

Faculty of Arts & Social Sciences: School of Education



Final Report: Part 1

Transdisciplinary Education Model

Embedding Occupational Therapists into
Specialised School Settings





Overview

The University of Technology Sydney, School of Education was engaged to research the outcomes of a project developed by three Schools for Specific Purposes (SSPs) in the Sutherland Shire, New South Wales, Australia.

Each of the three schools received funding for the project via the Toyota Foundation as part of the SchoolsPlus program and contributed part of the funding to research to ensure that the outcomes of the project were evaluated by an external process and could subsequently be shared broadly for the benefit of their school communities and other SSPs.

This first report from the project addresses two elements of the research:

1. How does the delivery of occupational therapies, embedded in three specialised school settings, result in transdisciplinary professional learning?
2. How does the delivery of occupational therapies, embedded in three specialised school settings, impact the environment?

To answer these questions, this report comprises four sections:

1. Transdisciplinary Models
2. Research Design
3. Findings
 - a. Process to Building an Effective Transdisciplinary Model
 - b. Transdisciplinary Professional Learning
 - c. Facilitators of a Successful Transdisciplinary Model
 - d. Effects of an Embedded Occupational Therapist on the Environment
4. Conclusions and Future Directions.

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1 Transdisciplinary Models







This project, envisaged by three schools, employed occupational therapists (OTs) to work within each schools with a focus on the professional development of school staff. It became apparent to the researcher that the model being described and envisaged by the leadership team from each of the three schools had the potential to develop into an authentic transdisciplinary model for the delivery of education and therapy for students with behaviour disorders and moderate to significant disabilities. To understand the value of the research findings from this project, it is useful to understand what counts as transdisciplinarity and how it differs from other collaborative team models. 

1.1 What Does it Mean to be Transdisciplinary?


Transdisciplinary practices involving integrated therapy services were advocated in the 1960s to address 'discipline-referenced' therapy, which produced disciplinary and role conflicts, therapies applied in unnatural settings and implementation issues. The subsequent shift to environment-referenced approaches has involved prioritising environments, collaboration and observation to discern needs and develop therapeutic interventions suitable to the environment, and activities. This is combined with discipline-referenced assessment for diagnostic and intervention development purposes. Transdisciplinary practices, then, involve collaborative planning, observation assessments by multiple team members to promote information exchange and problem solving.

Much has been written about conceptualising collaboration in terms of disciplinary knowledge and professional expertise for addressing complex social problems in various domains (Cartmel, Macfarlane, & Nolan, 2013; Choi & Pak, 2006; Di Giulio & Defila, 2017; Fitzmaurice & Richmond, 2017; Gibbs, 2017; Lotrecchiano, 2010; McGregor, 2015; Miller & Boix Mansilla, 2004; Nandan & Scott, 2013). This has been facilitated by increased ease of communication, fast-paced knowledge production and thinking about complex problems, which has significantly affected the way knowledge is organised, produced and used (Miller & Boix Mansilla, 2004, p. 1). There has been a shift away from single disciplinary approaches, whereby issues are dissected, siloed and addressed from one perspective, such as 'science' or 'education', to multi-, inter- and transdisciplinary approaches that, respectively, integrate disciplinary knowledges and expertise to a lesser or greater extent.

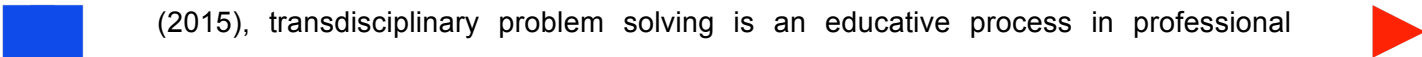


Choi and Pak (2006, p. 351) define **multidisciplinarity** as an additive approach to problem solving, whereby practitioners draw on knowledge from different disciplines to address various aspects of a problem, yet stay within their boundaries. An example is multidisciplinary practices in hospital or schools, where different disciplines work with one client, within their own specialised boundaries and with minimal interaction (Fitzmaurice & Richmond, 2017). **Interdisciplinarity** is an interactive approach, whereby practitioners analyse problems and synthesise knowledge across disciplines into a coordinated coherent whole (Choi & Pak, 2006). An example is interprofessional health practice, in which different disciplines collaborate to establish goals, yet remain within practice boundaries when carrying out interventions (Fitzmaurice & Richmond, 2017). In contrast, a **transdisciplinary** approach holistically integrates disciplinary knowledges and expertise by transcending traditional boundaries (Choi & Pak, 2006). Here, various professionals work outside their expertise to collaboratively create goals and deliver therapy (Fitzmaurice & Richmond, 2017). Importantly, transdisciplinary approaches seek to transcend disciplines through collective and collaboratively co-produced learning, knowledge and solutions (McGregor, 2017), *without* losing the specialist knowledge and expertise that disciplines and interprofessional practices produce (Easton, 2017; Edwards, 2012). This requires breaking away from hegemonic approaches that frame knowledge of the world, methodologies and thinking within disciplinary boundaries (Gibbs, 2017).

Transdisciplinarity has been discussed in terms of characteristics and strategies; for example, Cartmel et al. (2013) define transdisciplinarity as the study of isomorphisms between knowledge domains involving the flow of information circulating between these domains that enable the emergence of unity amid diversity, and diversity amid unity to produce new logic, new language and new concepts. Lotrecchiano (2010, p. 43) expands this conceptualisation to identify the characteristics of transdisciplinarity as complex problem solving (multidimensional, human and natural systems interface, 'actual' over 'conceptual'); a praxis perspective; interpenetration of epistemologies; methodological pluralism; collaborative deconstruction; stakeholder involvement and investment in outcomes; open systems (boundary spanning flow of information); different (shifting) levels of reality (diversity and disunity in perspective); a focus on inquiry to manage interdisciplinary space to what is shared, and spaces between and beyond disciplines; critical consciousness (Freire); simultaneous macro- and micro-analysis of situations, working both 'with and against'; and critical thinking and reflection. These characteristics form the basis of transdisciplinarity research.







Learning is central to transdisciplinarity research projects (Nandan & Scott, 2013) and transdisciplinary learning is both a scholarly domain and educational practice (Allen et al., 2010; Clark & Button; Di Giulio & Defila, 2017; McGregor, 2015, 2017; Meyer, Mader, Zimmermann, & Çabiri, 2017; Mitchell, Cordell, & Fam, 2015). For McGregor (2015), transdisciplinary problem solving is an educative process in professional development, where learning occurs in concert with others (p. 10), rather than individuals learning new knowledge and skills to enhance their practice. McGregor suggests that through their responses to multidimensional contextual factors in co-generative knowledge creation, people grow into a more complex transdisciplinary version of themselves, comfortable with and competent at, integrating diverse and contradictory perspectives (p. 18).





Drawing on information and knowledge transfer, and group dynamics in social psychology, Godemann (2008) argues that the quality of transdisciplinary development can be measured by the extent of the team's **knowledge integration**, the purpose of which is to achieve expanded perspectives and problem perception based on shared convictions. The knowledge-integration process has four collaborative and reflexive components:

1. Information exchange and understanding, which involves selecting, sharing and embedding the elements of disciplinary and specialist knowledge that each team member will contribute into a complex reference system.
2. A common knowledge base, which is understood as meta-knowledge of 'common ground' that facilitates a shared perception of reality, knowledge, attitudes, convictions and assumptions.
3. A shared frame of reference, which is a shared reality or group culture that facilitates consensus and cooperative action by enabling members to perceive, interpret and relate other group members' actions to their own.
4. A group mental model, which involves strategies and working stages, requiring communication and interaction patterns, and alignment of group members' perspectives, attitudes and skills.

The transdisciplinary approach is promoted to be more effective than the multi- or interdisciplinary approaches due to the 'creation of an integrated team structure and service delivery, deliberate and regular cross-discipline communications, knowledge exchange across disciplines and a strong student focus' (Hernandez, 2013, pp. 485), emphasising collective responsibility for the creation and implementation of educational



and therapeutic plans. In this approach, 'no individual is solely responsible for the progress and development in any particular skill area' (Hernandez, 2013, pp. 485).



Despite the value of transdisciplinary models, the literature suggests that school-based therapies are often limited to consultative and collaborative models. Few of the articles reviewed report the use of transdisciplinary school-based therapies. A recent systematic literature review (Fitzmaurice & Richmond, 2017) found only eight articles internationally that identified as implementing transdisciplinary approaches.


Professional collaboration has been viewed as a beneficial tool for helping teachers and other professionals to serve students with disabilities and has been deemed best practice in special education (Hernandez, 2013, p. 480). Literature focusing on the concept of *collaboration* in service delivery described team-based child assessment, goal setting, intervention planning, service delivery and evaluation, with teams comprising professionals, including therapists and teachers, and sometimes parents and/or school administrative staff.

Terms to describe collaboration between educators and therapists in school settings are not clearly defined or differentiated. Instead, they are often used interchangeably and are sometimes particular to certain disciplines or geo-political locations, making it difficult to differentiate meaning and determine to what extent collaboration extends or involves learning, other than for the child. Definitions of collaboration categorised according to their primary components or variables include 'interdependence, shared perspective, and goals'; 'interpersonal characteristics' (values, roles and skills; and respect, trust and communication); and 'contextual setting and constructs' (Hernandez, 2013, p. 480).


1.2 School-Based Therapy

1.2.1 Collaborative Consultation Models

Wintle, Krupa and Cramm (2017) describe the collaborative consultation model as cooperative in its philosophy, such that 'individuals with different expertise, perspectives, and experiences work together to develop intervention strategies and goals for students', with 'shared responsibility for goals, decisions, and problem solving' (p. 328). Indeed, team-based collaboration is distinguished by the degree of disciplinary boundary-crossing and shared decision-making and activities in which team members engage.



Benson, Szucs and Mejasic (2016) acknowledge that collaboration and communication between teachers and OTs is essential for a student's success inside and outside the classroom and that collaboration allows OTs and teachers to share decision-making, resources and accountability for outcomes. Truong and Hodgetts (2017) claim the 'collaborative relationship between teachers and occupational therapists is a crucial indicator of successful school-based [occupational therapy] practice' (p. 122). However, the role of the OT within the school is often poorly understood.







Notably, in the United States and Canada, where school-based OTs are not uncommon, many therapists within schools continue to use at least some form of direct therapy, seeing practice as a continuum between the direct model and the consultative collaborative model (Wintle et al., 2017). This suggests that therapy in the classroom is not necessarily integrated therapy.



When using the integrated therapy approach in schools, techniques must be integrated into the instruction provided during educational activities. To achieve this, therapists observe the engagement of, and participate with, students and other team members in routine activities, identify disciplinary intervention strategies to increase the effectiveness of instructional programming, provide staff training and supervision in implementing the strategies, devise methods to evaluate the effectiveness of interventions, and participate in data collection and analysis. When therapists do provide direct 'hands-on' services using an integrated therapy approach, this is done within the context of educational environments and activities. This is different from therapy activities merely moved to the classroom.

Teachers identified the a lack of understanding of an OT's role and their inconsistent status as factors that prevent them from fully contributing to best practice. The could be remedied by more frequent contact and a more detailed explanation of the OT's role, as Trunog and Hodgetts (2017) found that a clear understanding made teachers less defensive and more open to listen to OT's recommendations and to refer them (Truong & Hodgetts, 2017).

Challenges to coordinating team members' contribution and collaboration include changing professional roles in schools and therapy; professional hierarchies; the need to integrate a range of educational, communication and social supports; the lack of team processes; and the overlap between team roles and responsibilities (Truong & Hodgetts, 2017, pp. 124–125). Conversely, successful collaborative requires regularly scheduled opportunities for team members, including parents, to share their expertise,



identify common goals, build support plans and determine their responsibilities, which is reliant on administrative support and staff motivation (p. 141).







Structural changes are necessary, but this will only become possible with greater understanding about the role of OTs in schools (Benson et al., 2016). The structural changes might include necessary pre-service learning opportunities; new accreditation standards for occupational therapy and initial teacher education programs; changes to funding formulas; and the provision of occupational therapy services through government education departments (Wintle et al., 2017).

There is also support from teachers for whole-class programs, rather than teachers attempting to deliver one-on-one programs (Rens & Joosten, 2014). Ball (2018) advocates for a move from a caseload approach to a workload approach. Capturing data on the activities undertaken by school-based OTs can clarify their responsibilities and identify additional roles for the therapist in the school. Ball (2018) notes that direct services from the OT should occur in the child's natural environment (i.e., classroom) to allow for continuity of care. This would also allow for more practice with trained classroom staff and less one-to-one time with the therapist.



1.2.2 **Towards a Transdisciplinary Model**

In a recent scoping review of education and rehabilitation publications, Anaby et al. (2019) identified 56 scholarly articles and grey literature published between 1998 and 2017 that reported organisational principles and implementation strategies for the delivery of interdisciplinary school-based support services for students under 17 with disabilities (p. 15). Of the 56 articles, 13 were conceptual or theoretical commentaries published throughout the search period, while 22 were empirical evaluative studies, of which over half were published after 2001 (p. 18). This supports the notion that school-based therapy delivery for children with disabilities has increased significantly over the last two decades. The authors found that such services primarily focused on improving socio-emotional functioning and academic performance for students with behavioural issues and cognitive learning disabilities (p. 15).

Recent practice models call for a shift from direct service delivery focused on individual student goals, to consultative services focused on the capacity building of school staff to provide cost-effective and quality service delivery for a diverse student population (Bonnard & Anaby, 2016; Hutton, 2009; Missiuna et al., 2012). There are also opportunities to develop further the key skills required for consultative service delivery



and knowledge transfer, such as relationship building and coaching (Hutton, 2009; Laverdure, 2014; Missiuna et al., 2012; Villeneuve, 2009).



Those teachers who consult and collaborate with OTs in schools state that they want them to be directly and regularly involved at the school by spending more time with students in the school building and to have more flexible schedules (Benson et al., 2016, p. 298).





Notably, while literature was found to focus on teachers' lack of understanding of the role of OTs (e.g., Truong & Hodgetts, 2017), no discussion could be found of OTs' lack of understanding of teachers' obligations to operate within the school context and the competing demands they have when educating a class of students. Likewise, no mention was found in relation to OTs of the issues affecting schools and the importance of the home–school–therapy connection.

1.3 International Research into School-Based Therapy



Much of the international literature on school-based therapies, including occupational therapy, has emerged from North America and the United Kingdom over the last four decades. In many instances, the driver for this emergence has been legislative changes focusing on human rights, and specifically those of children, around the principle of inclusion. Despite the shift to team-based collaborative approaches, the literature review shows that few articles present their school-based therapies as transdisciplinary.

One function of OTs in this context is to collaborate with teachers to plan and implement a range of supplementary management strategies for students (Mills & Chapparo, 2018). Through consultation and training, the contextual suitability of classroom-based interventions may be validated (Grey, Honan, McClean & Daly, 2005); this may be an important protective factor in reducing teacher stress. For example, although therapists are comprehensively trained to understand the role that sensory processing plays in human performance (and how sensory activities may enhance it), teachers are not. Thus, teachers may require assistance and support from therapists before they are able to apply sensory interventions tailored to each student's needs (Eisenstein, 2005).

Leigers, Myers and Schneck (2016) surveyed 122 school-based OTs from the United States and found that 36% of practitioners did not feel they had the skills to provide



social participation interventions and that early career OTs did not feel ready for school-based practice.







However, Leong (2011) examined sensory integration in schools and found that teachers used OTs as their primary information source. Indeed, OTs both initiated and facilitated therapies for students and supported teachers through face-to-face contact, and in-house certification courses and workshops.

Further, Williams and Shellenberger (2019, p. 424) found that teachers involved in implementing of a specific self-regulation program (Alert) felt that they would be able to lead the program if trained and supported by OTs. At the end of the intervention, the teachers highlighted the importance of positive working relationships between the school management, OTs, teachers and students in successfully integrating such programs into the school experience (Williams & Shellenberger, 2019, p. 424).



In Ireland, the children in Patton's study (2015, p. 115) were noted as having received little to no occupational therapy (between four and six hours) when the study began. This indicates significant gaps in both occupational therapy interventions and the country's health and education services because children's educational needs may not be met. Patton's work also supports recent calls to increase therapeutic interventions (NCSE, 2013) and corroborates Doherty and Egan's (2009) data, which showed that children with Down Syndrome benefit the most from educational placement if multidisciplinary assessment is available—including an OT. Given the shortage of OTs in Ireland, this could be difficult, especially since health and education services function separately and thus, do not collaborate (Kinsella & Senior, 2008; Travers, 2012).

Patton's (2015) conclusions highlight the importance of collaboration and the inclusion of OTs as on-site team members in educational settings. Thus, further research should consider how to optimise increased face-to-face partnerships between OTs and teachers (p. 117) and facilitate a dialogue to support both curriculum and policy development (p. 120).

As part of a school-based occupational therapy intervention, a modified version of the aforementioned Alert program was successfully implemented with small groups of challenged students in the United States. Its success prompted a decision to examine further possibilities for teacher-led classroom-based learning programs. The first phase of the subsequent study was led by OTs (with teacher support in the classroom) and considered the suitability of classroom management and resources, content and teaching approaches (MacCobb, 2014).



A project by Graham, Rodger and Ziviani (2009, 2010) in the United Kingdom focused on whole-school therapy service delivery, rather than delivery targeting individual children. The results were positive, with building close working relationships identified as an important factor for success.



Missiuna et al. (2012) report that, under the New Zealand special education legislative framework, schools have interdisciplinary teams that include OTs. The NZ model is based upon the fundamental goals to collaborate, understand the education system, support participation in school communities and facilitate students' learning by working with them in context. According to Missiuna et al., this requires partnership, the collaborative team, application in the classroom and capacity building that can be achieved by fostering relationships and translating knowledge.

Hasselbusch and Penman (2008) studied occupational therapy practice in schools in the United States and emphasised the value of relationship building to increase the likelihood that suggestions made by the OT would be implemented. Effective knowledge translation saw both teachers and OTs able to navigate new situations and support new students; they may share this knowledge with others in their community.

Two particularly successful models of embedding OTs within schools have been piloted in Canada and the United Kingdom, respectively: the Partnering for Change (P4C) program (Campbell et al., 2012) and the Occupational Therapy in Schools program (Hutton, 2009, 2008). These pilot projects both demonstrated that embedding an OT into a school one day per week for between five and nine months resulted in the OTs becoming part of the school community, with stronger collaborative relationships between OTs and teachers. The essential ingredient to the success of P4C was found to be relationship building; in contrast, major inhibitors of successful consultation included a lack of time to meet with teachers and insufficient knowledge of roles and responsibilities. It was also important that OTs become part of school teams. For this, they must understand the school's policies, curriculum, culture and practise to build trust with colleagues in schools, particularly classroom teacher. This is most easily done by being present in the classrooms, which enables OTs to witness classroom activities, participate in school events, understand the curriculum and become familiar with the teachers' styles, expectations and challenges.

1.4 Australian Studies of School-Based Therapy

1.4.1 Status of School-Based Therapies in Australia

Occupational Therapy Australia (2016) provide guidelines for good practice for OTs working with children. They note that occupational therapy for children is most effective when provided through collaboration between the family, the education and health systems and relevant organisations. These guidelines state that the occupational therapy process involves:

- Building a positive and productive therapeutic relationship
- Considering which the occupational tools children need in their everyday activities
- Analysing the factors that affect occupational performance activities in the contexts and environments in which they occur, including human factors such as body functions and structures; habits and routines; roles; social, emotional, behavioural, cultural, physical, virtual, social, temporal and spiritual contexts or environments; and activity demands that affect performance skills and communication and interaction skills.

Further, Occupational Therapy Australia (2011) consider the occupations that constitute a child's daily school routine interactions between the student, the environment and the occupation. OTs aims to help students by teaching them how to change or adapt either the occupation or environment to the best suit them (p. 7). For this, OTs may work with the student alone or include the teacher or the environment to facilitate school participation. To examine the child's ability in the student role, an occupational therapy assessment must be done within the school setting. Nevertheless, students with disabilities may require evaluation outside the classroom (p. 9).

Occupational Therapy Australia recommended that education and support services for pre- and in-service teachers be increased to better equip them to support students with special needs (p. 16)—and OTs can provide this knowledge (p. 5). Those who teach students with disabilities must be able to access consultation services that suggest appropriate modifications to the physical learning environment and curriculum, as well as alternative assessment methods (p. 9). Teachers frequently report that they lack the knowledge to support students who require alternate ways to access the curriculum or school grounds, which creates significant stress for the teacher, student and the student's parents. As OTs are thoroughly versed in ergonomics and workplace risk management, the current disconnection between teachers and OTs compounds this

stress when collaboration between the two groups could potentially help teachers to be inclusive (p. 15).

