between research findings and their practical implementation in schools, mainly due to competing agendas and a communication breakdown between researchers and front-line teachers (Hallinan, 1996). There is also a need to use the learning gained from researchers in a variety of streams to design and implement effective school-based spaces and interventions that can improve the well-being of Autistic students (Cai et al., 2018; Public Health Agency of Canada, 2024b, 2024c). Multidisciplinary research needs to be synthesized and evaluated into an evidence base, and that evidence base needs to be put into practice. If policymakers are not updating and adapting based on multidisciplinary autism research, and if they are not moving from knowledge acquisition to an action agenda, are they not complicit in ableism?

Current data suggest that 50 to 70% of Autistic people also present with co-occurring attention deficit hyperactivity disorder (ADHD) (Rong et al., 2021). Students with ADHD who

are not properly supported, such as with physical spaces for movement breaks and permission to use said spaces, may become further ostracized if they cannot control negatively-perceived behaviours: American author Amy Tan famously quipped that she learned that "loneliness has more to do with being misunderstood, than being alone" from Jane Eyre.

Many Autistic students suffer from loneliness and depression in large schools, not due to a lack of people, but due to rejection (Solomon, 2000). Autistic students suffer more emotional dysregulation and distress than their neurotypical peers (Cai et al., 2018), which leads to poor physical and mental health outcomes (Crane et al., 2019; Sreckovic et al., 2014): students with autism and ADHD have higher rates of school drop-out (Connolly et al., 2023; Raedwulf Pogue, 2023), self-harm (Blanchard et al., 2021), and suicidality (Newell et al., 2023; Schwartz et al., 2022; Schwartzman et al., 2023).

Quality of life is widely acknowledged as one of the most important outcomes in autism research (Williams et al., 2023); however, the design of brick-and-mortar public schools creates an environment counter to the research and intended QoL and mental well-being outcomes. The physical designs of typical brick-and-mortar schools are ableist and can act as a systemic barrier to the success of Autistic students (McVey et al., 2023). It is generally known that autism can cause an increase in sensitivity to physical surroundings, including sounds, sights, odours, tactile sensations, physical movements or the inability for physical movement, and social expectations (Baron-Cohen, 2008); the physical reactions caused by these sensitivities can increase rates of stress, anxiety, and school avoidance (Chan et al., 2018; Connolly et al., 2023).

The Benefits of Blended and Online Learning for Autistic Students

While the learning profiles of Autistic students vary, common areas of difference include processing speed, working memory, fine motor skills, auditory processing, non-verbal learning,

attention, cognitive flexibility, and executive function (Frith, 2003). Research has shown that Autistic students with learning disabilities who use technology-aided instruction and supports see positive academic results (Hume et al., 2021; Ibrahim, 2020). A thorough meta-analysis of research into online and blended learning led by Weng concluded that computer-aided instruction was a promising intervention to enhance the cognitive skills of disabled learners (Weng et al., 2014). Many students, autistic or not, are hesitant to ask for or accept the extra support they need if it means that they will stand out amongst their peers (McVey et al., 2023) by embedding universally available invisible supports into course design, students' social, emotional, and academic needs are supported.

According to Rivera, blended learning is an effective method to address the learning needs of disabled students, and is quickly becoming the fastest-growing educational programming option (Rivera, 2017). Blended classrooms are designed such that each student has their own computer and receives individual support with online learning as needed. By having the option to work in the same place and at the same time as their (Autistic) peers, they are offered a stress-reduced way to increase their sense of community and belonging on their own terms (McCown, 2010). Students may choose to collaborate on assignments and openly share their struggles with classmates in a safe and supportive environment. Research has shown that disabled students perceive blended learning as a positive alternative to traditional classrooms; they appreciate its flexibility in pace and reduction in the pressures of classroom expectations, which leads to a decrease in school absences (Rivera, 2017).

Blended learning with Autistic peers has other social, emotional, and academic benefits, as well. In a typical classroom, it can be a social catastrophe to be working on an adapted assignment that differs from those of one's peers, or to be seen using a textbook from a lower

grade level. Conversely, it can also be sub-optimal on a social level to be working at an advanced level. By allowing students to work at their own pace (either faster or slower than their peers), on their subject matter of choice, students are given choice, control, and self-determination, which increases their chances of staying regulated, learning, being socially accepted, and maintaining mental well-being. Autistic students who struggle academically (e.g. due to learning disorders, lower processing speeds, or ADHD), often suffer embarrassment or shame in a typical classroom due to being unable to keep up with peers, leading to a cycle of emotional dysregulation, behaviours that are not socially advisable, and reduced mental wellness: the cascading effects can lead to school exclusion, either imposed by the school temporarily (suspension), permanently (expulsion), or self-imposed (school refusal) (Cleary et al., 2024).

Universal Design for Learning

There are different versions of the working definition of Universal Design for Learning (UDL). The non-profit organization CAST (formerly known as Centre for Applied Special Technology) considers it a framework for addressing and supporting the diverse and lifelong educational needs of all learners. The guidelines were designed as a tool to help individual educators implement or address the academic barriers and inequities faced by their students, with concrete suggestions to help make meaningful learning accessible to all (CAST, 2008). Online learning that builds UDL tenets into coursework normalizes and/or makes invisible many student support systems, such that students can quietly access the supports they need without drawing attention to themselves (McVey et al., 2023). Asynchronous online learning with flexible start and completion dates also allows students to take extended time to replay and/or process lessons, as well as take mental-health breaks without causing increased anxiety due to falling behind.

Figure 1

Venn Diagram of Support Triad
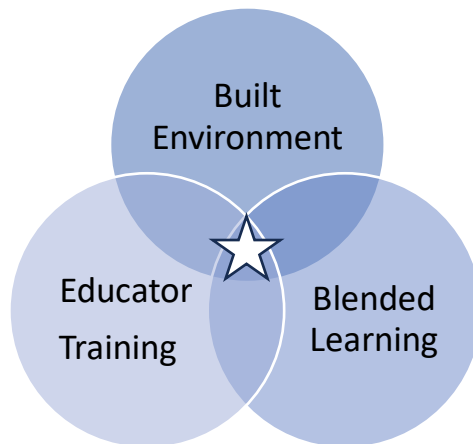
Note: A Venn diagram to show that all three parts of the program are necessary to fully support Autistic students: a properly designed physical environment, properly trained neuro-affirming educators, and online-blended learning to allow for student control of pace, place, and time of learning. Own work.

Autistic students benefit from a properly designed physical space so that they are not subconsciously put into a state of dysregulation due to sensory overwhelm (McVey et al., 2023). Because the process of obtaining supports can act as a barrier, underlying learning needs may be best suited by flexible learning options that include online coursework designed using the tenets of UDL and assistive technology (i.e., text-to-speech and speech-to-text applications) (McVey et al., 2023). Trust and self-regulation issues may be supported by having educators trained in neuro-affirming best practices in autism research (i.e., a shift away from invalidating compliance-based methods and towards validating methods that increase skills) (McVey et al., 2023). Such research suggests that Autistic students should experience improved mental well-

being by attending a neuro-affirming learning centre that has implemented autism-specific recommendations for physical design, blended and online learning, and educator support.

From my extensive library search, I have found a gap in the literature. A set of guidelines is needed for educators and policymakers such that Autistic students' mental well-being is positively affected by:

- feeling understood, supported, and safe in their learning environments; so that they may

- embrace their autistic identities; and

- positively connect with peers; while

- learning the skills needed to live a joyful and engaged life.

Purpose of the Study

The purpose of this study is to benefit the Autistic community by gathering empirical data from the lived experiences of Autistic students to bring their voices forward. Traditional approaches might not suffice for students entrenched in adversity, trauma, and overwhelm, necessitating a more nuanced and neuro-affirming framework to effectively meet their educational and emotional needs (Public Health Agency of Canada, 2024b, 2024c). These data will inform policymakers and service providers to effect neuro-affirming change that will increase the mental well-being of Autistic students. I investigated how Autistic students perceived their experiences while they attended a neuro-affirming blended-learning centre, and how those experiences affected their mental well-being.

Limitations and Delimitations

Limitations are weaknesses of a study's design that are beyond a researcher's control; these limitations may be inherent to a research design and may threaten the study's validity. Due to the nature of qualitative phenomenology, the results of this work will not be generalizable to

the Autistic community as a whole. The limited and indirect data collected through interviews are the interviewees' personal reflections (Creswell & Creswell, 2018), so I cannot draw centre-wide conclusions of experience. My presence may have biased my research participants' responses, as we have an established relationship and a power differential (Creswell & Creswell, 2018). To limit this effect, my research participants had already left the program at the time of the interviews. Lastly, due to the nature of autism, my research participants may not be able to articulate their perceptions of experience.

Delimitations are intentional choices made during the research design process to define what will be studied and what will not. The study included in-person interviews with four Autistic students who recently graduated from an innovative K-12 blended-learning centre in a rural city in Canada. My goal was to include students of different gender identities, sexual orientations, and years of experience with the program. The study included iterative semi-structured individual face-to-face interviews with the students.

Research Questions

The overall theme of my research involved flex blended-learning in a neuro-affirming blended-learning centre and its effect on the quality-of-life of Autistic students. I crafted two main research questions to learn about how the students experienced the physical, emotional, and psychological learning environments (Creswell & Creswell, 2018):

1) What were the physical learning experiences of K-12 Autistic students who withdrew from brick-and-mortar public schools, and then attended a neuro-affirming blended-learning centre?

2) How was the emotional, psychological, and mental well-being of Autistic students affected when they withdrew from brick-and-mortar public schools and then attended a neuro-affirming blended-learning centre?

Definition of Terminology and Labels

Ableism is a form of discrimination and social prejudice against disabled people. Ableism suggests that typical abilities are superior and that differences are deficits. Ableism may show up in overt or subtle ways, consciously or subconsciously, and may be institutional, interpersonal, or internalized (Bottema-Beutel et al., 2021; Mertens, 2009).

Adaptive Skills are defined as practical, everyday skills needed to function and meet the demands of one's environment. These skills are necessary to care for oneself effectively and independently, and interact with others (Pugliese et al., 2015).

Allistic is a term for a non-autistic person (*Autism Alliance of Canada*, 2025).

Asynchronous is a general term used to describe things that do not occur in the same place or at the same time. In an online asynchronous class, for instance, students can access class materials at different times and from different locations (than their classmates or educators).

Autism Spectrum Disorder is a complex neurological-based developmental condition involving persistent challenges with social communication, restricted interests, and repetitive behavior. It is considered a dynamic disability, wherein challenges and capabilities fluctuate (some daily and some over time) (Bottema-Beutel et al., 2021).

Blended-Learning is defined as the thoughtful integration of face-to-face and online learning activities. Students have the advantage of embedded invisible online learning supports, along with the social and academic support of their educator. The mix enables independent and in-class

learning, as well as additional support for students with learning disorders and diverse processing speeds (Rice, 2020).

Brick-and-mortar is a term that denotes a traditional physical building (Rice, 2020).

Emotional-regulation skills refer to a person's ability to manage and respond to emotional experiences effectively. People unconsciously use emotion regulation strategies to cope with difficult situations many times throughout the day (Cai et al., 2018).

Executive-function skills underlie the capacity to plan and meet goals, display self-control, follow multiple-step directions even when interrupted, and stay focused despite distractions. They include impulse control, organization, emotional control, task initiation, planning and prioritization, self-monitoring, working memory, and attention control (Kloosterman et al., 2014).

Flex blended-learning is a specific category of blended learning wherein students access their coursework through a Learning Management System (LMS), and are given the choice of what to learn, when and how fast to learn, and where to learn. Students have more freedom to chart their own path, and more flexibility regarding start and completion dates. Most of the content is delivered to students online, in a brick-and-mortar setting, with in-person support available from an educator (Rice, 2020).

A *gender-affirming approach* is one that supports people while they explore their gender identity, or identify as transgender or gender-diverse. It includes, at minimum, the use of preferred pronouns, preferred names, the availability of gender-neutral bathrooms, and connections to resources (Di Luigi et al., 2025).

Identity-first language emphasizes an identity before a person. While an individual preference, many people within disability communities, including the Autistic community, prefer

identity-first language to person-first language. Examples of identity-first language include "I am Autistic" and "He is an Autistic student" (*Autism Alliance of Canada*, 2025b).

Low-ratio instruction in a classroom with low student-to-teacher ratios, teachers can tailor the lesson to each individual child on their level (Solheim & Opheim, 2019).

A *multidisciplinary team* is a group of professionals from different disciplines and agencies, each providing different services to the client (LaFrance et al., 2019).

Neuro-affirming refers to believing in a strengths and rights-based approach to developmental differences and aims to provide support and adaptations that affirm the child's neurodivergent identity. This is rather than thinking that children must be fixed or cured of their neurotype (Mertens, 2009).

Neurodivergent refers to a person who has a variation in their neurology. The term is not autism-specific, and includes differences such as ADHD, PTSD, Tourette's Syndrome, among others (Autism Alliance of Canada, 2025).

Neurodiverse describes a unique way that brains work. While everyone's brain develops similarly, no two brains function the same. Being neurodivergent means having a brain that works differently from the average or "neurotypical" person (Autism Alliance of Canada, 2025).

Neurotypical is a concept by Australian sociologist Judy Singer to describe individuals who think, perceive, and behave in a manner that is culturally expected (Bottema-Beutel et al., 2021).

Person-first language emphasizes a person before an identity. Educators have traditionally been taught to use person-first language, such as "a student with autism" (Bottema-Beutel et al., 2021).

Social-competency skills consist of social, emotional, cognitive, and behavioural skills needed for successful social adaptation. Social competence also reflects having the ability to take another's perspective concerning a situation, learn from past experiences, and apply that learning to the changes in social interactions. This is a novel approach to social skills, such that the focus is not on attempting to appear neurotypical (i.e., the insistence on eye contact) (Clarke & Lord, 2024).

Trauma-informed practice is a strengths-based framework grounded in an understanding of and responsiveness to the impact of trauma (Berger et al., 2021).

Universal Design for Learning is a framework that sets out to remove barriers to learning and accommodate the needs of all students. It is designed to be embedded throughout the learning process and environment, so that information is presented to students in multiple ways (representation), students are able to engage in multiple ways of learning (engagement), and students have choice and control over ways to demonstrate their learning (action and expression) (CAST, 2008).

Summary

Autism Spectrum Disorder is a complex neurological condition that impacts communication, social competence, and restricted and repetitive interests (American Psychiatric Association, 2022). Autistic individuals have a high prevalence of co-occurring diagnoses, most notably anxiety, attention disorders, and depression. Recent trends in the field of disability research have seen a shift away from the deficit-based medical model to a strength-based social model, and a move away from person-first language towards identity-first language.

Research into how best to support Autistic students and their individual well-being is conducted by a diverse range of professionals; however, their research remains siloed within

their individual professional circles: there is a lack of synthesized best practices. There currently exists a focus on inclusive education for all students in the Province of British Columbia's Ministry of Education; however, Autistic students may require alternative learning environments and supports due to challenges in traditional brick-and-mortar schools. Peer-rejection, sensory overwhelm, and emotional dysregulation are commonly experienced by Autistic students which can lead to school-refusal, self-harm, and suicide. Neuro-affirming blended-learning centers with educators trained in current autism best-practices can enhance the well-being of Autistic students by addressing their individual learning, emotional, social, and physiological needs.

Chapter Two: Literature Review

During my process of collecting, reading, sorting, and evaluating multi-disciplinary research literature pertaining to autism, education, and mental health, three overlapping themes emerged: 1) there is need for more autistic input into autism-related research; 2) there needs to be a synthesis of recommendations from a variety of research fields; and 3) there is an overwhelming need to create more neuro-affirming spaces and policies in order to increase Autistic students' mental health and decrease their rates of self-harm. In and amongst the three themes above emerged three separate but related areas of research, which, when combined, suggest a more supportive physical, emotional, and cognitive learning environment for autistic students that would, in turn, increase mental health and decrease rates of self-harm.

The information laid out in this review is a presentation of my interpretation of current autism-related multidisciplinary research: to increase mental health and decrease self-harm Autistic students should have the opportunity to learn 1) in a space that is physically designed for their neurology (Built Environment); 2) supported by a sufficient number of educators that are adequately trained in current autism-related research (Educator Training); and 3) have control and choice over the pace and place of universally-designed online learning (Blended Learning). This paper presents a synopsis of each of my three main themes (Built Environment, Educator Training, and Blended Learning), followed by a summary.

Built Environment

Research into the science of learning consistently demonstrates that the physical classroom environment has a profound influence on student learning and achievement (Cheryan et al., 2014). Students are easily distracted by a busy visual environment, which causes a

reduction in on-task behaviours and results in smaller learning gains compared to when students' classrooms have bare walls (Fisher et al., 2014; Godwin et al., 2022).

