Supporting Neurodiverse Learners

Summary of Research and Local Insights

Acknowledgements

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This document outlines research into inclusive education for neurodiverse ākonga with a focus on the practical implications for classroom teachers. This is intended to support educators to provide support for neurodiverse ākonga (or those with behaviours and learning difficulties that resemble neurodiversity without a formal diagnosis) through a mix of different strategies that can make small, meaningful differences.

Educators in the Waitaha region were interviewed to understand how their experience working with neurodiverse ākonga aligns with research into inclusive education. This helped to create a platform for those with lived experience to share knowledge and strategies that have worked for them. It is intended that this work might support kaiako to implement new strategies to support neurodiverse ākonga, including those without formal diagnoses.

Grow Waitaha is a multi-year project designed to support schools in post-earthquake greater Christchurch through citywide educational transformation. This resource was written in 2022 by Jordan Mayes and Gabrielle Wall for the use of educators across Aotearoa.

We welcome ongoing feedback on how you have used this resource and what suggestions you would like to contribute. For feedback and suggestions please email: jordan@dandgconsulting.co.nz or gabrielle@dandgconsulting.co.nz

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Introduction

This work summarises and applies a range of research in the field of inclusive education for neurodiverse learners. This aligns with the inclusive education strategic area of Grow Waitaha while keeping the focus on storytelling and applying research to cases in the Waitaha region. This work seeks to do the following:

- Complement (rather than add to) research in inclusive education for neurodiverse learners using local cases;

- Provide a narrative on inclusive education for neurodiverse learners in the Waitaha region using cases of teachers and guardians; and

- Give New Zealand teachers and practitioners simple tips and strategies for implementing more inclusive education for neurodiverse learners.
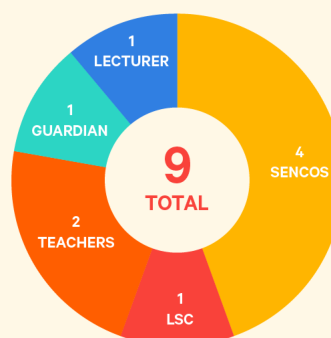
Case Interviews

As part of this project, schools were contacted to have staff and parents/guardians participate in interviews regarding inclusive education and what it means specifically for neurodiverse learners. The e-mail was sent out to Principals in the greater Christchurch region, and some passed this correspondence on to staff whom they felt had good knowledge in this area, which largely consisted of SENCOs (Special Education Needs Coordinators) and LSCs (Learning Support Coordinators), as well as teaching staff proficient in this area. Someone who is a guardian to a neurodiverse child also participated in an interview to provide contrasting evidence, reflecting more the struggles of dealing with education.

It should be noted that a limitation of this work is that responding schools (and the staff who agreed to participate) likely did so because of their confidence in their ability to provide inclusive education to neurodiverse learners. The feedback from schools focuses more on success stories and positive steps toward inclusive education, highlighting the importance of inclusive education for achieving inclusivity and positive educational outcomes for learners who are neurodiverse. The guardian interview highlighted more of the negative aspects of fighting for access, lacking communication from the school and lacking coherence in the education system to truly reach inclusive education. It is important, then, to not interpret the case interviews as a reflection of inclusive education in the wider Christchurch region, but as a small sample to provide a narrative for wider-reaching research in this area.

In total, 9 interviews were conducted with 4 SENCOs, 1 LSC, 2 teachers, 1 guardian and a lecturer at the University of Canterbury (former teacher).

Note that SENCOs and LSCs tend to have multiple roles including as teachers and deputy principals.

Interviews were semi-structured, meaning that topics/questions were drafted prior to interviews, but allowing the conversation to flow naturally was more important than asking each question individually in a strict structure. Participants were encouraged to take tangents and this often meant that the different areas were explored with a single question and follow-up prompts. Participants were first asked about their background, such as what neurodiverse conditions are currently present at their schools and how these ākonga are included in the school (i.e. whether there are special units or programmes, inclusion in mainstream classrooms etc.). Some also provided some commentary on ORS and other funding and support provisions. Participants were then asked to define what inclusive education means to them, irrespective of any definitions or explanations provided to them or how it is viewed by educational bodies such as the Ministry of Education.

The remainder of the interview then focused on the 5 key areas for inclusive education for neurodiverse discussed in the following section. This includes relationships, agency, behaviour management, (learning) environment, and teaching and learning. As the interviews were semi-structured and involved prompts and tangents, the areas were not explored in a particular order and often participants moved through discussing these areas naturally as they talked openly about inclusive education. The implications of this are discussed in the findings (section 3).

PART ONE:

Neurodiverse Learners – Inclusive Education Literature Review

Objective 1 of the National Education and Learning Priorities (NELP) is *Learners at the Centre:* "Learners with their whānau are at the centre of education" (Ministry of Education, 2022). This means ensuring that our learning environments are safe, inclusive, and free from racism, discrimination and bullying. Under the NELP, schools will be required to create safe and inclusive cultures where all ākonga feel they belong, including those that are neurodiverse. This report is intended to provide a brief background on research on fostering inclusive education for neurodiverse learners that can help schools to meet their obligations under the NELP and improve educational, social, and wellbeing outcomes for neurodiverse ākonga.

Neurodiversity is a very broad term covering a range of diagnoses including learning disabilities, developmental disabilities, communication disorders, autism/Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD), brain injuries, and Foetal Alcohol Syndrome Disorders. This covers a range of abilities, capabilities, and needs, and thus will cover a range of requirements to be authentically and meaningfully included. While this paper uses the term *Neurodiverse* as a generally broad term for these various conditions and different learning capabilities, it is important to recognise that there cannot be a one-size-fits-all approach as this is not only unlikely to succeed for all neurodiverse learners but goes against the principles of inclusion.

Ministry Learning Support Action Plan

The Ministry of Education 2019-2025 Learning Support Action Plan (Ministry of Education, 2019) outlines the priorities and plan for addressing the identification and support of children in Aotearoa with disabilities. The purpose of the action plan is to address current needs in supporting ākonga with dyslexia, dyspraxia, ASD, and other learning support needs not eligible for the Ongoing Resourcing Scheme (ORS).

ORS supports many ākonga in Aotearoa with high-very high learning, hearing, vision, physical, and language use/appropriate social communication needs. It supports the provision of specialist services such as therapists, teacher aide support, consumables and materials etc. Many neurodiverse ākonga do not meet the requirements for ORS as their conditions are not

considered severe enough. This document does not differentiate between ORS and non-ORS funded ākonga, as it can be expected that some neurodiverse learners, such as those with severe ASD, will be covered by ORS, but those with low to moderate needs will not be eligible for this scheme.

The Learning Support Action Plan includes six priorities to address recommendations received by the Ministry:

1	Implementation of a new Learning Support Coordinator role in schools and kura
2	Strengthening screening and the early identification of learning support needs
3	Strengthening early intervention
4	Flexible supports and services for neurodiverse children and young people
5	Meeting the learning needs of gifted children and young people
6	Improving education for children and young people at risk of disengaging

Priority four is of particular pertinence to this document. This priority focuses on "building the understanding and capability of early learning services, schools and kura to teach and respond to neurodiverse children and young people to progress their learning at an appropriate depth and pace" (Ministry of Education, 2019, p. 14).

The Learning Support Action Plan is intended to cover approximately one in five children and young people in Aotearoa who require additional support to reach their educational potential but who do not necessarily reach the threshold for ORS funding. This means that much of the support neurodiverse ākonga need will be provided by classroom teachers and the school alongside their other obligations to all ākonga.

The Notion of Inclusion

Inclusion in education can mean different things to different people and groups and has been debated in the literature. MacArthur (2009), a New Zealand researcher, conceptualised inclusion as being separate to 'special' education in that ākonga are entitled to a place in their local school, participate fully, and achieve alongside their peers. Inclusion in this sense is not a re-labelling of special education and does not simply place ākonga with additional needs in a regular school

setting expecting them to succeed, but puts in place policy, culture, and practices that lift ākonga to experience education and succeed *alongside* their peers.

Common school practices and entrenched hierarchies, however, continue to perpetuate exclusion within mainstream schooling (Slee, 2019). This includes practices such as banding, streaming, and separatist education practices that have persisted in education and that require dismantling for true inclusion to be realised. Inclusion of neurodiverse ākonga in mainstream education can, however, have a "person-fixing" ideology, whereby various conditions are perceived as threatening "disorders" that require training, masking, behavioural interventions etc. to fit within a group of "educable" individuals (Acevedo & Nusbaum, 2020).
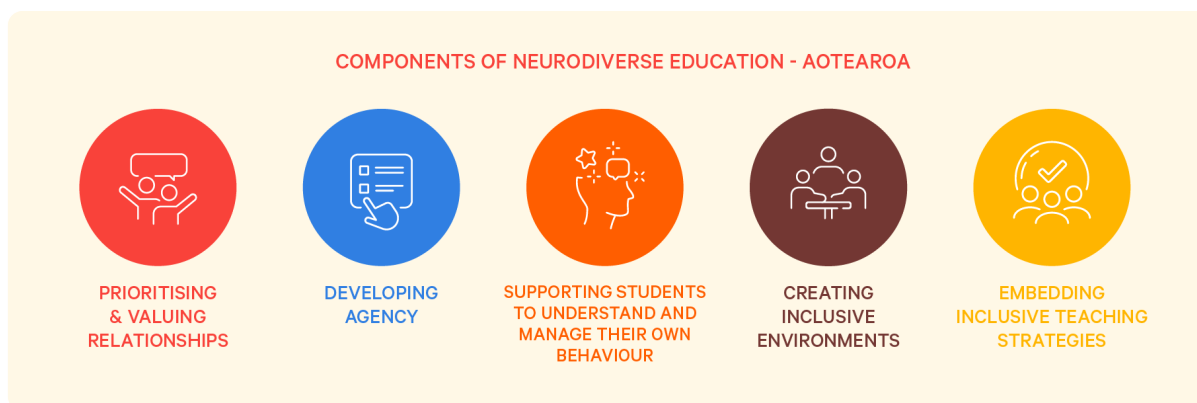
All ākonga have a right to education and those that are differently abled should have access to education alongside peers in mainstream classrooms for a majority of the school day rather than being separated or segregated (Schuelka, 2018). While being in the mainstream learning environment is important for the inclusion of neurodiverse ākonga, it needs to adequately address their needs as neurodiverse to experience social and educational success. In following the recommendations of the United Nations on providing inclusive education (UNESCO, 2017), Schuelka (2018) summarised five key components of successful inclusive education implementation:

