

Early Years Behaviour Support Program (EYBSP)

Application of tele-classroom consulting (TCC) practices to support classroom teachers to meet the challenging and complex needs of students on the autism spectrum in the early years of schooling (5–8 years)

FINAL REPORT

Associate Professor Beth Saggars, Dr Megan Tones, Mrs Jacqueline Dunne, Ms Rachel Aberdein, Dr Jill Ashburner, Professor Margot Brereton, Dr Susan Bruck, Professor Suzanne Carrington, Dr Trevor Clark, Mr Chris Edwards, Mrs Vicki Gibbs, Dr Keely Harper-Hill, Professor Trevor Russell, Associate Professor Jill Willis, and Ms Cara Wilson

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Early Years Behaviour Support Program (EYBSP)

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Associate Professor Beth Siggers

The Cooperative Research Centre for Living with Autism (Autism CRC)
School of Early Childhood and Inclusive Education
Queensland University of Technology | Faculty of Education

Dr Megan Tones

The Cooperative Research Centre for Living with Autism (Autism CRC)
School of Early Childhood and Inclusive Education
Queensland University of Technology | Faculty of Education

Mrs Jacqueline Dunne

The Cooperative Research Centre for Living with Autism (Autism CRC)
School of Early Childhood and Inclusive Education
Queensland University of Technology | Faculty of Education

Ms Rachel Aberdein

The Cooperative Research Centre for Living with Autism (Autism CRC)
School of Early Childhood and Inclusive Education
Queensland University of Technology | Faculty of Education

Dr Jill Ashburner

The Cooperative Research Centre for Living with Autism (Autism CRC)
Manager, Research and Development
Autism Queensland

Professor Margot Brereton

Electrical Engineering, Computer Science, Computer Human Interaction
Queensland University of Technology | Science and Engineering Faculty

Dr Susan Bruck

The Cooperative Research Centre for Living with Autism (Autism CRC)
Senior Research Officer
Autism Spectrum Australia (Aspect)

Professor Suzanne Carrington

The Cooperative Research Centre for Living with Autism (Autism CRC)
Office of Education Research
Queensland University of Technology | Faculty of Education

Dr Trevor Clark

The Cooperative Research Centre for Living with Autism (Autism CRC)
National Director, Aspect Research & Senior Education Consultant
Autism Spectrum Australia (Aspect)

Mr Chris Edwards

The Cooperative Research Centre for Living with Autism (Autism CRC)
School of Early Childhood and Inclusive Education
Queensland University of Technology | Faculty of Education

Mrs Vicki Gibbs

The Cooperative Research Centre for Living with Autism (Autism CRC)
Clinical Psychologist, National Manager
Aspect Research and Assessments
Autism Spectrum Australia (Aspect)

Dr Keely Harper-Hill

The Cooperative Research Centre for Living with Autism (Autism CRC)
Office of Education Research
Queensland University of Technology | Faculty of Education

Professor Trevor Russell

The Cooperative Research Centre for Living with Autism (Autism CRC)
School of Health and Rehabilitation Sciences
University of Queensland | Faculty of Health and Behavioural Sciences

Associate Professor Jill Willis

The Cooperative Research Centre for Living with Autism (Autism CRC)
School of Teacher Education and Leadership
Queensland University of Technology | Faculty of Education

Ms Cara Wilson

Electrical Engineering, Computer Science, Computer Human Interaction
Queensland University of Technology | Science and Engineering Faculty

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This report includes papers which are co-authored with other researchers. The bibliographic details and status for these papers, including all authors, are:

Saggers, B., Tones, M., Dunne, J., & Aberdein, R. (2019). Tele-classroom consultation: Promoting an inclusive approach to supporting the needs of educators, families and early years learners on the autism spectrum in rural and remote areas in contextually responsive ways. *International Journal of Inclusive Education*. doi: 10.1080/13603116.2019.1609103

A NOTE ON TERMINOLOGY

The term autism spectrum disorder (ASD) is used only when discussing the diagnostic criteria described in The Diagnostic and Statistical Manual of Mental Disorders: DSM 5 (American Psychiatric Association, 2013). Student participants in this research have been referred to as students on the autism spectrum, or students on the spectrum, throughout. At the time of writing, this is the preferred terminology within the Cooperative Research Centre for Living with Autism (Autism CRC). However, it is acknowledged that the language with which the autism spectrum is described is rapidly evolving.

The Cooperative Research Centre for Living with Autism (Autism CRC)

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Abstract

Students on the autism spectrum have unique learning needs which teachers may find challenging to adequately support. This can be an ongoing concern for teachers in rural and remote communities due to geographical isolation and a lack of professional learning opportunities. To meet the learning needs of students on the spectrum in these regions, teachers often need access to effective, ongoing support delivered in a timely and contextually appropriate manner. This report presents findings from five school community case studies, describing a flexible, multidisciplinary approach that provides classroom teachers with in-situ professional learning to help meet the more complex and individualised needs some students on the spectrum may experience in school settings. The Teleconsultation Classroom (TCC) approach involved a combination of face-to-face visits and more remote support through phone conversations, emails and video conferencing to facilitate collaboration between classroom teachers and outside specialists. This method demonstrates positive results in providing cost-effective, contextualised support to teachers in rural and remote regions, promoting their professional learning and allowing professional relationships to develop despite distance and cost constraints. Guiding principles are outlined to ensure the success, application and sustainability of the TCC approach in rural and remote settings and consideration of its application in more urban settings.