The design of constructed environments can be an influential factor in an Autistic person's quality of life (Tola et al., 2021): unfortunately, the Autistic population is usually ignored in design guidelines (Gaines et al., 2016; Mostafa, 2008; Tola et al., 2021). In their 2020 UK-based study, Jones et al. found that both teachers and parents noted that sensory experiences at school were frequently negative, distracting, and increased anxiety, as well as limited participation. Both groups felt that sensory experiences significantly impact Autistic children's daily functioning, learning, and school life (Jones et al., 2020). Mostafa (2008) stated that autistic behaviour can be proactively and positively influenced by the sensory environment, as opposed to offering a space for recovery after overwhelm has been experienced: Mostafa offers suggestions for creating an environment with sensory input more conducive to efficient skill development. The guidelines and suggested uses offered by Mostafa, in Appendix I, are separated by need. For example, Mostafa suggests bright colours to create visual stimulation for hypo-visual students, neutral colours to create serenity for hyper-visual students, and warm colours to create psychological warmth for hypo-tactile students.

While many studies have shown how (loud, busy, bright, etc.) physical spaces can overwhelm an autistic sensory system (Jones et al., 2020; Neil et al., 2016), there has been limited research on how physical environments can be designed to meet the needs of a highly sensitive person (Gaines et al., 2016; Grandin, 2006; Mostafa, 2008; Tola et al., 2021).

Mostafa's (2008) seminal study in architectural design for Autistic students sought to decipher the most influential architectural design factors on autistic behaviour, such that they may be further developed into guidelines and approaches. In the first phase of Mostafa's study,

families and teachers of Autistic children completed an online survey to rank the impact of acoustics, colours and patterns, lighting, textures, olfactory, and spatial sequencing of functions, from most to least important. Phase Two of the study involved the implementation of the two most highly ranked survey factors, namely acoustic and spatial sequencing inventions, in a specialised school in Cairo, Egypt. Mostafa employed behavioural observation of the progression of attention span, response time, and behavioural temperament: her rationale for which was their role in skill development. The study concluded that the top two survey responses, acoustic and spatial sequencing, did have a marked effect on autistic behaviours. The researchers used their findings to inform a "Sensory Design Matrix" (Appendix H), and subsequent "Architectural Design Guidelines generated by the Sensory Design Matrix" (Appendix I), both of which have had a substantial impact on the field of disability design.

Gaines et al. (2016) produced an award-winning autism-focused design book that draws on the fields of architecture, education, and environmental psychology. The authors discuss how natural and man-made elements affect Autistic people, including in-home, school, therapeutic, and work environments. The authors synthesised general environmental-design theories, common autism theories, and how those theories affect design for Autistic people (Gaines et al., 2016). Gaines et al. also explored common challenges that Autistic people face throughout their lifespan, proposed design ideas to support these challenges, and examined how design can impact mental well-being. By thoughtful synthesis of multi-modal research, including from the fields of environmental psychology, education, occupational therapy, trauma psychology, architecture, and neuroscience, physical spaces for Autistic students can be designed for increased self-actualization, well-being, and mental well-being.

US scholar-educators noticed that some K-8 special education rooms were typically makeshift rooms without sensory needs considered (Patel et al., 2022): a literature review indicated that there are no holistic design guidelines to deal with meeting the sensory needs of diverse students. After a thorough search, multidisciplinary research was synthesized into guidelines for interior design to create environments that were more conducive to learning and more inclusive of diverse needs. The guidelines, which included recommendations for space planning, furniture, shape, form, lighting, colour, texture, and acoustics from both Gaines (2016) and Mostafa (2008), were discussed with special education teachers. The paper aimed to bridge the guideline gap while documenting the correlation between design factors and the sensory needs of Autistic students (Patel et al., 2022).

Clément et al. published a sub-study of a longitudinal participatory research project to identify the primary concerns relating to socio-spatial exclusion and action steps needed to redress them: exceptionally well-developed senses are intimately related to how people interact with built spaces. Areas of concern that emerged were: 1) the relationship between sensory experiences and mental health, 2) layering of sensory and social experiences, 3) impacts of social missteps/social misunderstandings, and 4) how the theory of mind can lead to innovative solutions to inclusion (Clément et al., 2022).

Multiple research groups have published literature reviews of autism-related design research (Black et al., 2022; Sánchez et al., 2011; Tola et al., 2021), many of which reference the same core autism challenges, theories behind those challenges, and suggested design solutions. The recommendations as indicated in Black's (2022) scoping literature review fall under six main categories: 1) design and construction, 2) light, 3) sound, 4) aesthetics, 5) air quality, and 6) temperature. Black also recommends sensory rooms and larger personal spaces for each student

because Autistic children are often overwhelmed and disoriented by large schools (p. 1907). The design criteria necessities presented by Sánchez et al. in their review of the last 50 years of autism research is grouped into five categories: 1) imagination, 2) communication, 3) social interaction, 4) sensory difficulties, and 5) behaviour and safety. Tola et al. organized their results into three sets of over-lapping guidelines:1) sensory guidelines (i.e. lighting and acoustics) 2) intelligibility guidelines (i.e. a predictable and straightforward layout), and 3) orientation guidelines (i.e. visual supports for wayfinding).

Educator Training

There are many theories and approaches within the research fields that surround autism and its underlying characteristics, some of the most well-known of which are Applied Behaviour Analysis (Kearney, 2015), Central Coherence Theory (Frith, 2003), Executive Function (Demetriou et al., 2019), Theory of Mind (Baron-Cohen, 1995), Polyvagal Theory (Porges, 2009), Shanker Self-Reg® (Shanker, 2012), Collaborative and Proactive Solutions (Greene, 2008), Trauma-Informed Approaches (Berger et al., 2021), Context Blindness (Vermeulen, 2012), and Prediction Errors (Vermeulen, 2022a) . A lack of understanding of autistic neurology and its associated needs can lead to, compared to typically-developing students, a heightened risk of school exclusion: Autistic students are at double the risk of being expelled, triple the risk of being suspended, and are at a much higher risk of experiencing ongoing school refusal (Cleary et al., 2024). For Autistic students to be fully supported, and for helping the students learn what is important *to* them and important *for* them, they must be understood: an impossible task without having a strong working understanding of the theories, strengths, and challenges that affect their neurology. This paper allows for only a brief overview of the most common and relevant theories.

Applied Behaviour Analysis is undoubtedly the most well-known and highly divisive term when speaking to anyone in the Autistic community. Based on B.F. Skinner's work surrounding operant conditioning attempts to modify behaviour such that Autistic people appear neurotypical. At its very basic level, interventionists are taught to reward appropriate behaviour and ignore behaviour deemed inappropriate, and that all behaviours fall under one of four functions: access, avoid, attention, and tangible (in layman's terms, people are always trying to get or avoid something or someone). Historically, the "appropriate behaviours" to strive towards included eye contact, sitting still, and eating foods offered by interventionists. "Inappropriate behaviours" that were deemed necessary to change included stimming, restlessness, and asking for clarification: essentially, things that made people look autistic. The compliance-based approach typically involves withholding of preferred items, attention, affection, or food until the desired behaviour is seen. Autistic adults who endured ABA therapy as children now speak to the harm and trauma it caused.

Central Coherence Theory (CCT) refers to a different processing style, wherein people focus on small details rather than the larger picture (Frith, 2003). To use an analogy, one might not be able to see the haystack around the needle. While it may present a challenge when attempting to decipher context or summarize a novel, it is one of the reasons why Autistic people excel in areas such as computer programming (Costello et al., 2021). Frith's work has had a profound effect on the field of autism research.

Executive Functions (EF) are higher-level cognitive processes that help and hinder our planning and decision-making. Areas that fall under the EF umbrella, and how they relate to each other, differ slightly from researcher to researcher. Generally speaking, though, EFs consist of: impulse control, self-regulation, initiation, working memory, planning, cognitive flexibility,

decision making, the ability to self-monitor, and information processing (Baron-Cohen, 2008). EFs have an enormous effect on everyday life, including at home, school, and work. EF skills are areas of challenge for most Autistic students and can be areas of educator-student frustration: for instance, what educators may see as willful academic avoidance ("won't"), may be an inability to start ("can't"). Educators should find ways to support the development of these skills as increases in EF skills have an enormous impact on mental well-being.

Theory of Mind (ToM) is the concept of understanding emotions, thoughts, and intentions. It can be further broken down into cognitive ToM (i.e. thoughts, perspectives, joint attention) and affective ToM (i.e. feelings, understanding sarcasm), as well as interpersonal versus intrapersonal. ToM is often slower to develop in autistic neurology, which may underlie many of the social missteps taken by students (Baron-Cohen, 1995). Students are often asked to think or write about how a character might feel in a given situation (or how they would feel at the receiving end of something), and are genuinely stumped.

Stephen Porges' Polyvagal Theory, which he first developed in the early 1990s, has many fans and many who believe the theory has been disproven (Porges, 2009). Regardless, it is an important theory for educators to keep in mind. Porges' theory revolves around the unconscious reactions of our nervous systems, and how people can unknowingly be moved into a state of fight, flight, freeze, or fawn (2009). In simple terms, the theory states that if you are in one of these states, you are categorically unable to learn. Combining the polyvagal theory with altered perceptions and the tenets of trauma-informed practices helps educators to reframe their own approaches. Autistic people often feel unsafe, unheard, and misunderstood: they often carry trauma from past experiences of bullying, sensory overwhelm, compliance training, or embarrassment due to neurological differences. It is imperative that educators do not assume that

challenging behaviours are chosen behaviours: they need to look for what lies beneath to help the students feel heard, supported, and safe.

Stuart Shanker is well-known for the self-regulation framework he created, aptly named the Shanker Self-Reg® framework (Shanker & Hopkins, 2020). The underpinnings of Shanker's model are based on the work of the three originators of a psychophysiological view of self-regulation, namely Claude Bernard, Walter Bradford Cannon, and Hans Selye (Shanker & Hopkins, 2020). Shanker built upon their work by incorporating his own philosophical and psychological research, as well as that of neuroscientist Steven Porges' polyvagal theory (Porges, 2009), neuroscientist Paul MacLean's triune brain model (MacLean, 1990), and psychologist Robert E. Thayer's Thayer-energy-tension matrix (1996). Each researcher, in his own way, suggest that: 1) people are stressed by seen and unseen factors in biological, emotional, cognitive, and social domains; 2) compounding stressors in the various domains exacerbate each other's effects; 3) people reach a state wherein the combined demands placed on them outstrip their abilities to handle things which can cause unconscious stress responses; and 4) those stress responses (which may present as challenging behaviours), which are often assumed to be willful choices, need to be reframed and viewed through a lens of compassion and understanding.

Another highly regarded neuro-affirming approach is psychologist Ross Greene's Collaborative and Proactive Solutions (Greene, 2008). Greene's methodology was designed to help educators search out the reasons behind problematic behaviour to 1) help the student to acquire any necessary skills or understanding that may be lagging, 2) remove issues that are causing the problem, or 3) remove the expectation (that is causing the challenge) for the time being (Greene, 2008). While strict proponents of ABA feel that this approach rewards negative behaviour, Greene asserts that "Kids do well when they can": if they are not doing well, let's

figure out why, and fix it in a neuro-affirming way. The intent is not to help students do well by removing all problems, but by giving the students the ability to deal with said problems and also recognizing when the problems are outside the students' windows of tolerance: it is a marathon, not a sprint.

Peter Vermeulen is a Dutch psychologist who specializes in autism research. His theories on what underlies some of the challenges facing Autistic people come from a different lens than the researchers above, and offer great insight into an autistic mind. Vermeulen's Context Blindness theory suggests that an Autistic person may not pick up on the social nuances that change the context of a situation, thereby increasing the possibility of a social misstep (Vermeulen, 2012). Vermeulen believes that an Autistic person's biggest social challenges are not in knowing what social skills are, but in knowing where and when to do or say things, and where and when not to say things: socially appropriate behaviour is behaviour that is contextually appropriate (Vermeulen, 2012).

Another group of theorists is drawn to the notion of Predictive Coding. In 2014, Van de Cruys et al. presented their predictive coding theory named HIPPEA, which stands for High, Inflexible Precision of Prediction Errors in Autism. While the theories mentioned above are not mutually exclusive and can all work together nicely, the predictive coding theories purport to stand on their own. HIPPEA, for instance, is presented as the core processing difference behind all autistic areas of challenge (i.e., executive function, social and communication, sensory processing, etc.) (Van de Cruys et al., 2014). To say it succinctly, the theory suggests that unconscious prior knowledge is not taken into account in a way that allows an autistic processing system to effectively predict future experiences, unconsciously (Van de Cruys et al., 2014). In his book "Autism and the Predictive Brain: Absolute Thinking in a Relative World", Vermeulen

offers a digestible overview of the relatively new perspective on autism with two succinct points: 1) Autistic people search out predictability in an unpredictable world, and 2) the different way that Autistic people make predictions and deal with prediction errors should be seen as a natural part of neurodiversity, rather than a deficit (Vermeulen, 2022b). The theory helps to explain, for instance, why many Autistic people are happy staying alone in their rooms: the contexts within the social world are continuously changing and are very hard to predict, so by playing alone, they can avoid making uncomfortable errors and social mishaps (Vermeulen, 2022b).

Neuro-affirming occupational therapist Greg Santucci encourages educators to "Chase the Why" in behaviours (Santucci, 2022). Rather than the overtly ableist approach of disciplining students for struggling to meet expectations that surpass their abilities, he offers neurodevelopmentally-informed strategies for proactively creating environments and expectations to set children up for success, as well as ways for reflecting upon and deciphering the underlying cause of the behaviours. Santucci recognizes the difficulties that people with invisible disabilities endure by simply participating in a society that was not designed for them: when Autistic people are pushed beyond their window of tolerance or make a social faux pas, their responses can be seen as intentionally rude, aggressive, or obstinate.

Blended Learning

Inclusive education, a key policy objective in education institutions around the world, has been driven by children's rights advocates based on two main points: 1) mainstream education is more effective and beneficial than education in specialized centres, and 2) it is the right of every child to be fully included in the general classroom (Lindsay, 2007). Substantial evidence has come to light, however, that the real-world effects of inclusive education may not be as positive as idealized (Chan et al., 2018). In his 2007 study, Lindsay conducted a systematic literature

review to gauge the effectiveness of inclusive education for special education students: no clear evidence of a positive effect of inclusive education was found. Lindsay concluded that there was a gap in empirical evidence from appropriate works that unequivocally pointed to a positive outcome (Lindsay, 2007). An argument can be made that inclusive education policy is built upon children's rights rather than empirical evidence of optimal and effective education for students who require special education.

Researchers found that special needs students were better protected in special education centres than in mainstream schools, suggesting that current inclusive education models may not be sufficiently protective for all students (Chan et al., 2018). Students with disabilities may be less victimized in specialist settings where educators are better trained and peers are more accepting (Chan et al., 2018). The researchers' results suggest that school environments could have critical effects on the associations between disabilities and victimization that are consistently found in the literature (Chan et al., 2018).

The classic face-to-face brick-and-mortar classroom provides an efficient and effective forum of communication between the typically-developing student and teacher: the challenge lies for the students who do not fall into that category. Autistic students are at a heightened risk of having specific learning disorders, and the combination of autism plus a learning disorder increases the risk of social, emotional, and behavioural problems, on top of the expected academic struggles. The advancements in brain science and technology have made a whole new world of education options a possibility so that educators will be able to engage all learners at their individual levels (Rivera, 2017, p. 79).

Online environments can typically provide invisible accommodations that may not be available, or socially desirable, in a typical face-to-face classroom: extended time to complete

lessons and tests, flexible course start/finish dates, opportunities to revise and resubmit work, appropriate placement by skill level, and the ability to re-watch videos or lectures, to name just a few (Rice, 2020). Rice describes flex-blended learning and how it differentiates itself from other blended models, such as a rotation model, self-blend model, and an enriched virtual model. Rice (2020) explains the flex-blended model as one that delivers content through the internet, with students moving between face-to-face and online interactions as needed. She presses that the three key elements to remember in blended learning scenarios are 1) the ability to allow flexibility in time, place and pace, 2) the opportunity for frequent assessments, and 3) the ability to seamlessly and universally embed multiple pathways to learning and mastery: an ideal scenario for students with slower processing speeds (Cook et al., 2018).

Few formal studies have been done researching the experiences of Autistic students in a blended-learning format; however, those that have been completed speak to its benefits (Catalano, 2014; Rice, 2020; Rivera, 2017). Through thoughtful and purposeful collaboration between classroom and special needs educators, blended classrooms have been proven to successfully personalize and enrich the learning experiences of students with learning disabilities (Rice, 2020; Rivera, 2017). A neuro-affirming and thoughtfully designed blended-learning environment can provide students with numerous benefits, including a caring educator with whom to connect face-to-face for questions and support, universally embedded education technology, control over pace and timing, and a nurturing physical environment (Rivera, 2017).

In Crow's 2006 doctoral dissertation that focused on disability-friendly online-learning, he presented his working definition of universal design for learning (UDL) as the theory and practice of designing, developing, and implementing barrier-free and accessible communication, information and technology products and services. The four categories of disabilities referred to

by Crow are visual impairments, auditory impairments, motor impairments, and cognitive impairments. Crow includes strategies for making online-learning more accessible to disabled learners, using assistive technologies, universal design, and common sense.

Asynchronous UDL-based online-learning allows Autistic students with a variety of learning challenges to find more academic and social success by implementing tools that in turn, remove barriers (speech-to-text for students with written output or fine-motor challenges, text-to-speech for students who have challenges reading, the ability to pause and replay videos for students with processing speed challenges, etc.) (CAST, 2008; McVey et al., 2023).