COMPONENTS OF INCLUSIVE EDUCATION - UNESCO

1. Inclusive policies that promote high outcomes for all students
2. Flexible and accommodative curriculum
3. Strong and supportive school leadership
4. Equitable distribution of resources
5. Teachers who are trained in inclusive pedagogy and view it as their role to teach all learners in a diverse classroom
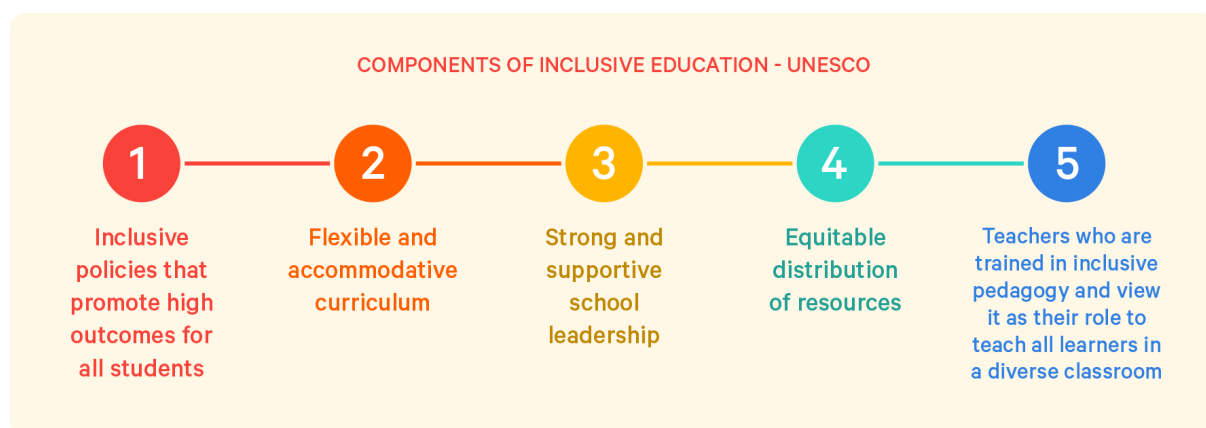
Going forward, this document views inclusive education for neurodiverse ākonga as including them (where appropriate) in mainstream classrooms while respecting their unique needs through addressing the school practices, policies, and pedagogies that enable neurodiverse learners to experience effective education and reach their true potential. It would not be considered inclusive to place neurodiverse learners in mainstream classes without providing the support they need to learn alongside their peers, as they would be included physically but not educationally. This requires schools to be proactive and flexible in assessing ongoing needs and providing necessary support congruent with those detected needs.

Responding to Neurodiversity Inclusion in Aotearoa Education

A systematic review by the Beasley Institute of New Zealand (Mirfin-Veitch et al., 2020) found five key themes for providing inclusive education for neurodiverse ākonga in Aotearoa. These were:

COMPONENTS OF NEURODIVERSE EDUCATION - AOTEAROA

PRIORITISING & VALUING RELATIONSHIPS

DEVELOPING AGENCY

SUPPORTING STUDENTS TO UNDERSTAND AND MANAGE THEIR OWN BEHAVIOUR

CREATING INCLUSIVE ENVIRONMENTS

EMBEDDING INCLUSIVE TEACHING STRATEGIES

These five areas will be briefly explored and used as a basis for the interviews presented in the storytelling section of this report. Many of the references in this literature review were included in the review of Mirfin-Veitch et al. (2020). The interviews later tautoko their findings.
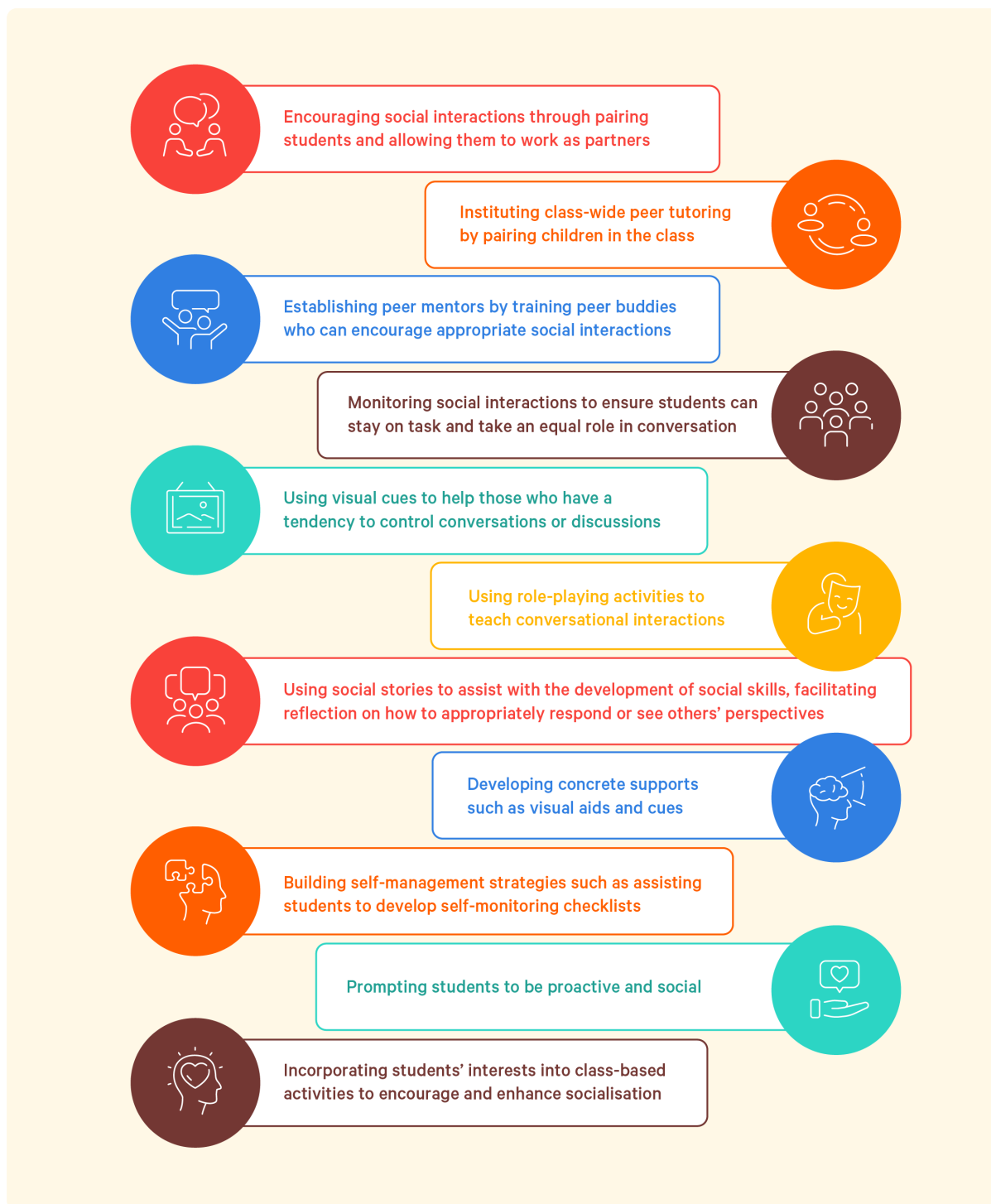
Prioritising and valuing relationships

According to Mirfin-Veitch et al. (2020), this goes beyond student–teacher relationships, but includes student–student, student–wider school community and teacher–teacher relationships within the wider school ecosystem. This stems from the need to be genuinely known and understood in order to be able to experience positive education.

Rentenbach et al. (2017), for example, advocate for teachers to foster meaningful relationships with neurodiverse ākonga both within the classroom and across the wider school context. This includes the positive ways in which they communicate (with kindness, confidence, and energy), active listening, and allowing nonverbal communication. They also recommend committing to talking to and observing students to identify their interests, likes, dislikes, and background. This allows staff to truly understand their students while fostering a social environment that makes them safe and comfortable. Further, teachers can learn about student interests as a tool to maximise their learning.

Student–student relationships are important to maximise social opportunities for neurodiverse ākonga. Autistic children can struggle to initiate play and social interactions with peers because of their difficulty in decoding social cues, maintaining eye contact, engaging in reciprocal conversation, and understanding the fundamental "rules" of friendship (Simpson et al., 2010). They can also experience difficulties interpreting verbal and nonverbal communication, assessing the emotional states of others and developing skills in play (Hart & Wilson, 2011). Autistic children do, however, tend to have a strong desire for friendships, and these relationships are associated with improved quality of life, mental health, and academic achievement (Rodda & Estes, 2018; Rotheram-Fuller et al., 2010).

Literature supports several interventions and supports for neurodiverse ākonga such as video modelling, visual/written scripts, priming, social stories, and self-management to support social skills and enrich social interactions (Mirfin-Veitch et al., 2020). Behaviour-focused interventions including peer modelling and prompting positive reinforcement have been associated with improvements in social interaction for neurodiverse youth (Camargo et al., 2014). Mirfin-Veitch et al. (2020, p. 12-13) summarised several strategies they found to be highlighted throughout the literature:

Encouraging social interactions through pairing students and allowing them to work as partners

Instituting class-wide peer tutoring by pairing children in the class

Establishing peer mentors by training peer buddies who can encourage appropriate social interactions

Monitoring social interactions to ensure students can stay on task and take an equal role in conversation

Using visual cues to help those who have a tendency to control conversations or discussions

Using role-playing activities to teach conversational interactions

Using social stories to assist with the development of social skills, facilitating reflection on how to appropriately respond or see others' perspectives

Developing concrete supports such as visual aids and cues

Building self-management strategies such as assisting students to develop self-monitoring checklists

Prompting students to be proactive and social

Incorporating students' interests into class-based activities to encourage and enhance socialisation

For those with intellectual disabilities, enabling peer relationships and supports appears to be beneficial. Pairing or grouping ākonga with a mixed range of academic abilities can facilitate learning for those with intellectual disabilities as well as non-disabled peers who reinforce their learning (Ncube, 2011).