1. Introduction

1.1 Unique Learning Needs of Students on the Autism Spectrum: The Importance of Effective Responses in School Environments

Students on the autism spectrum may present with unique learning needs that learning communities can at times find challenging to adequately and appropriately respond to. If the needs of this group of learners are not adequately met, they can experience difficulties coping with the demands of the learning environment. This may result in more challenging and complex behavioural and learning needs, poorer learning outcomes and less success at school. Previous findings from Autism CRC Australian Educational Needs Analysis project (ASD-ENA) (Saggers et al., 2018) identified that the social, emotional and behavioural needs of students on the spectrum were rated by parents, educators, specialist staff and the students themselves as having the biggest impact and required the highest level of support in education settings. This previous study highlighted the importance of support for social emotional wellbeing, positive behaviour, school connectedness and co-occurring conditions as essential to school success for this group of students. Additionally, students on the spectrum who participated in the research indicated tasks that were most difficult for them to manage were linked to the social, executive function, emotional regulation, handwriting, transition and sensory elements of the learning environment. Educators, parents and specialist staff identified major inhibitors to successfully meeting the needs of students on the spectrum included a lack of access to suitable education and training for staff, specialist support and multidisciplinary expertise. This previous research highlighted the need for a more responsive needs-based approach to meeting the learning needs of this group of students, using approaches that could be flexible and individually tailored with multidisciplinary team input and provided appropriate in-situ professional learning for staff.

1.2 Reconceptualising Teacher Professional Learning in the 21st Century

Professional learning is often considered at the heart of teacher practice and is an important tool in helping improve teacher confidence to meet the needs of all learners in their care. However, despite a huge growth in both autism research and professional learning over the past decade, schools and educators often continue to experience difficulties responding to and adequately meeting the needs of this particular group of learners. It can be especially challenging for school contexts to address the more complex social, emotional and behavioural needs some learners on the spectrum may experience (Koegel, Kim, Koegel, & Schwartzman, 2013). Difficulties can be

further exacerbated in rural and remote regions by a lack of ongoing, cost-effective support, services and professional learning.

In order for school communities to successfully and confidently meet the needs of all learners in their care, it is important for education systems to consider how they can deliver contextualised, appropriate and ongoing professional learning for teachers as part of a suite of support that teachers can access in their daily practice. To do this effectively requires looking beyond traditional modes of delivering professional learning. While professional learning targeted at understanding learners on the autism spectrum is often touted as critical to helping school communities to meet their needs, a lack of attention is paid to what this professional learning looks like and how it is delivered within and to school communities. Previous research investigating the most effective and efficient ways to provide professional learning and support to teachers in the classroom has highlighted the importance of contextually responsive approaches such as in-vivo performance feedback (e.g., peer coaching, such as teacher to teacher, daily and weekly feedback, and technical assistance). These are highly effective methods and essential components of professional learning for classroom teachers (Gilchrist, 2018). Despite this evidence, traditional teacher training and support methods, such as didactic instruction and in-service workshops, continue to be a primary source of professional learning and support for many classroom teachers. This is in spite of the fact that they have been proven to be inadequate methods of support and professional learning in isolation. In contrast, Snell and Janney (2000, 2005) recommend that professional development and support for classroom teachers take place in the natural environment and consist of feasible, embedded strategies which include teacher collaboration and problem solving as well as adequate social and administrative support to ensure sustainability. The current research has investigated novel and innovative ways to effectively implement a suite of support to educators in a range of geographical locations to deliver professional learning in a contextually responsive, ongoing, cost-effective and collaborative manner.

1.3 Professional Learning in Rural and Remote Regions

It is well recognised that rural and remote educators face additional challenges to their metropolitan counterparts with geographical isolation and lack of professional experience being two key factors (Glover et al., 2016; Kline & Walker-Gibbs, 2015). Geographical isolation can contribute to feelings of personal and professional isolation with limited access to professional developmental opportunities and a lack of support networks often an issue (Downes & Roberts, 2017; Glover et al., 2016). Of the 11 key recommendations Halsey (2018) recently suggested to support rural and remote communities as part of his review, many related to overall better

education and training for staff and a national focus on rural and remote education, training and research.

1.4 The Importance of Contextual Fit

Something that more traditional forms of professional learning often fail to recognise is that school communities are not static environments, but rather are very complex, ever evolving, socially demanding and dynamic nested sets of context-specific learning environments. Furthermore, the complexity of school and classroom environments is often reflected in very different, unique and idiosyncratic ways within individual school and classroom settings. Rural spaces and rural schools are in themselves each quite unique in their own right and influenced by the economy, geography and demography of these rural social spaces and the interrelatedness of these factors (Reid et al., 2010; White et al., 2011).