Catalano (2014) studied seven female undergraduate students with diverse disabilities at a New York State university. The researcher sought the experiences of the students during an adapted online library research course, with a goal of creating guidelines for future course design to better support online special needs undergraduate students. The course was redesigned using the principles of UDL as well as Crow's (2008) recommendations for disabled online learners. The study participants found that UDL and Crow's recommendations positively affected their experiences.

Summary

Traditional brick-and-mortar schools can act as a systemic barrier to Autistic students, as many students experience overwhelm due to social expectations and sensory overload (Rizzo et al, 2012). Research is emerging that the real-world effects of inclusive education may not be as positive as idealized (Chan et al., 2018; Lindsay, 2007). Due to its broad-reaching effects, autism research is conducted by a diverse range of professionals (including architects, speech-and-language pathologists, occupational therapists, psychologists, educators, and self-advocates): each offers guidance and best practices to support Autistic individuals. When the professional is

able to see a negative or challenging behaviour as an automatic stress response, they are able to help the individual return to a state of calm: they help the individual feel safe and understood, and they can work together to identify and address the underlying factors. When a professional sees a negative or challenging behaviour as intentional, they are likely to exacerbate the child's stress: children in this state have moved beyond the point of rational thought, so punishing them further breaks down the professional-child relationship as well as the child's mental health. Interventions and supports should include the physical design of spaces, communication approaches, mental-health approaches, and assistive technology. There are gaps both in 1) the synthesis of the multi-disciplinary best-practice approaches, and 2) between research and the practical implementation of said best-practices (Hallinan, 1996). Neuro-affirming, blended-learning centres that offer a range of multi-tiered supports from a multi-disciplinary team can remove barriers and improve Autistic students' quality of life (Rivera, 2017).

Chapter Three: Methodology

Introduction

The following chapter gives an overview of the methods I employed, including the philosophical assumptions, research design, data collection, instrumentation, participants, role of the research, community involvement statement, reliability and validity, ethical considerations, a preliminary inquiry, data analysis, and a summary to recap the research methodology.

Philosophical Assumptions

A Transformative Framework was employed to aid in my research goal of collecting lived experiences, to inform future policy, and to affect institutional change. Just as with the transformational leadership style, of which I am a follower, the transformative framework aims to act for social improvement (Burns, 1978; Mertens, 2009). It recognizes the uneven balance of power and social relationships within society, and sets out to make the world a more socially-just reality for marginalized groups (Creswell & Poth, 2018)

Within the transformative research framework lies the analytical Critical Disability Theory framework, an approach used by researchers to address social inequities from a social change perspective (Creswell & Poth, 2018). Disability Inquiry addresses the meaning of true inclusion in schools (Mertens, 2009), which is not happening in its current form.

The underpinning of philosophy asks us two very simple questions: what do we know, and how do we know it? As a scholar-practitioner in the field of autism, what a person knows, or their perspective thereof, is always top of mind. Autistic people are widely known to struggle with social interactions and change (in routine, schedule, context, expectations, etc.), and at the core of many of their challenges lie their perspectives, or rather their individual *interpretations* of those social interactions and changes. Knowledge, culture, appropriateness, and beauty, for

example, all lie in the eye and interpretation of the beholder. Disability theory posits that autism is not a disorder of deficits, but rather a collection of differences.

What counts as knowledge, and who gets to decide? Unfortunately, power and privilege play an all too important role here, as well. As mentioned earlier, disability communities often have their input and lived experiences excluded from discussion. This is known as epistemic injustice, or the injustice relating to whose knowledge counts as valid (Fricker, 2007). Hermeneutical injustice, in a similar yet separate vein of epistemology-related injustices, occurs when people's experiences are misunderstood or seen as invalid: this too is a common phenomenon in disability communities (Fricker, 2007). As a scholar-activist, I see it as my role to tackle injustice and instigate change in collaboration *with* the Autistic community, *not on* the Autistic community: nothing about us without us. Knowledge was co-constructed *with* my research participants, the true owners of the information collected (Creswell & Poth, 2018).

The axiological assumptions of a transformative paradigm are built upon the principles of respect, justice, and a moral responsibility to understand the barriers faced by their marginalized research participants in order to help remove them (Mertens, 2009). In the world of disability research, a common phrase is "Nothing about us without us": there has been a longstanding problem of excluding the voices and experiences of self-advocates, especially surrounding the trauma and harm caused by behaviour modification interventions.

The ontological assumptions of a transformative paradigm hold that our values, knowledge, and beliefs are socially constructed, such as which groups hold more power and privilege (Mertens, 2009). Ableism, or the preference for an able-bodied person, is such a construct. Ableism is rooted in the medical model (or deficit-based model) of disability, wherein the goal is to change a person perceived as less-than, as opposed to a neuro-affirming social

model (or strength-based model) of disability, wherein the focus is on removing barriers to allow a person to succeed.

Research Design

Depending on the author, choices in qualitative research design may be classified as qualitative approaches, approaches to qualitative data analysis, categories of qualitative methods, research strategies, or types of qualitative research (Creswell & Poth, 2018): there is much overlap and ambiguity. Of the five main qualitative research approaches as outlined by Creswell and Poth (2018), namely ethnography, grounded theory, narrative, phenomenology, and case study, the choice best suited to my context is that of phenomenology, and specifically van Manen's hermeneutical phenomenology (Creswell & Poth, 2018; van Manen, 1990). van Manen's six-step approach is different from other hermeneutical approaches, and moves iteratively between activities while seeking to uncover the meanings and essence of lived experiences.

Two of the most well-known phenomenologists are German philosophers Edmund Husserl, who developed the descriptive (or transcendental) branch of phenomenology, and Martin Heidegger, who developed the interpretive (or hermeneutic) branch of phenomenology. The goal of phenomenological inquiry is not to find the cause of an experience, but to find the essence of what was consciously experienced. Rather than search for evidence to support a hypothesis, it seeks to understand the feelings, values, and meanings of an individual's lived experience: it searches for things as they are, not as they should be (van Manen, 1990). The underpinnings of Husserl's and Heidegger's approaches are similar due to their mutual backgrounds in German philosophy, yet they have different ontological and epistemological foundations and different methodical processes.

Husserl first published that epoché and reductions were the central methods for practicing phenomenology in 1913, and continued revising their practical formulations until his last published work in 1936 (van Manen, 1990). Epoché is a Greek word that means to abstain from something: in the practice of phenomenology, epoché means that one should abstain from letting assumptions or previous knowledge get in the way of obtaining the meaning of lived experiences (Dowling, 2007). It is also known as bracketing, a term Husserl borrowed from mathematics, such that one may put imaginary parentheses around prior knowledge to suspend belief in it (van Manen, 1990). Husserl's phenomenologically focused meaning of reduction comes from the Latin word "reducere", or "to lead back." In Husserl's reduction phase, researchers go deeply into and beyond the surface of things to suss out, or lead back to, their underlying essence. Where at first one attempts to suspend belief in an object, they then move to acquire meaning by subjective, conscious thought.

Dasein is a German word that means "to be", or "to exist." It is fundamental to the phenomenological approach of Martin Heidegger: from an ontological perspective, it stands that our personal experiences shape everything we know (van Manen, 1990). Heidegger disregarded the use of bracketing and believed that pre-understanding is an inherent part of our human experience, and that it is not possible to completely set aside our knowledge. Heidegger believed that we are shaped by and experience things that are out of our control, such as being born into an affluent family: we do not choose the path, the path chooses us.

van Manen's (1990) hermeneutic phenomenology approach combines some of Heidegger's philosophical foundations (such as a nod to dasein and a disregard for bracketing), approaches from Husserl's descriptive phenomenology, and an iterative data collection and analysis method that takes researchers from part to whole in the hermeneutic circle. It is a

practice of thoughtfulness, aiming to seek universal meaning in individual human experiences (van Manen, 2016). Researchers (a) turn to the nature of lived experience, (b) investigate experiences as lived, (c) engage in hermeneutic phenomenological reflection, (d) engage in hermeneutic phenomenological writing, (e) maintain a robust and oriented relation, and (f) balance the research while exploring the parts and whole (p. 30–31).

The pedagogic human science of hermeneutic phenomenology is interested in questions of meaning, with a focus on interpreting and understanding the often hidden or overlooked human experience. Knowing is not a purely cognitive act: our individual experiences are deeply impacted by our neurology, culture, backgrounds, expectations, economic standing, health, and sense of belonging (Laverty, 2003). van Manen's approach seeks to describe subjective perceptions of an individual's lived experience by writing about it in such a way that it resonates with others. Phenomenology is, in a broad sense, the "theory of the unique." As Autistic people may experience and perceive the world differently from neurotypical people, it is important to gather and bring forth the realities of their unique lifeworlds.

I am deeply invested in uncovering how my research participants perceive their experiences of attending the blended-learning centre, in their own words, to bring their voices forward (Creswell & Poth, 2018). Rather than searching for broad generalizations, phenomenological research approaches focus on the experiences of individuals (Creswell & Creswell, 2018; van Manen, 2016): I interviewed four research participants, and received a written submission from a fifth participant. I attempted to capture, through the collections of interviews with and observations of participants, the essence of their lived experiences within their own realities: every experience is personal, and highly affected by neurology (van Manen, 1990). I allowed essential themes to emerge through reflection and repeated reading of the

transcripts. I attempted to relay my findings such that readers will experience an epiphany of understanding and will suddenly "see" something in a manner that enriches their understanding of the participants' experiences. I approached the data as unbiasedly as possible, recognizing my own experiences and assumptions such that I set them aside, and through focusing on the research questions. I wove the participants voices together, in van Manen's words, keeping the tension between what is unique and what is shared, between particular and transcendent meaning. As a researcher already sensitive to hermeneutical injustices, I am confident in my ability and resolved to ensure the research participants' voices and experiences were accurately portrayed.

This study utilized the phenomenological research tradition to uncover and articulate the Autistic participants' experiences and perspectives of learning in a neuro-affirming blended-learning centre. The procedures surrounding qualitative research, and my chosen path specifically, are inductive and follow a non-linear, ground-up path.

Preliminary Inquiry

I conducted a preliminary inquiry to test my research questions, interview protocol, data collection methods, and data analysis techniques. The results provided valuable feedback that informed subtle changes to my initial research plan, enabling me to better accomplish the purpose of my study: to transform education policy to better support Autistic learners.

The study revealed some of the pros and cons associated with both in-person and online-learning, as experienced by three study participants who had been students in both environments. The process reaffirmed my choice in a hermeneutical phenomenological approach to my future research, as the experiences and perceptions they articulated were very different.

All participants enjoyed the in-person connection with their educator, and the ability to have questions answered by them in a timely manner. They all disliked needing to follow the pace of entire in-person classroom, and frustration around slower students taking the educator's time away from the group: two were annoyed by the slower student, and one was a slower student who experienced the teacher- and peer-frustration for needing the support.

The participants all enjoyed the ability to have instant access to their online course and the ability to work at their own pace. They all disliked needing to wait for feedback and/or communication with their online educators. While a small study with a small group of participants, the overall sentiment was that timely educator feedback had a major impact on their learning experience, whether in-person or online.

Data Collection

I conducted qualitative interviews with a phenomenological approach using a transformative framework and a critical disability theory lens (Mertens, 2009). I used a pre-set list of questions to ask my participants during their interviews, with flexibility to modify questions and follow an iterative path as the interviews unfolded (Creswell & Poth, 2018; van Manen, 1990).

The Setting

The information compiled from my architectural and sensory-related literature reviews provided a fulsome guide to creating a welcoming setting. Every component of the physical space, both seen and unseen, was purposely selected to properly support the nervous systems and sensory processing differences of Autistic people.

The interviews took place in the climate-controlled boardroom of the sensory-safe learning centre. The walls were a pale shade of blue, left clutter-free aside from a few darker-

blue sound-absorbing panels and subdued artwork. The overhead LED lighting was further diffused with scenic panels bearing a cloud-filled blue sky, used to help evoke the calm feeling one gets when lying in the grass on a summer day. A light fan was used to circulate the air unnoticeably, and a sound machine quietly played the calming sound of ocean waves. Research participants were offered a selection of upholstered rolling office chairs, each with different comfort features, from which they could choose. Two open baskets of fidgets were placed within reach of the participants, as well as paper and pens for doodling.

The Events

The interviews were semi-structured, with open-ended questions intended to elicit personal perceptions and interpretations of their experiences with/at the blended-learning centre. The research participants were given a list of options from which to choose to make their interviews as stress-free as possible, including the location, date and time, format, and types of fun snacks. The first two research participants chose individual, face-to-face interviews, and allowed video and audio recordings. One participant selected a variety of Skittles candy, and the other selected a variety of jelly beans. The third research participant chose to have his mother accompany him to his face-to-face interview, which was video- and audio-recorded: the participants selected Booster Juices and chocolate-peanut butter cups. The fourth research participant experienced too much anxiety to participate in the interview by phone, Zoom, or in person: they chose to have their answers scribed and submitted by their aunt. The fifth research participant chose an in-person interview, but would not allow the interview to be video-recorded: they chose gluten-free pretzels, and brought their stuffed toy along for support.

The Process.

My research study was based on purposive sampling. While purposive sampling can create biases due to its lack of diversity, the expressed purpose for this research was to explore the experiences of the students who attended the specific program, and therefore, it was imperative that the research participants were selected with purpose. Phenomenological research focuses on the rich lived experiences of a small number of research participants, rather than an approach with many participants, with an aim to generalize data to a larger whole.

All research participants were fully informed about the study prior to recruitment. Participation was voluntary. All research participants were over the age of 18; however, one participant had an intellectual disability. I obtained parental consent and participant assent in his case, and participant consent for the other four. Important points were reiterated prior to and during the interviews, including the request for broad consent to have anonymized data transcripts deposited into a data repository for future use in similar studies. Participants were allowed to ask questions prior to and during the interviews, and I ensured that they knew that they could withdraw their consent at any time. Participants were offered the questions ahead of time, both to reduce anxiety over unknowns and to allow extra processing time. The four participants who agreed to in-person interviews did not want to see the questions; however, Avyana, who submitted scribed responses, did request the questions.

In an effort to answer my main research questions, I asked the students the following questions, with the flexibility to ask more questions for an iterative process to dig for more meaning and richness:

(a) How did the flexible, neuro-affirming physical spaces affect your mental well-being?

(b) How did the neuro-affirming staff affect your mental well-being?

(c) How did having choice and control over where, when, how, and for how long to engage with online academics affect your mental well-being?

(d) How did attending a program with an entire cohort of Autistic students affect your mental well-being?

(e) How did the choice to use universal classroom supports, such as fidgets, noise-canceling headphones, and scribes, affect your mental well-being?

(f) How did the choice to use universal online supports, such as speech-to-text software, text-to-speech software, a camera and microphone for alternate assignment formats, the ability to replay videos, etc., affect your mental well-being?

Instrumentation

I conducted three one-on-one in-person interviews, which were recorded on Zoom and then transcribed onto my personal computer. A fourth in-person interview, which was also recorded on Zoom and transcribed, involved the research participant along with his parent: comments made by the parent were not included in the coded data, however some of the parent's quotes are included in this paper for richness. Anonymized transcripts were deposited in a data repository for future use in similar studies, and hard copies were kept in my home office. I took notes during the interviews to record any pertinent non-verbal communication shared, as well as for use as a backup in case of technical malfunctions with the recordings. In addition to the interviews, the participants were given an opportunity to submit artwork, poetry, observations, or short stories if they wanted to better express their thoughts and experiences in alternative formats (Creswell & Poth, 2018); one participant shared his artwork, which is included as Figure 3. A former student who was not a research participant, but wanted to contribute, created a Zine to

express his overall experience in art and the written word: it is included as Appendix J. The information shared by the student in the Zine was not included in the data.

Participants

Based on Creswell and Creswell's (2018) suggested format, the following is an outline of the research participants:

The Actors. The five research participants were drawn from a group of students who graduated from an autism-focused K-12 blended-learning centre in a small town in Canada in June 2023 or June 2024; one participant was joined by a parent during the interview to reduce anxiety and ensure comprehension. I optimized the richness of my results by including students with different sexual orientations, gender identities, and years of experience with the program.

Role of the Researcher

I am a cisgender Caucasian middle-class female who has been fortunate to experience the advantages of formal post-secondary education. I am also a neurodivergent (and probably autistic) student-researcher-practitioner, as well as the parent of an Autistic child: I am deeply affected by ableism in public education and the effects of toxic stress and trauma.

This site was chosen for study because I created it ten years ago based on researched and synthesized best practices: the organization is a registered charity, as my value system is such that I want to improve the lives of my students, not profit from them. There can be challenges when researching one's own organization, or one's "backyard" (Glesne & Peshkin, 1992), including power imbalances, reluctance to disclose information, biased interpretation of data, and inaccurate information offered by interviewees due to concern for relationships. I am passionate about making the best possible educational offering for Autistic students, and I would like to

have rich, empirical data to inform and possibly change policy: I have ensured my participants that I am looking for honest and accurate information.