Peer support may be facilitated by the teacher aide role as they facilitate friendships and social interactions, and spend time with ākonga learning about their identities and needs (Mirfin-Veitch et al., 2020). However, neurodiverse ākonga who do not qualify for ORS funding are unlikely to have their own dedicated teacher aide. In many cases, schools and teachers will play important roles in facilitating relationships and social interactions that are beneficial to neurodiverse ākonga.
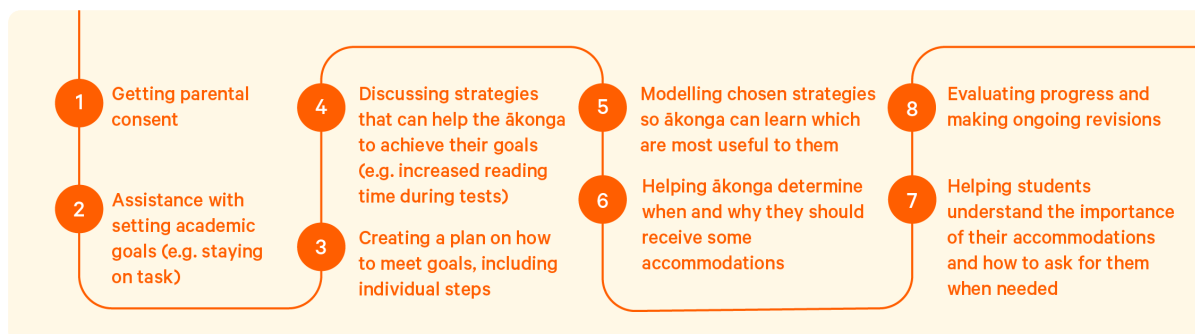
Finally, it is important that relationships are also formed with professionals (where appropriate) and whānau to diffuse good practice throughout the social ecosystem of neurodiverse ākonga. This can help increase the success of inclusion and access as professionals and schools can discuss ways to work together to meet unique needs (Alquraini & Gut, 2012). All persons involved may work on co-creating individualised education plans (Millar et al., 2017) thus it is important to facilitate these relationships.

Developing agency

Across the literature, researchers recommend supporting neurodiverse ākonga to have agency over their learning (Mirfin-Veitch et al., 2020). Not only is learner agency embedded in *The New Zealand Curriculum* key competencies,[1] but it is effective in fostering inclusive education for neurodiverse ākonga.

For example, ākonga with ADHD may develop greater agency through developing a self-monitoring checklist of tasks to be completed and having self-chosen alternative activities that can help them calm themselves and refocus (Majeika et al., 2011). Ākonga with Specific Learning Disabilities (SLDs) may increase agency over their learning by monitoring their academic progress (Cook & Rao, 2018). In general, ākonga agency can be supported by encouraging ākonga to understand their strengths, weaknesses, and interests, and providing them with the skills they need to communicate their choices and needs (Hart & Brehm, 2013).

Hart & Brehm (2013) recommend the following for developing a plan to practice self-determination:

1. Getting parental consent
2. Assistance with setting academic goals (e.g. staying on task)
3. Creating a plan on how to meet goals, including individual steps
4. Discussing strategies that can help the ākonga to achieve their goals (e.g. increased reading time during tests)
5. Modelling chosen strategies so ākonga can learn which are most useful to them
6. Helping ākonga determine when and why they should receive some accommodations
7. Helping students understand the importance of their accommodations and how to ask for them when needed
8. Evaluating progress and making ongoing revisions

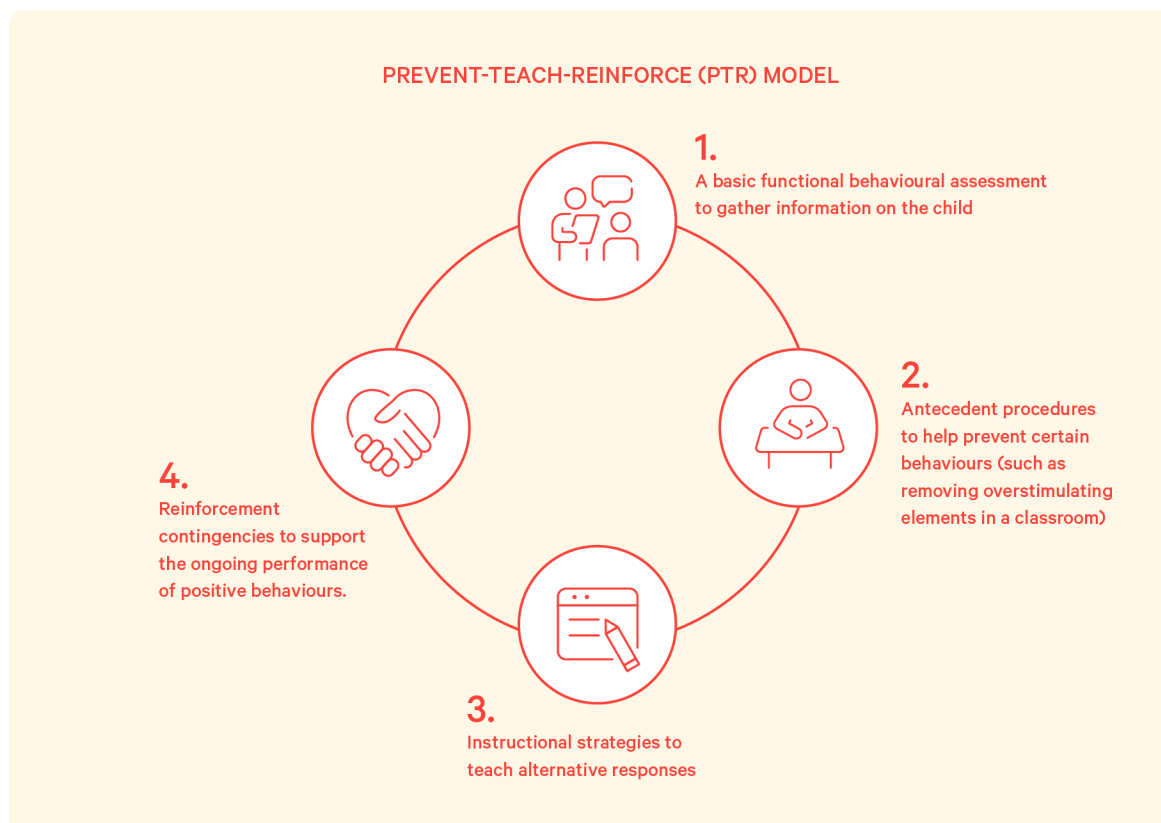[1] See https://nzcurriculum.tki.org.nz/Curriculum-resources/NZC-Online-blog/Learner-agency

This helps neurodiverse ākonga become advocates of their own learning, know what they need to learn effectively and know how and when to ask for what they need.

Supporting students to understand and manage their own behaviour

Similar to the previous theme of supporting student agency, this theme outlines the importance of supporting ākonga to understand themselves and their needs. This is particularly true as neurodiverse ākonga are placed in mainstream learning environments where they are commonly perceived to be challenging.

One sub-group of neurodiversity particularly perceived to experience anxiety, stress, depression, and hyperactivity in education settings is those with ASD (Mirfin-Veitch et al., 2020). Routines can also be highly important to them, and difficult transitions can result in emotional meltdowns and noncompliance that is often perceived as unacceptable or inappropriate at school (Strain et al., 2011).

Strain et al. (2011) recommend a Prevent-Teach-Reinforce (PTR) model of managing such behaviours. This involves 4 basic elements: 1) A basic functional behavioural assessment to gather information on the child, 2) antecedent procedures to help prevent certain behaviours (such as removing overstimulating elements in a classroom), 3) instructional strategies to teach alternative responses, and 4) reinforcement contingencies to support the ongoing performance of positive behaviours. Having multiple strategies in place is more likely to result in favourable outcomes for the emotional state and learning of the neurodiverse ākonga, as well as that of their classmates and teaching staff.

PREVENT-TEACH-REINFORCE (PTR) MODEL

1.
A basic functional behavioural assessment to gather information on the child

2.
Antecedent procedures to help prevent certain behaviours (such as removing overstimulating elements in a classroom)

3.
Instructional strategies to teach alternative responses

4.
Reinforcement contingencies to support the ongoing performance of positive behaviours.

Often, ākonga engage in off-task behaviours because they have difficulty paying attention, keeping up with the pace of learning, or want individual attention from the teaching staff (Majeika et al., 2011). The research supports engaging in practices that support ākonga to monitor and self-manage their behaviour, including positive reinforcement of on-task and appropriate behaviour and ignoring off-task behaviour, establishing behaviour contracts (social contracts that outline appropriate and inappropriate behaviour), creating behaviour plans and establishing systems of peer support and mentoring to manage behaviour (Mirfin-Veitch et al., 2020).

Creating inclusive environments

A central theme across the literature is the need for schools to foster learning environments that foster inclusivity (Mirfin-Veitch et al., 2020). Lucas (2011) recommends structured learning environments with consistent routines and rules that help ease the transitions between different activities. This brings into question the difficulty associated with innovative learning environments (ILEs) that often have large numbers of ākonga, multiple teaching staff, and flexibility in spaces that enable a range of activities but can result in ongoing disruption to some neurodiverse ākonga.

Alquraini & Gut (2012) recommend locating neurodiverse ākonga close to the source of instruction and away from known distractions, clutter and various sources of overstimulation (visual, verbal, and auditory stimulation) (Millar et al., 2017). This includes muted colours, removing posters and curtains, using headphones, keeping doors closed, and seating the neurodiverse ākonga away from windows and near the teacher. Having a dedicated space to go when overwhelmed is also recommended (Millar et al., 2017), and this has been facilitated in recent school builds with breakout spaces attached to classrooms.

Schools may consider master planning cycles as an ideal time to plan for the inclusion of neurodiverse ākonga. When writing an Education Brief, schools consider their physical design, including things like the design of learning spaces, colours, displays, climate controls etc., all of which may affect the sensory experience of neurodiverse ākonga.

Embedding inclusive teaching strategies

Schools should ensure that they meet the pedagogical needs of neurodiverse learners, employing teaching and learning techniques suited to the unique needs presented. That being said, neurodiversity encompasses a wide array of conditions that affect the learning and behaviour of ākonga. Mirfin-Veitch et al. (2020) assert that the teaching strategy should be matched to the individual and their presenting conditions. Across the broad spectrum of neurodiversity and learning disorders, commonalities exist that are not specific and reflect inclusive teaching, shown in *Table 1: Commonalities in inclusive practice across the neurodiversity spectrum*.

Specific learning disorders are neurodevelopmental disorders that impede the ability to learn or use academic skills including reading, writing, or arithmetic. This includes dyslexia, dyspraxia, dysgraphia, and dyscalculia. Specific teaching strategies may help ākonga with these learning disorders to allow them to process information and express themselves with some allowances in teaching style. For example, reading can be assisted with organisers that assist with reading comprehension (Awada & Plana, 2018), repeating reading to improve fluency (Cook & Rao,

2018), asking questions about comprehension after reading exercises (Awada & Plana, 2018), making ākonga aware of important learning areas prior to reading (McFall & Fitzpatrick, 2010), having creative and fun ways to discuss the text (McFall & Fitzpatrick, 2010), and story mapping to help ākonga identify, organise and analyse story elements (Boon et al., 2015).

Traumatic brain injuries (TBI) can affect cognitive and academic functioning. Teaching strategies thus need to match the needs present, such as breaking lessons into components or steps, providing previews of important ideas prior to lessons, providing immediate feedback, clearly stating expectations, and small group instruction (Savage et al., 2005). Teachers should work closely with ākonga with TBIs to understand their needs and then match their teaching strategies to these needs.