Professional learning needs to recognise and be responsive to this to ensure there is a “contextual fit” between the professional learning and the needs of the school community and the staff, learners and families within it. Examples of contextual factors previously noted as influencing the delivery, consistent implementation and success of support for learners include: time constraints, acceptability and feasibility ratings of techniques, teacher efficacy, and variables related to child and teacher characteristics and contextual variables such as structure, values, culture and resources (Odom, McConnell, & Chandler, 1994). This has resulted in an acknowledgement of the importance of a good contextual fit for any supports and professional learning provided to classroom teachers and the classroom context.

Contextual fit indicates the match or compatibility between the intervention itself and the implementers or related environments (Albin, Luchyshyn, Horner, & Flannery, 1996; Snell, Voorhees, & Chen, 2005). For the implementation of support and knowledge to be delivered consistently and with a high degree of fidelity, educators must perceive the plan to be important, useful, acceptable and feasible (Odom et al., 1994; Snell, 2003; Stormont, Lewis, & Smith, 2005). For supports to classroom environments to be effective, they must not only be appropriate to the needs of the learner in question, but also match the values and skills of the implementers, maintain some overlap with current practices and previous training experience, and be supported within the available resources to the greatest extent possible (Detrich, 1999; Stormont et al., 2005). Hence, it is important that effective, realistic, responsive and sustainable classroom supports and strategies can be implemented in a timely and cost-effective manner.

1.5 A Teleconsultation Approach to Professional Learning and Support

Some researchers and practitioners—particularly those within the medical and allied health field—have begun to examine alternatives to conventional (i.e., face-to-face) means for service delivery and support (Frieder, Peterson, Woodward, Crane, & Garner, 2009). Many of these approaches have utilised technology to provide or augment a service delivery and professional learning; however, there has been limited application of this approach in education contexts.

Teleconsultation approaches use electronic communications and information technology to provide and support participants when distance separates the participants (Darkins, 2001).

Teleconsultation has started to be used more widely as an innovative approach in the health sector in a telehealth/psychiatry/medicine approach with widespread popularity and success (American Academy of Child and Adolescent Psychiatry (AACAP), 2008). To date, however, this style of support has had limited application in the field of education with it only being more recently adopted in education with the benefit of instantaneous feedback to educator recognised (Bice-Urbach & Kratochwill, 2016; Gibson, Pennington, Stenhoff, & Hopper, 2010). Teleconsultation has more recently started to show positive results for students on the spectrum in rural and remote regions as well as to support professional learning of parents, therapists and educators (Bice-Urbach & Kratochwill, 2016; Hepburn, Blakeley-Smith, Wolff, & Reaven, 2016; Vismara, Young, Stahmer, Griffith, & Rogers, 2009; Wainer & Ingersoll, 2015). The Tele-Classroom Consultation (TCC) approach used in the Early Years Behaviour Support Program (EYBSP) trialled the use of teleconsultation as a cost-efficient tool to augment service delivery, contextualise support and provide ongoing professional learning to educators of early years learners on the spectrum in rural and remote regions of New South Wales and Queensland through a problem solving consultative approach.

1.6 Problem Solving Consultative Approach

One approach from the field of psychology that has been applied in school environments is the problem solving consultative approach. This style of consultation traditionally involves indirect services provided to an identified client (e.g., student/s) served through a consultee (or implementer, e.g., a teacher) by an external consultant (e.g., multidisciplinary team) (Kratochwill & Bergan, 1990; Sanetti, Collier-Meek, Long, Kim, & Kratochwill, 2014). Traditionally, there are three main approaches to problem solving consultation:

- i) Case-centred consultation – individual problem solving cases are established whereby specific target issues and concerns raised by the consultee/s are identified and addressed;

- ii) Technology training consultation – focuses on skill development consultation to empower consultee/s through training in various skills, strategies and processes; and
- iii) Organisational system-based consultation – targets addressing needs at more of system or organisational level (Sheridan & Kratochwill, 2007).

Refinements to the approach emphasise how the services and their delivery can vary depending on the needs of the people involved.

1.7 Conjoint Behavioural Consultation (CBC)

Recently, Sheridan and Kratochwill (2007) have described “conjoint behavioural consultation (CBC)” as an approach that extends more traditional forms of consultative problem solving service delivery. Adopting an ecological systems perspective (e.g., Bronfenbrenner, 1977), features of CBC include recognition that children work within and across different environments with the two primary environments being home and school. This approach also acknowledges the vital role families play in their child’s learning and development, ensures they are equal partners and brings together all key personnel in a collaborative and consultative partnership to address the child’s needs. This approach emphasises meaningful collaboration and consultation to ensure cross environment support and partnerships, family involvement and mutually respectful and reciprocal relationships can be established and sustained (Sheridan & Kratochwill, 2007). The focus is on constructive, goal-centred, solution-based services and support delivered through a structured, joint problem solving approach. The aim is to facilitate approaches guided by clear communication, shared goals, and compatible practices and that demonstrate a consistency in attitudes, actions and approaches across home, school and other support environments (Christenson & Sheridan, 2001; Sheridan & Kratochwill, 2007). In summary, the approach can be defined as:

A strength-based, cross-system, problem-solving and decision-making model wherein parents, teachers and other caregivers or service providers work as partners and share responsibility for promoting consistent outcomes related to a child’s academic, behavioural and social-emotional development (Sheridan & Kratochwill, 2007, p. 25).