The study was not disruptive to the activities of the site or its users: the individual interviews took place in the boardroom when it was not in use. Participants were offered a chance to read and verify the transcript of their interview; no participant chose to read their transcript. A summary of the study's results will be reported back to the study participants and made available to interested readers. Readers of interest may include Centre staff, education partners, board members, current and former students and their families, funders, and autism-related research-practitioner organizations.

Community Involvement Statement

There has been a deep and embedded involvement of the Autistic community throughout the planning of this research study. The belief that autism is a human difference rather than a defect underpins my research plan, including neuro-affirming data-collection methods, the types of questions research participants were asked, the use of identity-first language, and the collection and presentation of data for the benefit of the greater Autistic community.

A preliminary study involved an Autistic student, his father, and his brother and was conducted by a neurodiverse researcher. An Autistic researcher created the letter requesting participation and the research questions. The research involved Autistic students, their neurodiverse parents, and their neurodiverse educators, with a goal to give voice to their individual experiences and inform future policy change.

Reliability and Validity

I used several best-practice strategies to ensure my results are reliable and valid. I have prolonged engagement in the field of autism research for 15 years as a parent and a researcher,

and ten years in the selected organization: I am well-acquainted with the daily struggles and celebrations in the lives of Autistic children and youth (Creswell & Miller, 2000). I have included detailed personal accounts and quotes of the lived experiences of my research participants to ensure rich, thick descriptions and that my findings are clearly conveyed (Creswell & Miller). I member-checked the transcripts with the interview recordings to ensure the transcriptions were accurate (Creswell & Miller). Research participants were offered summarized versions of their interviews to check for agreement (Creswell & Miller).

Ethical Considerations

There are ethical concerns in all research contexts involving people, and even more so when involving vulnerable populations. Cascio et al. (2020) highlight two autism-specific considerations to keep in mind when working with Autistic research participants, the first being the history of abuse suffered by Autistic participants in formal research, which necessitates the need to formally commit to ethical research practices (Beresford et al., 2004; Pellicano & Stears, 2011), and the second being the historical yet continuing controversies around specific autism interventions and opposing social movements.

In order to respect, include, and empower the voices of my neurodiverse research participants, I followed the five overarching guideposts set out by the interdisciplinary Canadian-based Autism Research Ethics Task Force's person-oriented research ethics framework (Cascio et al., 2020):

1) I provided individualized support for each research participant;
2) I acknowledged the individual worlds in which my research participants live, and how a variety of factors may impact research ethics;

3) I empowered my research participants in decision-making, such that they were fully informed and fully understood the consent process;

4) I respected and addressed individual sensory and processing needs and strengths; and

5) I meaningfully included Autistic individuals as research participants, colleagues, knowledge users, and partners.

There is also an ethical challenge because I researched my own backyard, meaning, my own professional organization. As the main research participants were students in the organization I manage, there is a power imbalance. To reduce the power imbalance, I chose not to conduct interviews of current students. Self-selected code names anonymized research participants to ensure their responses remained confidential throughout the research and report-writing processes.

Data Analysis

Four interviews were recorded with Zoom onto my personal computer and transcribed using NVivo software (the fifth participant submitted written responses): all four were audio-recorded, but only three were also video-recorded, as per research participant preference. The transcripts were organized, stored and sorted using NVivo software, as well as printed out for manual paper-based reading and coding. Non-verbal communication cues were added to transcripts to add to the richness of the data. Repeated viewings and readings of the interviews allowed me to gain a fuller understanding of the participants' experiences and pick up on any nuances made during the interviews. I used the various sorting and coding features in NVivo, alongside manual coding, such that categories and themes emerged in an unbiased fashion. The presentation of my findings concludes with a highlight of significant quotes from the transcribed

interviews, which were analyzed through a disability lens (Mertens, 2009), formulated into themes, and used to describe the essence of the participants' experiences (van Manen, 2016).

Summary

To aid in my goal of collecting the lived experiences of Autistic students, to then inform future policy and affect institutional change, a Transformative Framework has guided my research.

I undertook an interpretive hermeneutical phenomenological study (Creswell & Creswell, 2018), during which I performed semi-structured, in-person, qualitative interviews (Creswell & Poth, 2018), which were then transcribed, coded, and evaluated through a critical disability theory lens (Mertens, 2009). To ensure confidentiality, research participants were given pseudonyms, the interviews were recorded onto my personal computer and then deleted once verified, and hard copies of physical data are kept locked in my home office: anonymized transcripts will be deposited into a data repository for future use in similar studies. Detailed personal accounts and quotes of the lived experiences of my research participants are included to ensure rich, thick descriptions and that my findings are clearly conveyed.

The research participants, chosen by purposive sampling, were drawn from an autism-focused K-12 blended-learning centre in a small town in Canada. While the number of research participants in my study was small, I optimized the richness of my results by including students with different sexual orientations, gender identities, and years of experience with the program. In order to respect, include, and empower the voices of my neurodiverse research participants, I followed the five overarching guideposts set out by the interdisciplinary Canadian-based Autism Research Ethics Task Force's person-oriented research ethics framework (Cascio et al., 2020).

Chapter 4: Results

Introduction

In this chapter, I present the research findings and connect the findings of the study with hermeneutic phenomenological philosophy. I discuss the process of data collection and analysis, in my attempt to draw out my participants' reflections of their lived body, time, space, and human relation experiences (van Manen, 2016).

Setting

The interviews took place in the current boardroom of the learning centre, which at one point served as a classroom for three of the participants. Light-covers, printed with the image of a cloud-filled, blue-sky, filter the LED lighting that warms the room. The walls were painted a matte blue, reminiscent of Wedgwood Jasperware, and were bare aside from a whiteboard, two non-ticking clocks, and a subtle painting. Closed storage, refinished in a similar shade of pale blue, blended into the wall at one end of the boardroom while a large SmartBoard anchored the wall at the opposite end. Sound-absorbing materials were used throughout the room, including in the ceiling, the floor, the furniture, and discreetly hidden behind the artwork; a noise machine placed just outside the door softly played the sounds of ocean waves to mask the interview responses to further reduce anxiety. The boardroom table was set with baskets of assorted fidgets, a box of tissues, copies of the consent forms, the laptop that was used to record the interviews, and the requested snacks and beverages. The room was scent-free, aside from those given off by the snacks the participant chose. Participants were given their choice of upholstered office chairs.

Participant Demographics

My pool of available research participants was limited to students who graduated from high school in a two-year span, so the age range is not very broad. In order to keep the identities of my participants as confidential as possible, I have chosen not to link specific demographic details to the chosen pseudonyms.

Table 1

Research Participant Demographics

Demographic	Participant Data
Age Range at Time of Interview	20 years, 0 months – 21 years, 5 months
Average Age at Time of Interview	20 years, 5 months
Range of Time in Program	3 years - 6 years, 5 months
Average Time in Program	4 years, 7 months
Cisgendered Male	3
Cisgendered Female	1
Transgendered Male	1
Non-Heterosexual	2
Caucasian	3
First People	2
Relocated to Attend the Program	3

Data Collection

There were five research participants in this study. Each participant was interviewed once, for approximately 60 minutes each. The participants were given a $25 gift card to a store of their choosing.

Four participants were interviewed in-person in the boardroom of the learning centre, one of whom was supported by his parent throughout. Three of the in-person interviews were audio- and video-recorded, with one participant choosing only to have the audio recorded.

The fifth participant, who experienced too much anxiety for an in-person interview, chose to answer the interview questions from their home with their aunt acting as a scribe; the responses were handwritten onto the interview guide and hand-delivered to me by the aunt. The interview was not recorded.

Analysis and Findings

The questions in the interview guide offered a jumping-off point, which allowed for an iterative conversation, rather than a formal, structured, interview. By following the lead of the participants, I was able to uncover the subtle nuances and meanings of their physical, emotional, and psychological learning experiences, thereby deepening my understanding as I moved back and forth between fine and general details.

The first step in analysing my data was to read through my participants' interview transcripts to paint a general picture of their learning experiences. Through the careful reading and rereading of my data, general categories and themes emerged. I analyzed and synthesized the emotions and meanings behind the statements, focusing on their intended meaning rather than the actual words used, and then organized the findings into 29 codes and six overarching themes.

Theme 1: Traditional Brick and Mortar School

The first theme represents the participants' experiences while they were students in their previous schools, including what they liked the most and the least, social experiences with staff and peers, and how they were impacted by the physical structure (their lived body, time, space, and human relation experiences). The schools attended include elementary, middle, and high

schools, in two different provinces, in rural and suburban areas, as well as on two First Nations reserves. As shown in Table 2, below, the codes within this theme speak to the traditionally-trained teachers and education assistants, traditional classroom experiences, the school building, social experiences with peers, and special-education programs.

Table 2

Traditional Brick-and-Mortar School

Theme	**Code**	Frequency
Traditional Brick-and-Mortar School	Educators	25
	Classroom Experiences	46
	School Building	26
	Social Experiences	19
	Special Education Programs	22
Traditional Brick-and-Mortar School Total		138

Educators and Classroom Experiences. There was no intention on the part of the researcher or the participants to "bash" their previous educators, and care was taken by the participants to ensure they were not speaking too negatively of their previous experiences. Most of the research participants were very appreciative of most of their previous teachers and recognized the difficulty in supporting so many different needs. Several students expressed that the teachers did the best they could, but that they had not received enough Autism-specific training, and there were just too many students for one teacher to properly support.

"I felt like they weren't taught specifically about that and how to treat students under it? But they were trying their best. They just didn't really know what to do because they've never dealt with it, right? Or never got educated about it." JW

- *"Um. They did all they could to help everyone. But there's so many kids so they can only do so much at a time. But for what I had, they did really well." Phoenix*

- *"They wouldn't, like, sit down and help you because they had other another 29 or so students." Pigeon*

The students did experience challenges with some educators, though, which is to be expected any time people are in a social situation. The common thread that ran through the issues was one of unrealistic, perhaps ableist, expectations and a lack of flexibility:

- *"And then some of the teachers didn't really want to change too much about their schedule to accommodate the students." [looked directly into camera] JW*

- *"That was something I didn't enjoy because my ADHD. I had an incredibly hard time staying still. And when I wanted to tap my foot to try to get some movement in the teacher didn't like that so wasn't really allowed to do that either. I didn't really have many options to walk around or anything. Yeah, that was kind of the thing I didn't like about it too much, right, I just had to follow the rules to the letter like everyone else. Which should be expected, but for someone with a disability it's like, extremely hard to follow the rules when you know how hard a time sitting still is." JW*

- *"But the guy did my History for Grade Eight, he wanted like, a, or I think my exam, I put as much as I could. He's like, "Come on, Phoenix, you can do more." He wanted so much. That I just didn't have." Phoenix*

School Building. The participant's general sense of the traditional school buildings was that they were too big, loud, and generally unfriendly. The large schools do offer more learning experiences that this small centre simply cannot offer, such as extensive science labs and shop classrooms, and the lack thereof was mentioned by a few participants.

Pigeon described a large school with the phrases *"It didn't have a great atmosphere"* and *"It didn't feel… very friendly",* and said both the building and its people gave a *"very dark and depressing vibe."* He also said that sometimes he loathed going to his previous school due to *"sensory-overloading."* Steve recalled saying, *"This is just way too big"* on his first day at his previous school.

Phoenix, who sought out quiet spaces at his previous school, really enjoyed the hands-on classrooms, such as the cooking labs and chemistry labs.

JW spoke most highly of his outdoor classes during which students were able to spread out on the fields, enjoy the fresh air, and have freedom to move without reprimand. *"Yeah, I'd say in the middle school going outside to read the books, to have just hear the wind and noise and feel the nice fresh air around you while you're… I noticed a lot of students got more quiet when we're outside too."* JW mentioned having access to fresh air and movement breaks throughout his interview, and how extremely effective they are in helping him regulate.

Social Experiences. Since the majority of the core challenges faced by Autistic people tend to involve communication and social interactions, especially with non-autistic people, it is not surprising that the research participants repeatedly mentioned negative social experiences while at their previous schools. Avyana poignantly explained that she "*wasn't comfortable speaking to any of the teachers, well, anyone at all... I never knew how to hang out with other kids or what to say."*

The social experience overall was described as the most challenging part of the brick-and-mortar system, overall, by four of the five participants. When asked about his least favourite part of a large-school experience, JW answered, *"The people, honestly. [fidgets with hands, looks away] Not like the teachers or anything like that just the people in general. There are so many and then there was, like just so many people that were mean or just didn't care about the others people around them." [gestured with hands]*

"Masking" is a common coping skill employed by Autistic people to try and "fit in" with non-autistic peers. Avyana described how she felt like she had to act like a character in a play, with pressure to appear *"regular."* While discussing his art-career goal, JW shared the image in Figure 3, below, and nonchalantly explained he always draws his characters with a mask or face covering because *"that's what I felt like when I was in middle school, I had to put on a mask to hide who I was."* It was a gut-wrenching explanation that made me pause.

Figure 2

Impact Pose

Note. Black and white pencil drawing of a masked character commonly drawn by JW.

Special Education Programs. Only two of the participants had experiences with special education programs in their previous schools, and they were markedly different from one another. Phoenix's experience was positive and involved a small, windowed learning support room that students could access throughout the day when they needed a quiet space or extra guidance. Steve, on the other hand, found the windowless room at his school to be dark, dingy, depressing, and smelly. His parent noted that the teachers did the best they could, but that *"the room, and the facilities did not make them feel like he was, I don't know. I guess a sense of worth, right? Because it's like, as if they were put in a corner."*

Theme 1 Summary. In moving from parts to whole, the general experience of the participants while they were students in large brick-and-mortar schools was one of social- and sensory-overwhelm, combined with feeling unsafe, misunderstood, and under-supported. While there was recognition that the educators did the best they could, the peer culture, physical structure, educator training, and educator ratios were barriers to the students' success.

Theme 2: Neuro-Affirming Built Environment

This theme refers to the architecture and design elements of the physical environment of the learning centre, purposely chosen to create a space that is sensory-safe and inclusive for neurodivergent needs, and how the research participants experienced those elements. As up to 95% of Autistic people have altered sensory-processing systems (Tomchek & Dunn, 2007), this is an incredibly important support area that is often overlooked or dismissed by the general public. This theme speaks to van Manen's lived-space experiences (van Manen, 2016), and the meanings behind how they experience the neuro-sensitive spaces around them. Participants were asked about what was most impactful, their use of Retreat Spaces, and if any elements stood out as their favourites. The needs considered included social capacity, cognitive capacity, sensory

processing, safety, and the ability to adjust for individual and changing needs. The four codes that are included in this theme, as shown in Table 3, are aesthetics, retreat spaces, small classrooms, and sound.

Table 3

Neuro-Affirming Built Environments

Theme	**Code**	Frequency
N.A. Built Environment	Aesthetics	13
	Retreat Spaces	13
	Small Classrooms	8
	Sound	10
N.A. Built Environment Total		44

Aesthetics. When the participants reflected on their experiences with the built environment of the learning centre, the word that most often came to mind was *"calm."* Steve's parent describes the experience as a feeling of *"welcoming, love, and warmth"* that makes the students feel valued and important. Avyana explained that while she did not notice things on a conscious level, *"I think my nervous system probably appreciated it. It took me out of flight or fight, kind of."* Pigeon noted the muted colours, the lack of *"posters and stuff everywhere",* and that *"this feels more like, like a space you want to be calm."*

Retreat Spaces. The Retreat Spaces, or Sensory Rooms, are heavily used by students in the learning centre daily, but not by this group of participants. In searching out why they did not use them very often, Steve said that he had too much anxiety to walk over to them. Pigeon said that he was so used to suffering at his desk from his previous years at school that it took him two

years to get comfortable with the idea of getting up and using them. Phoenix said that he never felt the need to use them, and Avyana preferred to stay in the open areas to regulate.

JW was the only participant who spoke about using the spaces regularly. He said that the spaces helped him to regulate his anger when he was feeling overwhelmed. When JW first arrived at the program, he was apt to physically lash out at people around due to past traumas. Once a sense of safety and trust was built, JW was able to recognize when he was getting overwhelmed, and would go to one of the retreat spaces to calm himself.

Small Classrooms. The participants enjoyed the smaller classrooms for a number of different reasons, but they all preferred them to the large classrooms of traditional schools:

- Pigeon enjoyed the extra space afforded to each student, the ability to decorate his desk area, and the close-knit vibe that comes with having only two or three classmates;

- JW felt a huge reduction in social anxiety due to only having two classmates; and

- Steve and Phoenix felt that the increased support from the educator was the best part of the small classroom.

Sound. The participants appreciated the quiet calm of the learning centre, which Pigeon described as less loud and chaotic than large schools. The students found it easier to concentrate on their academics, with fewer distracting noises. The reduced background noise also helped with audio-processing and attention challenges.

Theme 2 Summary. Both the seen and the unseen elements of the built space affected the participants, on both conscious and subconscious levels. There was general agreement that the most impactful aspect of the physical design was the reduction of background noise, with the second being the sense of calm brought about by the colour palette and reduced visual clutter.

Although the participants did not use the Retreat Spaces frequently, they agreed as a whole on the necessity of having them available.