TABLE 1: COMMONALITIES IN INCLUSIVE PRACTICE ACROSS THE NEURODIVERSITY SPECTRUM

Breaking tasks into smaller components (short chunks and sequences) and reducing complex steps

Keeping instruction short and concise

Repeated instructions and checking with ākonga that they understand

Conveying the curriculum through a variety of ways, including visual, role play, rehearsal, tactile objects etc.

Using a range of ways to communicate and be present in the class

Providing frequent breaks for ākonga and slowing the pace

Praising and reinforcing positive behaviour

Identifying and utilising ākonga strengths and interests to increase their engagement

Using technology to support learning (tablets, smart boards, laptops, headphones etc.)

Teaching hand gestures to communicate understanding

Providing guided notes

Designing games and activities for break times that encourage social interaction

Orienting ākonga to new learning environments before they arrive, providing schedules, and assisting in the transitions between activities

Creating organised environments where there are minimal changes

Performing rituals that can change the pace from one activity to another

Teaching relaxation methods to manage distress

Helping students retain information through transcription, recording lessons, highlighting important learning aspects, having ākonga self-test etc.

Using a loud, clear voice, repeating where necessary, making eye contact when speaking directly to neurodiverse ākonga

Implications for Aotearoa Schools and Kura

Across the literature, there is a clear need for learning environments to cater to a variety of needs, both in their physical design as well as in teaching and learning and behavioural management techniques employed. With how New Zealand schools are typically zoned, parents of neurodiverse ākonga may not necessarily be able to choose schools with traditional single-cell environments that may offer more structure to neurodiverse learners. In many cases, inclusion for neurodiverse ākonga will result in them being included in large innovative learning environments. While these provide opportunities for advanced and innovative learning, they may also come with additional challenges for engaging neurodiverse ākonga. Physical learning spaces should consider how spaces can remain structured with planned flexibility and include necessary spaces to de-escalate, such as small breakout rooms than can be visually and audibly separated.

Teaching and learning structures are somewhat consistent across neurodiverse conditions but require teaching staff to take a nuanced approach, matching their teaching styles to the presenting needs of ākonga. This can be challenging in cases where there are many ākonga in one environment (e.g. 60+ ākonga in one ILE) or when ākonga move between teachers frequently, as is the case in secondary education. It can also be difficult for teachers who have classes of ākonga with multiple presenting needs and have timing constraints regarding curriculum delivery. With much of the responsibility of teaching and learning on the shoulders of teachers, additional support for them will be necessary in many cases so that they may continue to create inclusive learning environments that favour the education of all ākonga.

PART TWO:
Interview Findings

Background

A good range of neurodiverse conditions was captured in the sample. This was important to ensure that interview participants were not all referring to salient examples of severe Autism Spectrum Disorder and Attention Deficit Hyperactivity Disorder, but instead included these conditions on both sides of the spectrum (mild to severe), traumatic brain injuries, dyslexia/dysgraphia/dyscalculia, Foetal Alcohol Syndrome Disorder, drug use during pregnancy, and other general conditions and comorbidities. These are discussed in the following subsection, 3.2. A range of age groups was also included, but largely the students discussed tended to be of primary age.

As participants were largely SENCOs, LSCs and teachers they did not limit their answers to one learner, but discussed their neurodiverse learners as a whole and used specific examples of various learners they have or have had in the past to illustrate points they were making. The guardian spoke specifically about the child under their care exclusively.

Diagnoses

Neurodiverse conditions are often comorbid with other conditions; for example, Global Developmental Delay and Specific Learning Disorders. Traumatic Brain Injuries were listed by someone as being particularly complex to work with, but also having additional support offered through ACC (Accident Compensation Corporation) which enables schools to utilise more resources available to support the learner's rehabilitation.

It was also commonly reported that neurodiverse conditions often go undiagnosed, thus families do not go through official channels to receive a diagnosis from a qualified health practitioner, such as a clinical psychologist. This can be due to the associated cost of doing so (particularly with the public system sometimes taking a long time to diagnose), a lack of understanding of neurodivergence, and other cultural reasons. For example, one participant discussed that a family forwent getting a diagnosis and did not accept additional support because they believe that this could result in them being viewed differently or being seen as 'needy' or receiving special treatment from other families.

> *"We had a little boy last year, he was identified by the Ministry… he was given support on starting school. He was highly autistic, and the family actually turned that support down because they thought that other parents would be looking at their family thinking 'oh that family isn't coping'. There's a side of embarrassment, even denial."*

Another common reason for not receiving a formal diagnosis is that a neurodiverse condition would then be attributed to something during pregnancy, such as alcohol and drug use. For example, Foetal Alcohol Spectrum Disorders are often stigmatised as people assign personal responsibility

and blame toward biological mothers for not adhering to a cultural norm of *good* mothering and remaining completely sober throughout a pregnancy (Bell et a., 2016). The associated stigma and shame may lead those with children affected by drugs and alcohol to go undiagnosed. This means that schools and other agencies identify the learner as having special learning needs without intervention from a psychologist or similar.

> *We also have another six that are undiagnosed. Some of them more severe on that spectrum. Parents where it's a 'shame' factor and don't want to go down the route of getting their child diagnosed.*
>
> *A cultural difference as well. We adapt the programme and change things for those students but without an actual diagnosis."*

> *"One of the big factors in our school is we don't have a lot of identification of neurodiversity through diagnosis… there just isn't the funding for some of our families to access diagnosis, and diagnosis typically is something in Christchurch that you have to access privately. We do have typically students identified as ADHD, with Autism, we have a lot of students who are dyslexic, but not many that have diagnoses of that.*
>
> *We know that we have students on the Foetal Alcohol Spectrum, that is something that I have a lot of information on personally and I can recognise students who are probably sitting within that space, but no one in the school is diagnosed with that."*

The more information the school is provided with the better, whether it is through formal diagnosis or otherwise. This allows schools to plan accordingly and organise networks of support where they might be needed.

Funding and Support

This work does not seek to review the supports available to neurodiverse learners, such as the ORS system (briefly discussed in section 2.1), but provides commentary around how the support affects schools and learners provides important context for the cases, particularly those that have had issues accessing additional (external) support. There was a sense across the case studies that schools have good intentions to provide inclusive education in all facets of education, however, good intentions only go so far without the necessary support and resources.

In particular, the ORS criteria can draw a very definitive line where support is offered. This makes it difficult for schools and families needing support for varying learning needs but not meeting all the criteria. This then makes schools rely on other funding and support streams to allocate resources where they are needed most. For example, one teacher said that a sad moment was realising that a student who was not toilet trained could have an additional 'box ticked' in their applications for support, allowing them access to funding to make up for a lack of ORS funding. It was a reflection on the box-ticking nature of support applications.

> *That's what's heartbreaking. The severe ASD children, they might get a communicative device and bits and pieces but to actually access clear funding… we're probably lucky, and it's awful to say lucky, but [our ASD child] is not toilet trained so we get high health funding… it does top the hours up to almost what ORS is, but we're lucky as a high decile school with support and access to a budget to put it where it's needed."*

In general, the view of the educators interviewed was that providing support to neurodiverse diverse is challenging, with imperfect and inequitable systems of support. This can come at the expense of other learners and can mean that different conditions are treated differently, receiving different support. One participant discussed the system becoming more difficult to navigate as there are increased applications and less support to go around. The criteria make applications fair, but not equitable. For example, when applying for in-class support, learners need to have 85% attendance rates, but this does not acknowledge the many reasons that neurodiverse learners may not be able to attend school, and how additional support may actually help to reduce absence. Educators would like to see a rehaul of the system.

> *"ORS funding is impossible to get these days… the number of children being applied for keeps getting bigger and the pool of money keeps getting smaller, the criteria keeps getting harder to meet. Technically anyone with a neurodiverse label should get funding because they need additional support. But that's not the case."*

> *Fortunately I was on one of the panels one year to allocate the funding so I could see how it was all done. You go through a process of: Is your attendance over 85%? No? You're cut. That's the first thing we look at. People with neurodiverse differences, they can't access school all the time. It could be anxiety, meltdowns at home, again it's something that totally <u>discriminates</u> them at the first point of funding."*

> *"The most frustrating thing with ASD is it's really difficult to get them funding in the education sector. Within that cohort we have a Deaf student who is fully ORS funded, they are more capable and able to access the curriculum in comparison to the severely ASD children. We also have a blind student who has ORS funding as well, and he is a lot more capable than the ASD child to access the curriculum, but for the ASD girl we can't get ORS funding…"*

The guardian interviewed said that funding for their child had changed during the year, and the less funding available created additional problems at the school as they felt the level of support from the school does not make up for losses in external support, resulting in their child not being able to attend school at the same hours as their peers.

> *"It feels like he's being set up to fail."*

Inclusive Education

Before participants discussed the aspects of education that support neurodiverse learners (as outlined in the literature review), participants were asked what inclusive education means to them personally with regards to neurodiverse learners. In general, the question was difficult to answer because of the potential scope of what it means to be inclusive and the different forms it may take. Across the responses though, there are similarities, and the following themes summarise some of the commonalities in participants' definitions with quotes as examples:

What we need to be doing is thinking about the individual and what is important for what they need rather than what I want to happen."

"To me, it doesn't mean putting a child in a classroom with [neurotypical] children and expecting them to fit. It means adapting the programme so they are included in their groups, and the work is done in a way so that they have a meaningful part in it."

When I was a beginner teacher, inclusive education meant everybody with special needs are in the classroom together, nobody gets sent out and we are all one big happy family. Realistically, after thirteen years doing it like that, it doesn't work. Those children are always left behind, excluded, that is frustrating for families and for children."

"Inclusive education means equal opportunities for all children. Instead of making a programme fit a child, you're using the child to plan the resources and support they need. It's individual to them."

BEING SAFE AND ACCEPTED IN LEARNING ENVIRONMENTS

" *That our neurodiverse students feel safe within our environment. They feel accepted, there's an effort to make positive relationships with them so that they then feel safe and comfortable."*

"Everybody has a right to learn in the way they learn in a mainstream classroom."

BUILDING PARTNERSHIPS AROUND THE NEURODIVERSE LEARNER

"Everybody is in it together."

" *About partnership between parents, caregivers, teachers, student, class (building a class culture)."*

"It involves the whole whānau, the agencies, it's a team approach."

Grow Waitaha

"Removing barriers, that can mean a variety of different things. Removing barriers so they can access [education], whether it's altering programmes or environments or peer groups around them. Then they can access the curriculum and thrive at school."

" *Setting them up for success."*

"Tools they need to be successful when they need them."