A CBC approach is achieved through structured supportive interactions with all partners (e.g., family, teachers, consultant and other service providers where applicable) and delivered through a dynamic and ongoing process that is flexible and responsive. Overarching goals and objectives of CBC as described by Sheridan & Kratochwill (2007) are summarised in Table 1.

Table 1: Overarching goals and objectives of conjoint behavioural consultation (CBC) (Sheridan & Kratochwill, 2007, p. 26)

Overarching goals
Promote academic, social-emotional and behavioural outcomes for children through joint, mutual, cross environment planning
Promote parent engagement with clear opportunities for meaningful participation within a developmental, culturally sensitive context
Establish and strengthen partnerships between home and school in relation to the child's learning
Process objectives
Improve communication, knowledge and understanding of family, child and school needs
Promote a partnership of shared ownership, commitment and joint responsibility to goals and problem-solving approach
Promote greater conceptualisation of needs and concerns and shared perspective taking
Strengthen relationships within and across environments
Maximise opportunities to address needs across different environments
Increase expertise and resources within the partnership
Outcome objectives
Collect comprehensive and functional contextualised data over an extended period of time
Establish consistent approaches to support across settings
Improve, skills, knowledge and behaviours of all involved (including family and school personnel, other service providers and child)
Monitor outcomes across all settings
Enhance generalisation, maintenance and sustainability of approaches and support
Develop skills and competencies to promote a sustained consultative problem-solving approach between home and school

2. Research Method

2.1 Research Aims

The overall aim of the EYBSP was to support the professional learning of educators in rural and remote regions to meet the more complex and individualised needs of learners on the autism spectrum in inclusive classroom settings. The TCC approach that was developed to trial for this project drew on Positive Behaviour Support (PBS) strategies - a multidisciplinary, problem solving approach through the use of conjoint behavioural consultation - to deliver in-situ and ongoing support to promote the professional development and learning of educators in rural and remote communities. The teleconsultation approach delivered more ongoing consultation to support the needs of the schools, young learners on the autism spectrum and their families, and ensured a cost-effective ongoing mode of delivery could be trialled in regional areas.

2.2 Long-Term Aims and Application

Long term it is hoped that trialling such approaches will not only promote the professional learning of educators, but will also ensure the increased success for early years learners on the autism spectrum within education contexts, particularly in rural and remote regions. With this in mind, other long-term aims of trialling this approach were to look at novel and innovative ways to:

- Increase retention and attendance rates in early years learners on the autism spectrum in educational contexts.
- Reduce use of restrictive practices.
- Increase inclusion of children presenting with challenging behaviours and complex needs.
- Identify and utilise strategies that work (e.g., PBS, social skills training).
- Upskill a range of education and allied health professionals through a model of professional learning delivery applied through a TCC approach that can be applied to a range of contexts and needs of both educators and learners.
- Provide equitable and effective professional development to rural and remote areas to support and upskill a range of education and allied health professionals and reduce feelings of isolation.

2.3 Short-Term Aims

The EYBSP aimed to investigate a novel and innovative approach to ongoing and contextualised professional learning and support to educators of early years learners on the autism spectrum in rural and remote regions through the development, trial and implementation of a TCC approach that drew on a problem solving consultative approach.

The short-term aims of this exploratory study were therefore to trial the TCC approach to:

- i) Improve how the more complex and individualised needs some early years learners on the autism spectrum experience can be more effectively met in inclusive education contexts.
- ii) Support teachers to promote their professional learning of the support needs of early years learners on the autism spectrum and improve their confidence to deliver this support.
- iii) Trial cost-efficient service delivery and support options to rural and remote regions through the use of a TCC approach to support the more specific individual, complex and challenging needs some early years learners on the autism spectrum may experience in their learning, and ensure these approaches are tailored to address other context specific factors.
- iv) Develop some guiding principles for using a TCC approach in schools and consider its application to a variety of geographical regions, student needs and educational contexts.

2.4 Research Design

Case study research involves “intensive study of a single unit for the purpose of understanding a larger class of (similar) units ... observed at a single point in time or over some delimited point of time” (Gerring, 2004, p. 342). Case studies therefore provide the opportunity for researchers to gain a deep holistic view that can facilitate description, understanding and explaining of the research situation (Baxter & Jack, 2008). A case study allows the researcher to conduct an in-depth and comprehensive assessment of the case of interest (Simons, 2009). The EYBSP used a qualitative case study research design, informed by action research, to integrate five exploratory case studies into a joint multiple-case design, to follow a ‘replication logic’ (Yin, 1994, p. 285). Exploratory case studies are one of three prominent types of case studies described by Yin (2009) and allow for the phenomena to be explored in depth when the phenomena are characterised by a lack of detailed preliminary research (Streb, 2010). This research design is therefore ideally suited to the current research, where little previous application of a TCC approach has been conducted or

researched in schools. Exploratory case study is an often-underestimated approach criticised for its high level of flexibility and adaptivity; however, it is these same aspects that form the strength of the research design (Streb, 2010). An exploratory case study allows the researcher the opportunity to develop definitions, data collection methods and hypotheses for future subsequent explanatory research in emerging fields of research (Streb, 2010).