Theme 3: Neuro-Affirming Educators

This theme reflects on how the students experienced being taught by educators with a strengths- and rights-based approach to developmental differences who aim to provide support and adaptations that affirm the child's neurodivergent identity. Formal education-assistant and teacher education in British Columbia is heavily rooted in Applied Behaviour Analysis, which is counter to how staff in the learning centre program are trained. As shown in Table 4, below, the three codes in this theme are the sense that the educators accommodate the students' needs, an overall atmosphere of freedom and staff support, and the level of individual support experienced by the students.

Table 4

Neuro-affirming Educators

Theme	Code	Frequency
Neuro-affirming Educators	Accommodating	29
	Atmosphere of Freedom and Support	38
	Individual Support	22
Neuro-affirming Educators Total		89

Accommodating. The participants enjoyed the flexible staff approach and how they worked with the students to accommodate student needs and preferences. In line with tenets of Universal Design for Learning, educators gave students the opportunity to shape their own learning journeys. In JW's words, *"it felt like they knew how to accommodate it too, at least. It's*

kind of hard to be educated on a person-to-person basis on Autism, though. Yeah, you can know

the baseline for it and how to help accommodate it, but it's person-to-person in the end. Each

person is going to need something a little different, right?"

Pigeon also enjoyed the alternative ways he was allowed to show his learning, *"Um,*

[with] my art. That was pretty supportive, like, you brought in a couple of artists here. And that's

something I want to do. And I used my art and writing for projects instead of just having to like,

like, "Oh, can I do this instead of this?"…"Instead of having like, "Oh, you have to do in this

format", you're like, "Oh, if it works that way then you can do it like this one." I remember one

of the first projects I did for science I did it in a comic format. And it still worked out. I got an A

on it."

Atmosphere of Freedom and Support. The participants reflected upon how much they

enjoyed having the freedom to self-direct much of their day. The culture of the program allows

participants to take breaks as needed, eat at their desks, choose whether or not to participate in

activities, and use a variety of self-regulation tools and spaces. Participants had access to the

kitchens, including self-serve coffee and tea stations, chilled water stations, and a variety of food

programs. JW explained that his favourite part of the entire program was the breaks and the

freedom of choice. *"That's something that really helped me",* he said. *"I was able to kind of just*

do whatever I wanted during my break time, de-stress, and then go back to work afterwards."

Individual Support. The increased level of knowledgeable support had the largest

impact on the participants overall.

> *"Honestly, [looks into the camera] the one-on-one attention that I got from the educators.*
>
> *The hands-on learning that was the most impactful for me because it helped me learn if I was*
>
> *feeling overwhelmed with my own work." [gestured with hand] JW*

Theme 3 Summary. The communal experience of the participants was that they found the increased level of individual student support most impactful, by far. There was a deep sense of trust with the educators, who the students felt were meaningfully engaged in helping them be successful. The feeling of empowerment and personal agency wove through the participants' voices.

Theme 4: Blended Learning

This theme explores how the participants experienced the integration of face-to-face and online learning activities, flexible deadlines, and greater autonomy. The participants reflected on the embedded online learning supports, diverse processing speeds, and the pros and cons of having flexible deadlines. The six codes within this theme, shown below in Table 5, include educational technology applications, the ability to learn in different locations, the ease of organization that blended learning offers, the ability to self-pace, the empowerment to choose which subject with which to engage, and when and how long to engage with said subject.

Table 5

Blended Learning

Theme	Code	Frequency
Blended Learning	Educational Technology Application	29
	Organizational Ease	6
	Place	11
	Self-Paced	20
	Subject Choice	11
	Time and Duration	9
Blended Learning Total		86

Educational Technology Application. All of the research participants' computers had built-in educational technology applications while they were students in the program, as do all of the students. By embedding the tools into each computer, it helps to reduce the anxiety that might otherwise be felt if the students had to ask to have it installed or if the student was the only one in the classroom with the tool. I found it humorous during the interviews that students did not even recognize that they had been using the applications, as their use has become so generalized. All of the participants were regular users of closed captioning and spell-checking software, for instance, and the use of text-to-speech and speech-to-text is encouraged to help the students with a variety of learning challenges.

Many Autistic learners benefit from visual supports, which can help with slower processing speeds and reduced working memory. Pigeon was the most articulate in explaining that he uses closed captioning and the resulting video transcripts as a tool to help with his audio-

processing disorder. He explained that listening to videos while reading the closed captioning helps him process what they're talking about: It's like, *"Oooh, okay."*

Organizational Ease. Executive function differences and ADHD can act as barriers to getting and staying organized. Phoenix was quite strong in his opinion that it was much easier to stay organized because he accessed all of his academics from one desk, rather than trapsing around a large school, going from classroom to classroom with paper-filled binders.

Place, Self-Paced, Subject Choice, Time, and Duration. All the research participants enjoyed the ability to self-direct their studies. They enjoyed working at their own pace, on the subject of their choice, where, when, and for however long they wanted. There are distinct differences in codes, yet they overlap in many of the quotes. The participants described having control as "awesome", that it made it easier, and according to Avyana, *"way less scary."* The most impactful aspect to all five participants was the ability to self-pacing.

I was curious to know if any participants found the flexibility of the deadlines to be a challenge, an experience of time, as motivating oneself to do a less-preferred academic activity without a clear deadline can be tough. Avyana was the only participant who found it beneficial, yet also challenging. She explained that she experienced less stress by having enough time to get things done at her own pace, yet at times it was hard to keep motivated.

Theme 4 Summary. The experience of moving from a compliance-based education approach to one of self-determination was nothing short of profound for these participants. The freedom to assert their preferences and voices, learn at their own pace, and be set up for success rather than anxiety and failure, led to a huge reduction in anxiety, followed by an increase in academic achievement and personal growth.

Theme 5: Mental Well-Being

While difficult to succinctly articulate, this theme encompasses the general feeling of happiness, contentment, purpose, and safety, which are all components of quality of life. One of the main influences of this study was my desire to investigate how mental well-being was affected by being a student at the learning centre, which was also the impetus for my second research question. Each code within this theme speaks to a different, yet closely tied, nuance of mental well-being. The seven individual codes within this theme, as shown in Table 6, are a felt-sense of belonging, education, emotional-regulation, a sense of safety, empowerment and self-determination, self-esteem, and social relationships with peers.

Table 6

Mental Well-Being

Theme	Code	Frequency
Mental Well-Being	Belonging	20
	Education	27
	Emotional-Regulation	45
	Safety	20
	Self-Determination	39
	Self-Esteem	24
	Social Relationships	26
Mental Well-Being Total		201

Belonging. A sense of belonging encompasses feelings of acceptance, inclusion, and positive social connection: all vital to one's mental well-being, and also sadly uncommon for

many Autistic people. Participants spoke of their sense of feeling accepted, and for many, it was for the first time. Pigeon explained that there is a kind of a baseline understanding between the students, so they don't feel as awkward with each other.

Avyana described her first months as a student as *"like, scary, but also much easier because there wasn't as much pressure to be regular."* She further described that *"it made it easier to relax compared to regular school, I didn't feel like I had to act like a character in a play."*

Pigeon said that he felt like he could become part of the ecosystem: it was a statement that made me teary. Steve's parent described their family's experience by saying that the students get to *"feel safe and accepted. As a teen, that's all they care about is feeling accepted, and that they belong and say, and that's what this program creates here."*

Education. Reflections made in this category refer to the process of acquiring knowledge, skills, and understanding that empower the participants to more fully engage in their community, improve their mental health, and gain employment, ultimately enhancing their overall quality of life.

Avyana, for instance, assuredly said that she could not have earned her diploma without the support of the program: she is currently attending a program to become a firefighter. Steve's parent feels that had he not joined the program, he would not have learned to read or acquired the skills he needed to attend his college program. JW described how he decided upon post-secondary education and a career in the arts due to the improvements gained while a student in the program. Pigeon enjoyed the freedom to explore different educational interests to see where they would lead, and is now a professional artist.

Emotional-Regulation. The statements grouped within this code refer to the conscious or unconscious processes and skills the participants use to cope with difficult situations throughout the day, one of the key factors that influence mental well-being.

Pigeon and JW appreciated the flexibility in learning how and when to self-regulate, so they now know which tools and accommodations they require. JW commented that he has also learned what makes other people uncomfortable in the workplace, so he can act accordingly: *"I just don't want to do anything wrong by them."* Steve was proud to let me know that he is getting better at regulating himself every year, and that his brother even complimented him on his growth.

Safety. A felt sense of safety was a recurring experience discussed by the participants. In this context, the participants referred to changes in their perceived physical and emotional safety, including from themselves and others, as a result of attending the learning centre. *"My experience [at the learning centre], I don't know, it was great, it was like, I don't even know how to say it. Definitely more like a safe feeling kinda thing."* Avyana

Steve's parent said that when she describes the Centre, she says, *"It's the safety. I'm like, your kid is not going to get the safety [at the big schools] or the acceptance, and without acceptance, safety and belonging, you can't learn. And it's scarring, like it's so scarring to feel alone and like hiding all the time, or finding places to hide, especially in such a big school. And I think also just the innocence that a lot of Autistic, or maybe it's just Steve, I don't know, could be different."*

Self-Determination. The reflections of experiences in this category speak to student empowerment and control. A lack of control has a hugely negative impact on an Autistic person's anxiety, many of whom experience a persistent drive for autonomy. In the case of the

participants, their experiences were overwhelmingly positive, with all participants expressing positive emotions.

Pigeon explained it as "*you can opt out of things you didn't want to do. Or you can do other things, like that are separate from what the other group's doing, instead of having to like, like joining in like it's mandatory.*"

Self-Esteem. Self-esteem includes many different facets, from autistic pride and understanding to pride in accomplishments to feeling a sense of acceptance. Avyana felt great pride in earning her graduation diploma, which took great strength and resilience. JW felt good about himself due to his job, his college program, his friends, his finances, and his future. "*I felt like I was going to go and do some good things,*" he explained.

Pigeon developed a stronger sense of worth through his comfort with and understanding of his Autism diagnosis. He explained that *"I was like 14 when I first came here? And now I'm more comfortable about things. Like, okay, I have a disability but it doesn't, like there's accommodations that help me and tools that can help me navigate through the world. And it's not like it's a huge hindrance. Well it's a hindrance, but it does not feel like a burden."*

Social Relationships. The reflections in this category relate to how the participants felt during interactions with their Autistic peers. Four of the five participants reported negative social experiences at their previous schools with non-autistic peers, generally due to feeling excluded or bullied, or as Pigeon described, *"feeling like an alien."* The participants said that they felt understood, that they found the other students relatable, and that they enjoyed not having to pretend to be *"normal."* Three of the students mentioned that they found their best friends while attending the centre, and the social aspect was a key part of the participants recommending the centre to other Autistic students.

Theme 5 Summary.

This theme is a collection of the reflections shared by participants of their lived body and human relation experiences (van Manen, 2016), and the resulting effects on their mental well-being. The participants spoke of how the program fostered acceptance, true belonging and mutual understanding, safety, autonomy, and peer connection, while significantly improving their emotional regulation and self-esteem.

Theme 6: Suggestions for a Perfect Scenario

The research participants gave suggestions for creating the ultimate learning scenario for Autistic learners based on their general lived experience and experiences at the research-led learning centre. As seen below in Table 7, the four codes within the theme include ideas for the building itself, capacity of individual classrooms, overall student capacity, and general programming ideas.

Table 7

Suggestions for a Perfect Scenario

Theme	Code	Frequency
Suggestions for a Perfect Scenario	Building	17
	Classroom Capacity	13
	Overall Capacity	9
	Programming	16
Suggestions for a Perfect Scenario Total		55

When I queried the idea of building a new learning environment from scratch, without any pre-conceived plans, the question seemed to be too open-ended for some of the students to

process. I had to quickly pivot to inquire about changes that the students would suggest to the current program, which limited the responses. What is somewhat remarkable, all students innately assumed that the blended learning format would be central to the program, without anyone ever mentioning or suggesting traditional face-to-face teaching.

Building. The participants agreed that the building should be designed with sound-absorbing materials to limit noise transfer, and that the aesthetics should be similar to the current learning centre (with muted blues and greens, walls free of posters and bright bulletin boards, soft lighting, and nice artwork). They all suggested the same small classrooms built around large open spaces that act as lounge areas with couches, TVs, and tables for playing cards and eating together. All participants felt that the inclusion of retreat spaces was important, whether or not they personally used them.

Suggestions for Improvement. Specific recommendations for improvement came from three participants and are as follows:

- a science lab for doing experiments;

- themed retreat spaces/sensory rooms, such as ocean, space, and dinosaur;

- a big arts and crafts room wherein students could "just craft away and get messy";

- cubicles around student desks for added privacy and sound-absorption;

- an outdoor courtyard area with vegetable gardens so the students could learn how to grow produce; and

- a designated computer-gaming room.

Classroom Capacity. The ideal number of students per classroom was three or four, with five being the maximum they would want. The five-student maximum was due to the noise that

students would make, the increased social expectations, and the decrease in the amount of educator support they would receive.

Overall Capacity. The participants did not answer with specific numbers, but agreed that the program should expand. They felt it should be as large as necessary to provide help to all the students who require the support, but only as large as could be properly staffed. Avyana had the most heartfelt response, noting that expanding to *"help more people is a good idea so kids have a place they can learn and like, feel safe."*

Programming. Two of the participants suggested more hands-on learning experiences, which go hand in hand with the additional physical spaces they recommended (specifically, more intense science experiments that involve explosions). One participant suggested more extracurricular activities or clubs, but did not have any suggestions as to what those would be.

The participants gave opposing answers to suggestions for afternoon programming, which was not surprising due to the fact that every Autistic person has individual preferences, however it was amusing that the suggestions were so contrary: two of the participants were steadfast in their expressed displeasure of going outside to the park and that it should stop, whereas two other participants felt that time spent outdoor at the park should dramatically increase.

Theme 6 Summary.

The participants suggestions and preferences are in line with what the research says: small classrooms (Black et al., 2022; Gaines et al., 2016; Mostafa, 2008; Sánchez et al., 2011), limited student numbers (Chan et al., 2018), substantial low-ratio support with educators trained in neuro-affirming research (Fletcher-Watson & Happé, 2019; Hallinan, 1996; Moyse, 2021), available spaces for retreat when experiencing social- or sensory-overwhelm (Black et al., 2022;

Gaines et al., 2016; Mostafa, 2008; Sánchez et al., 2011), outdoor spaces (Barakat et al., 2019), sensory-safe environmental design of indoor space (Black et al., 2022; Gaines et al., 2016; Mostafa, 2008; Sánchez et al., 2011), a technology-enhanced learning environment for greater autonomy (Haas et al., 2022; Rice, 2020; Rivera, 2017), and increased hands-on programming such as science experiments and gardening (Barakat et al., 2019).

Connecting to the Theoretical Framework

Hermeneutic interpretive phenomenology is a qualitative research approach that combines the principles of hermeneutics and phenomenology to understand human experiences. It focuses on the meaning of lived experiences, acknowledging that these meanings are shaped by the individual's own interpretation and the broader cultural context. As Autistic people tend to experience their worlds differently from how neurotypical people experience their worlds, I believe this is the best approach to ascertaining my participants' experiences in the learning centre. The framework allows for rich and detailed data to emerge through an iterative researcher-participant interplay that illustrates how participants interact with and interpret their complex experiences.

At the centre of the hermeneutic interpretive phenomenology lies the Hermeneutic Circle. The six-step circle is not a research approach, per se, but rather the dynamic process in which meaning is at first gained, clarified, and further deepened as both parts and the whole are continually re-evaluated and refined. As I had spent considerable time with my research participants and the context of the program in the years prior to this study, I had a general, or macro-level, understanding of the students' experiences. Through the individual interviews with the participants, I was able to dig into their experiences to parse out both the seen and the unseen, the consciously and unconsciously felt, with each participant's response shaping the next

researcher's question, to move from my initial interpretations to their detailed accounts of their individual experiences. The participants did not share any experiences that were counter to my initial understanding; however, I was profoundly affected by some of their statements, their emotions, and their descriptions of their experiences.

In explaining the process to my family, I likened it to assembling a jigsaw puzzle without having a reference picture. First, you flip over all the pieces, then start by making the outer frame. Next, you begin to organize the pieces into piles of colours or images that look like they might go together. Your next step is to try to fit the same-coloured pieces together in little sections, adding pieces as you go, with the images starting to take shape. With each additional piece, the picture becomes clearer, and you slowly build a rich and complete picture.

Summary

In this chapter I discussed my research findings, including how, where, and how often my data were collected. I gave a detailed description of the boardroom in which the single, in-person interviews took place, as well as the exceptions that stood out. I explained the process of how I came to my 29 codes and six themes (Traditional Brick and Mortar School, Neuro-Affirming Built Environment, Neuro-Affirming Educators, Blended Learning, Mental Well-Being, and Suggestions for a Perfect Scenario), gave their descriptions, code frequencies, and included participant quotes and artwork to deepen reader understanding. I included demographics of my five research participants, without connecting the demographics to each participant: an intentional choice to protect the identity of my participants. Finally, I explained how the six steps of the iterative Hermeneutic Circle help bring forward a deeper understanding of a phenomenon, through the ongoing reflections and moving from parts to whole, in a joint process between researcher and participant.