" *It means keeping everyone in the classroom as long as we can."*

"For me personally, it's allowing kids to reach their potential. Whatever that may be... Recognising strengths and operating in that space. Not being closed into something because someone thinks that's good for them."

With regards to removing barriers, the guardian interviewed discussed that the educators and adults in the child's life need to change and adjust because they (the child) are not going to change. In this case, the school and staff are barriers to the learner being enabled to be an independent learner.

> ❝ *[They are] not going to change, the adults around him need to change."*

Across the themes, there is an important distinction made between inclusion in every day (neurotypical) classrooms, and carefully planning and tailor-making inclusive education. It means that neurodiverse learners are not just put in a learning environment with neurotypical peers and given special resources and supports, but that the supports and systems are carefully planned to ensure that the learner is supported to stay in the classroom as an engaged learner.

However, good intentions to be inclusive can be thwarted by a lack of staffing, resources, external support etc. As discussed earlier, accessing support through ORS and making lengthy applications can be particularly difficult and time-intensive for schools, and outcomes can often be disappointing.

> *"There are systems that come into play that limit what you can do and what is available."*

> *"A big issue is having the resources available."*

The following five subsections discuss how the interview participants viewed inclusive education within the five key areas discussed by Mirfin-Veitch et al. (2020).

Relationships

Relationships include the educational ecosystems within which learners are supported to learn and be social, accounting for relationships among students, teachers, peers, families, school communities and the wider school system. A key component of prioritising and valuing relationships is the proactive work that teachers and educators do to foster relationships that are meaningful (Rentenbach et al. (2017).

The importance of relationships

Across the interviews, there was a strong sense that building relationships (with the learners) is the most important component of delivering inclusive education to neurodiverse learners. In this way, establishing an authentic relationship sets an important foundation upon which other aspects of teaching and learning can be built.

"Relationships is the most important thing. It comes secondary to nothing."

"Relationship is key. If you don't have their hearts, in any class, you will lose the child."

This largely comes down to the teacher *knowing* their learners, understanding their backgrounds, their needs, their strengths and weaknesses, and then using this to shape teaching and learning, mobilise support and resources, and help learners to learn to their strengths. One participant repeated the importance of "know your learner" throughout the interview, stressing the importance of this as a preliminary step to tailoring education to the learner. Through knowing the learner, a teacher or other staff member will know what they need for teaching and learning and how to handle difficult behavioural situations that may arise.

"It's relationships. Know your learner!"

> *"Relationships are key in all classrooms... making sure you know the children and know what their issues are. Talking to them. Staying calm."*

Prioritising the Teacher-Learner Relationship

Teachers also adjust their behaviour to foster positive relationships and develop trust with their learners. This means being patient, flexible, consistent, fair and firm, adaptive etc. Teachers in some cases will code switch to adjust their behaviour to the people they know will be in their classroom. They also ensure that they play to the strengths and preferences of their learners, ensuring that they are empowered to learn and be comfortable.

> *"Depending on what that child needs and how they interact, if they need someone more consistent and firm, or need someone more motherly and softer. Finding that niche of what fits that child."*

> *"Find out what they like and what works best for them, you have to work with them. It is a partnership with the student."*

Teachers use different methods to build meaningful connections, such as greeting every student by name, incorporating their culture into activities and social interactions, using social activities and games, play-based and creative learning, regularly checking in etc. These activities are important to educators looking to build connections early, develop trust and ensure that relationships are established to guide teaching and learning activities.

> *"Patience and time. Sitting cross-legged, we bring in the Māori culture... we sit cross-legged in a circle, we might share food, games, sensory breaks, and it has to be their home away from home. They will only learn if they know this is a safe space."*

Fostering Peer-Peer Relationships

In terms of peer-to-peer relationships, educators also play an important role in connecting learners with one another, helping them to make friends not only with other neurodiverse learners but with neurotypical ones as well. This can be difficult in some cases, for example, with those dealing with selective mutism, those with limited speech and expression, those with defiance or angry behaviours etc. Sometimes this can mean teachers need to carefully pair students together and work gradually and restoratively on antisocial behaviours etc. Often with neurodiverse learners, educators need to incorporate this into the curriculum so learners learn to be prosocial.

"Explicitly teaching those prosocial behaviours at the start of the day. Making it part of who we are and how we do things."

"Connect them with their peers. Some students work better with other students."

"One of our young people can't communicate very well... it's hard to build a connection with other people."

Buddies (typically neurotypical from the interviews) can also be important models of prosocial behaviour and play important roles in monitoring their neurodiverse peers. Some participants discussed the empathy shown by learners who include neurodiverse in games and activities, who make allowances in behaviour and try to accommodate different behaviours based on what they understand. One interview participant gave a success story of one of their learners being supported by their peers to participate in sports, overcoming their challenges with angry behaviour.

"I might not notice they're struggling, and their buddy might say, 'I notice they're struggling can I go work with them for a bit?' When I go see what is going on they've usually got them on track by then."

"One of my boys is quite sporty but has never been involved in a team or anything because of the anger he expresses when things go wrong. We had a goal that by term 3 he would be able to go to sport, to catch a bus to go to sport with a team and so he had peers that worked with him on the skills he would need. Walked away with him when he got angry and talked it through with him. He started coming back and joining in again. We talked with the parents, and they could watch and see what they think. It's been six weeks now of going on the bus and being involved with sport."

"We've appointed our biggest ever prefect team... really want the prefects to be involved with our ORS department. I really want these kids to be brought out. At break times they hang out together because it's safe, but it would be great to see seniors coming in and connecting and opening some other avenues for them."

Including Whānau

Relationships are also important with whānau and caregivers, utilising them as part of the learner's educational ecosystem. Involving whānau keeps them in the loop regarding their child's education but also allows the school to leverage their experiences for what works well with their child/ren. Often, they are involved in IEPs or come to the physical classroom to observe and assist with behaviour. Some participants discussed that high involvement from the whānau helps the school and vice versa, creating more wraparound support.

"It's almost a learning journey with the entire family, because I know the ins and outs of everything that goes on."

> *"Going into next year, a big piece of work is having families involved more. Them coming in and being part of the decision-making in a real sense… whānau often don't engage, or don't want to, particularly at secondary level."*

> *"There's definitely a willingness in our teaching team to want to see kids being part of the whole."*

A relationship-based tool, "PATH" (Planning Alternative Tomorrows with Hope) has been used by educators to help establish relationships and use them as a tool for positive results. It is a creative planning tool that starts in the future and works backwards to an outcome of steps that are possible and positive. It is individual and unique and can be used in a variety of settings where a plan is required. For one, participant, it was used as a tool starting with a whānau hui and outlining the plan they have for their child. The tool is particularly useful for engaging with whānau when facilitated correctly, and it allows for individuals and whānau to map what success looks like to *them*, rather than following prescribed measures (Pipi, 2010).

Breakdowns in Relationships

However, the story of relationships is not always necessarily a positive one. The guardian interviewed felt a strong disconnect with the school, feeling that she and her child are not supported in the way they should be, particularly when external agencies are rallying to provide support.

> *"This is what really mind-boggles me is that he has such a support network system around him, why does home work, out in the community work but why does school not work?"*

In particular, one breakdown in communication was in the diagnosis being part of their child's records at the school. Despite a meeting being held with the SENCO and Principal explaining the FASD diagnosis and underlying trauma and life experiences, they did not then put this on record and thus support was not adequately mobilised for reasons outside of the guardian's control. Further, despite staff being trained in FASD, the guardian did not see the training to be effectively working.

"If they have, then why is this not working as these issues are not present at home?"

The current communication with the school does not restoratively address issues and does not allow for relationships to be built. The guardian has been told the SENCO and the child do not get along and there have not been opportunities to meet with teachers to try to address problems with the relationships. This has had an ongoing debilitating effect on this child and their guardian.

"If you have nothing good to say about a student, they are going to feel it. And in this case, because there is also a trauma background of neglect and not feeling wanted, the lack of positives (even small things) from his teachers has made him feel not wanted at school."

Recommendations

Based on the literature review and recommendations from Mirfin-Veitch et al. (2020) and the findings from the interviews, the following tips might be of assistance to schools in building and fostering meaningful relationships that build a strong foundation upon which teaching and learning can be built.

- Use social activities, games, and play to get to know each learner as an individual and encourage peer-to-peer social interactions
- Establish buddies (with other neurodiverse and neurotypical students) to help teach and encourage prosocial behaviours
- Play to the strengths of learners, using different tools to assist them in social situations
- Monitor social interactions and play a mediating role in keeping social activities and conversations civil and on-task
- Include whānau from the beginning in planning and goal-setting
- Maintain relationships with whānau and guardians, including them in the day-to-day management of behaviours and keeping them well-informed
- Establish systems of maintaining accurate records of learner diagnoses and backgrounds
- Utilise student leaders (e.g. prefects) to help facilitate social interactions and games with neurodiverse learners
- Utilise individual and whānau planning tools to map paths to individual success with learners and their whānau involved in this process.

Agency

Developing agency is identified as an important process to assist neurodiverse learners to self-monitor and engage in their own learning. This includes using checklists for learning (e.g. Majeika et al., 2011), monitoring academic progress (e.g. Cook & Rao, 2018), and learning to communicate their choices and needs (e.g. Hart & Brehm, 2013). Interview participants discussed the roles of agency in learning and how it can be fostered in the learning environment.

Understanding the Learning

One of the roles for staff to support learners to develop is to help learners understand the learning, the purpose of school and education so that they can understand why they are at school and why they are learning.

> *"How is it meaningful for me now? Because they don't have that long-term perspective."*

Developing agency has been compared to building a foundation for learning by building up the learner with lots of support, then gradually taking the support away so that they can do tasks independently.

> *"I tell parents when we have ILP meetings, 'your child is like a building and we're building them'. We put up scaffolding, and with time we need to take that scaffolding away so they can stand on their own."*

> *"By providing that structure and that framework for a lot of our children, once we've taken that structure and framework away at the beginning and empowered them to take on their learning and responsibility themselves, that's a brilliant way of providing that support but taking that support away when we know they're ready to fly and be more independent."*

Segmenting Learning

Tasks often need to be broken down into smaller components to assist neurodiverse learners to engage in learning at their pace and move slowly toward independence. For example, rather than telling neurodiverse learners to do a learning task, it might be broken into steps of sitting down, getting out a book and pen, turning to a new page, writing their name etc.

"It's clear and explicit to them, you do this, then this, then this. For some, it's a visual aid, or for others, it's on the board."

"It's not that suddenly you become independent, it's a step process. Maybe at first it's 5 minutes, then you're slowly building that up."

"Something that takes twenty times to learn might take a neurodiverse student fifty times or even a thousand."

"Using a ladder diagram with little goals. Look at the first goal, then do the next piece. Then they see the steps, it makes their learning visible."