Occupational Therapy Australia (2017) argue that an interdisciplinary model that places OTs within classes as part of the staff has demonstrable benefit for the education of students with severe autism, and may serve as a model for some special schools and classes. Australian schools vary greatly in whether they allow OTs to access their premises to support students and there is further inconsistency in whether OTs are employed directly by the state education department. Occupational Therapy Australia supports Queensland Department of Education and Training's model, which employs OTs and physiotherapists to support students with disabilities in state schools at the request of school staff.

1.4.2 Queensland Department of Education Model





The Queensland Department of Education and Training (2015) employs physiotherapists and OTs to support students at state education facilities with the aim of enhancing learning outcomes for students with autism spectrum disorder, intellectual disability or physical, vision, hearing or speech impairment (p. 3).

The state funds occupational therapy and physiotherapy in Queensland's public schools. Where an OT or physiotherapist is temporarily engaged directly using school funds, the relevant supervisor is involved in recruitment, selection and professional supervision. Schools are also expected to plan for resourcing and factors (e.g., professional development) affecting provision of occupational or physiotherapy services. It is often difficult to predict the ideal number of students who may require an OT or physiotherapist and so, the provision of a quality service relies on matching resources to prioritised student needs to design a suitable service provision model.

PhillipsKPA (2015) report that the use of OTs in schools varied considerably across Australia, with the Queensland Department of Education and Training employing nearly 70 full-time equivalent OTs to work in state schools, while schools in other states have limited access at best to privately engaged OTs.

1.4.3 New South Wales Department of Education Service Delivery Model

The New South Wales (NSW) Department of Education provides advice to school principals, parents and service providers on 'externally funded service providers delivering health, disability and wellbeing services to students'. Whether a school is granted access to an external provider is at the discretion of the school Principal, who







takes into consideration the impact of the service on curriculum requirements and student participation; the extent to which services support students' learning needs or enhance access to education; and the impact of the service on other students and the operation of the school. The Department and the National Disability Insurance Agency recommend that therapy services funded through a child's National Disability Insurance Scheme support plan are best delivered outside school time. Where parents request that services be provided by their therapist at the school, schools will not assess the professional skills of therapy providers or evaluate their accreditation.

1.4.4 **Australian-Based Research and Case Studies**



Kennedy and Stewart (2012) conducted a survey on the perceptions and experiences of South Australian OTs. Their findings revealed multiple occupational therapy service delivery models: direct, integrated, supervised therapy, supervision and interactive teams. However, the approaches were not evaluated and there was little evidence of efficacy. They also found that best practice collaboration principles were not being implemented in the field, despite benefits to teachers, therapists, children and families. Barriers included OTs' ambivalence about and resignation regarding poor collaboration practices, a power imbalance regarding 'expert' status in professional hierarchies.

In Western Australia, an investigation into the experiences of a school-based occupational therapy program to inform community-based paediatric occupational therapy practice found that collaboration did not result from OTs simply spending time in the school; it was necessary for OTs to explain their role, build relationships and understand classroom routines. OTs acknowledged that recommendations made without seeing the child in the classroom context were often inappropriate. Further, they considered it necessary to understand the teacher role, to help teachers understand, trust and respond to recommendations; develop equal partnerships to set collaborative goals, rather than positioning themselves as experts; and keep all parties informed, as often teachers did not know that a child was engaged in occupational therapy. Finally, collaborative goal setting with mutually agreed goals using appropriate terminology was more likely to support participation and result in implementation by teachers. Teachers were also more likely to implement practical recommendations supported by brief clinical reasoning and clear benefits that could be applied to the whole class (p. 156).

A study conducted by Mills and Chaparo (2018) concluded that OTs and teachers can collaborate to design and implement appropriate school-based sensory-based interventions for students with autism spectrum disorder. Teachers have extensive



knowledge of students and can assist with assessment and identification of suitable therapy recipients. Appropriate training and ongoing support for teachers to trial intervention activities may assist teachers to consistently implement activities with fidelity. Teachers can benefit from learning new ideas to assist their students with sensory processing difficulties, but consideration should be given to feasibility of in-class activities and associated evaluation processes due to time and staffing constraints. Although OTs are often requested to work with one child in a class, teachers must divide their time and resources among all students (p. 22).



During the period 2012–2014, under the More Support for Students with Disabilities (MSSD) initiative, the Australian Federal Government provided \$300 million in funding to government, Catholic and independent (non-government) education authorities in each state and territory through a National Partnership and aligned Funding Agreements. The 'MSSD had a clear agenda to foster change and transform the way in which schools deliver education for students with disability through enhancing the capabilities of teachers' (PhillipsKPA, 2015).

From the MSSD initiative, two projects emerged that are particularly relevant:

- Case study 6: Allied health project (Catholic Education Office, Sydney Diocese)
- Case study 25: A collaborative approach to building teacher confidence (Association of Independent Schools, South Australia)

Case study 6: Allied health project (Catholic Education Office, Sydney Diocese)

This initiative improved the curriculum accessibility for students with disabilities (p. 4). The Secondary Coaching Model operated across six schools and saw speech pathologists instructing teachers and support staff on how to facilitate learning for students with language-based learning difficulties, including classroom language adjustments to improve accessibility.

This collaborative approach ensured that the skills of teachers, support staff and allied health professionals are equally valued and mutually beneficial. The collegial relationships supported constructive planning to support the needs of individuals, groups and classes through shared contributions to the teaching and learning processes.

This work identified six critical factors in sustaining the service delivery model. All are equally important to support a cohesive and robust capacity-building program:




- **‘An end point in mind’**. The project aims to build capacity; however, once this is achieved, resources are reallocated.
- **‘Support from school leadership’**. School leaders must acknowledge the benefit of collaborating with allied health professionals in the classroom and support them by providing resources to ensure the program runs smoothly and to support staff learning.
- **‘Resourcing’**. Time is the most critical resource and a reasonable amount must be allocated to collaborative planning to set goals, share strategies and reach a common understanding.
- **‘The skills of allied health professionals’**. These skills include both the professional training of allied health professional and their interpersonal attributes and knowledge of the school context. These professionals must be able to work with school-aged students, while collaborating with teachers at a higher level.
- **‘A spirit of collaboration’**. Teachers must be willing to interact and collaborate with allied health professionals and be receptive to fresh insight into their pedagogy.
- **‘Skilled coordination’**. Programs must be established according to agreed objectives and resources must be allocated for coordination to manage difficulties and ensure that accountabilities are fulfilled.

Case study 25: A collaborative approach to building teacher confidence (Association of Independent Schools, South Australia)

In this instance, the MSSD funding allowed schools to access specialist support to assist students with severe, multiple and complex disabilities. This case study aimed to develop a model for professional learning and the processes that unfold as a result and found that allied health professionals are critical in catalysing change. Staff who participated enhanced their knowledge, skills and confidence. Importantly, they took ownership of the strategies to be implemented; they can now apply these independently of the allied health professionals.

This differs significantly from staff experiences under previous service delivery models. Before, the school’s regional location permitted it only limited access to allied health professionals; support included only student assessments. However, the consultancy model allowed health professionals offer provide practical advice and resources to students and staff in classrooms to support learning engagement.

PhillipsPKA (2015) report that:



the MSSD initiative encouraged schools to take diverse and often creative approaches to engage health and allied health professionals with strategies ranging from implementing whole school practices through to advice for individual students. Focus groups were highly positive about the impact of MSSD on increased collaboration with allied health services and agencies and the raised awareness of support in the school community. They saw working with experts in the community as an extension of the focus on team sharing and noted a change in the nature of professional discussions to an emphasis on cross-disciplinary approaches. (pp. 40-41)

The MSSD projects allowed therapists to work in the classroom and learn from teachers. These collaborations not only encouraged these professionals to become key providers of school-based professional training, but also benefitted teachers: 'When we teach together, we not only plan what we do but we take time at the end of the lesson to reflect on what has worked and what hasn't. It can be as simple as seating arrangements or modeling effective strategies in group-work. As a beginning teacher, I find this level of support and guidance invaluable in building my repertoire of skills'.

2 Research Design





2.1 Case Study Methodological Approach

The case study, which emerged during the nineteenth century from anthropology and sociology, has been referred to as both a field method and an approach to research. Case study research has been defined as social inquiry in the context of generalisation versus experience (Stake, 1978), helping to further understandings of social issues and problems. The idea underpinning this approach is that while most people arrive at their understandings through 'vicarious experience', researchers may 'capitalize on the human capacity to experience and understand ... [by] approximating through the words and illustrations of [their] reports, the natural experience acquired in normal personal involvement' (p. 5).



In recent times, case study research has been classified as having three different functions; that is, the **description**, **understanding** or **explanation** of part or an aspect of society that represents it as a whole. Case studies can use complex, holistic or narrative styles to represent observational data, or may be used to explore phenomena in preparation for explanatory, statistical studies. Sometimes, Stake (1978) argues, 'in-depth knowledge of an individual example is more helpful than fleeting knowledge about a larger number of examples. We gain better understanding of the whole by focusing on a key part' (p. 1).

Gerring (2004) defines case study research as 'an intensive study of a single unit with an aim to generalize across a larger set of units' (p. 341), concluding that it is a particular way of defining, rather than analysing, cases. Hamel (1993) concurs in part, stating that the case is 'used as a point of observation for the social phenomenon or issue constituting the object of study' (p. 23).

Despite its continued popularity in many social science and creative disciplines, there are ongoing debates over the methodological value of case studies in relation to theory validation (rigour in collection, and the construction and analysis of the empirical material); the status of field materials (wherein researcher bias and field informants' common sense or deception informs the outcomes, rather than theory verifiable through quantitative evidence); and its lack of representativeness or generalisability (description and breakdown of social experience). Gerring (2004) suggests the case study exists in a 'methodological limbo ... Case studies may be small or large-N, qualitative or quantitative, experimental or observational, synchronic or diachronic'



(p. 341); there is little in the way of organisational structure to guide researchers. In contrast, Hamel (1993) argues that the value of its representativeness is 'not so much a function of the group or case under investigation as it is of the object of study that can be approached from this point of observation chosen for the study of one particular case (p. 24). Flyvbjerg (2006) presents two key points about the value of case studies in research:



First, the case study produces the type of context-dependent knowledge which research on learning shows to be necessary to allow people to develop from rule-based beginners to virtuoso experts. Second, in the study of human affairs, there appears to exist only context-dependent knowledge, which thus presently rules out the possibility of epistemic theoretical construction. (p. 4)

Therefore, the case study remains an attractive methodological choice in educational research it is flexible and can construct cases from a single unit, while still being sensitive to inferences in similar units outside the study's focus (Gerring, 2004). Social science, Flyvbjerg (2006) argues, may be strengthened by the execution of thorough case studies that systematically produce exemplars of particular phenomena.

2.2 Research Design and Cross-Case Analysis


This study employed a cross-case analysis (Merriam, 2009) to understand how transdisciplinary professional learning was implemented in three Schools for Specific Purposes (SSPs) in NSW. Cross-case analysis was chosen because each case is seen as belonging to a collection of cases with common, categorically related characteristics and conditions (Stake, 2006). In other words, each case may be examined for context-specific particularities while an analysis of commonalities across cases may produce credible, confirmable, dependable and transferable knowledge (Shenton, 2004).


While some authors have used cross-case analysis as a kind of meta-analysis of knowledge in existing case studies, this study generated empirical data from four sources (teachers, student learning support officers [SLSOs], Principals and OTs) using five methods (focus groups, interviews, surveys, journals and document analysis). The rationale for triangulating the data analysis using multiple sources and methods was to ensure the case study was valid.



2.3 Methods

2.3.1 Data Collection



As noted, five forms of data collection were used: focus groups, individual interviews, surveys, journals and authentic document analysis. 

Across the three schools, 21 people participated in focus groups and 14 individual interviews were conducted.

Three surveys were conducted, each containing a range of quantitative and qualitative questions. The numbers of respondents for each survey were as follows:

2017	N = 67
2018	N = 50
2019	N = 57

Teachers, SLSOs and OTs were asked to keep a journal across the research period. This was not mandatory. Journals were found to be descriptive, rather than reflective.

Document analysis included review of minutes of meetings, emails between OTs and teachers, OT information notes to school staff, and documents produced for the two professional learning sessions held by the OTs for all staff across the three schools.

2.3.2 Data Analysis and Presentation

As data was primarily qualitative, thematic analysis was applied to identify emergent themes. The findings presented in Section 3 of this report represent the strongest themes that emerged. Themes were considered sufficiently meaningful when they emerged across the three research sites and were triangulated through different data collection methods.

The findings have been presented in a descriptive manner with an emphasis on maintaining participant voice to capture the experiences of teachers, SLSOs and OTs as they developed an authentic transdisciplinary model.

2.3.3 Ethics


This research obtained UTS Human Research Ethics clearance (No. ETH17-1587) and NSW State Education Research Approval (No. 2017369).




2.4 Participants

2.4.1 Research Sites

Three schools participated in this research.



School A is located in the Sutherland Shire, NSW, and is classified as an SSP. The school currently has 37 students enrolled across K–12. The school caters for students with mild to moderate intellectual disabilities and emotional disturbances. 

School B is located in the Sutherland Shire, NSW, and is classified as an SSP. The school currently has 61 students enrolled across K–12. Each class is supported by a special education teacher and an SLSO. To be eligible to attend School B, a student must have a confirmed disability with a moderate to severe intellectual disability as their primary diagnosis. At present, 34 of the students are considered to have a moderate intellectual disability and 27 have a severe intellectual disability.

School C is also located in the Sutherland Shire, NSW, and is also classified as an SSP. The school has 50 students enrolled across eight classes. Three of these classes are for students in years 7 to 10 without a diagnosed mental health issue but who require behavioural support. Students generally attend the school for a 12–18-month intervention, attending four days per week at School C and one day per week at their originating school. There are three classes for students in K–6 with either internalising or externalising diagnosed mental health issues. These students generally attend for an 18-month to 2-year intervention, again with four days per week in School C and one day per week at their originating school. The school has one class for students in K–6 with Autism, who have been deemed by a panel to require a higher level of support than can be provided in an Autism-support class in a mainstream school. Students in this class attend School C five days per week. The final class is a specialist program for a student assessed as requiring 2:1 support for complex mental health requirements.

2.4.2 Research Participants

2.4.2.1 School staff

As is common in school settings, there were staffing changes across the three research sites during the period of data collection. Most notably, two schools had a change of Principal during this period. As detailed below, the majority of school-based participants were female (see Figure 2.1), with two-thirds aged between 40 and 59 years (Figure 2.2).

Gender

67 responses

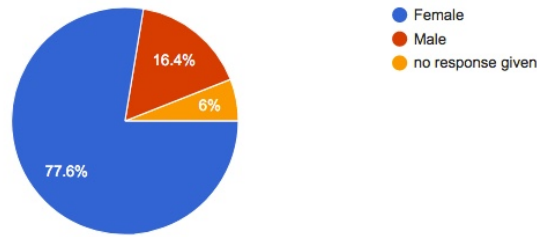


Figure 2.1: Gender of School Staff Participants

Age

67 responses

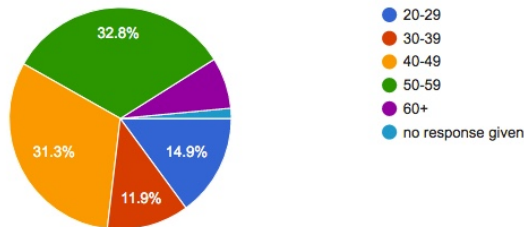


Figure 2.2: Age of School Staff Participants

Almost half of the school-based participants had 1–10 years’ teaching experience, while around 18% had more than 20 years’ experience (see Figure 2.3). Most of the SLSO staff held a Certificate III, while the majority of teachers held a Bachelor degree and around 12% held a post-graduate qualification (see Figure 2.4).

Number of years teaching/SLSO experience

66 responses

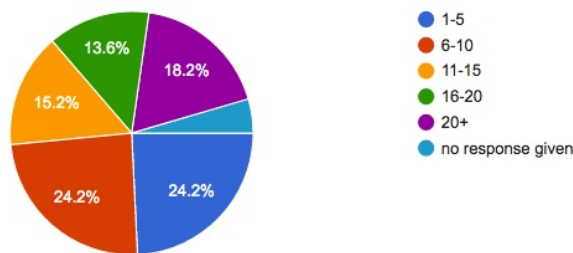


Figure 2.3: Years of Experience of School Staff Participants

Qualifications in Education

67 responses

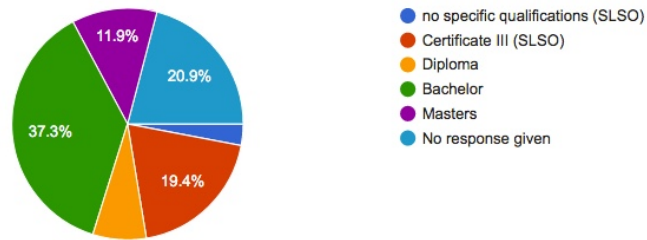


Figure 2.4: Qualifications of School Staff Participants

Current role

67 responses

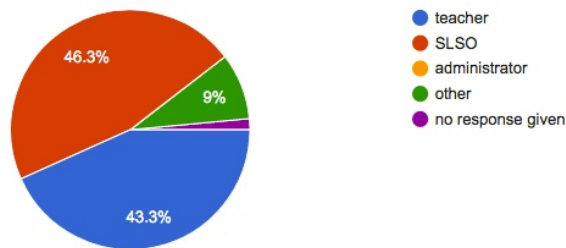


Figure 2.5: Current Role of School Staff Participants

2.4.2.2 Occupational therapists

The project commenced with three OTs. In March 2018, one OT left the project and a new OT commenced. This resulted in data being collected from four OTs across the duration of the project.

Three of the four OTs were female (see Figure 2.6). Half were aged between 30 and 39 and the other two were aged 40–49 (see Figure 2.7). One OT entered the project with 6–10 years' experience, two had 16–20 years' experience and the fourth OT had more than 20 years' experience (see Figure 2.8).

Gender

4 responses

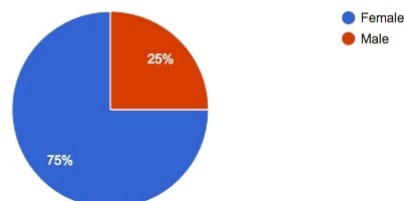


Figure 2.6: Gender of OT Participants

Age

4 responses

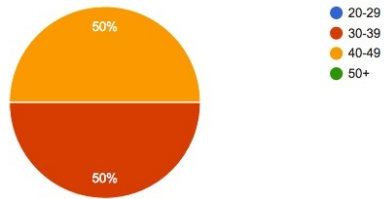


Figure 2.7: Age of OT Participants

No. years experience

4 responses

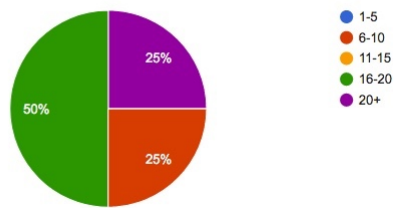


Figure 2.8: Years of Experience of OT Participants

3 Findings

As described in Section 2.3.2, the data to inform these findings were drawn from multiple sources and integrated to present the collective findings across the three research sites. The survey data are presented, supplemented by qualitative data, to give voice to the participants and provide greater understanding of the 'how and why' of the process and evident professional transdisciplinary learning. This section commences with three overview tables of the survey data, to provide a sense of the growth in participants' relationships and knowledge-building through a visualisation of the survey data. This report focuses on 14 survey questions drawn from the 2018 and 2019 surveys. These summary tables are unpacked in detail in subsequent sections.

In Figure 3.1, a numerical scale is used to show the average change in scores across the two survey periods. Each survey item has shown a positive increase. Figure 3.2 provides a further visual representation of growth in each of the survey items. Finally, Figure 3.3 shows the Year-on-Year Average Scale, indicating the greatest growth has been on Q7 Through access to OT I have adapted my programming tools; Q33 How would you rate teachers at your school's understanding of the role of the OT; and Q34 How would you rate teachers at your school's involvement with the OT?