Chapter 5: Conclusion

Introduction

There is a gap between the findings of autism researchers (know), and the implementation of those findings in real-world applications (do): the know-do gap. I set out to ascertain how research participants experienced a program that was built upon applied multidisciplinary autism research, and whether or not the program was efficacious in improving their mental well-being. Through a thoughtful synthesis of earlier research, the program under study was created based on the combination of neuro-affirming physical environments, education approaches, and staff training. The purpose of the program was to positively impact the mental well-being (and quality of life) of Autistic students by offering a safe place to learn, connect, and feel a sense of belonging. This study aimed to collect the lived experiences of the students who participated in the program to bring their voices forward, such that study findings could be shared and addressed as appropriate.

Returning to the Research Questions

Question 1: What were the physical experiences of K-12 Autistic students who withdrew from brick-and-mortar public schools, and then attended a neuro-affirming blended-learning centre?

The research participants were overwhelmingly positive about their collective student experience at the learning centre, even when they could not find the right words to express their emotions due to alexithymia. For instance, when asked about how she would describe her experience overall, Avyana responded:

My experience, I don't know, it was great, it was like, I don't even know how to say it. Definitely more like a safe feeling, kind of a thing. I don't know, all I can think of was it was just so great, I couldn't have finished school without it.

JW was quite emotional when he spoke about his experiences, and often looked down and away. During the beginning of our interview I explained that I was going to attempt to find out his experiences, and he said *"I mean, in my opinion, you were all wonderful to me."* I further explained that I really wanted him to be honest about his experiences, and not simply tell me nice things that he thought I would want to hear. His response was, *"Well, the place was good. How can I say something bad about it?"* When pressed to come up with his least favourite things, or areas for improvement, he said *"My experience overall was wonderful. I had these few bad points, but that wasn't because of teachers. If I have to bring it up, it's some of the students I just didn't get along with."*

Phoenix was the least unhappy student in his previous school of all the participants; however, his parent was the most emotional when I made the offer of admittance. He expressed that he felt duped by his parent, and that the decision to enroll at the Learning Centre was not his. I believe the fact that Phoenix was less bothered by his previous school gave him an unbiased starting point that allowed him to be better able to articulate what he enjoyed, and did not enjoy, at the learning centre. Although on the flip side, when I asked if he would recommend the program to other he nodded, shrugged, and said *"Yeah."* When I asked him how he would describe the program to others, he thought for a moment, and then said, "*It goes off of their Autism, or… well, mainly Autism, and you try to find the best way to help them with their learning."* Phoenix enjoyed the program overall, especially the quiet calm and high level of educator support, however he mentioned several times that he wished that there had been a chemistry lab for

hands-on experiments. In listening to the reasons why he missed classrooms where he did hands-on learning, they seemed to be related to the fact that the subjects taught in those classrooms did not require written output, rather than his experiences with the physical space.

Pigeon described the program as *"calm, supportive, flexible, and open."* He most enjoyed the change from a compliance-based system, the new reality of having choices, and the empowerment to decline to engage in activities. When I asked if there were any specific recommendations he could share to improve the program, his response was simply, *"Not that I can think of. I think you guys have a pretty good grip."* When I asked Pigeon about whether he would recommend the program to other Autistic students, he gave a much more detailed response:

> *Yep, [I would recommend it to] everyone. I think it will be good, especially to connect with other Autistic students. That you, you might find your best friend here. Or… that you'll be excited to want to learn more stuff. Instead of just like having a strict education plan you're like, "Oh, I can explore this interest or explore this interest and see where that leads."*

Steve's experiences were the most intriguing to uncover, as he generally offers few words. He said that his favourite parts of the program were that the days were shorter, and that he had so many choices. The most telling bit of information was when his parent reminded him of how he used to brag to his siblings. *"It wasn't in a teasing way,"* he said. *"[Steve's sister] used to get so mad!"* he laughed. His parent continued, *"You went on and on about all the things in your program, saying, "Don't you wish you had a s*chool like mine?" You would spend 10 minutes talking about all the things in the program!" When asked if he would recommend the program to others, Steve said, *"Yeah, so I would. But I have anxiety. So I'd stay quiet. But I like it."* [laughs]

Question 2: How was the emotional, psychological, and mental well-being of Autistic students affected when they withdrew from brick-and-mortar public schools and then attended a neuro-affirming blended-learning centre?

Avyana. Avyana chose not to answer this question; however, in summarizing her interview, her mental well-being experienced a very positive change. She had limited attendance and little success at her previous brick-and-mortar school due to social and generalized anxiety, to the point where she was unable to enter the building by herself. She was unable to pinpoint why, explaining that *"I felt like, I don't know what was the fear, but there was a lot of fear. I think I thought I was going to be stuck. I couldn't stay at school alone."* She said that her least favourite thing at school was the social aspect, and *"feeling scared all the time."* During her first year as a student at the Learning Centre, she spent a large amount of time silently crying at a communal desk in the open area, unable to let her mother leave her side: there were often days when she simply could not walk through the front doors. By the time she graduated, she was filled with pride for her academic accomplishments and filled with excitement for a career in public safety.

JW. I asked JW to describe how he felt about himself when he first started, and later how he felt about himself when he left:

> [When he first arrived] *I would say I was very anxious about… anxious about being around new people. And just that was my main issue in middle school. I wasn't able to learn effectively because I was so anxious about the people around me. So just a huge group of people made me so twitchy and overwhelmed. I couldn't work. I was failing school before I came. That's how unable to work I was. I was failing almost every single class. The only one I was doing good in was science, actually. I got B's in that. I got better when I came here. I started getting A's in science. That kind of thing.*

[When JW left] *I mean, I had a job back then, so I was actually feeling quite good about myself. I had one working every Thursday, every I think every Thursday and Tuesday. I was going to college when I left too. So I felt quite good about myself. I felt like I was going to go and do some good things. I was quite successful back then. I had extra money, I had college, I had friends.*

Phoenix. Phoenix dismissed questions related to any type of mental well-being. As he was the least unhappy at his previous school, he had a much different emotional and mental wellness baseline than the other participants when he first arrived. While he did not offer glowing, descriptive responses indicating a substantial positive change in his mental well-being, the summary of his interview overall presents a generally positive mental health experience.

Pigeon. Pigeon offered an insightful and descriptive picture of his mental-wellness journey:

> *"I felt more comfortable about being neurodivergent. Because, um, I was like 14 when I first came here? And now I'm more comfortable about things. Like, okay, I have a disability but it doesn't, like there's accommodations that help me and tools that can help me navigate through the world. And it's not like it's a huge hindrance. Well it's a hindrance, but it does not feel like a burden."*

Steve. When Steve first joined the learning centre, he was in a place of mental and emotional distress, suicidal ideation, and self-harm, sadly due to, or at least exacerbated by, his experiences in his previous school. I was reticent to trigger any traumatic memories, so I did not dig too deeply. I simply asked if he thought his mental health had improved by coming here, which I recognize was a leading question. His response was, *"I think so. Yeah."* The conversation then moved between Steve and his parent:

Parent: *If you would have stayed in public school, what do you think would have*

happened?

Steve: *Something.*

Parent: *Yeah, like, what?*

Steve: *Something? Who knows?*

Parent: *Yeah. I don't think we'd be where we are right now.*

There was intense emotion in the room, and an unspoken understanding between the

parent and the participant, who both clearly recognized the precarious mental state that prompted

the withdrawal from the previous school.

Discussion

The powerful quotes gleaned from the participant interviews are in line with neuro-

affirming research and literature from around the world. In a profoundly impactful and award-

winning animation of her experiences in a traditional brick-and-mortar high school in Scotland,

Erin Davidson is quoted as saying that it felt like the walls around her *"were closing in… like*

being trapped in a cage with a whole bunch of things that scare you, surrounding you… the

feeling of isolation at school was crushing, because I could be surrounded by people, but still

entirely alone" (Donaldson Trust, 2020). The animation demonstrates that the responsibility for

finding solutions to the barriers Autistic students face lies in the hands of the physical school

environment, the school culture, attitudes of peers, and the approaches taken by staff. In an

excerpt from an interview shared on the Donaldson Trust website, Ruth Moyse is credited with

saying that "*telling young Autistic people struggling to attend school to be more resilient is*

profoundly inappropriate, if what you are really asking is for them to keep going under

circumstances they should not be asked to endure" (Donaldson Trust, 2020). In her doctoral

thesis research into Autistic girls and the reasons behind their increasing absence from high

school, Moyse found that her research participants longed for a school that would "prioritize

pupil well-being." (Moyse, 2021) Her results showed that one of the key recommendations from

the students was that they wanted a school wherein they could be taught, experience a feeling of

safety, and receive less sensory input from the built space. The other four recommendations from

her research participants were that they wanted the educators to 1) listen to their individual

needs, 2) dig into the "whys" of behaviour with sincere curiosity, 3) become better trained in the

needs of Autistic students, and finally 4) take action and actually implement the suggestions,

tools, changes, etc.

The results of my study extend the findings shared by Moyse. Although each Autistic

person's experiences are different, the experiences shared by Davidson are consistent with those

shared by my research participants and what I have observed day-to-day over the ten years of the

program. Both sets of Autistic students have a profound desire to be seen, understood, and

supported by their educators: a universal human need that goes unmet for far too many Autistic

students around the globe. The need to affordably educate students en masse leads to physical,

emotional, and psychological learning environments that are counter to the needs of many

Autistic students: classrooms become too big, too loud, too crowded, and too anxiety-provoking.

Many educators, in Canada, Britain, and beyond, are unprepared and under-supported to fully

meet the needs of their Autistic students, impacting the rates of their students' school avoidance

(Moyse, 2021; School Can't Australia, 2022; Thom-Jones et al., 2025).

Limitations

The limitations of this study are consistent with the phenomenological approach, in that

the results are specific to the research participants in this very unique context, and are therefore

not generalizable. This was also an extremely small study, due to the requirements that I only include participants from a set timeframe.

A further limiting factor was the anxiety experienced by one of the participants. They were paralyzed with anxiety, even though they truly wanted to participate and had the questions well ahead of time. In addition to the option of the in-person interview at the learning centre, they were given the option of a phone interview, an in-person interview at any location of their choosing, a Zoom interview with the camera turned off, or an interview by email.

Anxiety and intellectual capacity impacted a second research participant, which was the impetus for the inclusion of a parent during the interview. The limitation in this case was not due to the participant, but the parent who sometimes answered for the participant before he had the chance to process the question and answer on his own.

Recommendations for Future Research

This was a small study in a small program: further research is needed to investigate whether other student cohorts had similar experiences. The study could be repeated on an annual basis as students graduate from the program, as well as with research participants in similar programs in other parts of the world. A longitudinal study could be conducted, with students taking an initial mental health assessment as a baseline, followed by a repeat assessment upon graduation.

A quantitative study measuring the unconscious effects of the sensory environment on the nervous system and cognition would be an excellent next step to validate this research further. The use of an electroencephalogram to record and analyze brain activity in contrasting sensory environments would be valuable data to bring forward and strengthen policy recommendations.

In order to translate this and other Autism-related empirical data into actionable plans for actual impact, work needs to be done to create guidelines to close the know-do gap (Hallinan, 1996; Leggat et al., 2023). A "know-do gap" exists when research (know) remains in libraries and laboratories, rather than being put into practice (do). An example of this is how many schools and service providers still employ methodologies based on Applied Behaviour Analysis, even though substantial research has come out about its harms (Anderson, 2023; Wilkenfeld & McCarthy, 2020). Further research needs to be undertaken in the fields of knowledge translation and implementation science so that said knowledge moves from research to action to impactful change to positive life outcomes for Autistic students. I recommend a study to investigate what current teacher-training programs include, and what novice teachers wish said programs included, as a step toward improving teacher preparedness. With that information in hand, teacher-education programs could be updated with current neuro-affirming research and approaches, as well as supplemented with cautions around the use of compliance-based approaches.

Conclusion

This study set out to investigate the lived experiences of Autistic students in a Canadian neuro-affirming blended-learning centre, and evaluate its effect on the mental wellness of its students. The results of the investigation show that the participants enjoyed their experiences, would recommend the program to other Autistic students, and that their mental health was positively affected.

The results of this research support Dwyer's case for free inclusion, the idea that Autistic students and their families should be given the option for full-inclusion in their local brick-and-mortar school if they so choose, and that the educators in those schools should be properly

trained in neuro-affirming Autism supports, but that they should also have the option to choose an alternative environment that is more conducive to their neurology.

Notwithstanding the relatively limited sample, this study offers valuable insights into how the prioritization of mental health through the combination and application of multidisciplinary research is an essential step toward reducing suicidal ideation and self-harm in Autistic youth.

These findings will be of interest to educators and who are curious about blended-learning, the effects of aesthetics and sensory-based architecture on Autistic learners, or those interested in moving away from compliance-based methods of classroom management. The voices of these participants open the door to further exploration.

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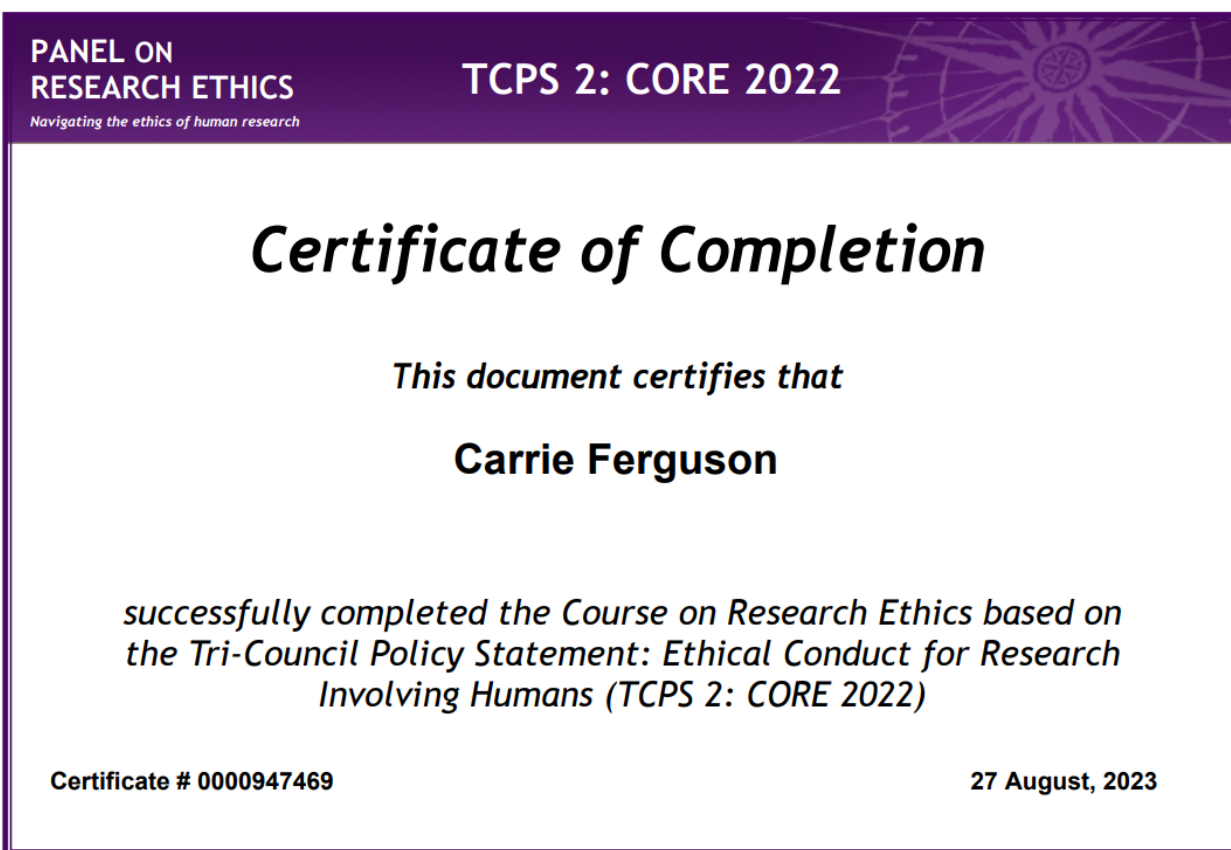
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Appendix A

Research Ethics Certificate

Appendix B
Certification of Ethical Approval

Athabasca University

CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: 25916

Principal Investigator:
Mrs. Carrie Ferguson, Graduate Student
Faculty of Humanities & Social Sciences\Master of Education in Open, Digital, and Distance Education (MDDE)

Supervisor/Project Team:
Dr. Cynthia Blodgett-Griffin (Co-Supervisor)
Dr. Connie Blomgren (Co-Supervisor)

Project Title:
Experiences of Autistic Students in a Canadian Neuro-Affirming Blended-Learning Centre

Effective Date: February 11, 2025   **Expiry Date**: February 10, 2026

Restrictions:

Any modification/amendment to the approved research must be submitted to the AUREB for approval prior to proceeding. Any adverse event or incidental findings must be reported to the AUREB as soon as possible, for review.