Segmenting learning also includes taking breaks and having manageable amounts of learning to keep the tasks engaging.

"Not learning too much at a time. Multiple exposure often."

Explicit Teaching

Explicitly teaching skills helps a lot of learners develop agency, regardless of whether they are neurodivergent or neurotypical. Teachers value teaching academic skills as well as independence skills to help ākonga develop a sense of agency over their learning and, at a certain point, over their life.

> *"We provide a lot of explicit teaching with all classes. The mastery of academic skills, independence skills. Visuals such as packing their bags, things like that."*

Building Self-Esteem

Developing a sense of worth and efficacy helps learners feel that they *can* do a learning task, even if they previously thought they could not. Teachers in the interviews often discussed helping learners.

> *"Breaking through 'I can't do it'. It's a fine line between losing them and getting them to believe they can do it... If you can't write a story, write one word. Then again tomorrow, write one word. Then eventually it's 'oh you've written one word', walk away, then later 'oh you've written three words! Bet tomorrow you can't write three words."*

Choice and Strengths

Teachers discussed that having agency over learning often means that learners have choices available. If one task is not working or is not going to work for them, there is something else they can do so that they are still engaging in learning. While it might not be what others are doing, they are still learning under their own conditions and developing agency over their learning.

> *"We offer a lot of choice and options at different levels so we can offer choice to all our children."*

> *"It didn't necessarily look like the learning the other year 9's were doing, but it was their learning."*

Recommendations

Based on the interview feedback and some of the recommendations from Hart & Brehm (2013), the following might be helpful to develop agency in learners:

- Set and monitor academic goals (with the learner and their whānau/guardians)
- Put plans in place that can be revised when needed and give learners oversight over their progress
- Teach learners why their learning is important so they understand the purpose in ways that are meaningful to them
- Segment learning tasks into smaller, explicit and doable tasks and have learners repeat steps often
- Teach learning/academic skills and independent skills as part of their regular teaching and learning
- Offer learners alternative options to tasks and ensure they always have something they can do to learn, even if it is not what others are doing
- Ensure that learners know how what support is available and how to ask for what they need

Behaviour

Managing behaviour can be a difficult component of having neurodiverse learners in the classroom for many teachers. This is because staff may deal with difficult behavioural situations on top of the other demands of their classroom, and where there is a lack of support, staff may feel disempowered to handle behavioural situations restoratively. Strain et al. (2011) discuss that neurodivergent learners often perceive changes in routines quite negatively and can lash out in typically unacceptable behaviours.
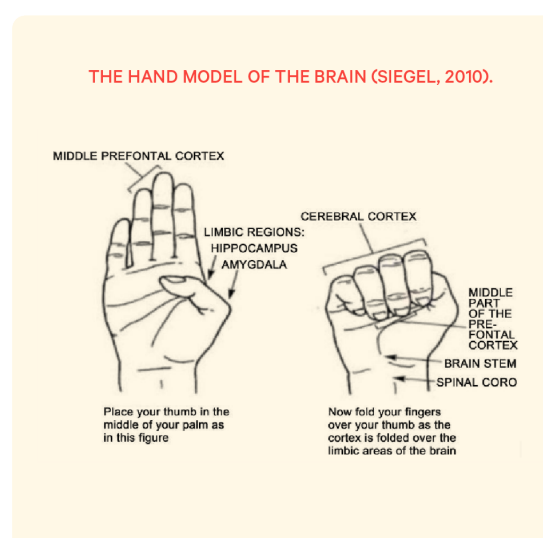
Throughout the responses from interview participants, the importance of restorative practices in response to antisocial behaviours was highlighted. Schools tend to prioritise restorative practices by understanding the behaviour, the cause, and everyone's perspectives, then working with the involved children to help them understand the effect of the behaviour and work toward a resolution. This can take longer for neurodiverse due to some difficulties in understanding social situations, reading others' expressions and body language, showing empathy etc.

Understanding and Rationalising Behaviours

Teachers discussed the importance of understanding and rationalising behaviours at their most basic form, making them explicit to neurodiverse learners as well as neurotypical peers. This involves helping them to understand the antecedents, the behaviours, and the consequences to then try to understand how someone else was affected and work through a resolution.

> *"We do our ABCs: What happened prior to the behaviour, the antecedent? What was the behaviour? And what was the consequence?"*

Understanding the behaviour can sometimes be difficult. Dan Siegel has a hand-model tool to help children understand the brain. This model involves holding your thumb on the middle of your palm, then wrapping the fingers around the thumb (resembling a fist). The brain stem is then the wrist, and the limbic area and brainstem work together to regulate arousal and emotions, then the cortex wraps around, and is the higher part of the brain that allows us to reason. The regulation is important because if something happens in our lives, we lose the flexibility granted by the cortex and react emotionally.

THE HAND MODEL OF THE BRAIN (SIEGEL, 2010).

MIDDLE PREFONTAL CORTEX

LIMBIC REGIONS:
HIPPOCAMPUS
AMYGDALA

CEREBRAL CORTEX

MIDDLE PART OF THE PREFONTAL CORTEX

BRAIN STEM
SPINAL CORO

Place your thumb in the middle of your palm as in this figure

Now fold your fingers over your thumb as the cortex is folded over the limbic areas of the brain

Having young people understand this model helps to rationalise why some behaviours occur, as a behaviour perceived to be a meltdown by others is actually the child losing regulatory control and reacting at a very basic emotional level.[2]

> *"The hand model of the brain is fantastic. Dan Siegel… When your cortex is offline, you can't think, you're in your emotional brain. We teach that to the children and say 'when you're angry your brain is offline, no one can really reason with you at that point, then we can fix things when your cortex comes back on. It's just really cool, the more you teach them about how things work, and you give them the tools to understand what they're seeing, the more receptive and calm they are to help their peers."*

It is important for maintaining the safety of the classroom to understand where behaviours come from and allow a child to work through them. This is particularly important when helping neurotypical peers to understand.

> *"Preparing them for safety is really important. We do have children who trash classrooms and toss chairs you know. Preparing the class that when they get angry, they can't think at that moment. It's just making it really normal and natural for them."*

By treating behaviour this way, the behaviour is then validated and it does not frame the learner as "naughty" when they are reacting to something. Teachers recommend trying to understand the behaviour and validate it so the learner feels understood and supported.

> *"Think about the behaviour… what is it trying to tell me?"*

> *"Validate the feeling, 'I can see you're frustrated. I'll come back in a few minutes and check in.' That validation is really important. If they don't feel heard it just escalates that behaviour."*

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[2] See https://www.youtube.com/watch?v=gm9CIJ74Oxw for an explanation from Dan Siegel.

Staff also often play important advocacy roles for neurodiverse learners, which can mean helping other staff and learners to understand the behaviour and the neurodiverse learner so they know how to communicate and interact with them without vilifying them for the behaviour.

"I'm often doing that with staff members and they might realise that they are the ones who caused a behaviour... that realisation that, yes, the child is reacting in a certain way, but it's in relation to something in the environment."

Teaching and Reinforce Good Behaviour

Like relationships, explicitly teaching prosocial behaviour is important for neurodiverse learners to understand, particularly when some of those behaviours have not come naturally or they have not learned them socially.

"Have lessons and teach about inclusivity ... has helped to manage behaviours that come with some students. It is the same for you as everybody else."

"Don't wait for a problem, teach those skills from the get-go. If they don't get those skills initially, it's not that they're being naughty, they need support to learn those skills."

This requires patience and work from the teachers as a lot of repetition is required to reinforce good behaviours.

"This term we have really focused on social and emotional regulation. He was having outbursts and meltdowns on regular occasions. Now he has the skills to self-manage himself, we're seeing the learning taking place."

> *"Teachers might want to jump to academic, but self-regulation must be taught before there's any learning that occurs."*

Conversely, staff may also ignore inappropriate behaviour.

> *"Learning to ignore any behaviour you don't want is a huge, huge thing... If there's behaviour I don't want in the classroom, I will turn my back and walk away from it."*

De-Escalation

De-escalating behaviours has been an important tool for some teachers as they offer alternative activities and de-escalation spaces for learners before behaviours escalate and become problematic. This also gives learners a sense of ownership over their learning as they are empowered to work with the teacher to reach a resolution and avoid more extreme behaviours.

> *"All of them know it's okay to walk out and to take 5 [minutes]. They have got to be in view and they need to be doing something that helps them but doesn't hurt or harm people or property."*

> *"If a situation looks like it's going to escalate, give them the power to make a choice, such as play with Lego... Having that choice all the time. These kids are often not in control and that's part of their frustration. Giving them a measure of control and targeting things that work well for them."*

> *"I always use Eeyore, Winnie the Pooh, and Tigger. If you're at Tigger, what do you need to do to get back to Winnie the Pooh?"*

At the opposite end to restorative techniques, teachers discussed that stand downs are the most extreme outcome from ongoing defiant behaviour, but this is very seldom needed as restorative techniques, de-escalation, teaching self-regulation and other things tend to avoid situations getting to this point.

Social Stories

Social stories have been referenced as useful tools for behaviour as they use pictures and storytelling to help learners understand the behaviours in question and how others felt and reacted. These are useful tools for conveying information.

> *"Social stories are amazing, that's what we used for students who were having particular issues. We'd write a wee story and take photos and put it into a story form. For example, 'when I go to school I wear a hat, this might make my head uncomfortable' and you frame it as a story. You put the reasoning in there, like 'I wear hats to keep me safe from the sun.' They're always personalised to the issue at the time, whether it was swearing at the teacher or whatever... They're amazing teaching tools."*

Utilising Whānau

Parents and whānau may also be involved in instances of poor behaviour. One teacher discussed that whānau may be included in the classroom to help with behavioural problems. This not only helps staff deal with difficult behaviours but may also help educate the whānau on techniques to manage behaviour at home and provide more consistency in these techniques.

> *"We've had parents working in the school with children who have behavioural problems. They've been sitting in and learning new strategies."*

While successful for some schools, the guardian interviewed had tried to intervene with behaviour but was met with indifference. They tried to communicate techniques that worked well at home, but the school informed them that they had specialist training. Despite this, the behaviour management did not appear to be working for their child.

"I was met with 'we've had [specialist training], we've already done it'. Well if you've already done it, then why is this not working?"

Mixing Students

The guardian interviewed discussed their child who has FASD. Because of his learning delays, he has been placed in the special unit with other learners who have ASD and ADHD. Because of how he is easily heightened, the behaviour of these learners results in him becoming heightened compared to when he is in a mainstream classroom with mostly neurotypical learners. He then struggles to learn social skills and then takes on the personas of those around him (including staff if they are not regulating their emotions in the face of poor behaviour).

"How you respond is how he acts… Make sure you're self-regulated because if you're not then he won't be."