The context of the current case is bounded by five school settings in rural and remote regions of Queensland and New South Wales where early years learners on the autism spectrum were identified by families and school staff as having more complex or individualised needs that required additional professional learning and support delivered to the educators in order for them to effectively meet these children's learning needs. A case study protocol was developed and used multiple methods to gather information at three data collection points within each school setting. Researchers followed Yin's (2009) principles, using a consistent data protocol that enhanced cross-case analysis. Data describes the early years learners, the school environment and educators involved, and outcomes. The findings provide a detailed description of outcomes within each case and outcomes that are common across cases.

2.5 Research Questions

2.5.1 Overarching Research Question

The overarching EYBSP research question was:

How could the trialling of a Tele-Classroom Consultation (TCC) approach deliver a cost-efficient service delivery and support option to educators in rural and remote regions, to promote their professional learning and confidence to more effectively implement support catering to the more complex and individualised learning needs of early years learners on the autism spectrum in their care?

2.5.2 Sub-Research Questions

The project aimed to trial how a TCC approach promoted the professional learning and confidence of regional and remote teachers to support the more individualised needs of early years learners on the autism spectrum within inclusive settings. With this in mind, sub-research questions that were considered were:

- i) How can a TCC approach support the more complex and individualised needs some early years learners on the autism spectrum experience in regional and remote inclusive education contexts?
- ii) How can a TCC approach be applied to a variety of geographical regions, student needs and educational contexts?
- iii) What guiding principles can be developed for using a TCC approach in schools?

2.6 Ethical Considerations

Primary ethics approval to conduct the study as outlined in this report was initially obtained from the Queensland University of Technology (QUT). Due to the more high-risk nature of the learner population, ethics approval was sought through the National Ethics Application Form (NEAF) and was received from the QUT Research Ethics Approval Committee (No. 1500000162).

Secondary ethics approval was obtained from other research and participant organisations including:

- An expedited institutional review from the University of Queensland (Approval number: 2015000797),
- Department of Education and Training, Queensland (Reference Number: 15/394917), and
- New South Wales Department of Education (Approval Number: 2015319).

In addition, gatekeeper approval was obtained from:

- Autism Queensland, and
- Autism Spectrum Australia (Aspect).

2.7 Recruitment

Purposeful sampling is widely used in qualitative research for the identification and selection of information-rich cases related to the phenomenon of interest (Palinkas et al., 2015). In the EYBSP,

a purposeful sampling method was used to recruit suitable school contexts, families and early years learners on the autism spectrum across rural and remote regions of Queensland and New South Wales. Once ethics approval was gained from all research partners and organisations involved in the research, partner organisations in New South Wales and Queensland were approached and distributed an invitation to suitable school communities in regional and remote areas that met criteria to be involved in the research to screen for interest. If schools were then interested they would contact the research team to seek further information and would approach suitable families with information about the project on behalf of the research team to see if they were interested in being involved and, if so, gain consent for the project to proceed. Once all consents were obtained, an appropriate member of the research team would contact the school and families involved to gather some initial information and plan the next steps.

2.8 Settings

The project received additional funding from Positive Partnerships, an initiative funded by the Australian Government Department of Education and Training through the Helping Children with Autism Package which allowed the project to be extended and increased the original recruitment of five school sites across rural and remote regions of New South Wales and Queensland to eight. Eight schools were recruited to the research project; however, circumstances beyond the control of the project or schools involved meant that data across all time points was only collected from five school settings. These schools were identified by families and school staff as having children with more complex or individualised needs that required additional professional learning and support delivered to the educators in order for them to effectively meet these children's learning needs. Settings are described according to the ASGS remoteness measure (Australian Bureau of Statistics (ABS), 2018) and the Index of Community Social-Educational Advantage (ICSEA) (Australian Curriculum, Assessment and Reporting Authority (ACARA), 2014) as well as other information about staff and students relevant to the school site.

2.9 Measures of Remoteness

The Australian Statistical Geography Standard (ASGS) used by the Australian Bureau of Statistics defines remoteness into five classes of relative remoteness across Australia. These classes of remoteness are determined using a process that provides a consistent definition across Australia and over time (for more information visit ABS at <https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/1270.0.55.005Main%20Features15July%202016?opendocument&tabname=Summary&prodno=1270.0.55.005&issue=July%202016&num=&view>).

The five classes of remoteness are:

- Major Cities of Australia,
- Inner Regional Australia,
- Outer Regional Australia,
- Remote Australia, and
- Very Remote Australia.

2.10 ICSEA Measure

The Index of Community Social-Educational Advantage (ICSEA) is an index developed by the Australian Curriculum and Assessment Reporting Authority (ACARA, 2014) to measure the social educational backgrounds of the students in school communities and is used to measure and compare academic results of different schools with similar student cohorts (ACARA, 2014). The lower the ICSEA value, the lower the level of educational advantage of the students who attend the school. The average ICSEA value is 1000 and the Australian average in the bottom quarter is 25%.