Average Scale

Question	Year		Average Scale 1.00 5.00
	2018	2019	
1. Through access to an OT I have considered different ways of supporting student development	4.23	4.53	
2. Through access to an OT I have adapted my practice to support student development	4.20	4.43	
3. Through access to an OT I have improved my practice to support student development	4.22	4.54	
5. Through access to an OT I have adapted how I work with teachers/SLSOs	3.80	4.06	
7. Through access to an OT I have adapted my programming tools	2.63	3.09	
11. I feel confident to use Zones of Regulation in my classroom	4.20	4.61	
14. I will receive appropriate support to successfully integrate Zones of Regulation in my classroom	4.23	4.36	
15. Applying the Zones of Regulation will help/helps me understand and manage student behaviour more effectively	4.38	4.52	
33. How would you rate teachers at your school's understanding of the role of the OT?	4.15	4.56	
34. How would you rate teachers at your school's involvement with the OT?	3.87	4.33	
35. I acknowledge the sensory processing issues of each student when programming for them	4.07	4.24	
36. I understand the impact of each student's sensory processing strengths/challenges in the daily school routine	4.11	4.35	
37. I have the ability to identify subtle changes in each student that indicates they are becoming dysregulated	4.07	4.29	
38. I have confidence to effectively intervene when a student is dysregulated	3.98	4.36	

Average Scale broken down by Year Year vs. Question. Color shows Average Scale. The marks are labeled by Average Scale. The data is filtered on Scale, which excludes Null.

Figure 3.1: Average Scale

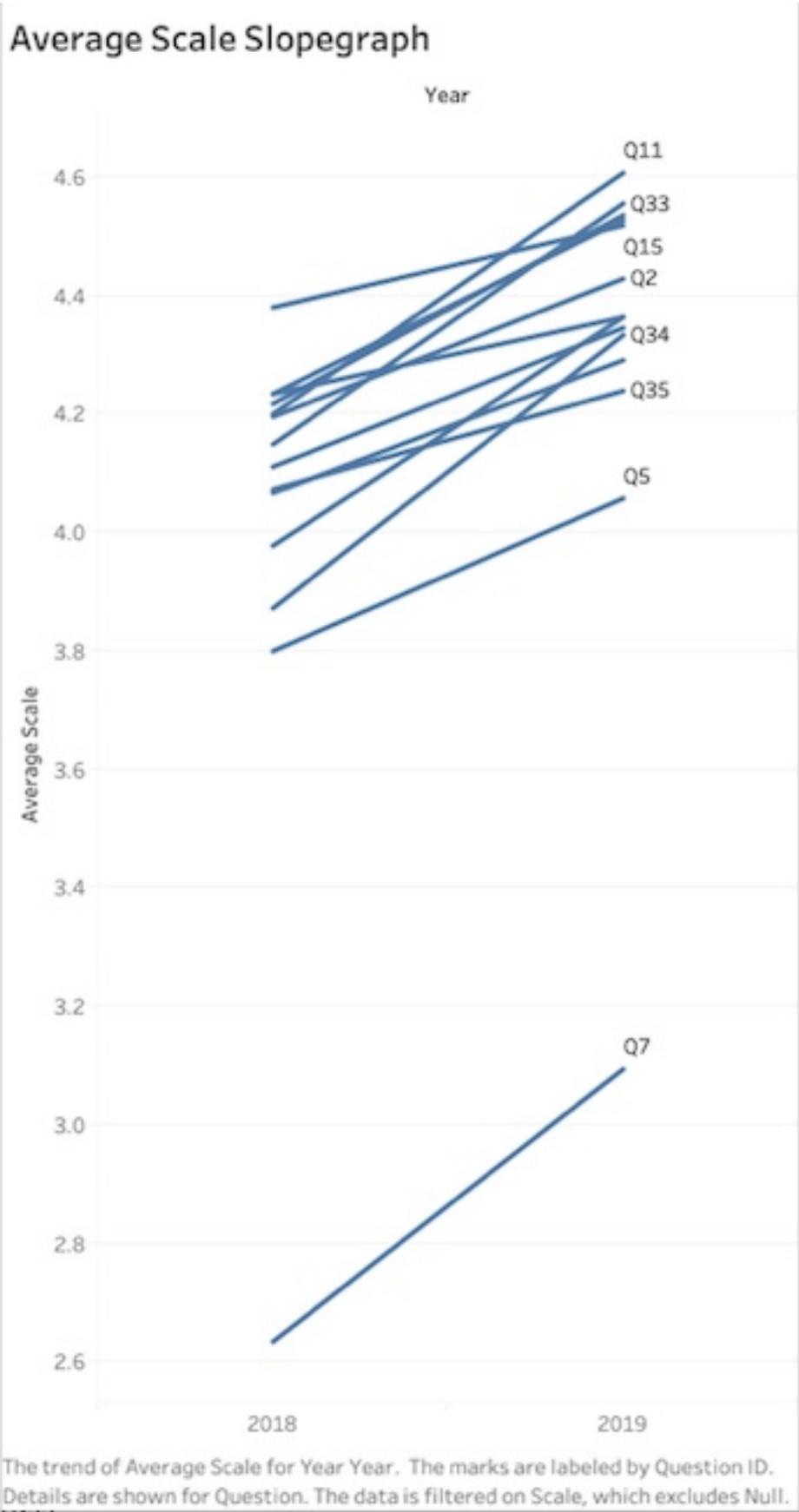


Figure 3.2: Average Scale Slopegraph

YoY Change & Average Scale

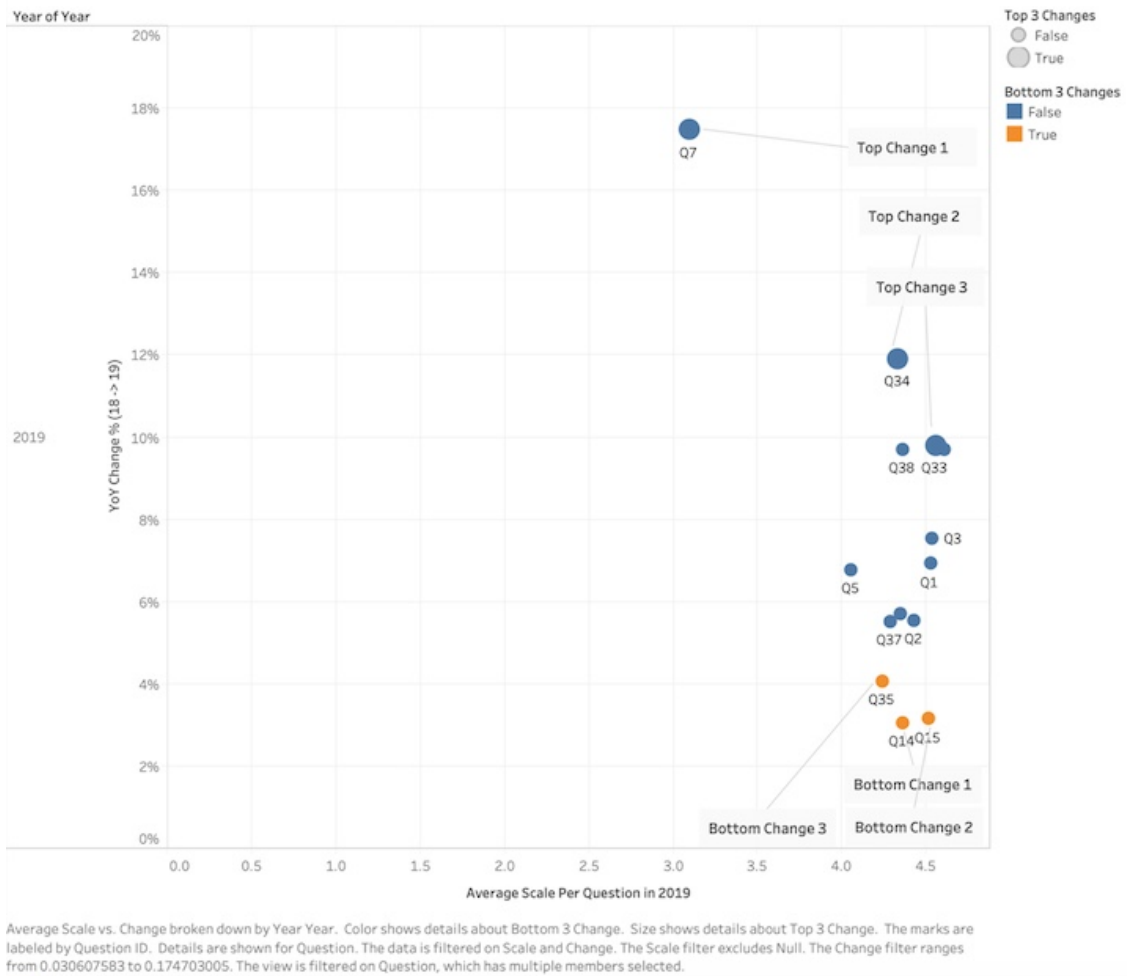


Figure 3.3: Year-on-Year Average Scale

The report now moves to unpacking these survey findings to better understand the outcomes of the project through the specific themes that emerged from the qualitative data sources.

Firstly, the process involved in building the effective transdisciplinary model is explored. This is followed by a description of the transdisciplinary learning of teachers and OTs. Next, the factors underpinning the success of the program are discussed. Finally, the environmental impacts are shared.

3.1 Process to Building Effective Transdisciplinary Model

To build an effective transdisciplinary model, it is necessary to overcome many tensions that can prevent different parts of the system from working productively together. Wintle, Krupa and Cramm (2017) conducted a scoping review to identify the tensions in OT–teacher collaborations. Of the 266 articles they reviewed, 31 (12 from

the United States, seven from Canada, six from Australia, five from the United Kingdom and one from Ireland) examined the tensions in these collaborations. The 41 tensions identified can be categorised under three themes: professional socialisation, person-level tensions and environment-level tensions (see Table 3.1).

Table 3.1: OT–Teacher Tensions (Adapted from Wintle, Krupa & Cramm, 2017)

Professional Socialisation	Person-level Tensions	Environment-level Tensions
Understanding one another	Ability to build relationships	Nature of OT service delivery
Goals and Recommendations	Lack of investment	Not enough time
What collaborations should look like	Poor communication	Nature of school setting
	Proficiency of skills	The parent
	Views on inclusion	

To overcome many of these tensions, it is essential to build trusting relationships. This section commences by examining the ways in which the OTs, teachers and SLSOs in this project developed positive *professional socialisation* and minimised *person-level tensions*.

Section 1 focuses on the **process** involved in developing trusting relationships between OTs and school staff at all levels. As addressed in Section 2, this resulted in positive transdisciplinary learning and significant professional development for teachers.

The four processes that emerged in this research were an immersion phase, during which contextual knowledge was built; a modelling phase; the development of a common language; and the evolution of communication strategies. The outcome of these processes was the establishment of trust and respect.

3.1.1 Immersion Phase

To build sufficient contextual knowledge to enable the OTs to successfully function in the school context, there was a period of subtle immersion. Three sub-themes emerged to explain why the initial immersion period was successful: (1) functional observation, (2) unobtrusive actions, and (3) sufficient time.

3.1.1.1 Functional observation

Each OT spent considerable time from the outset of the project engaged in classroom observations, to develop their understanding of classroom routines; pedagogical practices; interactions between students, teachers and SLSOs; and individual student behaviours. While this caused some anxiety on the part of OTs, it was understood to be an essential part of the process:

I've been putting myself under a bit of pressure going you know they're probably wanting all these outcomes already and we're taking all this time to kind of observe and gather information and all of that and they probably can't see that there's a lot happening...but at the same time you don't want to jump in too quickly (OT focus group 17(i)).

Moreover, it was understood to be part of the process to then become engaged in practice: *'I was doing a lot of observations ... then I started to get my hands dirty'* (OT focus group 17(i)). This observation phase was cyclical, with OTs noting: *'what I'm doing is observing and then giving strategies, observing, giving strategies, meeting with teachers, asking if they're comfortable with the strategies'* (OT individual interview 18).

The need to balance teacher insecurity at being observed was noted as important:

[teacher] came across quite nervous about having me there scrutinising her and I think that was a big thing for us to get to know each other and her to realise – 'cause I just kept saying I love being in the class with you 'cause I learn so much off you, and you know, to release that it's like a mutual kind of thing rather than me being the authority (OT focus group 17(i)).

The range of observations ensured authenticity, with a teacher noting:

it's all authentic, that's exactly right. So when you're seeing [student] in a classroom, it really shows how they're engaging with other students, how they're watching other students and how they're reacting to the outside influences coming in, whether it be noise or movement or whatever it might be so I think it's really important that therapists see the guys long-term in a classroom, seeing how they interact with other people and other influences (teacher interview 18CT).

After the period of observation for the purpose of contextual familiarisation, the embedded model enabled on-demand observation when issues arose, allowing the OT to *'come and observe...then explain what's happening [for the student]'* (teacher focus group 17C). As another teacher commented: *'[OT] comes to our classroom, observes our kids, looks, basically in the context of the question that we're asking so [OT] comes and views them in that scenario, in that context'* (teacher interview 18CM).

The value of peer observation to improve pedagogy in education is well-established, and having OT observation of teacher practice provides further opportunities for professional development, as noted in one focus group: *'when you're juggling a million things going on around you, you don't even think about what's working...[observations] don't know if you notice but this is what you do really, really well and this worked well, when you did this this kid did straight away and then another falls in'* (teacher/SLSO focus group 17A). It also proved motivating for the OTs: *'[teacher's] class was a joy to observe. Seeing sensory techniques in action to assist learning has been fantastic'* (OT email notes 05.18).

The scope with which OTs built their contextual knowledge during observation was broad, as they were noted to *'watch playgrounds, watch [students] come off the taxi, watch the transitions'* (teacher interview 18CT). They also spent their initial embedded months surveying the physical environment. While this was also considered essential, it also took *'a big chunk of [time]'* (OT focus group 17(ii)).

The immersion of teachers also ensured that the *'OT is not alone in isolation'* (anonymous survey respondent 19). The value of this was apparent to the OTs: *'I wouldn't be able to do all that [implement strategies] if I wasn't part of the gang within the school'* (OT focus group 17(i)). To facilitate this process, consideration needs to be given to offering OTs opportunities to engage with the school community, beyond their work role, as one OT noted: *'there is a need to become part of the school community but it is difficult with staff news not communicated i.e., regarding staff [social activities]'* (OT notes 11.17).

3.1.1.2 Unobtrusive actions

The period of observation and immersion to build knowledge was particularly successful because it was relatively unobtrusive, as noted in various teacher journal entries during the first six months of the project: *'the OTs have fitted in well and have not disrupted the class routine'* (teacher journal undated 17A1) and *'working with OT in class time has been through common agreement as such not really disruptive or intrusive'* (teacher journal undated 17A2). This finding was supported during various participant interviews; for example, *'It's all been non-threatening, non-invasive, consultative-type dealings'* (teacher/SLSO focus group 17A). Unobtrusive immersion was also valued by teachers as *'it was up to us to own, embrace, take on board and seek support at the level needed without having it sort of pushed down our throats or being too intrusive in the approach'* (teacher interview 18AR).

The value the OTs placed in listening to teachers was evident:

I think a lot of listening ... So asking those questions, what would you like from me? How can I help you? What it is that I can do to make your life easier and those kind of things, so a lot of listening I think helps. (OT focus group 17(i))

This becomes particularly challenging when observed classroom practices do not align with OT practices, such that *'when you question them and they go but we've been doing this for 20 years'* (OT focus group 17(ii)). However, OTs appeared to deal with these conflicts positively: *'from talking to [OT] I certainly got the impression that [OT] was very respectful of trying to understand the school rather than coming in as I'm the expert in everything'* (SLSO focus group 17).

3.1.1.3 Sufficient time

Despite taking *'much longer than I thought, just getting the rapport and credibility with them, I guess and that relationship to be able to then make suggestions'* (OT focus group 17(ii)), the investment of time to get to know the school was invaluable: *'That first term was more about really familiarising myself with how the school ran...just kind of made me realise how much I didn't understand about the environment'* (OT focus group 17(i)). Notably, only the OTs reported feeling concerned about the time taken to observe and immerse themselves to gain contextual understanding. Teachers, SLSOs and Principals only commented on the value of building relationships and trust: *'I think they trust [OT] to be honest'* (Principal focus group 18).

The building of relationships during the initial immersion period enabled a *'lot of two-way learning. I think [OTs] have been willing to ask questions of staff...what I observe in really trying to get to know students here and know the setting and understand the classrooms'* (teacher/SLSO focus group 17A).

3.1.2 Modelling Phase

A notable strength of the immersive model, and an integral part of the process of building an effective transdisciplinary model, particularly in the early phases, was the opportunities it provided for OTs to model the strategies and resources they sought to introduce.

Modelling was noted by an OT as beneficial *'not only for the kids, but for teachers and SLSOs to see'* (OT journal 07.17). The modelling was viewed as a form of mentoring, whereby executive staff had the *'opportunity to sit with the OT and receive mentoring as [OT] ... introduces the students to techniques/strategies to assist them to begin to self-regulate'* (teacher journal 18D).

As time progressed, modelling became a natural part of the OTs' time in the classrooms *'I find there's lots of things I am doing that I'm just sitting in morning circle...I'm demonstrating and I don't actually think about it, I just kind of do it'* (OT focus group 17(ii)). The teachers also observed:

I needed to find out how to solve a problem, [OT] was able to come in and have that conversation and then goes away and would flick me some information or give me some other suggestion – and [OT] trialled it with me in front of me there and then (teacher focus group 17C).

Across the range of data sources, there was strong evidence that this process of modelling increased the likelihood of success; for example:

*If I'm bringing something in I try and like to **model it and trial it out first** like I'd rather it go wrong with me than with them [teachers]. (OT focus group 17(i))*

*show what ideas and strategies have you got and they **come in and show us** and then we you know work together to reinforce that. (teacher/SLSO focus group 17A)*

*upskilling thru [sic] **conversation, modelling, trial and error** is so far beyond reading a 40 page report without context. (survey respondent 19)*

*good to have [OT] in class **demonstrating** and supporting students. (teacher journal 12.17A)*

The immersion phase's incorporation of observation and modelling was considered by one OT particularly valuable when working with a person who might otherwise be less receptive to new strategies:

I know if I was going in under the classic model of spending that one hour and not knowing that teacher, I know for a fact none of my recommendations would be implemented whereas now I at least feel like I know the way to have those things implemented. (OT focus group 17(i))

3.1.3 Developing a Common Language

During the process of immersion of the OTs in the schools, evidence emerged that participants developed a common language, which in turn assisted building relationships and knowledge.

Consistent vocabulary brought together a range of pedagogies engaged across the school:

[staff] might be learning a new set of terminology or language...A lot of the language is quite new...but the strategies are kind of known in many, many ways so it kind of feels as though all those things are coming together at the moment. (teacher/SLSO focus group 17A)

This transferred across school settings, as it was noted at a different research site: 'now we have that same language so we were all coming with a positive language and now we've modified the [existing frameworks] and [OT] was a part of helping us mould those two together' (teacher interview 18CT).

The importance of OTs using education language, rather than OT-speak, was identified by one teacher, who said:

[OT is now] speaking in the language of the education side of things perhaps rather than speaking in the OT language which automatically sounds like too much to integrate into what is already a crowded day with lots of kids.

And later:

I even watch you know sometimes even [OT's] language choices now with us and [s/he'll] start talking and then...I think [OT] looks at our faces and has

definitely, yeah, probably changed the way [s/he] talks to us as well and makes it much more relatable to our classroom situation. (teacher focus group 17C)

Principals also recognised that '[the OT] is really learning how to speak teacher and [OT]'s really now seeing how unrealistic some of the things teachers were being asked to do' (Principal focus group 18).

It was not only OTs and teachers that developed a common language; teachers and SLSOs were also encouraged to use a common language in their interactions with students:

my teacher's aides are good 'cause they mirror what you do like they learn from you and you actually hear them having the same dialogues and so there's that consistency over the day. So it's not just me saying, it's – the teacher's aides are using the same dialogue and following the same like routine as well which is really good. (individual teacher interview 18CM)

The value of consistent vocabulary and a common language was alluded to in survey respondents' comments about the project; for example: '*common language used for all students, a systematic approach that has been embedded across all syllabus areas and lessons*', and a '*consistent vocabulary to address students on the topic of emotions, sensory needs, self-regulation etc. A more systematic approach being implemented*' (survey respondent 19).