Recommendations

Based on the interview feedback and some of the recommendations from Hart & Brehm (2013), the following might be helpful to develop agency in learners:

- Set and monitor academic goals (with the learner and their whānau/guardians)
- Put plans in place that can be revised when needed and give learners oversight over their progress
- Teach learners why their learning is important so they understand the purpose in ways that are meaningful to them
- Segment learning tasks into smaller, explicit and doable tasks and have learners repeat steps often
- Teach learning/academic skills and independent skills as part of their regular teaching and learning
- Offer learners alternative options to tasks and ensure they always have something they can do to learn, even if it is not what others are doing
- Ensure that learners know how what support is available and how to ask for what they need

Grow Waitaha

Environment

The learning environment is an important component of inclusive education for neurodiverse learners. In general, structured learning environments with consistent routines and rules are most helpful (Lucas, 2011), however, this is not always possible depending on the facilities the school has.

Single-Cell vs. Innovation Learning Environments

The structure of a learning environment is a contentious issue for schools as new builds and new facilities in existing schools tend to be innovative learning environments as opposed to single-cell, traditional environments. It is not the purpose of this paper to assess these environments, however, interview participants did tend to indicate that smaller learning environments with fewer students tended to yield better results for their neurodiverse learners.

> *"Our neurodiverse students struggled, they found that quite hard. You went from having 25 to 30 kids in a classroom to 50 to 60 altogether. It wasn't necessarily noise, it was the busyness of students altogether. Working out the spaces and places for them where they felt comfortable, and they could cope."*

> *"If it was open-plan learning the children would get lost, and I've seen it happen. In smaller classes I've seen them bloom, then that carries through to the bigger classrooms."*

> *"There's definitely challenges in an open learning environment.."*

This is not to say that innovative learning environments can not be facilitative to learning for neurodiverse learners, as the increased flexibility, increased seating options, range of spaces and furniture etc. can be beneficial for meeting individual needs. It depends on the learner and whānau, what works best for them, and where schools are utilising more innovative spaces, allowances need to be made to allow neurodiverse learners space to de-escalate, work in small groups or one-on-one etc. Breakout spaces can be utilised innovatively for neurodiverse learners to separate them when needed and provide a safe, private space for them.

> *"There are parts that work well, and parts we are looking to change. It's good to have both."*

> *"The feeling of security is a big deal.."*

Range of Options

The learning environment can be customised to suit individual sensory needs, including various furniture like bean bags, breakout spaces, wet areas, play areas, colours etc. Stationery may also be customised, including using things like pen grips to assist learners.

> *"Massive trial and error. We have a range of different things, fidget toys, cushions, different pen grips and things, weighted toys, weighted blankets... we try not to say no to things that might work or parents say works."*

Visual cues are also somewhat important to some teachers. They use diagrams and pictures to help learners, including helping them set up their learning and navigate different social situations. Visuals that celebrate success may also be on display to raise learner self-esteem and a sense of self-efficacy.

The guardian interviewed felt that things in the learning environment need to be lower to the ground but currently the class is not set up for this.

Preparedness

Teachers also stated that they need to be prepared themselves. That means having the room set up for learning prior to learners arriving and being in the class ready for the learners when they arrive.

> *"I make sure I am ready for them. Never behind the computer, never busy doing something else. Always standing at the front of the classroom, smiling as they come in, saying their name, and finding a connection very quickly."*

"Making sure the scene is set for the students that are coming in."

"Curtains, dangly things. Ensuring they're not in the environment. The space of learning that is not too busy and a sensory overload."

Teachers should also be prepared to deal with clutter and minimise things that might heighten a neurodiverse learner.

"It can be overwhelming visually for a lot of students."

"Really easy to navigate physically... neurodiverse diagnoses often have issues with perception, introspection and vestibular systems and all that sort of stuff so they tend to bang into things which can heighten them."

Recommendations

Based on the feedback from the interviews and findings in the literature review, the following tips may be useful for staff in preparing their learning environments for neurodiverse learners:

- Regardless of whether teaching in a single-cell or innovative learning environment, learning spaces should be adaptable for individual sensory needs
- Breakout spaces should be utilised, and where not available, some space should be designated for de-escalation
- Include a range of furniture options such as bean bags
- Include sensory objects, toys, stationery etc. in the learning space
- Include visual cues around the classroom and make these clear to learners
- Remove clutter prior to learners arriving and clear thoroughfares to ensure learners can move unimpeded
- Be prepared for learners to arrive by being at the front of the class to greet them consistently

Teaching and Learning

The final key area is teaching and learning. This was discussed last with participants in the interviews, and in many cases, it was a natural conclusion to summarise the previous sections. Building authentic relationships, setting up the learning environment and having systems and programmes in place to support positive learning behaviour is the important foundational groundwork to enable teaching and learning to occur.

> *"We tried to rethink how we approach children. Small classes, more individual support is great, but it comes down to the teacher and the perspectives they hold... we spent a lot of time looking at how we create our learning environments to be prosocial, emotional spaces to allow for learning to happen."*

Structured Learning

Structured learning provides the opportunity to intervene early through detecting where gaps exist. This does not only apply to curriculum areas but also areas of executive function that might be deficient in some neurodiverse learners (e.g., maintaining attention).

Universal Design for Learning (UDL) is a framework for improving and optimising education for all learners, removing barriers and ensuring that all have opportunities for success. It is designed to be beneficial for all learners. This reinforces the idea that many things that are good for neurodiverse learners are good for all learners. Multiple means of engagement, representation, and action/expression can support all learners by catering to their strengths and needs, rather than applying a one-size-fits-all approach.

> *"We went through a UDL, universal design for learning approach, where we looked at what individual students need in spaces. One easy thing is visual support and made that a universal thing across the school. What works well for one child works quite well for every child, there's no harm that it can do."*

A structured learning environment is also important for participants with neurodiverse learners in their spaces. This means setting up the learning space to enable learning and success, ensuring that the space is consistent and predictable, yet flexible and adaptable for different needs. Several participants discussed the importance of structuring learning to suit the needs of neurodiverse

learners. This means offering options for learners in situations where they might not be able to learn otherwise.

> *"We can tailor-make a curriculum, using The New Zealand Curriculum, by changing the font, the chunking of the work, the amount the kids have to do, and making sure they feel that they're succeeding every day, even if it's at their own pace."*

> *"We can see the results over two years that it's making a big difference… Not just for learning, but for self-esteem."*

> *"The kids work hard. I'm incredibly strict and structured… you're here to learn. But if there's a meltdown, or if someone needs to take off their shoes and socks and rub their feet on the foot pedal, and that's what they need to learn, they do that."*

Assessment

The Lucid Assessment System for School (LASS) may be a supportive tool for staff to identify cognitive strengths and weaknesses. One participant quoted this assessment tool as it may be particularly useful in cases where a learner does not have a diagnosis but shows signs of being neurodivergent.

In terms of formative academic assessment, some participants expressed views that National Certificates and types of formative academic assessment are not well-suited to many neurodiverse students, not because they are incapable, but in many cases will not work well under time pressures or controlled environments. One participant lamented that one learner is very clever but has a short attention span not well-suited to a time-bound test.

> *"If I were to take an asTTle reading test and break it into smaller chunks he would do very well. We need to be conscious of how we assess these children. His asTTle tests look awful, but in terms of his ability, he's in the top of my group. Those transitions need to be carefully managed."*

Educators need to be careful how they assess neurodiverse learners and not consistently apply neurotypical tests and conditions to assess their knowledge and skills. The above quote also highlights the importance of this when learners are transitioning between schools/levels as assessment may under-represent their actual ability.

Goal Setting

Goals are important for neurodiverse learners to keep them on track with their learning and keep them engaged with education. This is not exclusively for curriculum outcomes, but also applicable to other activities and small achievements such as goals of independence. This allows learners to celebrate small achievements and build a sense of self-efficacy. Breaking tasks into steps helps to not overwhelm neurodiverse learners and allows them to apply processes and goals to their learning.

"Goal setting is important for these kids. They want to do things but might not always have the opportunity."

Specific Interventions

Some interview participants listed specific interventions that are helpful to neurodiverse learners (at least according to their observations), and these were intended to be shared with other educators as a means of knowledge-sharing good practice to improve overall outcomes for neurodiverse learners.

Socially Speaking (https://www.sociallyspeaking.co.nz/) is a resource to help young people with social, sensory, and communication difficulties. It provides speech-language and occupational therapy services and includes assessments, individual therapy, social clubs, and several other resources. One participant recommends this for social skill development, emotional regulation, conversational skills, and identifying strengths.

One of these interventions was handwriting due to the researched link between handwriting and literacy results. A recent study conducted by Lê et al. (2021) found that fine motor skills (hand dexterity and bimanual coordination) predict both executive function and handwriting, which in turn predict reading accuracy, reading speed, spelling, and quality of text production. The relationship between handwriting and literacy outcomes suggests that working on motor skills and handwriting could help develop the literacy skills of neurodiverse learners. Halen Walls of Massey University specialises in structured literacy and has provided PLD in this area which has been helpful to one participant. This participant has worked with their learners on word patterns, how words are formed, and teaching the various rules of the English language so learners are familiar with the rules and can use them throughout school and life to comprehend language.

"If children have poor handwriting, the cognitive load on the brain as children try to form letters is too much and so they do shorter ideas, limited ideas, and pull it back."

Handwriting and the physical components of literacy have been emphasised by other educators in the interviews. One participant spoke on how they have technology-free days and use these to focus more on handwriting, turning pages, forming letters etc. so that handwriting and recognising letters becomes more automatic.

The Code, from Liz Kane Literacy (https://www.lizkaneliteracy.co.nz/the-code) is a resource designed to support structured literacy through explicit and systemic teaching of phonological awareness. One participant found this programme useful by having young learners read out words and write what they hear. This can be self-paced for those with specific learning disorders that require more time to work through the content and develop their abilities.

Steps Web (https://www.stepsweb.com/) helps improve literacy through an online literacy and language programme. The programme is evidence-based to build phonological awareness, phonic knowledge, reading fluency, vocabulary, and comprehension. It is self-progressing to address individual gaps and is usable for children right through to secondary school. This was recommended by one participant to work with dyslexic learners as their RTLB has had success with the programme.