Eight school settings in New South Wales and Queensland agreed to be part of the project, but data was only collected from five of these. Non-identifiable information about these settings is available in Table 2.

Table 2: Information about school research sites

	School site	ABS ASGS	ICSEA	School type	Staff	Enrolment information
1	LSNRC	Remote Australia	833 with 66% of students in bottom quarter	K–12 govt	30 teaching staff 12 non-teaching staff	370 total enrolments 53% boys 47% girls 45% Indigenous 11% language background other than English (LBOTE)

2	WSQS	Remote Australia	1005 with 30% in bottom quarter	P–10 govt	13 teaching staff 10 non-teaching staff	86 total enrolments 57% boys 43% girls 1% Indigenous 1% LBOTE
3	BSNCS	Remote Australia	789 with 77% in bottom quarter	K–12 govt	11 teaching staff 7 non-teaching staff	109 total enrolments 56% boys 44% girls 53% Indigenous 1% LBOTE
4*	ESQS	Outer Regional Australia	800 with 67% in bottom quarter	P–12 govt	11 teaching staff 12 non-teaching staff	92 total enrolments 43% boys 57% girls 57% Indigenous 21% LBOTE
5	QCSL	Outer Regional Australia	972 with 24% in bottom quarter	P–6 govt	2 teaching staff 4 non-teaching staff	11 total enrolments 55% boys 45% girls 18% Indigenous 0% LBOTE
School communities recruited but in which research did not go ahead						
6	WCNC Student transferred to	Remote Australia	654 with 94% of students in	P–6 govt	10 teaching staff	132 total enrolments

	another region after initial data collection		bottom quarter		6 Non-teaching staff	45% boys 55% girls 95% Indigenous 0% LBOTE
7*	MSQS Child transferred to this school from school site 4 near end of TCC implementation and support was provided to this school to help support transition but no data collected from this school	Outer Regional Australia	953 with 45% in bottom quarter	P–10 govt	30 teaching staff 26 non-teaching staff	236 total enrolments 51% boys 49% girls 8% Indigenous 13% LBOTE
8*	WQC Parent approved participation in research, but family moved to more regional area before project could get underway properly	Remote Australia	600 with 95% in bottom quarter	P–6 govt	17 teaching staff 20 non-teaching staff	146 total enrolments 49% boys 51% girls 100% Indigenous 60% LBOTE

(* denotes schools recruited through additional Positive Partnerships funding)

2.11 Participants

Across the five research sites, 20 participants were involved in interviews and worked with the team to collect data. Participants consisted of ancillary staff (n=1), school-based specialist support staff (n=2), principals (n=3), educators (n=4), parents of early years learners on the autism spectrum (n=3) and research specialist support staff implementing the TCC approach (n=7). Data was not collected from students due to their age. Non-identifiable information about the participants for each site is provided in Table 3. Those who were interviewed have an * after their role.

Table 3: Final school research sites

	School site	Staff	Parents/carers	Research specialist support staff	Child
1	LSNRC	Class teachers x 2*	Parents happy to consent for child to be involved as part of research but did not want to participate	Psychologist*	Male of Indigenous background Aged 7 Year 1 Medical diagnosis on the autism spectrum
2	WSQS	Principal* Class teacher* Parent*	Mother*	Speech language pathologist* Occupational therapist* Educational consultant*	Male Aged 7 Year 2 Medical diagnosis on the autism spectrum and ADHD
3	BSNCS	Learning support teacher* Class teacher* Assistant principal	Parents happy to consent for child to be involved as part of research but did not want to participate	Speech language pathologist*	Female of Indigenous background Aged 6 Prep No formal diagnosis on the autism spectrum
4	ESQS	Principal* Parent*	Mother*	Speech language pathologist*	Male of Indigenous background

		Class teacher* (no post interview due to illness)		Occupational therapist* Educational consultant*	Aged 5 ½ Prep year Medical diagnosis on the autism spectrum
5	QCSL	Teaching principal* Special needs teacher* Teacher aide* External specialist govt adviser	Mother*	Speech language pathologist* Occupational therapist* Educational consultant*	Male Aged 6 Year 1 Medical diagnosis on the autism spectrum

2.12 Procedure

The collaborative problem solving TCC approach involved the implementation of the following process when working with families and schools across the three years of the study and the five case studies. When a school and family consented to be part of the research project, the following process was followed and is represented in Figures 1 and 2:

- i) Initial contact with school and family involved.
- ii) Initial face-to-face consultation with identification and discussion of the needs of the family, student and school. Interviews conducted and core assessments completed.
- iii) Plan of support and TCC approach developed.
- iv) Implementation via a mix of remote and face-to-face support.
- v) Monitor and review periodically based on individual needs.
- vi) Follow-up and exit plan developed.

Early Years Behaviour Support Project (EYBSP)



Recruitment Phase

- 1 participating school recruited to pilot research.
- Initial contact made with school and family involved
- Initial face to face consultation to identify and discuss the needs of the family, student and school.