Ethical approval is valid *for a period of one year*. A request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

An Ethics Final Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: February 11, 2025**

Rhiannon Bury, Chair
Athabasca University Research Ethics Board

_____

Athabasca University Research Ethics Board
1 University Drive, Athabasca AB Canada T9S 3A3
E-mail rebsec@athabascau.ca Telephone: 780.213.2033

Appendix C

Letter Requesting Participation

Experiences of Autistic Students

in a Canadian Neuro-Affirming Blended-Learning Centre

February 15, 2025

Principal Investigator (Researcher):	**Supervisors:**
Carrie Ferguson	Dr. Constance Blomgren
cferguson8@athabascau.ca	connieb@athabascau.ca
	Dr. Cynthia Blodgett-Griffin
	cynthiablodgettau@gmail.com

My name is Carrie Ferguson and I am a Master of Education student at Athabasca University. As a requirement to complete my degree, I am conducting a research project about autistic-student experiences students at the Learning Centre, and whether being a student improved their qualities of life. I am conducting this project under the supervision of Dr. Constance Blomgren and Dr. Cynthia Blodgett-Griffin.

I invite you to participate in this project because you were a student who graduated from the Learning Centre in either June 2023 or June 2024.

The purpose of this research project is to find out what students liked, did not like, and would like to change about our program. The information will be used to make our program better, and to help create a guide for other educators to better help their Autistic students.

Your participation in this project would involve participating in one 60 minute in-person interview at the Centre, arranged at a time that is convenient for you. The semi-structured interview would be recorded using a transcription tool, and you would have the opportunity to review the transcript to alter or clarify your statements. To reduce anxiety, you may request to see the questions prior to the interview. If you wish to submit answers in writing rather than by having an in-person interview, the written answers may be submitted by email or on paper, with a deadline of March 15, 2025.

All information you provide during the study will be kept anonymous. Identifying characteristics, such as your name or description of physical appearance, will not be used. Every reasonable effort will be made to ensure your confidentiality; you will not be identified in publications. The published study will not refer to our city or program, and all participants will be given pseudonyms (code names). The data collected in the interviews will be anonymized and stored in my home office (locked in a filing cabinet). I would like to put the anonymous data into a special research program, called a data repository, in case I would like to use it for future research.

The research should benefit current and future Learning Centre students (by making our program better), as well as Autistic students in other learning organizations (by sharing with them what works). I do not anticipate you will face any risks as a result of participating in this research. If you choose to participate in the study, you will be given a $25 gift certificate to your choice of stores as a thank you (Tim Hortons, Subway, or Amazon).

Thank you for considering this invitation. If you have any questions or would like more information, please contact me, (the principal investigator) by e-mail cferguson8@athabascau.ca

or 250-462-5928, or my supervisor Dr. Constance Blomgren (connieb@athabascau.ca) or Dr. Cynthia Blodgett-Griffin (cynthiablodgettau@gmail.com)

Please let me know by February 28, 2025 if you would like to participate in this research project.

Thank you.

Miss Carrie Ferguson

This project has been reviewed by the Athabasca University Research Ethics Board [REB File #9642]. Should you have any comments or concerns about your treatment as a participant, the research, or ethical review processes, please contact the Research Ethics Officer by e-mail at rebsec@athabascau.ca or by telephone at 780.213.2033.

Appendix D

Consent to Participate in Research Project

Experiences of Autistic Students in a

Canadian Neuro-Affirming Blended Learning Centre

February 15, 2025

Principal Investigator (Researcher):   **Co-Supervisors:**

Carrie Ferguson   Cynthia Blodgett-Griffin

cferguson8@athabascau.ca   cynthiablodgettau@gmail.com

                                                  Constance Blomgren

                                                  connieb@athabascau.ca

You are invited to take part in a research project entitled *"Experiences of Autistic Students in a Canadian Neuro-Affirming Blended Learning Centre."*

This form is part of the process of informed consent. The information presented should give you the basic idea of what this research is about and what your participation will involve, should you choose to participate. It also describes your right to withdraw from the project. In order to decide whether you wish to participate in this research project, you should understand enough about its risks, benefits and what it requires of you to be able to make an informed decision. This is the informed consent process. Take time to read this carefully as it is important that you understand the information given to you. Please contact the principal investigator,

Carrie Ferguson, if you have any questions about the project or would like more information before you consent to participate.

It is entirely up to you whether or not you take part in this research. If you choose not to take part, or if you decide to withdraw from the research once it has started, there will be no negative consequences for you now, or in the future.

Introduction

My name is Carrie Ferguson and I am a Master of Education student at Athabasca University. As a requirement to complete my degree, I am conducting a research project about the experiences of Autistic students who attend(ed) The Centre. I am conducting this project under the supervision of Dr. Cynthia Blodgett-Griffin and Dr. Constance Blomgren.

Why are you being asked to take part in this research project?

You are being invited to participate in this project because you are a student who graduated from the Learning Centre in June 2023 or June 2024.

What is the purpose of this research project?

The Learning Centre was designed to be neuro-affirming based on synthesized best practices in autism research: the purpose of this study is to collect the lived experiences its Autistic students such that I may inform future policy and affect institutional change.

What will you be asked to do?

You will be asked to participate in one 60 minute in-person interview in the Boardroom at the Learning Centre, arranged at a time that is convenient for you. The semi-structured interview would be video recorded, and you would have the opportunity to review the transcript to alter or

clarify your statements. To reduce anxiety, you may request to see the questions prior to the interview. If you wish to submit answers in writing rather than by having an in-person interview, the written answers may be submitted by email or on paper, with a deadline of March 15, 2025.

What are the risks and benefits?

I do not anticipate you will face any risks as a result of participating in this research. Should you appear to be uncomfortable the interviewer will end the interview.

You will receive a $25 gift card for your choice of store (Subway, Tim Hortons, or Amazon) following the interview as a thank you. Benefits may also include a change in the policies and/or practices at the Learning Centre.

Do you have to take part in this project?

As stated earlier in this letter, involvement in this project is entirely voluntary. Should you wish to take part in the study, you may change your mind at any time and stop participating in the interview: you (or your parent, on your behalf) may withdraw (you) from the study by letting me know by email, text, phone call, or in-person. You may choose to allow your data to remain in the study, or have it removed and destroyed. Should you choose to have your data (the interview transcript) removed, please inform me within one week of reading your interview transcript. There will not be any consequences for withdrawal from the study (you will still receive your gift card).

How will your privacy and confidentiality be protected?

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use or disclosure. All videos, transcripts, and

miscellaneous data will be kept on my personal computer in my home. Files will be encrypted/

password-protected, and participants will be given code names which will be stored separately.

How will my anonymity be protected?

Anonymity refers to protecting participants' identifying characteristics, such as name or

description of physical appearance. Identifying information such as names, genders, ages, grades,

and our city will be removed from your responses and stored separately for one year and then

permanently deleted. Every reasonable effort will be made to ensure your confidentiality; you

will not be identified in publications. The published study will not refer to our city or program,

and all participants will be given pseudonyms (code names).

How will the data collected be stored?

To ensure all forms of your data are kept confidential, I will encrypt/password-protect

electronic data. Zoom recordings would be saved in an encrypted/password-protected file on my

personal computer (not on the cloud-based service). Physical copies of anonymized data will be

kept locked in my home office for a minimum of one year after the completion of this study:

access to physical data will only be available to myself. When appropriate, stored physical copies

will be shredded and my electronic files will be deleted.

I would like to keep the research data on file for future use (such as in autism research

journals or while working towards a PhD): should a future project take place there would need to

be further Research Ethics Board approval. Electronic anonymized transcripts (the data) will be

deposited into "Borealis" and kept for a minimum of seven years. Borealis, the Canadian

Dataverse Repository, is a secure research data repository supported by academic libraries and

research institutions across Canada. It was designed to provide Canadian researchers with an

online place to store, share, and publish their research data. Borealis supports open discovery, management, sharing, and preservation of Canadian research data (https://borealisdata.ca/). The anonymized transcripts from this research will be available to researchers from around the world to discover, view, and download.

The following individuals and agencies will have access to the electronic anonymized data from this project:

- Dr. Cynthia Blodgett-Griffin and Dr. Constance Blomgren, Athabasca University

    o Co-Supervisors

- Members of the Board of Directors of The Centre

- The Borealis Dataverse Repository

Who will receive the results of the research project?

The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room and the final research paper will be publicly available. Direct quotations without personally identifying information may be reported, either in part or in whole. Audio/video recordings will not be used in dissemination of the research; they will only be used to verify transcripts. You will be provided a copy of your individual interview transcript to check for agreement (which is optional), as well as a visual summary of the overall results.

Who can you contact for more information or to indicate your interest in participating in the research project?

Thank you for considering this invitation. If you have any questions or would like more information, please contact me, (the principal investigator) in person or by e-mail at

cferguson8@athabascau.ca or one of my co-supervisors by e-mail at

cynthiablodgettau@gmail.com or connieb@athabascau.ca If you are ready to participate in this

project, please complete and sign the attached Consent Form and return it to me by January 31,

2025 (by email or in person at the Centre).

Thank you.

Carrie Ferguson

This project has been reviewed by the Athabasca University Research Ethics Board. Should

you have any comments or concerns about your treatment as a participant, the research, or

ethical review processes, please contact the Research Ethics Officer by e-mail at

rebsec@athabascau.ca or by telephone at 780.213.2033.

Informed Consent

Your signature on this form means that:

- You have read the information about the research project.

- You have been able to ask questions about this project.

- You are satisfied with the answers to any questions you may have had.

- You understand what the research project is about and what you will be asked to do.

- You understand that you are free to withdraw your participation in the research project

  without having to give a reason, and that doing so will not affect you now, or in the future.

- You understand that if you choose to end your participation **during** data collection, any data collected from you up to that point will be retained by the researcher, unless you indicate otherwise.

- You understand that if you choose to withdraw **after** data collection has ended, your data can be removed from the project at your request, up to one week after reviewing your interview transcript.

	YES	NO
I agree to be audio-recorded	◯	◯
I agree to be video-recorded	◯	◯
I agree to the use of direct quotations	◯	◯
I allow data collected from me to be archived/deposited in Borealis	◯	◯
I would like to be contacted following the interview to verify that my comments are accurately reflected in the transcript.	◯	◯

Your signature confirms:

- You have read what this research project is about and understood the risks and benefits.

- You have had time to think about participating in the project and had the opportunity to ask questions and have those questions answered to your satisfaction.

- You understand that participating in the project is entirely voluntary and that you may end your participation at any time without any penalty or negative consequences.

- You have been given a copy of this Informed Consent form for your records; and

- You agree to participate in this research project.

_____   _____

Signature of Participant   Date

    I have explained this project to the best of my ability. I invited questions and responded to any that were asked. I believe that the participant fully understands what is involved in participating in the research project, any potential risks and that he or she has freely chosen to participate.

_____   _____

Signature of Principal Investigator   Date

Appendix E

Consent for Minor to Participate in Research Project

LETTER OF INFORMATION / PARENTAL INFORMED CONSENT FORM

Experiences of Autistic Students in a

Canadian Neuro-Affirming Blended Learning Centre

February 15, 2025

Principal Investigator (Researcher):   **Co-Supervisors:**

Carrie Ferguson   Cynthia Blodgett-Griffin

cferguson8@athabascau.ca   cynthiablodgettau@gmail.com

                                                                       Constance Blomgren

                                                                       connieb@athabascau.ca

Your child is being invited to take part in a research project entitled *"Experiences of Autistic Students in a Canadian Neuro-Affirming Blended Learning Centre."*

This form is part of the process of informed consent. The information presented should give you the basic idea of what this research is about and what your child's participation will involve, should you and they choose to participate. It also describes their right to withdraw from the project. In order to decide whether you wish to allow your child to participate in this research project, you should understand enough about its risks, benefits and what it will require of your child, to be able to make an informed decision. This is the informed consent process. Take time

to read this carefully as it is important that you understand the information given to you. Please contact the principal investigator, Carrie Ferguson, if you have any questions about the project or would like more information before you consent to allow your child to participate.

It is entirely up to you whether or not you allow your child to take part in this research. If you choose not to allow them to take part, or if you or they decide to withdraw from the research once it has started, there will be no negative consequences now, or in the future.

Introduction

My name is Carrie Ferguson and I am a Master of Education student at Athabasca University. As a requirement to complete my degree, I am conducting a research project about the experiences of Autistic students who attended The Centre. I am conducting this project under the supervision of Dr. Cynthia Blodgett-Griffin and Dr. Constance Blomgren.

Why is your child being asked to take part in this research project?

Your child is being invited to participate in this project because they are a student who attended the Centre and graduated in June 2023 or June 2024.

What is the purpose of this research project?

The Centre was designed to be neuro-affirming based on synthesized best practices in autism research: the purpose of this study is to collect the lived experiences its Autistic students such that I may inform future policy and affect institutional change.

What will your child be asked to do?

Your child will be asked to participate in one 60 minute in-person interview at the Centre, arranged at a time that is convenient for them. The semi-structured interview will be recorded

using a transcription tool, and they will have the opportunity to review the transcript to alter or clarify their statements. To reduce anxiety, you may request to see the questions prior to the interview. If your child wishes to submit answers in writing rather than by having an in-person interview, the written answers may be submitted by email or on paper, with a deadline of March 15, 2025.

What are the risks and benefits to your child?

I do not anticipate your child will face any risks as a result of participating in this research. Should they appear to be uncomfortable I will end the interview.

Your child will receive a $25 gift card for their choice of store (Subway, Tim Horton's, or Amazon) following the interview as a thank you. Benefits may also include a change in the policies and/or practices at the Centre.

Does your child have to take part in this project?

As stated earlier in this letter, involvement in this project is entirely voluntary. Should you wish to allow your child to take part in the study, but then change your/their mind, you/they may stop participating in the interview: you (or your child) may withdraw (them) from the study by letting me know by email, text, phone call, or in-person. You may choose to allow your child's data to remain in the study, or have it removed and destroyed. Should you choose to have your child's data (the interview transcript) removed, please inform me within one week of reading their interview transcript.

There will not be any consequences for withdrawal from the study (your child will still receive their gift card).

How will your child's privacy and confidentiality be protected?

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use or disclosure. All videos, transcripts, and miscellaneous data will be kept on my personal computer in my home. Files will be password protected, and participants will be given code names.

How will your child's anonymity be protected?

Anonymity refers to protecting participants' identifying characteristics, such as name or description of physical appearance. Every reasonable effort will be made to ensure your child's confidentiality; they will not be identified in publications. The published study will not refer to our city or program, and all participants will be given pseudonyms (code names).

How will the data collected be stored?

The following individuals and agencies will have access to the anonymized data from this project:

- Dr. Cynthia Blodgett-Griffin and Dr. Constance Blomgren, Athabasca University
  - Co-Supervisors
- The Board of the Learning Centre
- The Athabasca University Data Repository, hosted by Borealis

To ensure all forms of your child's data are kept confidential, I will password protect electronic data, use of pseudonyms (code names), and use locked filing cabinets for hard copy data. Zoom recordings will be saved in a password-protected file on my personal computer (not on the cloud-based service), and will be deleted once transcripts are verified. I would like to keep

the research data on file for future use, such as in autism research journals or while working towards a PhD: should a future project take place I would need further Research Ethics Board approval.

Who will receive the results of the research project?

The existence of the research will be listed in an abstract posted online at the Athabasca University Library's Digital Thesis and Project Room and the final research paper will be publicly available. Direct quotations without personally identifying information may be reported, either in part or in whole. Audio/video recordings will not be used in dissemination of the research; they will only be used to verify transcripts. Your child will be provided a copy of their individual interview transcript to check for agreement (which is optional), as well as a visual summary of the overall results.

Who can you contact for more information or to indicate your permission to allowed your child to participate in the research project?

Thank you for considering this invitation. If you have any questions or would like more information, please contact me, (the principal investigator) by e-mail at cferguson8@athabascau.ca or one of my co-supervisors by e-mail at cynthiablodgettau@gmail.com or connieb@athabascau.ca If you are ready to participate in this project, please complete and sign the attached Consent Form and return it to me by February 28, 2025 (by email or in person at the Centre).

Thank you.

Carrie Ferguson

This project has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns about your treatment as a participant, the research, or ethical review processes, please contact the Research Ethics Officer by e-mail at rebsec@athabascau.ca or by telephone at 780.213.2033.

Informed Consent:

Your signature on this form means that:

- You have read the information about the research project.

- You have been able to ask questions about this project.

- You are satisfied with the answers to any questions you may have had.

- You understand what the research project is about and what your child will be asked to do.

- You understand that you are free to withdraw your child's permission to participate in the research project without having to give a reason, and that doing so will not affect you or your child now, or in the future.

- You understand that if you or your child choose to end their participation **during** data collection, any data collected from them up to that point will be retained by the researcher, unless you indicate otherwise.

- You understand that if you or your child choose to withdraw **after** data collection has ended, your data can be removed from the project at your request, up to one week after receiving the interview transcript.

	YES	NO
I agree to allow my child to be audio-recorded	○	○
I agree to allow my child to be video-recorded	○	○
I agree to the use of my child's direct quotations	○	○
I allow data collected from my child to be archived/deposited in Borealis	○	○
I allow my child to be contacted following the interview to verify that their comments are accurately reflected in the transcript.	○	○

Your signature confirms:

- You have read what this research project is about and understood the risks and benefits.

- You have had time to think about allowing your child to participate in the project and had the opportunity to ask questions and have those questions answered to your satisfaction.

- You understand that allowing your child to participate in the project is entirely voluntary and that you/they may end participation at any time without any penalty or negative consequences.