The Pyramid of Learning was also utilised by one participant, focusing more on the brain development of children and areas of delay that might result in difficulties in learning. This is built on the concept of sensory integration (Akbar, 2020), a process that occurs naturally and becomes part of the brain. Initial senses closest to the child (tactile, vestibular, and proprioceptive) develop in early childhood, and once automatic and efficient, children develop their visual, auditory, gustatory, and olfactory senses. Difficulties in developing the primary senses create difficulties in sensory processing and motor skills development. The pyramid of learning has baseline sensory systems at the bottom of the pyramid, and academic learning at the top, signalling a need for previous levels to be developed prior to developing intellect.[3]

The participant from the interview stated that where there are gaps in learning with neurodiverse learners, they take a stepwise approach, working backwards through the hierarchy, testing things like hand-eye coordination by catching balls, looking at coordination using one side of the body etc., and looking at what sensory areas need to be developed. By developing the sensory systems to be more automatic and developing motor skills in individual learners, they are brought closer

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[3] A visual representation of the pyramid may be found at https://www.yourkidsot.com/blog/the-importance-of-the-pyramid-of-learning

to academic learning. Using this, staff could develop a toolbox of techniques to apply in different situations.

> *"I work very much on a sensory hierarchy, where we look at what primitive reflexes a student has and work on developing those within the classroom prior to developing their academic needs."*

> *"If teachers understood neurologically what is happening in a child's body, 'why are they acting like this', 'why can't they form their letters?', and we're able to give that input in the classroom. That would then show academic learning. It's like building blocks."*

Professional Learning and Development

Targeted PLD has been recommended by several participants as they have used various forms of PLD to enhance their practice and improve learning outcomes for neurodiverse learners. One participant pointed out the importance of including teacher aides in PLD as they are often left out of school-wide PLD but work directly with neurodiverse learners and thus need this development. One participant stated that there is a lot of information and resources that can make it very difficult for educators to keep up with best practices for teaching neurodiverse learners. Targeted PLD is necessary to address needs and support staff.

> *"For teachers that are not trained, or schools that are not putting time and money into keeping staff trained to work with these children, I think we're doing them a great disservice. It's a heavy loading."*

Technology and Assisted Learning

Technology can provide the necessary support for neurodiverse learners. Prior to BYOD policies, one participant found a laptop shared between dyslexic learners (one laptop shared between two learners) was extremely helpful for supporting their reading and comprehension.

Assistive technology has been important for some educators to address gaps in learning. Auditory processing is supported through technology such as Roger Devices and C-pens. Roger devices reduce background noise and transmit a speaker's voice directly to hearing aids or cochlear implants. C-pens read aloud written text. Google Read is also a supportive online tool for dyslexic learners as this application reads written text aloud, meaning learners can read along as they listen to content.

> *"If I could in my dreams have BOT fund 20 Google Read licenses."*

Supporting Families

The guardian interviewed felt that their school has been failing their neurodivergent learner. This is because the teacher aide has been hands-off under the instruction from the learner that they want to be 'normal', without the teacher aide drawing attention by being at the front of the class. She stated that she has always had to ask the school "well what's normal?".

During the learner's stand-downs, the school has insisted that they participate in online learning, sending learning material remotely. The guardian stated that they were not supported to facilitate learning and the neurodivergent learner was not able to cope without assistance. It was necessary for the guardian to seek support directly from the Ministry rather than the school.

> *"You could see that this was over his head, and when he doesn't understand it, he puts his heels in the ground."*

They feel that the school has also not been completely transparent in how knowledge and skill are assessed. What they have witnessed in learning at home has not met the level reported by the school. All in all, they feel the school has not supported them and their neurodivergent learner. This case signals the importance of supporting families and involving them in the teaching and learning process, being transparent, and working through problems rather than removing the learner from the school when issues arise.

Recommendations

Based on the feedback from participants as well as information in the lit review, the following may be helpful for schools:

- Be adaptable in matching learning tasks to the individual learners, their needs and their strengths
- Be flexible and adaptive to potential changes based on what works well and what does not
- Use a range of instruction methods, including visual, role play, rehearsal, tactile, play etc.
- Universal Design for Learning (UDL) may be helpful in many cases to cater to the individual needs of neurodiverse learners
- Use a range of assessment tools, not necessarily relying on standardised testing kits that are matched to neurotypical learners
- Assessment tools, such as Lucid Assessment System for School (LASS), may help create profiles for learners where they do not necessarily have diagnoses
- Break learning tasks into smaller, doable steps
- Attach goals to tasks (strategically using SMART goals) to help learners feel a sense of achievement in their learning
- Chunk learning, including numerous learning breaks between chunks
- Utilise the physical aspects of literacy, including handwriting, page-turning, sounding out words etc.
- Working on handwriting, forming letters and forming words may be a particularly useful tool to improve literacy
- Specific programmes including Socially Speaking, The Code, Steps Web, and the Pyramid of Learning (sensory hierarchy) have worked well for some participants
- Ensure targeted PLD equips staff to effectively teach neurodiverse learners
- Ensure PLD is also directed at teacher aides and others who directly work with neurodiverse learners
- Technology and assistive technology may be useful, particularly in helping learners access language such as through Roger devices, C-pens, and Google Read
- Work alongside whānau, take advice and provide them with tools to assist with learning at home
- Maintain transparent reporting relationships with whānau, including realistic reports of learning outcomes.

Transitions

While not a focus of this paper, transitions have been an important aspect of feedback from participants. Transitions can be a difficult time for learners as they adapt to new systems, environments, peers, schedules etc. This can be particularly difficult to navigate for neurodiverse learners and their families, as well as schools receiving neurodiverse learners without having prior knowledge of their needs.

For neurodiverse learners, transitions can be eased with thorough knowledge sharing, such as through building detailed profiles. A profile might include details on the diagnosis, their current situation, typical behaviours, tips for dealing with difficult behaviour, how to handle a crisis, and some keywords. Schools may then work collaboratively in building a profile for a learner and helping one another in the transition process to ensure the best possible outcomes for neurodiverse learners.

> *"That one-pager is powerful because it captures everything."*

Schools may also need to plan ahead. If it is known that learners are neurodiverse (or indicated that they need additional support, regardless of diagnosis) they may start to mobilise support and resources early, completing applications (where possible) and having school systems in place to ensure the transition is as smooth as possible. This is difficult as it will largely depend on staffing, time, and workload, and in many cases, schools may simply not have the time and ability to establish this very early. Both schools needed to collaborate to make this possible.

One success story was of a girl with several neurodiverse diagnoses who struggles with change. A big team effort among the school, the new school, and the whānau have helped mobilise support for the impending transition as she moves to intermediate in 2023. They were anxious at the IEP regarding the transition but being supported by a friend to go to the new school, meet children there, and take photos to make a social story made the idea of changing schools more palatable. There will be support in place at the new school and agencies available to assist.

Interviews and incoming tests have been helpful for some participants. As previously stated, some tests will not accurately show what a learner is capable of as the learner may have difficulties with attention or concentrating in certain environments. Involving whānau may be particularly helpful to gather context prior to a learner starting school.

One participant said that play-based learning has been particularly helpful for neurodiverse learners. Play helps to build motor skills as well as social skills to help them adjust and make friends.

"I think learning through play has had a really strong influence on how our younger children have transitioned in. Gives them that opportunity to build up skills ready for school."

Hands-on, explorative, and play-based learning is important to maintain through secondary school for cases that might otherwise disassociate at the secondary level and aren't ready to learn in a typical secondary setting.

Recommendations

Based on the feedback from participants, the following tips may help schools aid the transition process for neurodiverse learners:

- Create and share detailed profiles of learners, including information that the next teacher/school may find helpful
- Collaborate with other schools, ensuring the next school knows how to support the incoming neurodiverse learner
- Allow for neurodiverse learners to visit schools, allowing them to take someone to make them feel safe and supported
- Where possible, plan in advance, such as through making early applications and establishing school systems to support learners
- Interviews and incoming tests may be helpful in some cases to determine what needs neurodiverse learners have
- Involve whānau where possible, including them in the transition process and using their expertise
- Explorative and play-based learning may be helpful in new school environments to develop social skills

PART THREE:
Summary of Recommendations for Inclusive Education for Neurodiverse Learners

Relationships

- Use social activities, games, and play to get to know each learner as an individual and encourage peer-to-peer social interactions
- Establish buddies (with other neurodiverse and neurotypical students) to help teach and encourage prosocial behaviours
- Play to the strengths of learners, using different tools to assist them in social situations
- Monitor social interactions and play a mediating role in keeping social activities and conversations civil and on-task
- Include whānau from the beginning in planning and goal-setting
- Maintain relationships with whānau and guardians, including them in the day-to-day management of behaviours and keeping them well-informed
- Establish systems of maintaining accurate records of learner diagnoses and backgrounds
- Utilise student leaders (e.g. prefects) to help facilitate social interactions and games with neurodiverse learners
- Utilise individual and whānau planning tools to map paths to individual success with learners and their whānau involved in this process.

Agency

- Set and monitor academic goals (with the learner and their whānau/guardians)
- Put plans in place that can be revised when needed and give learners oversight over their progress
- Teach learners why their learning is important, so they understand the purpose in ways that are meaningful to them
- Segment learning tasks into smaller, explicit, and doable tasks and have learners repeat steps often
- Teach learning/academic skills and independent skills as part of their regular teaching and learning
- Offer learners alternative options to tasks and ensure they always have something they can do to learn, even if it is not what others are doing
- Ensure that learners know what support is available and how to ask for what they need

Behaviour

- Address antisocial and inappropriate behaviour within a restorative framework, helping neurodiverse learners understand other's perspectives and help them to repair relationships

- Teachers should try to understand the behaviour and why it is happening, e.g., external factors that might explain the behaviour and signal areas a learner needs support
- Quickly assess different behaviours for their nature and whether they should be ignored or quickly de-escalated
- Explicitly teach and reinforce prosocial and positive behaviours
- Incorporate self-regulation techniques explicitly into the curriculum
- Teach students about behaviours and why they occur
- Have high standards of safety for the classroom and have techniques to de-escalate behaviour
- Social stories may be a particularly helpful tool to help neurodiverse learners understand their behaviours
- Incorporate parents and whānau where possible to help understand the behaviour at home, give them behaviour management techniques, and learn about techniques that are helpful at home
- Where possible, place neurodiverse learners in environments where prosocial behaviour is modelled

Environment

- Regardless of whether teaching in a single-cell or innovative learning environment, learning spaces should be adaptable for individual sensory needs
- Breakout spaces should be utilised, and where not available, some space should be designated for de-escalation
- Include a range of furniture options such as bean bags
- Include sensory objects, toys, stationery etc. in the learning space
- Include visual cues around the classroom and make these clear to learners
- Remove clutter prior to learners arriving and clear thoroughfares to ensure learners can move unimpeded
- Be prepared for learners to arrive by being in the class to greet them consistently

Teaching and Learning

- Be adaptable in matching learning tasks to the individual learners, their needs, and their strengths
- Be flexible and adaptive to potential changes based on what works well and what does not
- Use a range of instruction methods, including visual, role play, rehearsal, tactile, play etc.

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Transitions

- Create and share detailed profiles of learners, including information that the next teacher/school may find helpful
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