Engage Multidisciplinary Team

Multidisciplinary team from ASPECT identified for school A with expertise that aligns with the identified needs of school and student



Assessment Phase

- Education and technology assessment of school and student needs
- Interviews and core assessments completed
- Pre-intervention assessments based on individual needs: qualitative and quantitative baseline data from students; educators and parents interviews, surveys, observation and anecdotal notes; student records; descriptive analyses of behaviours to collect baseline data on student's needs, teacher confidence and satisfaction



Findings

Initial findings drafted to inform Year 2 and 3 of study and development of training modules/resource materials to support TCC and EYBSP approach in schools



Post-intervention Phase

- Follow-up and exit plan developed
- Post intervention assessment completed: collecting qualitative data from students, educators and parents through post intervention interviews.



Implementation Phase

- Implementation of intervention
- Monitor and review periodically based on individual needs



Preparation Phase

- Classroom technology installed as appropriate
- Plan of support and TCC approach developed

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Recruitment Phase	<ul style="list-style-type: none"> • School or setting recruited • Initial contact made with staff at setting and family/s involved • Multidisciplinary team established • Initial face-to-face consultation to identify and discuss the needs of the family, student and school
Engage Multidisciplinary Team	<ul style="list-style-type: none"> • Multidisciplinary team works with setting and family to identify initial needs of the setting, staff, family and student
Needs Analysis Phase	<ul style="list-style-type: none"> • Needs analysis of setting, staff, family/s and student/s conducted • Interviews and pre-implementation data collected dependent on individual needs of setting, staff, family/s and student/s involved
Preparation Phase	<ul style="list-style-type: none"> • How TCC is delivered and frequency discussed with participants and finalised based on participant preferences • Plan for support and collaboration approach developed
Implementation Phase	<ul style="list-style-type: none"> • Needs based support implemented • Regularly monitored and reviewed to refine support and implementation • TCC approach implemented in an ongoing manner • Monitor and review periodically based on individual needs and TCC support adjusted
Post-Implementation Phase	<ul style="list-style-type: none"> • Follow up and transition plan developed • Post implementation data collected
Findings/Data Analysis Phase	<ul style="list-style-type: none"> • Findings shared with participants • Initial findings drafted to inform future implementation, guidelines and support of TCC approach in middle years contexts

Figure 2: TCC procedure.

The TCC approach and the focus of professional learning and support was different in each context based on the needs of the school site, the educators and the learners involved. The format and regularity of the TCC support was determined in consultation with the participants and also responded to their preferences for the mode of delivery of the remote support (email communication, phone calls or video conferences) in combination with scheduled face-to-face visits. The regularity of the support and when and how it was delivered was also determined in consultation with individual participants. This ensured the approach was responsive to participant needs and preferences allowing for timely responses to teacher needs and ongoing support, responsive to individual needs and was delivered in a cost-effective manner. A more detailed description of the procedure that rolled out in each school is outlined in Figure 3.

Across, the three years of the research project, the TCC approach was implemented in each school site for the period of approximately one school year. The TCC approach was used to consult and work with schools and families in the following way:



Figure 3: TCC problem solving consultation approach.

The TCC approach involved consultation that was delivered through a combination of face-to-face visits, phone calls, emails and use of virtual collaborative software. The frequency and mode of collaboration was determined in consultation with participants. Each school and family (if they chose to) was provided with an iPad with its own 4G sim card and collaborative software loaded to the machine. The initial software that was used was adapted from telehealth software. However, feedback from participants in the first two research sites indicated this was not effective for the TCC rolled out in education settings and required too much training. As a result, research sites in years 2 and 3 of the project trialled the use of Zoom software which was quicker and easier to use and better met the needs of this project. Feedback from the first two research sites highlighted the importance of teacher release time to support the project and the consultation required and therefore latter research sites were provided with limited funds to support teacher release time for the purpose of the project.

2.13 Data Collection

Qualitative approaches seek to “arrive at an understanding of a particular phenomenon from the perspective of those experiencing it” (Vaismoradi, Turunen, & Bondas, 2013, p. 398). In the early years project this meant gaining perspectives from participants involved in the TCC approach across the five sites including the parents, educators, and specialist support teams through qualitative data collected through semi-structured interviews. The current study reports on the

findings of implementing a TCC approach across five schools (QLD n=3, NSW n=2) and the influence of this approach on the teacher's ability to meet the more individualised needs of early years learners on the spectrum in their care.

Qualitative data through interviews with key stakeholders was collected at three key time points:

- i) Pre-implementation/planning phase,
- ii) Mid-implementation phase, and
- iii) Post-implementation phase.

Data collection at these different time points consisted of separate phone/online interviews with participants involved in the project from the school community (e.g., teacher, principal, parent). Interviews were conducted by phone or online via Zoom software and scheduled for a time convenient to the participants. According to Cohen, Manion and Morrison (2018), phone interviews have several advantages over other modes of interviewing that made them more suited to this particular study and far outweighed any disadvantages. For example, given the geographical location of the schools, phone interviews were cheaper and quicker to conduct with travel costs omitted and were more convenient for participants as they could be held at a time suitable to the participant, reducing interruptions and protecting the confidentiality of the respondents. Similarly, semi-structured interviews were considered the most advantageous form of interview as topics and questions could be organised in advance, but the questions could be open ended, and the wording and sequence tailored to each individual participant and the responses they provided with prompts and probes also able to be provided if necessary (Cohen et al., 2018). Where applicable, other data collected to help obtain background information on the needs of the students included observations, discussions with school and family, analysis of school records, and child-based assessment measurements as determined by the appropriateness to the learners' needs.