A common language, in which OTs used 'teacher' language and teachers applied 'OT' language, resulted in consistency in language use across the schools, which was viewed positively by participants. The next section reveals the process behind these shifts in language use.

3.1.4 Evolving Communication Strategies

At the outset of the project, the goal was for OTs to be embedded in classrooms. As such, survey questions enquired about the time OTs spent in classrooms. Figure 3.4 shows the participants' responses to this survey question in 2018 and 2019.

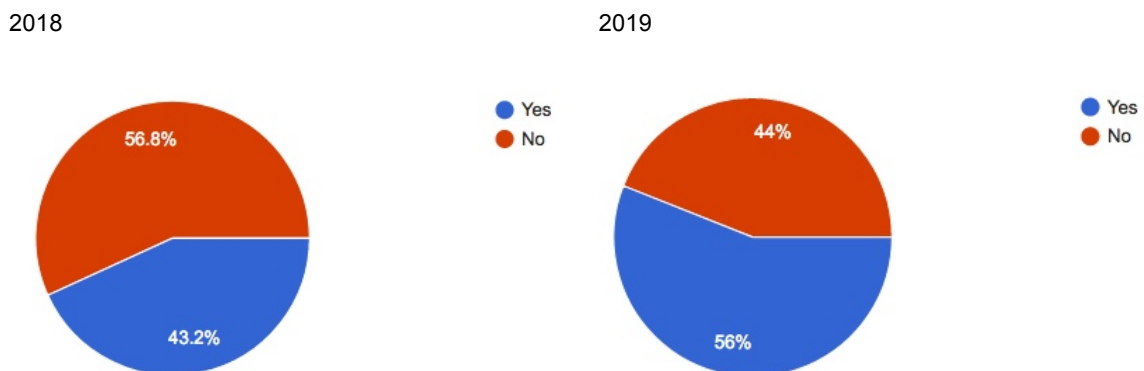




Figure 3.4: Responses to Q19
Has the OT spent ongoing, regular time in your classroom with students?



In early 2018, 43.2% of teaching/SLSO staff perceived the OT in their school as spending ongoing, regular time in their classrooms each fortnight. This increased by 12.8% to 56% when the question was asked again in 2019.

It is important to note that in the 2019 survey, the fact that 44% of teachers/SLSOs reported that the OT did not spend regular, ongoing time in their classroom should not be perceived as negative. A number of qualitative survey responses of teachers/SLSOs revealed that regular OT time was not required in their classrooms; for example:

In 2018 I received lots of support in my classroom.

I have prioritised other classes as my students had a lot of time and intervention last year so the systems are already in place. Other classes are more in need.

There are some classes who need more regular support than mine. However when I need [OT] assistance with a student I can make an appointment for her to see the student and observe them in my class.

Further, some of the respondents were not teaching a permanent class at the time of completing the 2019 survey.

If survey participants answered yes to OTs spending regular time in their classrooms, they were then asked about how many hours OTs spent in their classrooms (see Figure 3.5).

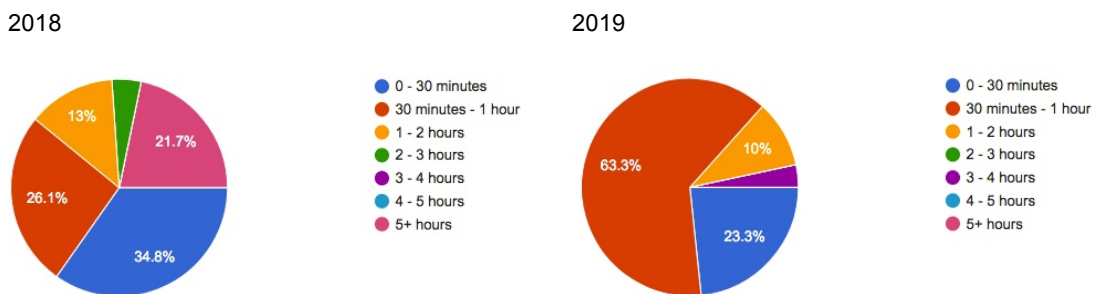


Figure 3.5: Responses to Q19
How many hours per fortnight, on average have been spent [by OT] with your students?

For this question, it was found that in 2018, during the period of the pilot classes, 21.7% of teachers/SLSOs who had OTs in their classrooms had them for a substantial number of hours per fortnight (5+ hours). Contrastingly, in 2019, 96.6% of teachers/SLSOs reported that the OT spent <2 hours per fortnight in their classrooms. This reflects the fact that after a period of intense support during the first 18 months of



the OT integration, the OTs then became available to a larger number of classrooms, spending shorter periods in each.

To examine the move from the initial immersion phase of observing and modelling, participants were asked about the professional conversations that took place, recognising that these professional conversations would also occur outside the classroom (see Figure 3.6).

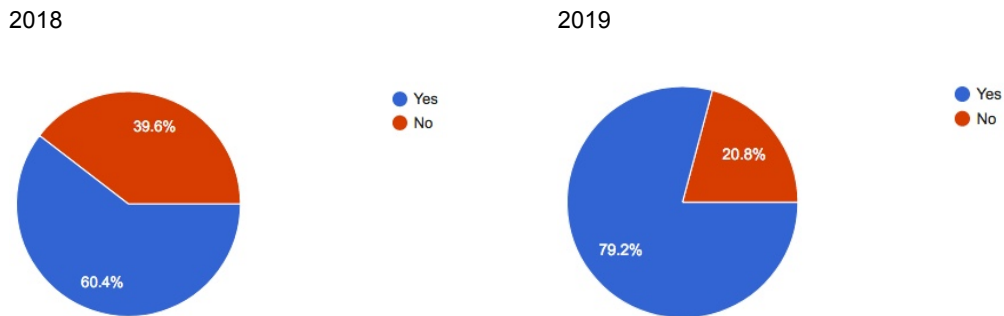
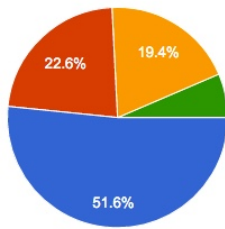


Figure 3.6: Responses to Q21
Have you had regular, ongoing, professional conversations with the OT working at your school?

The number of professional conversations taking place between OTs and teachers/SLSOs was significant from the outset at 60.4%. This increased further over the following year, with almost 80% of teachers/SLSOs across the three schools claiming to have regular, ongoing professional conversations with the OT working at their school.

Figure 3.7 shows the amount of time teachers/SLSOs engaged in professional conversations with OTs. In 2018, almost three-quarters of staff conversed with their OT for under one hour per fortnight, while the remaining staff reported spending between one and three hours per fortnight speaking with their OTs. In 2019, there was a small increase in the number of teachers/SLSOs speaking with their OT for shorter periods, with 80% of staff conversing with the OT for <1 hour and the remaining 20% spending one to three hours per fortnight in professional conversations with OTs.

2018



2019

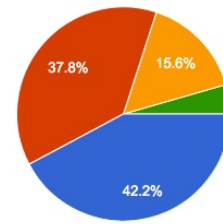
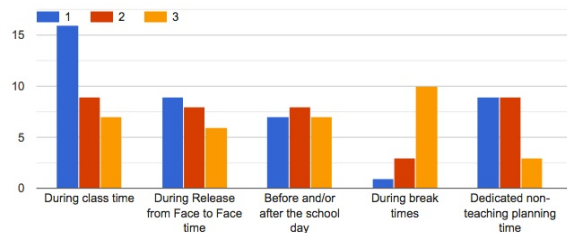


Figure 3.7: Responses to Q22

How many hours per fortnight, on average, have you talked with the OT? Including meetings and informal professional conversations

To determine where the participants preferred these professional conversations to occur, they were asked to rank a list of locations by preference (see Figure 3.8). The most notable change from 2018 to 2019 was the move from in-class time as the preferred place for professional conversations to dedicated non-teaching planning time.

2018



2019

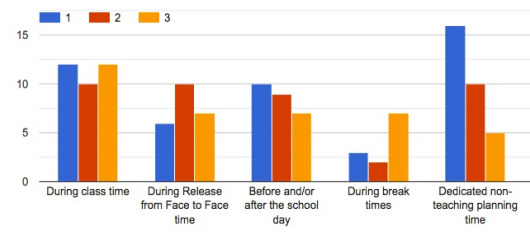


Figure 3.8: Responses to Q24

From the list provided, rank your top three preferred forums

Each research site took a different approach to facilitating conversations and communications between OTs and teachers. Apart from in one school, which had consistent weekly scheduled meetings, the communication activities evolved over time, depending on teacher and student need.

Formal scheduled meetings were highly valued, as seen in the change towards teachers preferring communication during dedicated non-teaching meeting times. The school with scheduled weekly meetings had all staff and the OT in attendance, which the OT recognised as an opportunity to *'nut out like what I'm going to be doing in the day, what's happened in the week, maybe follow up from things we talked about the week before'* (OT interview 17(i)). As an executive teacher's journal (Dec 2018) explained, *'the Friday morning OT meetings are an invaluable source of ongoing professional learning as we discuss student progress and strategies to respond to escalated and escalating behavior for individual students'*.

Where permanent scheduled meetings were not school practice, other strategies were used by proactive OTs:

at the end of every week I send an email of the whole school – I guess to make me accountable but so they know where I am. (OT focus group 18)

if I've had a session I'd follow it up with an email saying hey, we saw [student] today, this is what I observed, this is what we probably need to look at over the next week. So then it's a written. (OT interview 19)

In schools in which formal weekly meetings did not occur, teachers were also appreciative that OTs made themselves visible and available:

every week we at least have some sort of chat like [OT] will pop in and check on our students...if I have any questions or you know just like any you know any ideas on goals and stuff like what OT strategy should we work on with this student this week...[OT] will definitely have a bank of information to pass on so yeah, I feel like [OT] is very accessible, we can have a chat every week. (teacher interview 19BK)

I feel like with [OT] on hand we can just instantly access her knowledge, I guess because we can email any time or you know and when – so she's here twice a week so we can always you know find her and yeah, access any sort of information on the OT front that we need. (teacher interview 19BL)

[OT] comes into the classroom with us so although it's not a scheduled meeting it is actually – she's on hand so that when something – so she'll come into the class and make sure everything's going alright. If I want to see her I have RFF and she's here the day I have RFF so I kind of use her up a bit in that time and I'll say to her I've got this going on, what do you think? (teacher interview BM)

Importantly, 'regular visits from embedded OT provides sense of assurance to teachers/SLSOs to be able to seek advice, discuss concerns for student welfare' (survey respondent 19).

Ensuring flexibility in the scheduling of time with the OT proved valuable, as it could then be managed around student need, rather than strict timetabling, as evidenced in the following quotation:

depends on the student, depends on the class...for some classrooms I'm okay to just wander around the class and spend time with the student, whereas for this particular student that would be distracting for the rest of the class...at the morning meeting we talk about those times...it had been quite flexible but this term we decided to make it more structured 'cause I think that suits the kids, but it also suited the teacher so we've split up 45 mins for each class in my day and that 45 mins doesn't have to be direct with the kids, it can be making phone calls to parents, it can be planning resources...in these kinds of environments things don't necessarily happen in the 45 minutes that you want them to...the squeaky wheel gets the oil. (OT focus group 17(ii))

Similarly, 'I'm seeing kids that aren't in the pilot classes because...it's the [children with] behaviour, it's the emergency' (OT focus group 18).

In addition to formal meetings, informal classroom conversations, and ad hoc out of classroom meetings and discussions, OTs used email communications and one even set up 'a notice board in the staff room ... so that if people are not sure what is happening with the program they can have a look . If you have ideas about sensory processing activities please write the ideas down' (OT email 02.18).

3.1.5 Establishing Trust and Respect

The processes each school moved through that allowed the OT to become fully embedded in the school resulted in the respectful and trusting relationships necessary for transdisciplinary learning to occur. The OTs were particularly cognisant of the need to develop trust:

the strategies I've used with teachers that have gotten traction in terms of changing practice have been the ones that require trust first of all which is huge like you cannot buy trust in five minutes, you really need it, you need trust. (OT interview 18)

Building teachers' trust is probably the biggest part so it's all that relationship-driven things. If they trust you then they'll trust even if it's just one suggestion that you make. (OT interview 19)

There was evidence throughout the data that teachers valued the relationship-building process and the trust each had in the other: '[OT] is very open with – giving me ideas and also taking suggestions of what I think could help with my expertise and hers and between both of us we're yeah getting along well and – yeah. It's all positive', and later 'I think just the trust, the trust that we have in each other. We're both qualified, we're both – we have the same direction of goal of helping the kids to achieve, yeah, get their outcomes' (teacher interview 18AB).

The degree to which there was trust and respect between the parties can be, to some extent, captured by the level of involvement staff have with the OT. Figures 3.9 and 3.10 show the responses to the two survey questions that sought to uncover this.

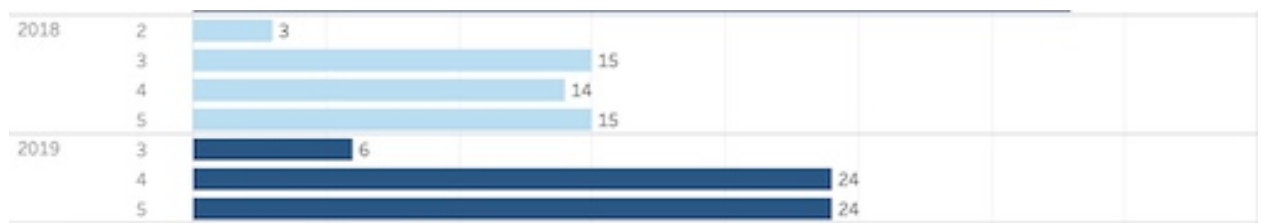


Figure 3.9: Responses to Q34
How would you rate teachers at your school's involvement with the OT?

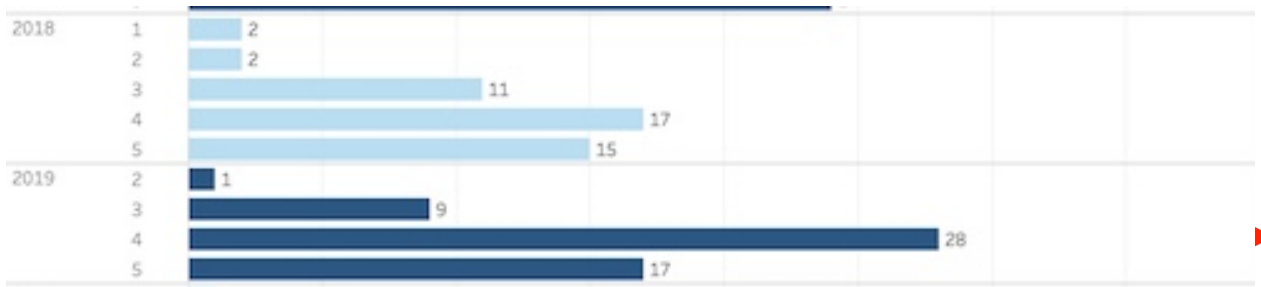


Figure 3.10: Responses to Q31
How would you rate SLSOs' involvement with the OT?

From Figure 3.9, it can be seen that, in 2018, 62% of respondents believed there was high to very high engagement between teachers and OTs, increasing to 89% in 2019. Similarly, there was growth in the level of perceived engagement between SLSOs and OTs between 2018 and 2019, at 68% and 82%, respectively (see Figure 3.10).

3.1.7 Key Findings from Part 1: The Process

- Building an allocated observational period into the process would alleviate OTs' concern about time taken to build necessary contextual familiarity.
- Teachers valued the unobtrusive and non-threatening nature of the immersion period, in turn contributing to successful relationship building between OTs and teachers/SLSOs.
- It is essential that OTs be provided opportunities to engage in observations in context across the range of school activities (i.e., transitions, arrival/departure travel, lessons with other teachers) to build their knowledge.
- The modelling phase, in which OTs introduced teachers to available strategies and resources, contributed to improved up-take of OT recommendations.
- The modelling phase helped to build positive relationships between OTs and teachers/SLSOs.
- Immersion helped generate a common language, which supports ongoing professional conversations.
- Teachers/SLSOs recognised the value of using a consistent vocabulary across the school.
- More than 66% of teachers/SLSOs reported OTs spending regular, ongoing time in their classroom.
- 79% of teachers/SLSOs said they engaged in regular professional conversations with OTs.
- A shift was observed in teachers/SLSOs' preference of location for engaging in professional conversations with OTs, from the classroom to idedicated non-teaching planning time.
- Professional conversations between teachers and OT are a valuable form of professional development. It is worth investigating how these could be formally accredited.
- Flexibility is required, as communication strategies evolve over time.
- Dedicated meeting times are highly valuable.
- 89% of participants reported high involvement between teachers and OTs and 82% reported high involvement between SLSOs and OTs.



3.2 Transdisciplinary Professional Learning

This section focuses on the transdisciplinary learning demonstrated by the themes that emerged from the qualitative data. The first two sections examine the evidence for the transdisciplinary learning of the teachers/SLSOs and OTs, respectively. The section concludes with analysis of the participants' comparisons between this project's embedded OT model and the traditional, external models of occupational therapy delivery in schools.

3.2.1 Transdisciplinary Learning—Teachers

This section commences by presenting the baseline knowledge of the teachers/SLSOs. Four sub-themes emerged to explain and describe the professional transdisciplinary learning that occurred during the research period: (1) validation through building theoretical knowledge; (2) viewing students and pedagogy through an OT lens; (3) strategy building (preventative rather than reactive); and (4) generalisation of transdisciplinary knowledge.

At the commencement of the research component of the project in 2017, baseline data were gathered to understand the teachers' and SLSOs' knowledge of, and exposure to, professional development in areas relevant to occupational therapy.

Survey respondents revealed the types of professional experience in which they had engaged in the past five years. Particularly relevant to the project, 40% of staff at the three project schools had engaged in professional development related to self-regulation, almost 65% had undertaken professional development in the area of sensory processing, and 84% had pursued further learning around behaviour management (see Figure 3.11).

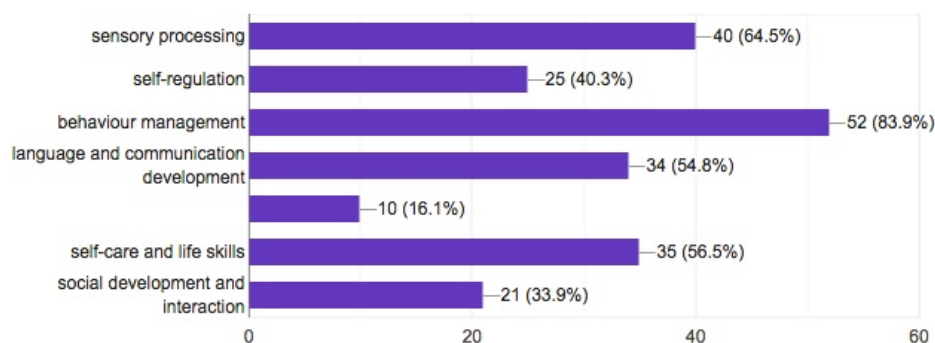


Figure 3.11: Types of Professional Development Undertaken by Teachers/SLSOs

Survey respondents also indicated a surprisingly high perception of their own knowledge and understanding of sensory processing and dys/regulation (see Figure 3.12).