- You have been given a copy of this Informed Consent form for your records; and

- You agree to allow your child to participate in this research project.

_____   _____

Signature of Participant   Date

_____   _____

Signature of Parent   Date

    I have explained this project to the best of my ability. I invited questions and responded to any that were asked. I believe that the participant's parent/guardian fully understands what is involved in participating in the research project, any potential risks and that he or she has freely chosen to participate.

_____   _____

Signature of Principal Investigator   Date

Appendix F

Assent to Participate in Research Project

Title of Study: Experiences of Autistic Students in a Canadian

                                            Neuro-Affirming Blended-Learning Centre

Principal Investigator: Carrie Ferguson

Contact Information: cferguson8@athabascau.ca

Co-Supervisor: Dr. Constance Blomgren

Contact Information: connieb@athabascau.ca

Co-Supervisor: Dr. Cynthia Blodgett-Griffin

Contact Information: cynthiablodgettau@gmail.com

What is a research study?

A research study is a way to find out new information about something. Children do not need to be in a research study if they do not want to.

Why are you being asked to be part of this research study?

You are being asked to take part in this research study because I am trying to learn more about student experiences, in their own words, while attending our learning centre. I am asking you to be in the study because you recently graduated from the Learning Centre. Approximately six students will be in this study.

What is involved if you join the study?

Here are some details about what will happen if you choose to take part in the study:

- We will ask you to have an interview that will last about 60 minutes.

- I will be the interviewer.

- The interviews will take place at the Centre

- The interviews will be recorded using transcription software and then deleted. No one will see the interviews but me.

- You will be asked questions about what you like and dislike about the Centre and about your old school(s).

- You can see the questions first.

- There are no wrong answers.

- If the idea of answering the questions verbally makes you uncomfortable, you could submit a story, art, music, instead, or you could write the answers instead of coming for an interview (or have someone write them for you).

Will the study help you? Will the study help others?

I am doing this study to see if our students have enjoyed our program and if it improved their mental health/made them happier. If it turns out it has helped, the information may help other Autistic students in other schools. If it turns out that things didn't help, we can adjust things to make them better.

What do you get for being in the study?

You will get a $25 gift card for participating in the interview: you can choose from Subway, Amazon, or Tim Horton's.

Do you have to be in the study?

You do not have to be in the study. It's up to you. No one will be upset if you don't want to do this study. If you join the study, you can change your mind and stop being part of it at any time. All you have to do is let me know that you want to stop the interview (or you or your parents could let me know ahead of time by email, phone call, or in person): neither your parents or I will be upset.

Do your parents know about this study?

This study was explained to your parents and they said that I could ask you if you want to be in it. You can talk this over with them before you decide.

Who will see the information collected about you?

The information collected about you during this study will be kept safely locked up. Nobody will see it but me. The study information about you will not be given to your parents. You can't get in trouble for anything that you say.

What if you have any questions?

You can ask me or your parents any questions that you may have about the study. If you have a question later that you didn't think of, either you or your parents can call or email me.

Other information about the study.

- If you decide to be in the study, please write your name below.

- You will be given a copy of this paper to keep.

☐ Yes, I will be in this research study.   ☐ No, I don't want to do this.

Student name   Signature   Date

Principal Investigator or

Person obtaining Assent   Signature   Date

Appendix G

Interview Guide

1. How did you feel about _____ when you first came?

    o   yourself

    o   your autism diagnosis

    o   your future

2. What challenges did you have at your previous school?

    o   What did you like least?

    o   Best?

3. How did the Centre's physical spaces, such as the sensory rooms, small classrooms, walls

    colours, reduced lighting, quiet vibe, etc. affect you?

    o   What did you find most impactful? What made no difference?

    o   Did you use the sensory rooms? Why or Why not?

    o   Did you have a favourite?

4. The staff at the Centre are trained very differently than at a typical school. What was your

    experience like with your educators at the Centre?

    o   What was better than at your old school?

    o   What was worse?

5. You had choice and control over the pace, place, time, and length of time you engaged with

    your online academics. What was that like for you?

6. What was it like having all Autistic-classmates?

7. Describe what was it like having only two or three classmates.

8. How did the universal classroom supports (fidgets, headphones, scribes, extended time) affect you?

    o Did you use them? Were they effective?

    o Was it distracting when other people used them?

9. Your computer had built-in universal online supports (speech-to-text, text-to-speech, camera and mic for alternate assignment formats, closed captioning, video replay):

    o Did you use them?

    o If you did, what was your favourite?

10. How did you feel about _____ when you left?

    o yourself

    o your autism diagnosis

    o your future

11. Overall, describe what you liked the most about the program.

12. Describe what you liked the least about the Centre. How would you improve it?

13. How would you describe it to others?

14. How would you describe your experience, overall?

15. Describe the perfect learning scenario for an Autistic student.

16. Is there anything I didn't ask that you think I should know…

Appendix H

Magda Mostafa's Sensory Design Matrix

			Auditory			Visual			Tactile			Olfactory			Proprioceptive		
			a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
Structure		A	1	2		1	2	1	2	1		1	2		2	1	1
		B	3	4	3	3	4								4	3	
		C	5	6	5	5	6	5	6	5					6	5	5
		D					7									7	7
		E	8			8										8	8
Balance		F	9	10		9	10	9							9	10	9
		G					11									11	11
		H				12	13	13	12							13	13
		I				14	15	14							14		14
Quality		J				17	16			18							
		K	19			19	20										
		L	21	21	21												
		M		22					22	23							
		N										24	25	24			
Dynamic		O				26	26	26		26						26	26
		P				27		27								27	27
		Q	28			28		28								28	28

Sensory Issues
a. Hyper   b. Hypo   c. Interference

Architectural Attributes
A. Closure
B. Proportion
C. Scale
D. Orientation
E. Focus
F. Symmetry
G. Rhythm
H. Harmony
I. Balance

J. Color
K. Lighting
L. Acoustics
M. Texture
N. Ventilation
O. Sequence
P. Proximity
Q. Routine

Appendix I

Magda Mostafa's Architectural Design Guidelines

#	Design Guideline	Suggested Objective and User
1.	High enclosure and containment	1) to reduce external visual and acoustical distraction for the hyper-auditory and hyper-visual 2) to provide tactile stimulation via tight spaces and containment for the hypo-tactile 3) to create visual focus in cases of visual interference 4) to reduce olfactory intrusion via ventilation for the hyper-olfactory
2.	Low enclosure and openess	1) to increase opportunities for acoustical stimulation for the hypo-auditory 2) to provide visual stimulation for the hypo-visual 3) to reduce sense of containment for the hyper-tactile
3.	Low ceilings and moderate proportions	1) to reduce echoes for the hyper-auditory 2) to reduce visual distortion and illusions of space for the hyper-visual 3) to promote balance for the hypo and interference-proprioceptive 4) to create a more acoustically controllable environment for the interference
4.	High ceilings and exaggerated proportions	1) to increase echoes and auditory stimulation for the hypo-auditory 2) to create visual illusionary stimulation for the hypo-visual 3) to stimulate the proprioceptive sense of space for the hyper-proprioceptive auditory
5.	Use of intimate scale	1) to reduce echoes for the hyper-auditory 2) to create a controllable auditory environment for the interference auditory 3) to create a controllable and manageable space for the hyper and interference visual 4) to increase tactile stimulation from boundary proximity for the hypo-tactile 5) to increase proprioceptive stimulation from boundary proximity for the hypo-proprioceptive 6) to create a controllable environment for the interference auditory and proprioceptive
6.	Use of open scale	1) to create auditory stimulation through echoes for the hypo-auditory 2) to create visual stimulation through spatial exapnse for the hypo-visual 3) to relieve over stimulation from spatial boundaries for the hyper-tactile and hyper-proprioceptive
7.	Orientation towards external views and elements of interest	1) to create focus and attraction for the hypo-visual 2) to instill balance and direction for the hypo-proprioceptive

Appendix I

Magda Mostafa's Architectural Design Guidelines, continued

8.	**Use of activity focus to organize space**	1) to increase attention span and reduce distractibility for the hyper-auditory and visual 2) to create a behavioural and geometric point of reference for the hypo and interference proprioceptive
9.	**Symmetrical organization**	1) creates predictability for the hyper-visual 2) creates acoustical balance for the hyper-auditory 3) increases sense of centre and balance for the hypo and interference proprioceptive 4) creates a controllable environment for the interference visual
10.	**Asymmetrical organization**	1) creates auditory and visual stimulation for the hypo-auditory and visual 2) creates proprioceptive stimulation for the hypo-proprioceptiveTables
11.	**Use of visual or spatial rhythm**	1) to create visual stimulation and tracking opportunities for the hypo-visual 2) to create predictability and coherence to the spatial environment for the hypo and interference
12.	**Visually harmonious space with no contrast or discord**	1) to create a visually neutral space for the hyper-visual 2) to create a neutral tactile space for the hyper-tactile
13.	**Visually unharmonious space using accents and contrasts**	1) to create visual stimulation for the hypo and interference visual 2) to create proprioceptive stimulation for the interference and hypo-proprioceptive
14.	**Use of dynamic and statically balanced spaces**	1) to create orientation and stability for the hyper-proprioceptive and visual as well as the interference proprioceptive and visual
15.	**Use of unbalanced spaces**	1) to create visual stimulation for the hypo-visual
16.	**Use of bright colours**	1) to create visual stimulation for the hypo-visual
17.	**Use of nuetral colours**	1) to create serenity for the hyper-visual
18.	**Use of warm colours**	1) to create psychological warmth for the hypo-tactile
19.	**Indirect natural lighting**	1) minimize glare and distracting views for the hyper-visual 2) less distracting than buzzing artificial light for the hyper-auditory
20.	**Direct natural lighting and views**	1) creates visual stimulation for the hypo-visual
21.	**Noise and echo-proofing**	1) creates a conducive environment for the hyper-auditory 2) removes the distracting opportunity of self-stimulation through echoes for the hypo-auditory 3) creates a neutral auditory background for the interference auditory

Appendix I

Magda Mostafa's Architectural Design Guidelines, continued

|		
22.	**Use of smooth textures**	1) calms the hypo-tactile 2) creates echo and reverberation stimulation for the hypo-auditory
23.	**Use of rough textures**	1) stimulates the hypo-tactile
24.	**Cross-ventilation**	1) redues smells and odours for the hyper-olfactory
25.	**Enclosed ventilation**	1) may help contain scents during aromatherapy for the hypo-olfactory
26.	**Organized compartmentalization using visual cues**	1) helps orient and adjust the hyper-visual 2) helps stimulate to action the hypo-visual 3) helps organize the interference visual 4) creates necessary boundaries for the hypo-tactile 5) helps orient the hypo and interference proprioceptive
27.	**Spatial organization according to sensory characteristics**	1) helps orient and adjust the hyper-visual 2) helps organize the interference visual 3) helps orient the hypo and interference proprioceptive
28.	**Use of one-way circulation patterns to capitalize on routine**	1) helps orient and adjust the hyper-visual 2) helps organize the interference visual 3) helps orient the hypo and interference proprioceptive 4) helps create predictability in general across the spectrum, particularly the hyper-auditory

**Appendix J**

"It Got Better" Zine

It Got Better
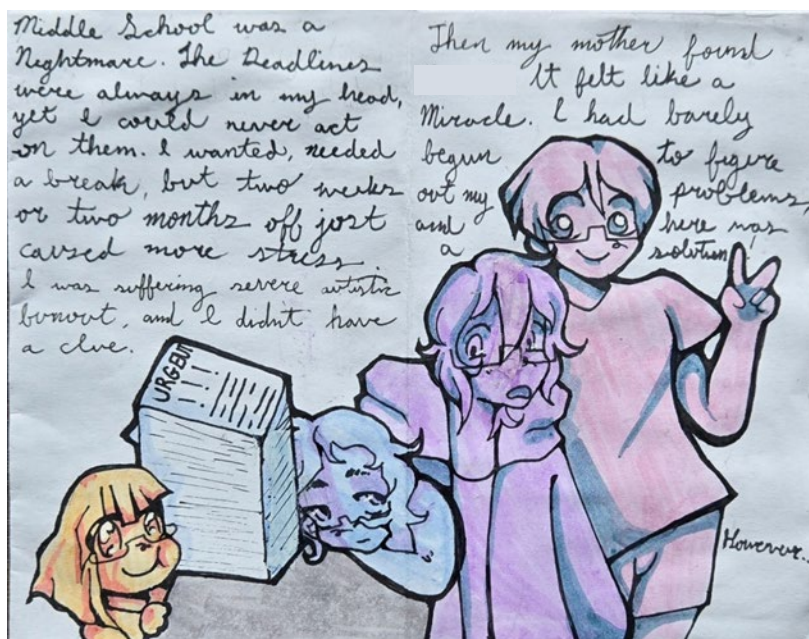
Middle School was a nightmare. The deadlines were always in my head, yet I could never act on them. I wanted, needed a break, but two weeks or two months off just caused more stress. I was suffering severe Autistic burnout, and I didn't have a clue. Then my mother found the Learning Centre. It felt like a miracle. I had barely begun to figure out my problems, and here was a solution! However…

Appendix J

"It Got Better" Zine, continued
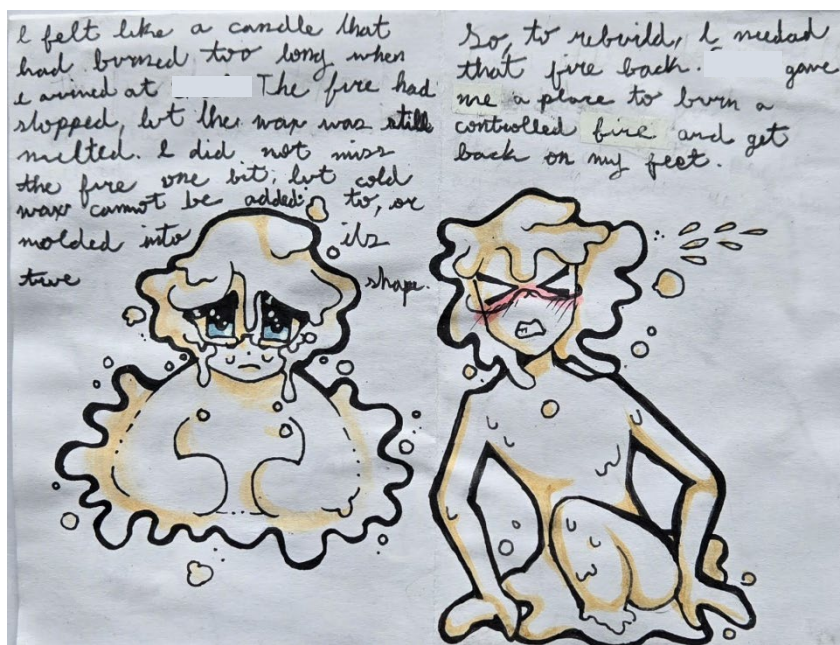
I felt like a candle that had burned too long when I arrived at the Learning Centre. The fire had stopped, but the wax was still melted. I did not miss the fire one bit, but cold wax cannot be added to, or molded into its true shape. So, to rebuild, I needed that fire back. The Learning Centre gave me a place to burn a controlled fire and get back on my feet.
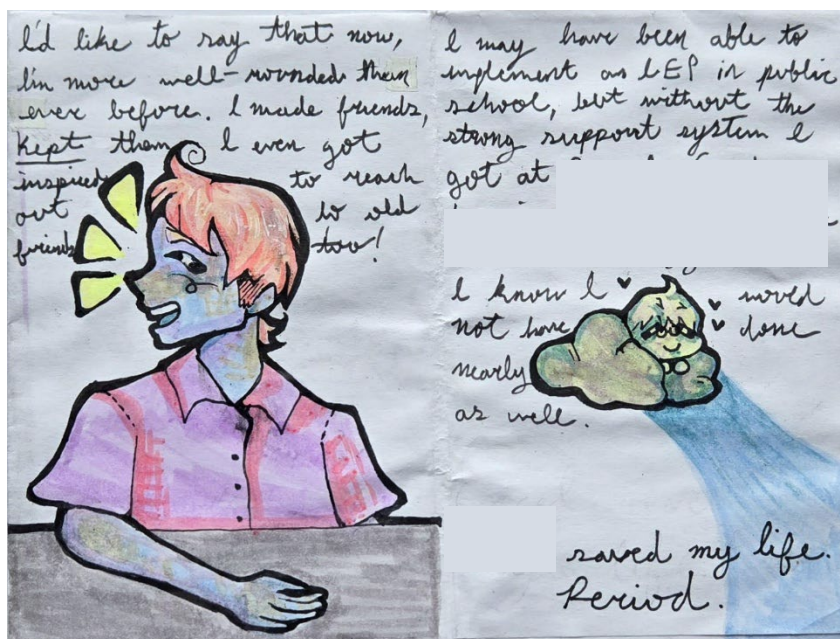
I'd like to say that now, I'm more well-rounded than ever before. I made friends, kept them, I even got inspired to reach out to old friends, too. I may have been able to (follow) an IEP in public school, but without the strong support system I got at the Learning Centre, I know I would not have done nearly as well.

The Learning Centre saved my life.

Period.

Appendix J

"It Got Better" Zine, continued