Rate your level of understanding of the following (Form 1):

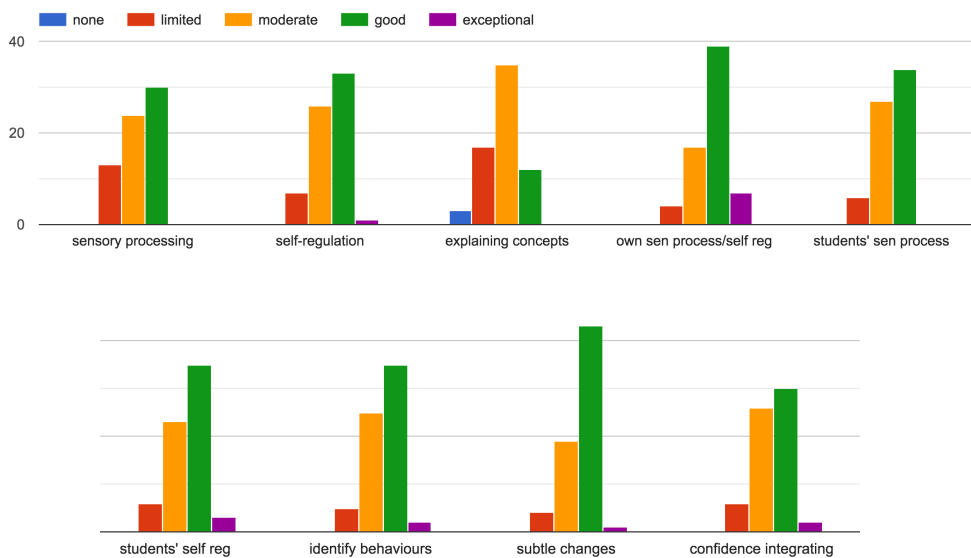


Figure 3.12: Level of Understanding of Teachers/SLSOs of Student Behaviours and Needs

As noted in Section 2.3.1, there were 67 respondents to this 2017 survey across the three schools. The percentages of respondents who rated themselves as having a **moderate to good** (and occasionally **excellent**) understanding of each concept at the commencement of the research were as follows:

- level of understanding of sensory processing – 88%
- level of understanding of self-regulation – 90%
- confidence in explaining these concepts to colleagues and parents – 70%
- understanding of own sensory processing and self-regulation needs – 94%
- understanding of students' sensory processing challenges – 91%
- understanding of students' self-regulation challenges – 91%
- ability to identify behaviours in students related to self-regulation – 92%
- ability to identify subtle changes in students that indicate they are becoming dysregulated – 94%
- confidence with integrating these concepts into daily teaching activities – 87%

The respondents' perceived levels of understanding and confidence with these items was unexpected. However, as will be explored throughout this Findings Section, this

confidence had not translated into practice prior to the project commencing (i.e., the OTs being embedded in the schools).

3.2.1.1 Validation through building theoretical knowledge

A notable finding relating to teachers' professional transdisciplinary learning was the validation they experienced when they learned from the OT about the theory underpinning the strategies they were already naturally inclined to implement.

Teachers across the three schools recognised they were naturally implementing certain strategies with their students, particularly in relation to their sensory needs, but that this was often not grounded in theory: *'a lot of things we were doing but we didn't always know exactly why we were doing them or why they were working'* (teacher focus group 18). During the project, the embedded OT might explain, *'that's because his body's doing this ... so I think for me having sort of the language and understanding of what is actually happening to the child or why the child does do what they do and why the strategies we're using are working has been really great'* (teacher focus group 18). This was affirmed by another teacher:

I think some of the things that they do is we were already doing anyway but it's good to have someone affirm well that's what you should be doing, you know? You're doing the right – well what you're doing with him is exactly what you're supposed to be doing with him. (teacher interview BL)

For another survey respondent, it *'reinforced my current practice and gave me a formal structure and deeper therapeutic perspective'* (survey respondent 19).

The OTs recognised that teachers were putting appropriate strategies in place, but suggested *'they were more like incidental thing as opposed to knowing exactly why they were doing it'* (OT focus group 17(i)).

Validation alleviated one teacher's guilt of:

feeling like you're not doing your job by offering them [sensory breaks] because I think so much is placed on the academic part and sometimes you felt really guilty in inverted commas because you were saying oh we're going to jump on the trampoline or we're going to have sensory play. I think I personally used to think you know am I wasting my time? Am I wasting their time? Should I be you know sort of pushing that and it was this really nice feeling of justification...I knew it was working but it was having somebody say to me this has got a meaning behind it and it's the right thing to do. (teacher focus group 17C)

It also helped teachers' when talking with external parties:

it [validation to use sensory activities] also give us more power – power's the wrong word but like when we are talking to the home schools and explaining to them why we do what we do but also giving them almost permission to be able to go and do those same sort of things and not feel guilty but it's like you're going to get more out of the student. (teacher focus group 17C)

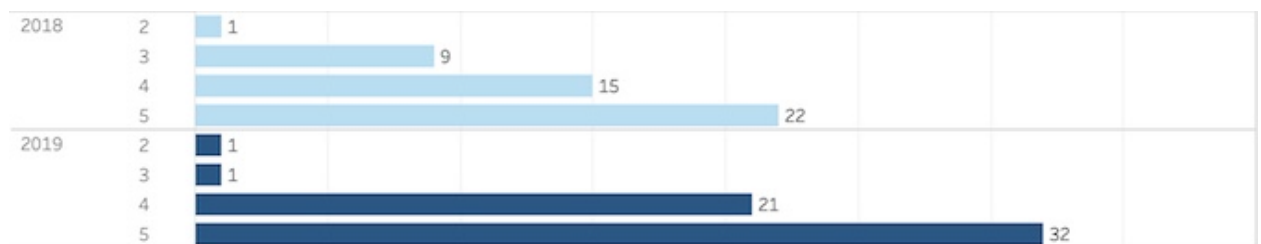
Developing knowledge of the theory behind practice was particularly important to cater to the diverse needs of teachers within a school: *‘teachers who are just ready to try everything, you got people who need to understand why, you’ve got people who want to know the evidence base and you know how’s it going to impact my classroom’* (teacher interview 18CT).

Significant transdisciplinary learning was evidenced as teachers/SLSOs’ confidence grew, not only to apply and expand their existing practices, but to move towards implementing the strategies and resources introduced by the OTs. There was subsequently a clear shift in how teachers/SLSOs viewed their students and adapted their practices through an OT lens, as explored in the next subsection.

3.2.1.2 Viewing students and pedagogy through an occupational therapy lens

Nine questions in both the 2018 and 2019 surveys explored the degree to which teachers/SLSOs across the three research sites integrated and applied the theoretical knowledge and practical strategies being espoused by the OTs. As noted in Section 2.3.1, the 2018 and 2019 surveys had different numbers of respondents (2018 N=50; 2019 N=59). For each question, 1 = strongly disagree and 5 = strongly agree.

As shown in Figure 3.13, there was growth from 79% in 2018 to 96% of teachers/SLSOs reporting in 2019 that they had considered different ways of supporting student development as a result of the embedded OT.



**Figure 3.13: Responses to Q1
Considered different ways of supporting student development**

Seventy eight per cent of 2018 respondents reported they agreed/strongly agreed that they had adapted their practice to support student development. This increased to 93% in 2019 (see Figure 3.14).

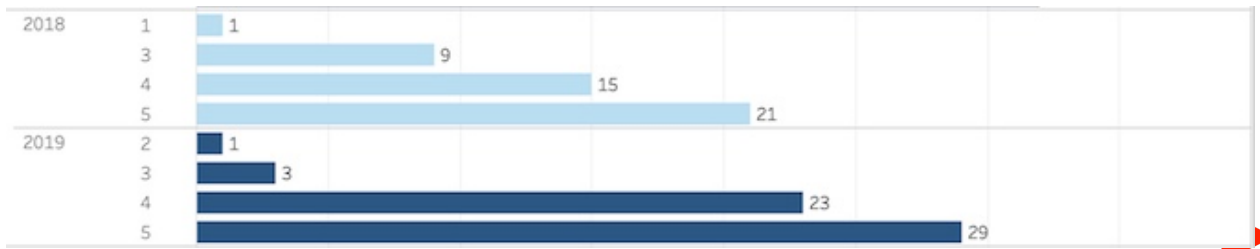


Figure 3.14: Responses to Q2
Adapted my practice to support student development

As seen in Figure 3.15, 2019, 52 of 56 respondents (93%) agreed/strongly agreed that they had improved their practices, which was a 15% increase from 2018 (78%).

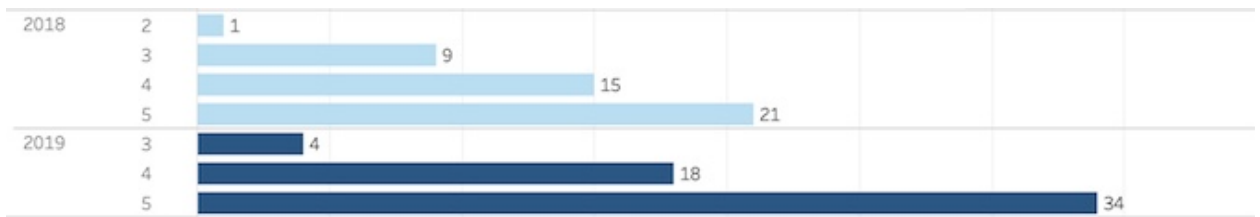


Figure 3.15: Responses to Q3
Through access to Occupational Therapists I have improved my practice to support student development

Q5 explored the degree to which teachers had adapted the way they worked with SLSOs and how SLSOs had adapted the way they worked with teachers. Again, there was an increase between 2018 to 2019, from 65% to 75% (see Figure 3.16).

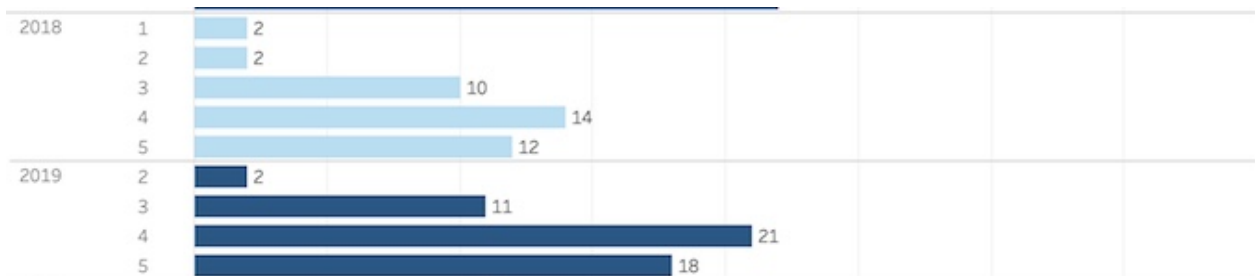


Figure 3.16: Responses to Q5
Through access to the Occupational Therapist I have adapted how I work with SLSOs/teachers

With regard to specific strategies introduced by the embedded OT, teachers/SLSOs continued to build their confidence, which was at 96% in 2019, up from 86% in 2018 (see Figure 3.17).

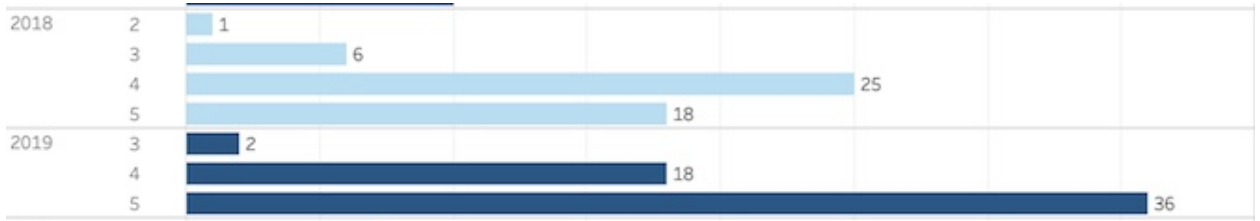


Figure 3.17: Responses to Q11
I feel confident to use Zones of Regulation in my classroom

In 2018, 86% of respondents reported that this program would help them to manage student behaviours. There was a subtle increase to 89% in 2019 (see Figure 3.18). Note that the wording of this question was rephrased slightly in the 2019 survey, from 'if applying the Zones' to 'does applying the Zones'.

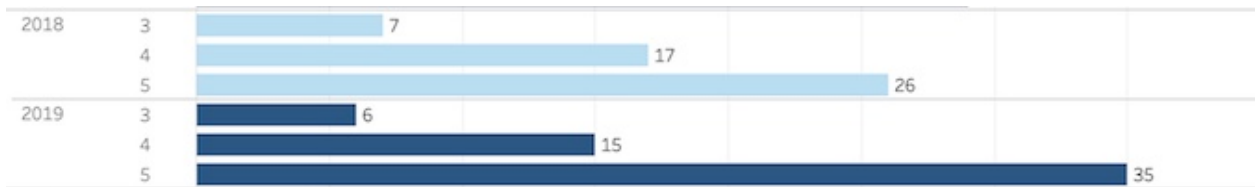


Figure 3.18: Responses to Q15
Applying Zones of Regulation help me to understand and manage student behaviours more effectively

In 2019, 85% of teacher/SLSOs' agreed/strongly agreed they understood the impact of students' sensory processing on daily school routines (see Figure 3.19).

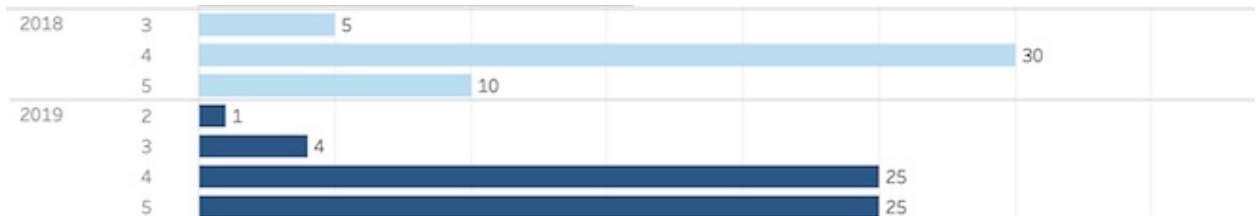


Figure 3.19: Responses to Q36
I understand the impact of each student's sensory processing strengths/challenges in daily school routines

In 2018, 89% of teachers/SLSOs agreed/strongly agreed that they were able to identify subtle changes in students that indicated they were becoming dysregulated. This increased to 93% in 2019 (see Figure 3.20).

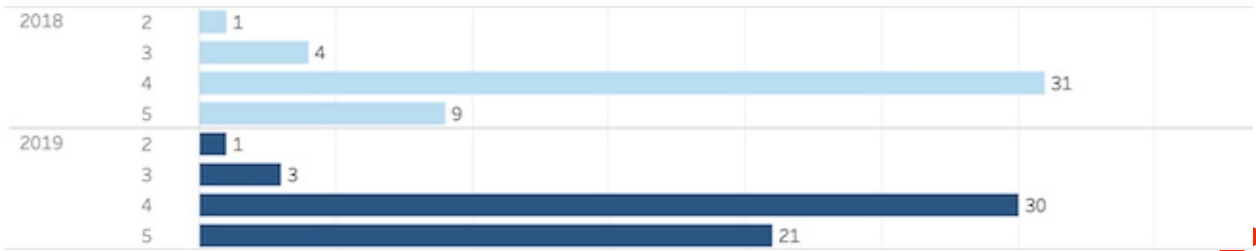


Figure 3.20: Responses to Q37
I have the ability to identify subtle changes in each student that indicates they are becoming dysregulated

In 2018, 76% of teachers/SLSOs agreed/strongly agreed that they were confident to effectively intervene when a student was dysregulated. This increased significantly to 91% in 2019 (see Figure 3.21).

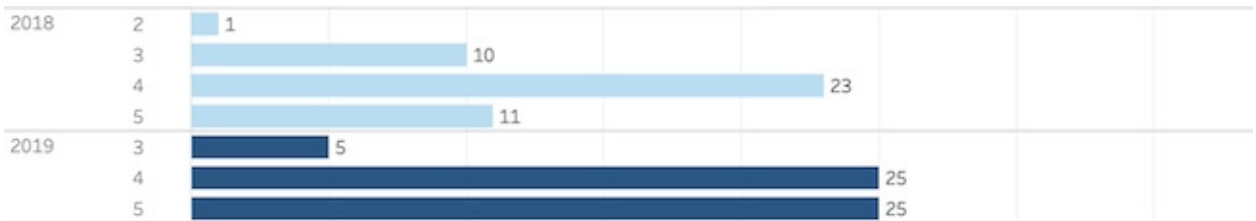


Figure 3.21: Responses to Q38
I am confident to effectively intervene when a student is dysregulated

Building on the survey findings regarding teachers/SLSOs' perception of their knowledge and implementation of, and confidence with, the various concepts advocated by the OTs, supporting qualitative data is now presented, to show how the teachers/SLSOs developed in how they perceived their students, as well as in their pedagogical classroom practices.

Teachers' growth in the way they viewed students was captured across the various qualitative data sources used. Illustrative examples include:

Generally it has changed the way staff view behaviour and deal with it. It has changed the perspective to 'what can we do to support regulation' rather than 'the student is choosing to be defiant/agitated/aggressive. (survey respondent 19)

I always have that guilt of like the traditional educational, right? Goals where now I'm seeing more that the OT's just as important for these students as – if not more important, really, as the educational side ... you realise that these students do need that sensory input in order to function. (teacher interview 19BK)

some of the knowledge of the understanding of why kids function the way they do...we might think it might be disobedience but it's actually another factor of anxiety or stress...that I didn't really take into consideration before. (teacher/SLSO focus group 17A)

seeing these behaviours aren't deliberate and sort of dealing with them and moving on from a different perspective rather than thinking I'm doing something wrong or you know the environment. (teacher/SLSO focus group 17A)

I've become increasingly apt at reading the 'undercurrent' of some students emotion and reflection of how they dealt with the challenge. (teacher journal 08.18).

now I'm seeing this, absolutely obvious. I was sort of in that position where I was a little bit more connected with those subtle signs that you were seeing because you know you often just look at those things like you know foot tapping, pencil tapping you know kids that are constantly on the move up and down and what not but you weren't then really looking at those really subtle things that were happening 'cause I didn't have the expertise for it. (teacher interview 18CC)

There was also significant qualitative evidence that teachers were changing their pedagogy as a direct result of the transdisciplinary learning experience:

in particular the sensory breaks. I never had sensory breaks with my kids. Okay, we got out and did physical activity but it wasn't really targeted to sensory yet now we're having sensory breaks every session so we do like 20 minutes of work, 15 minutes of sensory and that sort of helps again to regulate them ... it's all part of our class timetable now so part of our class timetable that yeah, we've got in there booked in their three sensory breaks throughout the day on top of recess and lunchtime. (teacher interview 18M)

It just becomes part of your daily routine rather than becoming a therapy thing that we do, it just becomes part of your timetable and how you run your class so it's not a – it shouldn't be a unique thing or a separate thing. (teacher focus group 17C)

Understanding into how students are feeling, what has caused them to feel a certain way and adapting my approach/practice/instruction accordingly to meet their specific needs at the time. (survey respondent 19)

3.2.1.3 Strategy building—Preventative rather than reactive

As one survey respondent explained, one 'positive outcome has been the ability to read students behaviors and intervene appropriately and prior to the behaviors escalating' (survey respondent 19). This was seen as particularly beneficial:

adrenaline hits and then okay, what do I do? where now it's like more forward-thinking so instead of waiting for you know that ultimate crisis moment like you kind of read the behaviour signs way earlier and try and implement some sort of movement strategy or OT strategy in the system to try and bring the behaviours back the other way so – yeah ... just being like giving them tools and I guess kind of more of the theory behind the OT side of it rather than just going oh we have a trampoline, this child's hit the red. (teacher interview 19BK)

The range of strategies introduced by the OTs meant that teachers could 'instantly know that those strategies are available to try and bring [students] back down again and just knowing that I guess you can help staff confidence in managing those behaviours' (teacher interview 19BK).

A range of survey respondents commented on the preventative nature of the occupational therapy strategies: 'I'm more aware of the signs to look for when the children are getting worked up and I tell the student what zone they are in and direct them to a calming activity' (anonymous survey respondent 19) and 'frequent monitoring of students' zones allows me to intervene with preventative sensory strategies at an earlier stage and sometimes prevent red zone behaviours' (anonymous survey respondent 19)

Similarly:

I am more focused on students' behaviour and my ability to pre-empt situations and triggers for them. I am able to make a choice on what activity may assist them to co/self-regulate – which will stimulate and which will calm. For example, if students come off playground heightened – so calming activities are used (reading, meditation, colouring in, sensory tools). (survey respondent 19)

This was viewed as having '**empowered me** to recognise when students are elevated and given me options to assist the students in calming themselves' (survey respondent 19).

Having an OT embedded in the school was described by one survey respondent as having:

provided a most valuable resource to increase my knowledge and understanding of how to effectively implement strategies to improve my students cognitive, physical, sensory and motor skills, as well as enhance their confidence. The practical strategies [OT] provides have been a massive contribution towards assisting children to identify their emotions and begin to learn how to self-regulate.

Immediate professional development

Building on the original period of immersion, the OTs' prolonged engagement in classrooms enabled them to support teachers/SLSOs as students continued to present new behaviours and react in new ways to different stimuli.

Having the OT available when new students commenced was noted as extremely beneficial for teachers:

when I got a new boy in here and I was not looking at him correctly and I was saying but he's so calm, we haven't – I'm not pushing his buttons, I haven't seen any behaviours and so forth and [OT]'s like, have a look at his eyes like he's sitting there really quietly but his eyes were just going a million miles an hour. Now I had missed that. (teacher interview 18CC)

As issues arose, there was the opportunity for the '[OT] to come and touch base with [the student]...then [OT] says well look, try this, this might be happening, that you need to change this setting for him, try these resources out (teacher interview 18CC). This had a powerful impact on professional learning: 'OT is available to talk through

therapeutic response to the student, with me, in real time. This provides deep contextual meaning to my professional learning' (teacher journal 09.18)

3.2.1.4 Generalisation of transdisciplinary knowledge

Transfer of transdisciplinary learning

Over time, there was evidence of teachers transferring their learning to maximise outcomes for other students:

quick hands-on strategies, really quick, achievable strategies that we can use not only for that child that [OT]'s done a specific program for but....I can use that with another student, I'm going to try that with another student. And so that's really good and I think that's been the big difference that I have seen after working so long with therapists, that their programs were fantastic but they were often very unachievable for us on a day-to-day basis. (teacher interview 18CC)

This transfer of knowledge was also evident for other teachers: *'I've picked it up and now I'm looking at other kids and how they're travelling with it'* (teacher interview 18C) and *'You go home and go well I have four kids in my class that fit into this box so I can use all of this. I have two kids that – 'cause we're time-poor – I have two kids like this so this crosses over'* (teacher interview 19BL).

Adaptation of transdisciplinary learning

Substantial evidence emerged demonstrating that teachers/SLSOs were moving beyond implementing only the strategies and resources introduced by OTs to adapting occupational therapy programs and ideas to suit the needs of their students and classroom context. In a school in which the Zones of Regulation had been introduced, one teacher offered the following:

we do zones every single day, there's not a day that we don't utilise them and we visit them regularly throughout the day but it's just natural now, it's not something that we have to set aside and go we're doing zones. So in our circle time in the morning we visit zones but I've created lots of different ways that we use them ... then added to that over the day and then changed the way I did it like I do a true to false thing, I put a timeline down, I made 50 cards that have all different scenarios. You see the dots around the room? ... and I'll give them a scenario so they move to whatever colour that – if that happened, how would I feel and why? So they'll move from the middle of the room to – like they'll go to yellow ... Yeah, I adapted it to my kids. And 'cause they're all boys they're very active and they're very hands-on. (teacher interview 18CM).

Regarding expanding the introduction of sensory activities in a structured way for students, one teacher described how *'Friday afternoons introduced sensory wheel experience. 3 mins to experience each sensory activity. Then decide whether they would like it added to their tool box'* (teacher journal 04.18).

Once teachers experienced success using resources and/or equipment introduced by the OT, they found ways to replicate that success, regardless of whether the original piece of equipment/resource was available, for example:

the big new swing set out the front and seeing how the students responded and really calmed down on that. It's sort of like okay, we can't necessarily always get down to that swing so what can I use in here to create that same sort of movement? (teacher interview 19BM)

Prior to this project, one school's existing sensory room was:

chucked in the smallest room in the tiniest corner... now what I've learned through this program I can implement it in the outdoor area so I just don't feel like I really need to book time to go into the sensory room when I can achieve the same if not more just in the area off the classroom. (teacher interview 19BK)

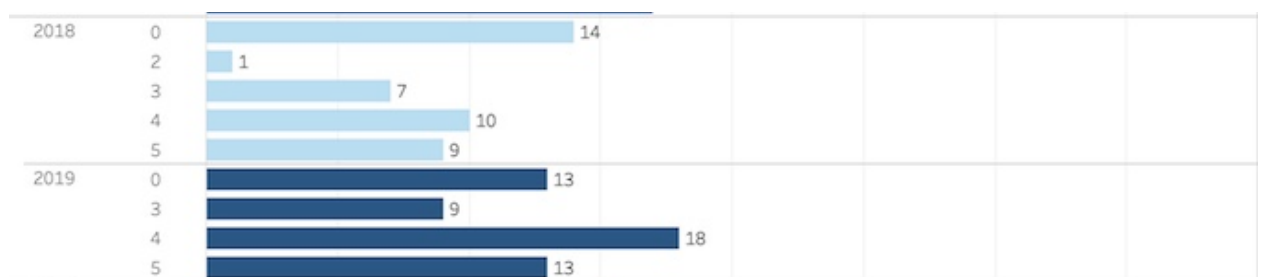
This teacher also commented on how resources introduced by the OT that had not been successful could be re-purposed:

blue covers over lights haven't noticed any major difference like they're quite expensive and they just do – they – magnetic clip over the top. But we haven't really seen a big impact with that change so we were saying maybe we could try them in the kitchen 'cause the kitchen's quite an aggressive sort of area. (teacher interview 19BK)

Programming

For teachers working in SSPs, an important component task is to develop personalised learning programs for individual students and, where appropriate, whole-class programs that integrate core curriculum. External OTs working with children are often tasked with preparing occupational therapy programs that are shared with schools. Given this, one aspect of the research explored the degree to whether the transdisciplinary learning was reflected in school programming. Two questions in the surveys examined this issue.

In 2018, 46% of respondents agreed/strongly agreed that access to the OT had resulted in them adapting their programming tools. This increased by 12% to 58% in 2019 (see Figure 3.22).



**Figure 3.22: Response to Q7
Through access to Occupational Therapist I have adapted my programming tools**

When asked the degree to which students' sensory processing issues were considered when programming, in 2018, 80% agreed/strongly agreed they were acknowledged, which increased to 89% in 2019 (see Figure 3.23).

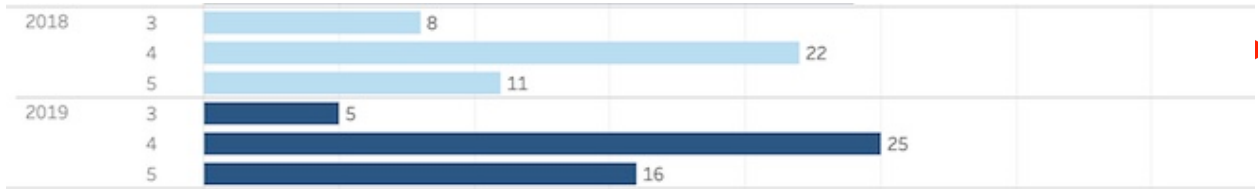


Figure 3.23: Response to Q35
I acknowledge each student's sensory processing issues when programming

Various participants across two of the schools highlighted the ways in which the OT strategies were to be integrated into the Personal Development, Health and Physical Education (PDHPE) curriculum. In a journal entry (09.18), one teacher noted specific ways that Physical Education was being used to reinforce learning in other Key Learning Areas, including literacy. Similarly, a Principal described how they were:

looking at how they integrate the Zones of Regulation or movement and a lot of the OT lens on that...such as [literacy lesson] teaching the kids punctuation with you know like karate moves and stuff like that to have them up and moving during a spelling activity. (Principal focus group 18)

The OTs saw the value of integrating occupational therapy strategies into the curriculum: 'Looking to write a curriculum around pd/h/Pe so that teachers don't have to write up something every time' (journal 07.17). Another OT (interview 19) highlighted her role in driving the programming from a therapy perspective.

However, there is a challenge for schools in formally integrating programming to reflect occupational therapy strategies:

all these tools are actually part of the PDHPE curriculum. So we're at the next step now in trying to get what we do innately every day across the day all day into a document that works. (teacher interview 18CT)

Attending the individual education plan meetings for students does not appear practical for embedded OT's: 'block out a whole week and then parents just don't show up and like it's a massive expense that to this point we haven't seen as much value [compared with] using [OT] in the classrooms' (teacher interview 18CT).

Examination of the programs developed in the form of students' personalised learning plans and whole-class and school programming is to be addressed in Report 2: Student Learning and Development.

3.2.2 Transdisciplinary Learning—Occupational Therapists

Three themes emerged in relation to the impact on the OTs' professional learning and role in developing an authentic transdisciplinary model: (1) developing knowledge of the role of the teacher; (2) developing knowledge of school practices; and (3) Department of Education system knowledge. It also became evident that a better understanding of the strengths of the OT-embedded model could be gained by comparison with the traditional external model.

3.2.2.1 Developing knowledge of the role of a teacher

As a result of the OTs being immersed in schools, they developed an innate understanding of the role of the teacher and their practices:

Currently I hold – like I work privately for myself and I'm – I think at last count I'm in 11 different schools in the Catholic, independent and public school systems and high schools and primary schools and a couple of preschools, actually so I'm all over the shop, to be honest and I feel like this learning, my understanding of teachers and also some of the long-held beliefs that I've had about teachers have been really debunked. One of the beliefs is I am starting to understand your training better. We have completely different training. (OT interview 18)

On the issue of teacher training in comparison to the OT knowledge set, one OT's comment was particularly reflective of the effect this had on practice:

[teachers receive] training about like different learning styles but I don't think that that's been linked to developmental processes and the sequential nature of development and where if there's disruptions in that process then learning styles doesn't even begin to touch it in terms of how that looks and how that...So they might not have a learning style or their learning style might change 17 times a day because they're so biologically dysregulated or whatever. (OT interview 18)

It was also acknowledged by an OT that *'they believe that I can help their student 'cause they all passionately love their students and that's also something I – I mean I've always known that but it's so lovely to see that on a daily basis'* (OT interview 18).

There was also recognition of the demands on the teacher:

to produce content are enormous like I don't know how teachers do it, develop lessons every single day of the week for six hours or five hours or however long – how much content you have to deliver. Like as a therapist if I was to do a workshop and present for five hours it would take me two months to prepare that content. You guys do it on a daily basis, it blows my mind so we've got completely different skillsets and we approach information differently because of that, because of the need to disseminate so much content on a regular basis. (OT interview 18)

3.2.2.2 Increased understanding of how schools operate

The immersion period had a profound effect on OTs' developing an insider perspective: *'I find myself like when I go into schools now, I think I've got a different perspective, yeah, I feel like I can see from the inside a bit more rather than just being an outsider looking in'* (OT focus group 17(ii)). This increased understanding led one OT to observe: *'schools are such complicated microorganisms'* (OT interview 18).

Executive staff also recognised that the embedded model enables the OT to *'understand why different things are harder to trial at schools but [OT] keeps persisting when people find it a bit difficult'* (teacher interview 18CT). Teachers also recognised OTs growth in this area, for instance:

[at school] there's a lot of flexibility and adaptability required and there's a lot of changes that happen very quickly ... so I think [OT]'s kind of learnt to adapt to that. And I think [OT]'s learnt to adapt to a timeline a little bit too because you might need something that works now but in two weeks' time it's not going to work. (teacher interview CM)

Entries in OTs' journals also evidenced their growing awareness that personnel changes in schools, whether of a teacher or executive staff member, affect progress and can see a change in goals.

3.2.2.3 Building knowledge of the education system

Executive staff identified the benefit of OTs:

watching that process of the paperwork, the – like we're accountable, we still had hours to meet, curriculum requirements to meet, we still have you know their goals to try and achieve that aren't just behaviour-driven, they're academic-driven, literacy, all those types of things so [OT] seeing all of that will help – I think has helped [OT] understand what works and what doesn't. (teacher interview CT)

OTs recognised the limitations of some of the ideas being implemented and the lack of control that teachers and schools may have over aspects of their work. One example was in reference to a sensory room: *'we can't do anything to at the moment because of the Departmental – it's not zoned as a sensory room and the Department have said that they might reclaim it as a classroom'* (OT interview 19). Other limitations noted by an OT were *'barriers = playground; change of Principal; change of teacher; lack of understanding of departmental procedures/policies'* (OT journal (10.18))

OTs also learned to recognise the rhythms and processes in schools that could affect implementation; for example:

I'd worked in schools for lots of years so I kind of thought I knew how to do it but I have learned a lot for example this time of year for these two weeks, don't

implement anything 'cause it's report-writing time. All of those things that go with the natural cycle. (OT interview 19)

3.2.3 Embedded Occupational Therapists v. External Occupational Therapists

Throughout the interview and focus group process, it became apparent that to describe and explain the impact of the embedded model, the teachers, SLSOs and OTs often made comparisons to the traditional external occupational therapy model. Their positive experiences with having an embedded OT who was focused on the professional development of teachers and OTs were often expressed as in contrast to the traditional model. From the qualitative data sources, four themes emerged: (1) challenges implementing programs developed out of context; (2) the need for occupational therapy programs to be integrated; (3) the need for liaison between embedded and external OTs; and (4) the importance of OT accountability.

The 2017 survey gathered baseline data from the participants on their experience with OTs prior to commencing the project. While 18% had no experience implementing OT programs in classrooms, just over half of the respondents (57%) reported having a positive/very positive experience implementing OT programs (see Figure 3.24).

Rate your experience working with occupational therapists in the past:

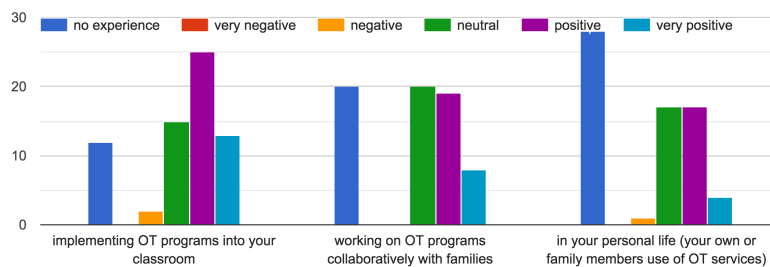
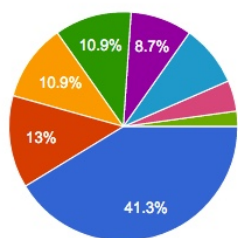


Figure 3.24: Teachers/SLSOs' Experience Working with OTs

Teachers/SLSOs were also asked about the number of students in their class who were seeing an OT outside school (see Figure 3.25). Around 40–45% of respondents were unsure of the number of students in their classrooms seeing external OTs.

2018



2019

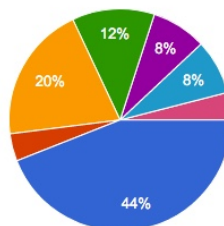
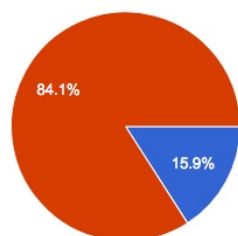


Figure 3.25: Responses to Q25

How many of the students in your class currently see an OT outside school?

In 2018, around 84.1% stated they did not have access to a program prepared by an OT. This was reduced to 69.6% in 2019 (see Figure 3.26).

2018



2019

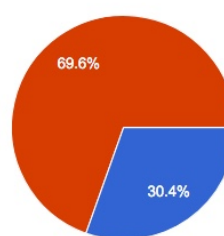


Figure 3.26: Response to Q26

Do you currently have access to OT programs prepared by external OTs for the students in your class?

3.2.3.1 Challenges implementing programs developed out of context

It was widely recognised that teachers are often unable to implement many of the occupational therapy programs provided to them by external OTs, particularly in terms of one-to-one strategies. This is because:

every student is one-to-one so if we're given a program where it's one-to-one but you've got six others to manage how is that supposed to work, delivering the program while feeding while toileting while you know the millions of responsibilities through the day...it feels like it's unachievable and [embedded OT]'s really interested in trying to integrate the program. (teacher/SLSL focus group 17B)

The focus of external OTs on individual children was challenging for teachers to accept:

[External OTs] have interactions with you as if [the specific student] kind of ignores all the other students ... but I need to be attentive to everybody else but they take up your time as if that's all you have to do...and then throw all of these recommendations at you and it's either not realistic with the students and staffing numbers you have or they're completely out of left field and don't apply (teacher/SLSL focus group 17B).

Interestingly, this perception that OTs ignored other students was not reflected in an external OTs experience of observing in a classroom:

having a dialogue with a teacher which is also hard, trying to get time to a teacher when you're an external therapist and you're paid to have therapy with that one child and you're looking around going okay, there's 23 other kids here that are impacting the child I'm working with so I can't comment on that 'cause that's a breach of my role so I have to try and skirt that by – anyway it's complicated. (OT interview 18)

This situation is further confounded by the fact that teachers are traditionally not given sufficient information regarding why proposed strategies are beneficial for students:

After working in SSP settings for over 20 yrs, I have often felt that OT were not always considerate of the amount of time we could practically spend working 1:1 with individual students...Previously – a large report was given with too many ideas or strategies and I was never really aware of WHY I was doing it and WHY it worked. (survey respondent 19)

The growth of the embedded OTs was evidenced by their move away from suggesting multiple strategies at a time to suggesting one or two focused strategies: *'I have found effectively that if I give one or two for a week that has – holds more traction than 25'* (OT interview 18).

3.2.3.2 Need for occupational therapy programs to be integrated

Teachers also valued the embedded approach for its ability to *'integrate OT strategies into the day, as opposed to an ad hoc/adjunct program'* (survey respondent 19).

Teachers envisaged an improvement to the embedded OTs' own practices when working for private clients:

some of the more extravagant ideas [OT] has is not always going to work in a classroom. It actually might be good for [OT] to see that if [s/he] has a private client and [the embedded OT] recommending all these for a classroom, that [s/he] actually gets to realise that they're great but they may not always be either implemented in a classroom because the teacher doesn't have the time or they're just not possible. (focus group 17C)

One OT made an important observation about a strategy they were seeking to introduce, noting it:

worked well-ish, some kids were excited by the new activity (which is great) but also eclipsed a little what the purpose of the activity is for (calming). I think this highlights how valuable having a consistent and regular OT in the school is, as we can work through this over time and by repeating the activity each week we can gradually and meaningfully build up the understanding of this strategy for staff + students, where if I were doing a 'one-off' school visit this strategy might be quickly dismissed for not having immediate positive benefits. (OT journal 07.17)

Interestingly, an embedded OT reported what was said to her by one OT who was initially involved in the program and who continues to visit the school as part of their private practice. Apparently, when that OT attends the school (at the request of a parent), *'I come in and I feel like I've got nothing to add to their programs.* [Embedded OT]'s like is that a good thing? [External OT] went yes, it is a good thing' (OT interview 19).

The embedded model also reduces issues with scheduling of external OT visits, which:

becomes exhausting...it was disruptive, it is disruptive when you've got therapists saying oh well I want to be there on Monday morning at 9:20am and you're thinking well that's when I do my excursion...disruptive for the [students], finding areas in the school...As a whole school though we were finding we could sometimes have 15 therapists in a day and you know seeing multiple kids, it became a bit of an issue for risk assessment, control. (teacher focus group 17C)

OTs acknowledge these challenges:

I put my head down and shake, I'm just like going what are you – like you're not going to get anywhere by going these are the only times I can come...offering a teacher an appointment for example in the school holidays ... It's that bridge so – and I don't know how I cross – I feel like I'm constantly trying to either justify for the therapist 'cause I'm the only one going oh therapists don't run on a school timetable. (OT interview 18)

Reflecting on traditional occupational therapy delivery in schools, one OT noted that *'half the time they don't hand across [to teachers] any information after the session. Look, if they do stuff that regulates them, great, they're regulated for an hour but what happens for the rest of the week?'* (OT focus group 17(i)). By contrast, the embedded approach enables actual implementation of strategies and programs: *'[OT] is telling me we are going to be implementing [specific program], we're doing it instead of [traditional external model] it'd be great if you implemented [specific program] okay, bye.* (teacher/SLSL focus group 17B).

OTs reported that the teachers they were working with were beginning to question the role of the external therapists: *'I've had a lot of teachers going I don't know why they are coming in and I feel like it's a waste of money when they're not linking it to anything I'm doing in the classroom'*. This left the OTs questioning, *'how do I communicate that message to my OT colleagues and my speech colleagues without offending them...so that they consider what the [personalised learning plan] is not just what the parent goals are'* (OT focus group 18).

The position taken by one Principal indicates the leadership recognises these issues and is taking action:

so people [therapists] ask to come here and do it and use our rooms after hours and I've said no to that, I'm happy for them to work in the classrooms, the OTs and speech therapists ... it's tricky...for a therapist coming in it has to be with the agreement of the Principal who recognises that it's somehow of benefit to their learning and education program. Now if I've already got an OT that I'm using to run the program I don't know that I'd want other OTs in. (Principal focus group 18)

3.2.3.3 Liaison between embedded and external occupational therapists

Embedded OTs assumed the unanticipated role of liaison between teachers and external OTs: *'rather than there now being two OTs like you know that OT talks to me and I then synthesise it to the teacher'* (OT focus group 17(i)). As time progressed, OTs became even more proactive in this area:

I've connected with individual therapists like external therapists that are coming in so I can be – like I'm getting the emails of the strategies of the teacher – of the OTs or speechies who are coming in, I'm reading them then I'm debriefing the teachers about them, things like that. (OT interview 18)

As one embedded OT reported, families with an external therapist *'have been getting in touch with me as well...been really good taking all those recommendations and putting it into their contexts'* (OT focus group 17(ii)).

Further value is added to an intervention if an outside connection is made between the embedded OT and an external OT because: *'[the external OT] will pass the recommendations on to me that it would understand where they're coming from and then I'd be able to kind of make it fit into the practicalities and culture of the school'* (OT focus group 17(i)) and *'taking all those [other OT] recommendations and putting it into their context...we can see the theory behind the recommendations but sometimes it just needs a tweak'* (OT focus group 17(i)).

To strengthen OTs' developing role as liaisons in the embedded model, a more structured approach is warranted, noting *'external therapists have been notified of OTs input and appear excited to learn more'* (teacher journal 08.18).

3.2.3.4 Importance of occupational therapist accountability

A notable strength of the embedded model was that embedded OTs demonstrated a level of accountability towards achieving positive outcomes for students that was not necessarily evident in external OT practices. One teacher illustrated this by explaining that external OTs had been referred to as:

the rabbits because they wouldn't make eye contact with you because you know they knew if you looked at them you'd say I need you for this and so we used to call them the rabbits, they'd scurry away when they saw you coming at them. (teacher focus group 17C)

That this is no longer the perception of OTs in the schools reflects a significant change to the positive relationships and avenues of communication between teachers and embedded OTs.

Teachers concluded that visits by external therapists *'feel very unproductive and like a big waste of money and resources and time and everything'*. Contrastingly, the embedded model was thought of as:

personal and it's you know someone with their vested interest to support in our school, in our classrooms to start with, in our school where we could have that time for reflection and change...I guess that accountability will be there because like if this [a strategy] isn't working, what can work? (teacher/SLSO focus group 17B)

There was also a sense *'from past experience there isn't much accountability... It's sort of like oh, behaviour, here you go, I'm out of here'* (teacher/SLSL focus group 17B). Further, the external therapists *'come in and don't really know the students and tell us about them and it's like well I can tell you that they're actually more like this'* (teacher/SLSL focus group 17B).

3.2.3.5 Transdisciplinary problem solving

One indication that an authentic transdisciplinary model has been achieved emerged through substantial evidence of collaborative problem solving across the three research sites. This is best understood through the following illustrative examples.





One teacher provided evidence of a successful co-teaching approach:

And we have a little bit of a thing where I'll be teaching a lesson and if [OT]'s in my room I'll be able to say well hang on, how does that work then? And so I throw it back at [OT] and we sort of have discussion about it with [the class]... really good teachable moments, that I could have a therapist in my room teaching to the whole class. And to me – and then that's perfect. That's perfect. (individual teacher interview 18C)

Another teacher articulated the benefit of receiving *'specific guidance on solving problems/challenges the staff experience when working with children with disabilities and challenging behaviours'* (survey respondent 19).



Teachers also acknowledged the different lens through with OTs approach situations because they do not have a teaching degree. When one teacher asked the OT, *'this is the content I need to teach, how do I teach to proprioceptive?'* and the OT was not sure, this initiated a period of collaborative conversation with positive results. Commenting on this interaction, the teacher remarked:

where it comes together, it comes together really well 'cause I come at an angle like this and she comes at an angle like that and somewhere in the middle we



go oh you know and we have these brainstorming moments. (teacher interview 19BM)

Similarly, another teacher reported:



[OT] brought the OT knowledge but then we've got all the behaviour knowledge...so it's just blending it together and teaching each other and you know one strategy that we talk about you know may not work and then we, okay, let's go back to the drawing board and discuss other options and plans...I feel like we've taught each other equally, I guess, in some ways, yeah. (teacher interview 19BK)

Another teacher clearly articulated the growing recognition of their own limitations on the part of both teachers and OTs during the early days of the program:

it's finally something where I can go well this is actually what our students need for once and I'm excited on that front and [OT]'s excited to start it up so between her saying look, I don't know the teacher's side and I'm saying I don't know the OT side, together hopefully we do find that balance and how to manage it. (teacher/SLSL focus group 17B)

The embedded OTs also emphasised the value of being able to solve problems collaboratively, which the external OT model did not allow: *'the main difference that I see is [in the traditional OT model] there's not scope for modelling, or implementing or problem solving any of the recommendations'* (OT focus group 17(ii)). Further, *'you know when you make a recommendation you can tell straight away if they [teacher] think it's a good idea or not and you can problem-solve it straight away'* (OT focus group 17(i)). This change was viewed positively by the OTs: *'[teacher] was already doing something similar and had strategies for this, was great working together to come up with this [combined] strategy'* (OT journal 07.17).

3.2.5 Key Findings from Part 2: Transdisciplinary Professional Learning

- School-based participants commenced the project with relatively high levels of perceived knowledge and confidence in areas of self-regulation and sensory processing.
- Strategies previously used by teachers/SLSOs were validated through building theoretical knowledge.
- Teachers/SLSOs began to view their students through an OT lens and reassessed the underlying causes of student behaviour.
- By 2019, 96% of teachers/SLSOs had considered different ways of supporting students as a result of the embedded OT.
- 93% of teachers/SLSOs agreed/strongly agreed that they had **adapted** and **improved** their practice.
- 93% of teachers/SLSOs agreed/strongly agreed that they were able to identify when students were becoming dysregulated and 85% were confident they could successfully intervene if a student became dysregulated.
- Teachers/SLSOs became more adept at using preventative, rather than reactive, strategies to deal with student behaviour.
- Teachers transferred their learning of strategies for individual students across different students.
- Teachers adapted resources and strategies provided by the OT to suit their own teaching styles and classroom needs.
- OTs developed in-depth understanding of the complex role of the teacher.
- OTs considered the constraints on schools in implementing proposed strategies/resources and revised planning accordingly.
- Factors related to the education system in which schools' operate became more apparent to OTs.
- Participants valued the embedded model over the traditional external model primarily because
 - programs were developed in context and were integrated into the classroom setting
 - there were continued opportunities to liaise with OTs and engage in collaborative problem solving and increased OT accountability

3.3 Facilitators of a Successful Transdisciplinary Model

The process described in Section 3.1 produced positive transdisciplinary learning across the teachers, SLSOs and OTs working within each of the schools. This third section now focuses on the underlying factors that supported the embedded process and transdisciplinary learning. In this regard, four themes emerged from the data: (1) leadership; (2) a whole-school approach; (3) teacher wellbeing; and (4) program ownership.

3.3.1 Leadership

For any initiative to be successful, it requires appropriate leadership to support necessary changes to existing structures and processes. One survey question examined the support that teachers/SLSO expected to receive (2018) and had actually received (2019) in relation to implementing the main whole-school program being introduced by the OTs at each of the three schools (see Figure 3.27).

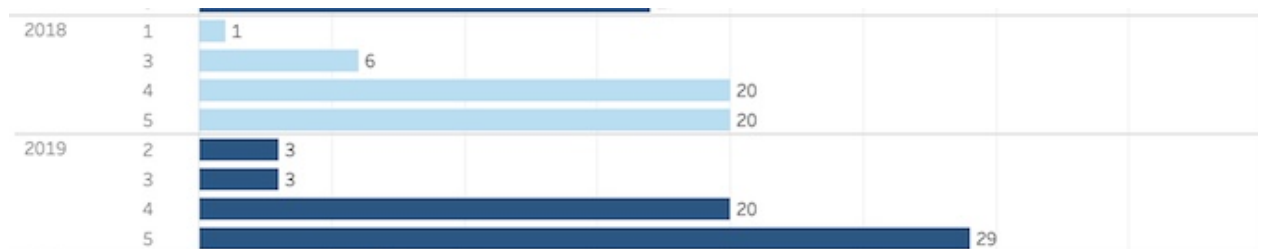


Figure 3.27: Responses to Q14 I will receive (2018) / have received (2019) appropriate support to successfully integrate Zones of Regulation in my classroom

Of the 47 respondents to this question in 2018, 40 respondents (85%) expected sufficient support to successfully integrate the new program in their classroom. The number of participants who agreed and strongly agreed that they received sufficient support on the 2019 survey was 49 of 55 respondents (89%).

Various strategies were implemented across each of the three schools to ensure teachers/SLSOs received adequate support to understand and implement the OT-introduced program. Most significantly, the over-arching purpose of the project, for which funding was sought by the schools, was to employ OTs:

with the express purpose of working with teachers so it wasn't working with kids per se, it was working with teachers and obviously you had to work with kids to show the teachers what to do but yeah, we didn't want that – we wanted [OT] to come and look at a class in that moment and tell us what we could be doing differently (teacher interview 18CT)

Also, as discussed in Section 3.1.4 above, one school scheduled a weekly meeting with all staff and the OT to address issues arising. This school also had a very

proactive executive staff member acting as liaison between the teachers and OT at other times throughout the week. Another school subsequently provided an executive staff member with allocated time to co-ordinate the program:

so this year I've given one of the teachers role of director if you like or the coordinator of the program so that person has a day off every [second] week to actually meet with the OT and discuss things that the OT wants driven throughout the classes. (Principal focus group 18)

The person allocated to this role saw her objective as to:

take the reins of the project and guide its direction so that means working alongside the OT with fortnightly strategies ... I can communicate more with the staff and get them more readily on board and doing what they should be doing rather than it just being lost with the OT...my role is just to keep everything flowing and actually have those conversations that they might not have the time to have with [OT] and if they do need the time to actually release them so that they can have conversations away from their teaching with [the OT]. (teacher interview 18AS)

Strategic decisions by executive school staff to commence with specific pilot classrooms at each of the three schools also aided the success of the program:

I think having those couple of pilot classes with some keen and motivated teachers, getting them on board was the enabler to them to be able to say to everyone else hey, look at what's happening, this is working really well and then the positive talk and the positive experiences. Then seeing that wow, the materials, the resources, everything's here, this is great I think then enabled everybody else to then jump on that bandwagon and go hey, let's keep going with it. (Principal interview 18M)

3.3.2 Whole-School Approach

As alluded to in Section 3.3.1, the transfer from the pilot classes to a whole-school approach proved one of the strongest aspects of the project. The whole-school, weekly meetings with the OT '*allow staff to be provided with continuous, on the job, learning. Whole school approach to supporting self-regulation providing consistency across locations – classrooms and playground and as students encounter different staff*' (teacher journal 08.18). This reflected previous actions by the leadership team of this school, who had previously:

got the whole school trained in [behaviour program]. And because the whole school trained in it we all went through that process together and sort of pulled apart stuff we were doing that was really good ... and we were ready for that next level. (teacher interview 18CT)

A Principal, who had not held the role at the commencement of the project and had joined the school at a later point, acknowledged '*the fact that the whole school's basically on board with it and just think it's amazing. Yeah, it's evolved so quickly*', and

later *'it's just embedded in our school like it's just going to be part of our school'* (Principal interview 18A). The perception of the whole-school value by teachers was captured in the reflections of an OT, who noted *'I think before that...people were creating their own resources, holding onto – whereas now they're starting to go – seek more school wide'* (OT interview 19).

Survey respondents also indicated the value of the whole-school approach to the strategies the embedded OT implemented, appreciating the *'ability to discuss directly with OT, any concerns, seek input and share positive results – seen directly as a result of effective implementation across the whole school setting'* (survey respondent 19) and another, *'[OT] has shifted school culture and made such a positive impact on our school'* (survey respondent 19).

Taking a whole-school approach to the program is particularly beneficial, as it supports casual teachers working at the schools:

we've got a high staff turnover with casuals ... so it's sort of very helpful with them because they can go in and not feel like they have no idea... And there's just not time in the morning to sit and read through you know the reams of paperwork...So we have our student behaviour profiles which are just visually reinforced, how they eat, how they go to the toilet and all that and so...and the OT strategies within that, between those two things they can get a pretty clear picture as to what's going on in the room...also the visual toolkit on the wall if there's a casual in or the RFF teacher or something so it's like okay, whoa – right now they're not individualised but it's sort of strategies that work for everybody in the room. (teacher interview 19BL)

A further unanticipated outcome was that the OT could move between classrooms and has:

brought out what each teacher's doing in their classroom. We don't get time to go into each other's classrooms so if [OT] hadn't have done that professional learning or that professional learning wasn't happening afterwards we wouldn't have seen what everyone else is doing in the classroom. (teacher interview 19BM)

3.3.3 Teacher Wellbeing

One of the most powerful themes to emerge, which should be a catalyst for continuing support of the project, was improved teacher wellbeing. This was raised a number of times throughout the data collection process, as captured in teacher interview (19BK):

marrying up the behaviour plan with the OT strategies and knowing what your pathway is before crisis and adrenaline hits and all that, it's sort of like that emotional reaction. So before all that comes into play this process with [OT] and the strategies has really clarified how to deal on a thinking level where you just okay, this is it, we're not panicking, it's not adrenaline, this is what we do.

Similarly, at another school an example emerges:

it's making me personally a lot calmer from a – 'cause I'm able to identify and not be reactive to a situation. I can read a kid's situation now and say oh okay, this might be a reason why they're doing it rather than them just being naughty and then come up with another strategy which helps the kid stay calmer and then it helps me stay a bit more focused and calmer and – yeah. (teacher interview 18AB)

One OT was particularly mindful of the wellbeing of teachers:

I was really worried about self-care following a critical incident or a situation where they might have a student who's being aggressive or abusive or whatever or hits them or – there's no again formal structure for them to have a debrief moment ... So I wanted to equip the teachers just with a three-minute activity that they could do in the context of having the rest of the class like – so they're still teaching but they can do some breathing activities just to help settle their own nervous system down. (OT interview 18)

3.3.4 Program Ownership

An important part of the process was evidenced at one school where executive staff ensured that teachers took ownership of the program and caused teachers to move beyond an expectation that the OT suggestions must be implemented to:

no [OT] gave you some ideas and you as the educator now make it work or don't make it work, okay? And if it doesn't then we come back and go okay, [OT], that didn't work and we unpack it. (teacher interview 18CT)

One OT was particularly cognisant of the need for teachers to take ownership of the program, specifically stating '*I also wanted the teachers to start taking a bit more – like it can be lonely trying to push that wagon by yourself so that's why I need them to start owning the project a bit more*'. The OT worked to achieve this in communication with staff:

We are trying to decide where to position the swing, our options for soft fall. We are also considering other equipment options that would be good to use in this space as well as a lockable area. As a school community we will need your assistance to consult who, how and when the area would be best used. (OT update to staff Term 4 2017)

This OT was pleased when independence and ownership were evidenced by a teacher: '*[teacher]'s amazing, she doesn't need a lot of assistance so she put a swing up in her classroom, for example. That's when she came to me and said what do you think? How should this work? (OT interview 19).*

Buy-in of the program was evidenced across the school, such as when one Principal noted that:

other staff would then come back to a staff meeting, the teacher meeting, and say how well something's working then you know [OT] would go into the rooms that weren't as open to it and just – I guess be more able to explain why it works and that kind of stuff, it's just that slow process of change but that

wouldn't happen without [OT] here. That – yeah, that buy-in. (Principal interview 18)

Another Principal voiced his perceptions of the level of buy-in by staff:

I certainly know [the OT] is in demand now away from pilot classes so that tells me that she's effective because the grapevine tells you that you know if these [OTs] are no good [teachers] don't want anything to do with them, they're far too busy here you know with high needs [students] to be interfered with so obviously she's doing a good job and they want to use what she's doing. (Principal interview 19)

Similarly, at another school the Principal notes:

we're finding that we have a weekly meeting with the OT and we're finding that nearly all the staff are sticking around for that meeting, even the teachers who are working in our high school who aren't part of the project. (Principal focus group 18)

3.3.5 **Key Findings for Part 3: Facilitators of a Successful Transdisciplinary Model**

- There was strong leadership with vision for the purpose of the project.
- Leadership was supportive in ensuring a positive experience for teachers/SLSOs, reflected in 89% of teachers/SLSOs reporting they had received sufficient support.
- A whole-school approach was developed, building from successful outcomes in pilot classes.
- Teacher wellbeing was increased on the back of implementing new strategies with students. This appeared to build momentum to continue using these strategies.
- Teachers, SLSOs and OTs demonstrated ownership of the program.

3.4 Effects of an Embedded Occupational Therapist on the Environment

Four themes emerged from the data in relation to the effect each embedded OT was having on their respective environment: (1) impact beyond the physical environment; (2) improving the physical environment; (3) improved access to resources; and (4) improved integration of diverse resources.

3.4.1 Impact Beyond the Physical Environment

As teachers became more confident with the OTs, they became willing to make significant changes to their daily routines: *'so far everything has been working so I've even rearranged my timetable to suit some of the things that [OT]'s suggested and it's been working really well'* (teacher focus group 17C) and another, *'introduced tool box to classroom. OT recommended trampoline in morning session as part of their program = heavy work break = co-regulation activity...working well...therefore timetable change to incorporate tram'* (teacher journal, T3 2017).

In addition to individual teachers making timetable changes to incorporate successful strategies across the school day, one notable impact was made by an OT who moved beyond surveying the physical structures of the environment to examine the contextual factors influencing the effective use of the environment. In this instance, the issue was the length of student breaks (recess and lunch), with the OT suggesting:

40 min breaks too long...how can we reduce that...they would actually have to split the K-6 would have a separate lunchtime to the high school and that does actually reduce the areas they have to supervise...teachers would be 40 mins better off a week.

Evidence of true contextual understanding emerged when the OT also noted factors preventing her suggestion, *'because it's fitting in with the guidelines, supervision and the guidelines for the federation says for staffing about what breaks they have to have'* (OT focus group 17(ii)). Teachers noted that positive change to break times did occur: *'OT also assisted teaching staff in renewing the existing playground duty rosters/times which resulted in a trial of different playground times and segregated K-6/7-12 times'* (survey respondent 19 Q47) and another teacher survey respondent *'Timetable changed. Split recess and lunch times/ OT organised and drove changes. Evaluation is that students are less stressed and [Health and Safety] indicate less staff injuries'*.

3.4.2 Improving the Physical Environment

Each of the OTs played a significant role in re-visioning the communal spaces across the three schools, to enhance opportunities for students to engage in sensory activities and to increase variety to promote student regulation and combat dysregulation. Each school had a different space that was influenced by their respective OT.

At one school, an OT independently recognised an outdoor space, where student's spent time when exhibiting challenging behaviours, as perceived by staff as a negative space. As the Principal at this school said, *'it was a negative space and [s/he]'s trying to turn it into a positive space'* (Principal focus group 18). In the focus group (17B) at this location, teachers/SLSOs highlighted the negativity of the space, and the OT's positive influence:

well that concrete cage doesn't get used any more, we don't use it, would be nice to have it as a positive environment rather than being 'time out'

[OT] saw that straight away and kind of went wow, OT in there would be excellent because it's sort of like a section off the room

we didn't even think about that [changing the negative outdoor space to positive area] [OT] did.

The value of the final product was evident:

so now it's so positive, I see it as a huge benefit to this program 'cause I just – again without the OT side I just never really viewed it in that way. I saw it as okay, this is a crisis zone, this student's injuring themselves and others so this is why we have to use that where now I don't see it like that now, I see it as OT environment first and then crisis point sort of second. (teacher interview 19BK)

Appendix 2 shows the information provided to teachers/SLSOs describing possible alterations to playground spaces, including the change of timetable described in Section 5.1.

At another school, there was a focus on developing a calm space. This was achieved through a collaborative effort, whereby the OT offered suggestions, which the school then implemented as appropriate for their context:

[OT] had the ideas but then we again had to put in practice – are we covering our duty of care if kids come out of the room and they're over there? Can we see them? Line of sight, all those types of things. So yeah, it really has been a collaboration that [OT]'s got the ideas but we make it work in a school setting 'cause not everything works in a school setting. (teacher interview 19CT)

Teachers valued the end result: *'Sensory area re-built with better swing, water fall and seat. BRILLIANT – used continually'* (teacher journal 09.18).

In addition, OTs were engaged to undertake specific ecological inventories and environmental risk assessments. In one example, an OT recognised that major

structural changes (in this case, to a toilet block) could not be actioned by individual schools, as these were 'bigger areas that the Department of Education have to fund' (OT interview 19). In this toilet block assessment (see Appendix 3), the OT has gone beyond analysis of the physical environment alone, to present a comprehensive explanation of why students experience challenges in using this facility. The embedded OT's insider knowledge about the school and individual student characteristics contributes to their capacity to advocate for change.

3.4.3 Improved Access to Resources

A notable strength of the embedded model was that it increased access to a range of occupational therapy resources. As one OT observed in relation to a classroom:

you're sort of looking around and you're going...geez, they need a chewy and they're just there [in school], as opposed to having to order online and it'll take a week to get here...like there's just things on hand now which is cool. (OT focus group 17(i))

Another SLSO described how they could now 'grab the tool box out and have a look.... First thing in the morning you can see...how they walk in and you can de-escalate it from there' (SLSO focus group 17). Further, an SLSO highlighted the ease with which new resources could be obtained: 'if we run out of things or need more than one [we have] little post-it-notes and they're stuck in their [tool]box...cause it's a work in progress....figuring out who likes what' (SLSO focus group 17).

Increased access to multiple new resources meant that teachers/SLSOs could more readily assess and evaluate what would work, or not work, in their classrooms: '[OT] brought in chewies and stuff but they kind of got destroyed...pretty quickly...within two minutes...it didn't work...we noticed within 20 minutes that wasn't going to work' (teacher/SLSO focus group 17B).

Teachers' evaluations of the effectiveness of certain introduced resources also contributed to their professional learning:

Some activities [toolbox] are becoming a distraction for students as they spend more time swapping and changing than using. (teacher journal 02.18)

we are still having issues with most of the class requesting calm card outside prior to coming into class. (teacher journal 09.18)

the fitball needed to be put away on occasions as a no. of students were over-bouncing and it was becoming a stimulus rather than calming. We discussed the use as a class and formulated a plan for us. OT was included in discussions. (teacher journal, undated)

Tool boxes have been reassessed as they were becoming a collection box for favourite things. (teacher journal 11.17)

inconsistent success with fidgets; wiggle pen too distracting; no noticeable difference with or without headphones; therapy ball he becomes distracted. (teacher journal undated)

Similarly, the long-term appropriateness of some resources was questioned:

[students] wanting tent so that it's all dark in there....they go in there and it's their sensory thing and they'll come out and do some work. I don't know what that translates to when they go back to [other environments]...can't imagine [going elsewhere] with my six-foot tent. (SLSO focus group 17C)

As will be discussed in detail in a subsequent research report, one of the schools had OT students attend for their professional experience. From this, a website was produced that provides information to staff at that school about the resources available and the underlying theories and principles for using various resources and strategies. This website can be accessed at: <https://sensorylinks.wixsite.com/sensorylinks>. Screenshots from the website are shown in Appendix 4.

3.4.4 Improved Integration of Diverse Resources

One school took a structured approach to introducing OT strategies and resources:

*in a more systematic way so they can be tracked & integrated more easily * decided on exposing students to one new sensorimotor activity each week. Each activity that helps regulate students can then be added to their template * activity to trial next week is use of mini tramps in class. (Minutes of meeting 02.18M)*

The SLSOs at that same school (focus group 17) identified the role of the OT in sharing knowledge that improved their own practice:





there was this ring thing with spikes on it and I didn't really know...[student] will be all wiggly, as soon as he's got that he sits still because his hands are moving...so I didn't even know so [OT] told me what it's for and to give him that when he needs it and another student who might also need it, so now I know that's the tool that I'll get them if they need it and are all wiggly and so developing understanding of different tools and what they're for I'd find invaluable.

At another school, the OTs' ability to increase knowledge of existing resources available at the school was identified, and valued:

Well I know [OT] came into our sensory room early in the piece just to see and [s/he] know of all of these items in the back room – we knew some were there but then there were some other ones which [OT] went well this one's for this, it's really good and we well...I never really knew that. (teacher/SLSO focus group 17B)



At another school, during a meeting, they:

discussed and brainstormed equipment needed in classrooms and other areas such as Personal Learning Space...[executive staff member] to get teachers to do a 'stocktake' of equipment in the room so we don't double



up, then to present equipment ideas next week and implement this equipment with strategies as it arrives. (OT journal 07.17)

Importantly, considering school budgets, OTs' input was valued, to ensure money was being spent on resources that would benefit students:



so we're not buying things wondering if it's going to work, we can actually buy things that are specific to students' needs and we know that they are going to work. I mean there is still some trial and error but that's always going to be the case but certainly you know we're not kind of fumbling along guessing. (teacher focus group 17C)

This was further reflected in comments such as: '[the OT is] able to give us alternate solutions for equipment as well without being a great expense' (teacher focus group 17C) and '[OT] said I've got X, Y and Z in the car that we can try so that we're not running out and buying it and [OT] said let's see if that works...would talk me through it' (teacher focus group 17C).



The range of resources and strategies introduced by OTs in a relatively short period was considerable, ranging from those used with individual students to large-scale communal areas. This became apparent when analysing teacher journal entries and OT email communications to staff (comprising over 30 documents), and was reinforced during the interviews and focus groups. A summary of the resources and strategies mentioned by the participants, divided into no- or low-cost options and mid- or high-cost options, is provided in Table 2. As can be seen, this extensive list of resources and strategies includes personalised (e.g., individual items in students' personalised tool boxes), classroom-based (e.g., calm corners and brain breaks) and whole-school (e.g., swings and gym equipment) options.

Table 3.2: Sensory Resources and Strategies Mentioned by Participants

No-Cost / Low-Cost (replaceable)	Mid-Cost / High-Cost (durable / semi-permanent / permanent)
blue chalk breathing exercises brushing hair bubble blowing chew stick deep breathing visual deskwork checklist dodgeball drawing/colouring activities (for non-eaters during meal times) fidget spinners, spheres and keys hand cream/massage hand washing visual headphones ice Lego box meditation photos book of things that make student happy pull ups at the window putty scents scheduled breaks (brain breaks, movement breaks) slope board social stories (soccer, PE, lining up in morning) spiky balls spinning top therapy ball therapy band on side of chair therapy brushes vibrating cushion vibrating pen water beads in a box writing clip boards Zone of Regulation (signs, visuals, desk cards)	artificial turf in outdoor calm area battle ropes bean bag with weighted cushion chairs (bouncy ball chair and wobbly seat, spinning office chair, dynamic chair, rocking chair) climbing frame crash and bang mattress fluorescent light covers flying fox foot spa gym equipment mini tramp sensory gardens shade cloth over the swing swings (porch swing, liberty swing, waterfall swing) trampoline water feature weighted blanket



Key Findings of Part 4: Effects of an Embedded Occupational Therapist on the Environment

- 
- 
- OT impact was not limited to the physical environment but also included influence on classroom schedules and whole-school timetables.
 - Each research site had communal spaces reconceptualised through an OT lens, turning negative spaces into positive spaces.
 - OTs revealed underlying causes for spaces not functioning well. Such justifications assisted in gaining school-wide support for change.
 - Environmental risk assessments can be undertaken with greater specificity by embedded OTs than when undertaken by external persons.
 - There was increased access to a broader range of resources.
 - Teachers/SLSOs were active in evaluating the use of resources and strategies with their students.
 - Opportunities emerged for school staff to increase their knowledge and understanding of existing resources that were being underutilised or not used at all.
 - Teachers felt more confident in purchasing resources that would be useful to students, with less trial and error.
 - Approximately 60 new resources and strategies were introduced by the OTs.
 - These OT-introduced resources and strategies ranged from the personalised (e.g., items in students' personalised tool boxes) to the classroom-based (e.g., calm corners) and those accessible to the whole school (e.g., swings).

4 Future Directions

In the period 1 July 2019 – 31 December 2019, being the remainder of the research period, no more data will be collected in relation to Transdisciplinary Professional Learning and Impact on the Environment. Instead, there will be two foci: (1) dissemination of the outcomes and (2) translation of the findings to improve practice, referred to as 'Research Impact'.

1. Dissemination:
 - a. Presentation of the research at the Australian Association of Special Education national conference, 22–24 September 2019, in Hobart, Tasmania.
 - b. Journal article focused on underpinning theoretical perspective, titled Activity Theory Applied to Transdisciplinary Professional Learning in Schools for Students with Disabilities.
 - c. Journal article focused on the process and outcomes when OTs are embedded in schools educating students with disabilities.
2. Research Impact
 - a. Continue to work with academics in the Faculty of Business to report the economic value of the findings.
 - b. Liaise with health academics to develop a short course for OTs, speech therapists and physiotherapists to work effectively in an embedded school model.

For the remaining six months of the project, data will continue to be collected in relation to the final two research questions: (1) Impact on Student Learning and (2) Impact on Home–School–Community–Therapy Connections.

The second report addressing these two questions will be presented on 20 January 2020.

Throughout 2020, beyond the formal research period, dissemination and research impact activities will continue and all such outputs will be provided to the three research schools.

Appendices

Appendix 1: Proposed Playground Modifications

Environmental modifications that could be trialled/ considered to make the playground more supportive of students-

1. Relocation of the speaker to an area away from the ORA
2. Compilation of a music list which is agreeable to the majority of students.
3. Removal of the fence between the climbing structure and the vestibular equipment – This would open the space and reduce the student crowding. A further option is to remove the fence between the middle playground and top playground although this would require more expensive fencing options.
4. Restructuring of the playground times to reduce crowding – this timetable would be as follows:

1st session	9:00	11:00	120
Recess	11:00	11:40	40
2nd session	11:40	13:10	90
Lunch	13:10	13:50	40
Last session	13:50	3:00	70

1st session	9:00	10:10	70
Recess	10:10	10:50	40
2nd session	10:50	12:20	90
Lunch	12:20	13:00	40
Last session	13:00	15:00	120

The time table changes would enable students with the physical disabilities that are currently excluded from the main playground to participate as there would be less students. The reduction in students would mean staff would be required to man one less area meaning additional time for staff to have breaks.

It may be a beneficial to shorten the recess and increase the lunch break if a split timetable cannot be managed.

5. Placement of art and lines in the main playground area as a visual cue where to sit and to create pathways which kids can follow.
6. Creation of visuals to use in the playground to assist students in choosing activities to regulate in accordance with the zones of regulation.
7. Purchase of an additional porch swing. That could be placed outside HSV.
8. Incorporation of Visual timers that are large for the pool areas, swing and trampoline areas. This would assist to students to acknowledge that the time they have been allocated on a piece of equipment.
9. Providing a rostered activity to students during the week. This could include using the parachute, having bubble blowing, having a large fitness ball to push and throw around to encourage interaction.

Conclusion-

It is hoped that through these changes the sensory processing needs of each child can be accommodated and reduce the behavioural challenges within this environment.



Appendix 2: Kindy Room Toilet Assessment

Kindy room toilet assessment

Summary- The demountable toilet near the kindergarten room is accessed mainly by the 4 kindergarten students. Three out of four of these students have difficulties with toileting- and in particular- entering the demountable toilet. Staff are using excellent behavioural strategies to support students but are still faced with manual handling challenges while assisting with toileting. There are many environmental sensory considerations which may be impacting on student's behaviour.

Behaviours observed-

The students exhibit a variety of behaviours during the task of toileting. Some of these behaviours include (but are not limited to)-

- Refusal to enter the toilet.
- Refusal to sit on the toilet.
- Dropping to the floor bodily and refusing to move when confronted with toileting.
- Screaming/crying while inside the toilet room.
- Crying and screaming when the automatic light went out.
- Fearful faces and sounds while in the toilet room.
- Reluctance to go into the toilet.
- Only able to use the toilet with a staff member providing supports such as hand holding, back tickles, whistling, rewards, presence of comfort items, rewards/reinforcers for use of toilet, non-verbal cues to use the toilet etc.
- Urination on the floor.

Sensory considerations of the environment and student experience within the demountable toilet-

Smell - Staff report a smell within the toilet- a building material type smell.

- The tasks of urination, defecation and handwashing also have associated smells.

Sound - The room has an echo when any sound is made within.

- The sub-floor is open so there are increased sounds when walking on the floor.
- An extraction fan running directly above the toilet which issues a moderately loud mechanical hum.
- Materials dropping into the toilet and handwashing makes sounds.

Tactile - The room's temperature is cold in winter and hot in summer. There is a heater present within the room which can be used on a timer.

- The toilet is adult sized and has a plastic moulded seat and standard opening hole.
- The seat in the shower is where students perch for changes- it is a hard flat bench.

Visual - The toilet has an open plan shower recess and is used for storage of outdoor equipment. The walls are painted white. There are visual schedules and other safety information fixed to the walls.

- The room is lit by fluorescent lights on a movement sensor. They come on/off automatically.

Proprioception- When seated on the adult toilet, the students feet are unable to reach the ground- possibly causing them to feel insecure.

Environmental modifications which could be trialled to help make the sensory experience of the demountable toilet more supportive of students-

1. Adding a cleansing smell to the room via. Essential oil room sprays, diffusers, smell beads etc.
2. Choosing a neutral smelling soap.
3. If OH&S allows- switch off the extractor fan.

4. Add a music device to the room and play preferred music for the students while in the room.
5. Use the heater during the frequent toileting times to manage the cold.
6. Add a child sized toilet to the demountable toilet room.
7. Add a stable step with handles to the toilet- see example below.



8. Add a padded toilet seat insert- see example below



9. Include a student sized chair for changing time.
10. Close the shower curtain if that space is not needed to reduce the perceived size of the room.
11. Add a curtain to block off the view of the stored equipment and reduce the perceived room size.
12. Have an electrician remove the automatic light feature and instead have a light switch.
13. Cover the fluorescent lights with fabric draped from the roof to reduce the strain.
14. Drape fabric around the room/roof.

Conclusion- The demountable toilet room has many environmental aspects which may be triggering fear, nervousness, avoidance and negative behaviours for students when attempting the task of toileting. Staff are using behavioural strategies to support students in this environment with some success. The combination of behavioural and environmental strategies is likely to be more successful in supporting students with toileting and therefore reducing manual handling burden on staff.

Appendix 3: Sensory Links Website

SensoryLINKS

Home

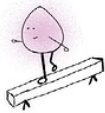
Sensory Processing

Sensory Systems

Spaces/Equipment

Resources

vestibular



proprioception



tactile



auditory



visual



gustatory



olfactory



Sensory processing is the ability to receive information through the 7 senses (vision, smell, taste, touch, hearing, vestibular and proprioception), organise and interpret that sensory information from the environment into a response. For most people this process is seamless and automatic. However, for some students it is not and they may detect these senses or be unable to organise them into appropriate responses.

What is Sensory Processing?

[Click for more information.](#)

USING OCCUPATIONAL THERAPY TO MAKE SENSE OF OUR SENSES.

Sensory Processing

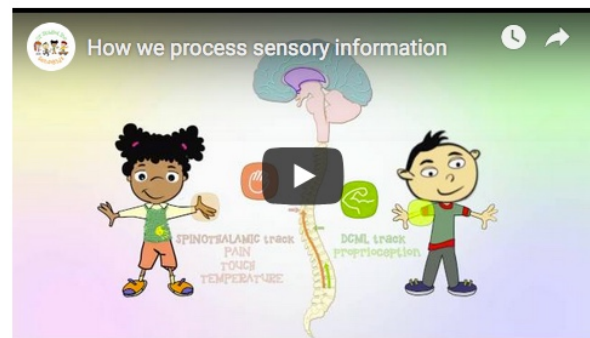
What is Sensory Processing Disorder (SPD)?

Sensory processing disorder (SPD) is a condition where there are problems in putting together information from different senses. These senses are vision (sight), tactile (touch), olfactory (smell), gustatory (taste), proprioception (sensing body position) and vestibular (balance). SPD results in students being unable to perform play, concentrate in studies as well as controlling emotions. The 3 main categories of SPD are sensory modulation disorder, sensory-based motor disorder and sensory discrimination disorder.

Sensory modulation disorder

Defined as being unable to process the intensity, duration and frequency of a sensation, accurately.

- **Over-Responsivity** - Experiencing senses with increased intensity, duration or frequency (e.g., finding music too loud while others find the volume manageable leading to the student covering their ears.)



[OT Studios, Inc., 2016]

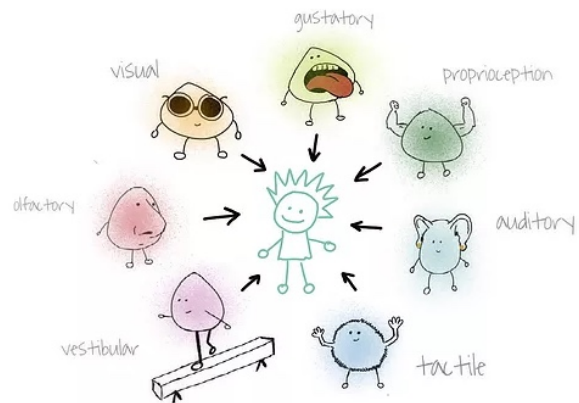


The Seven Senses

Sensory processing from the seven senses is highly specific BUT also interdependent, each sensation is affected by each other.

Integration of senses can affect an individual's abilities for

- Regulating and coping with triggers
- Having sustained concentration
- Improving social behaviour
- Physical and cognitive development
- Processing and problem solving
- Applying willingness, and
- Acting according to daily rhythms and routines.



Improvements in an individual's abilities to engage and integrate the senses, results in better organisation

- According to individual methods of sensory exposure and timeframes in school
- Measuring baselines and changes to arousal levels

What is the Ora for?

The Ora is a place where teachers can bring students to help regulate their behaviour or emotions. Whilst the indoor calming sensory room encompasses many different senses, the Ora has been primarily designed to provide the body with lots of proprioceptive input. The Ora is best for students who are seeking out excessive proprioceptive input or can be used to de-escalate their behaviour and emotions.

What is Heavy Work?

Heavy work can assist in calming students' who are seeking this proprioceptive input. It also is effective in regulating a student's emotions as heavy work activities can result in a more calm and focused brain and body. Although students can use the Ora Room for proprioceptive input, it is important to also note that heavy work can be utilised throughout the day easily. Remember that heavy work is any activity that involves putting pressure on muscles and joints that are moving. For example carrying heavy books, animal walks or even scrubbing down desks and tables.

There is a whole range of equipment in the Ora that can be used in many different ways to provide proprioceptive input. *For further information in regards to the equipment, please click the pink button below.*

EQUIPMENT

RESOURCES

Battle Ropes

These ropes provide an opportunity for kids to do heavy work as the ropes are quite heavy which will give them proprioceptive input they need to relax their body.

To begin using the battle ropes, it is best for the child to have both feet flat on the ground and have their knees slightly bent. These ropes can be quite heavy so it is recommended to not use these for an extensive period of time.

- **Waves** – Child holds one end of the rope in each hand at arm's length in front of hips and moves the rope by alternately raising and lowering each arm explosively.
- **Slams** – Child holds one end of the rope in each hand and quickly raises handles of the rope overhead. Then immediately drive them down towards the ground as hard as possible. The idea here is for the kids to apply as much force when slamming the rope down.

[“Mini Trampoline,” protrampolines.com]



Resistance Bands

- With the band tied up on the gate, the child can hold the bands and pull to provide sensory stimulation.
- Taking off the band from the gate and using the band, the child can pull the band using force and strength, therefore giving them proprioceptive input.
- These resistance bands could be useful within classrooms as well by placing them on the bottom of the two front chair legs for



Noise Cancelling Headphones:

Noise cancelling headphones are useful in minimizing or blocking out background noise or other auditory input. Students who are hypersensitive, or 'over-responsive' to auditory input will find these headphones helpful to reduce any possible anxiety, pain or discomfort caused by auditory input. By minimizing noise to a more manageable level, students will then have the ability to relax and gain focus and concentration on other things. Some students may not find the sensory room calming if the room is particularly loud and noisy. These headphones can be worn by those students that are particularly sensitive to auditory input so that they may be able to engage with different equipment and activities in the sensory room in a relaxed state.



[“Peltor Junior Earmuff, Pinterest.com.uk]

Chimes and Sound Buttons on tactile boards

The wind chimes and the sound buttons on the tactile boards provide the student the opportunity to control auditory stimuli. The wind chimes provide a soothing and calming noise while sound buttons produce wild and funny sounds. Students can pick whichever auditory input they would like to achieve by manipulating the objects.



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