2.14 Data Analysis

Semi-structured interviews with participants were conducted at the five different sites across three different time points and were audio recorded and transcribed verbatim to ensure direct quotes and extracts could be used to illuminate the qualitative data. This can help to clarify links between data, and support the interpretation and conclusions discussed. Use of direct quotes can provide evidence, help explain and illustrate data, deepen understanding and enable the voice of the participants to be heard (Braun & Clarke, 2006; Corden & Sainsbury, 2006). According to Braun and Clarke (2019), "the purpose of thematic analysis is to identify patterns of meaning across a

dataset that provide an answer to the research question being addressed. Patterns are identified through a rigorous process of data familiarisation, data coding, and theme development and revision” (para. 3). In this project, Braun and Clarke’s (2019) reflexive thematic analysis approach was used to analyse the data because it is theoretically flexible and suits questions related to “people’s experiences, or people’s views and perceptions” (Braun & Clarke, 2019, para 3). The thematic analysis was approached in an inductive-dominant way (Armat, Assarroudi, Rad, Sharifi, & Heydari, 2018) whereby “coding and theme development were directed by the content of the data” (Braun & Clarke, 2019, para 3) in order to “identify, analyse, and report patterns (themes) within the data” and “reports experiences, meanings and the reality of participants” (Braun & Clarke, 2006, p. 81) to provide a “rich thematic description of your entire data set” in response to the research question and overall aims of the project (Braun & Clarke, 2006, p. 83). The analysis followed Braun and Clarke’s (2019) six phase approach and involved two researchers independently worked through the analysis process. This process started with both researchers independently reading the interviews to familiarise themselves with the data. They then independently generated a set of initial codes and conferred with each other and the team leader to verify their interpretation of the codes. This was followed by an independent search for broader themes among the codes before conferring with each other and the research team leader to verify their interpretation of the codes. The data was coded and classified according to the theme, interviewee (parent, teacher or principal), and time the interview took place (pre-intervention, mid-intervention and post-intervention). In Phases 4 and 5, the themes were then reviewed and finalised in preparation for them to be reported on. In the cross-case analysis, there were six final themes to emerge from the data regarding the TCC approach, including: 1) school climate, 2) relationships, 3) sustainability, 4) support strategies, 5) benefits, and 6) barriers. These themes are also used to inform the development of guiding principles for consideration in implementing a TCC approach in education settings. Case by case outcomes will be discussed followed by a summary of results from a cross-case analysis.

3. Findings

3.1 Case by Case Outcomes

An important element of the problem solving consultative TCC approach implemented in this research was using the initial consultation with the school, family and student to help to collect information around the context as well as the needs of the student and staff from the educator and family perspectives. This initial consultation occurred by email or phone to begin the conversation and establish rapport with relevant staff and set up a face-to-face visit to the site to meet with all relevant stakeholders and gather all relevant information. The initial face-to-face visit was used to help develop rapport and establish a relationship with all key stakeholders. It was also used to collect information and conduct assessments in order to evaluate the needs of the student, the school community and the family and develop a plan to determine how the TCC approach would roll out across the course of the project in the school.

Information about each case will be discussed in relation to nine key topics – 1) needs – understanding background, context and student needs, 2) goals, 3) TCC process, 4) support strategies, 5) outcomes, 6) enablers, 7) challenges, 8) sustainability, and 9) ideas for improvement – before a cross-case analysis of findings are discussed and used to inform guiding principles for this approach.

3.1.1 Case Study 1 – LSNRC

Table 4: Case Study 1 – LSNRC

Family needs	<ul style="list-style-type: none"> Several siblings with additional needs Difficulty getting learner to school on time Keen for child to be involved and to support school in the project but did not want to be involved
Student needs	<ul style="list-style-type: none"> Emotional regulation Development of social understanding/social-emotional learning and support to promote development of friendships and socialising Health issues and physical fitness levels make participation in sport challenging Managing crowds in whole school activities and performing in front of people difficult Late arrival disrupts structure and routine and misses preferred activities Support for transitions and working with others Support for written tasks Making inappropriate comments/targeting other students
Staff needs	<ul style="list-style-type: none"> Teacher interested in improving IT literacy to support children on the spectrum More support and feedback for supporting learner in class More guidance and education with IT/apps, using sensory gym and implementing support and differentiation in whole class activities
School context	<ul style="list-style-type: none"> Not a lot of supports/services available within community Student had support class placement and individual learning plan Students in class working at different levels Differentiated support would be beneficial Learner has support from a teacher aide at lunch School reasonably well-resourced (e.g., sensory gym, supervised playground programs at computer lab at lunchtimes)
Goals	<p>Providing support to teacher to help promote the following goals with learner:</p> <ul style="list-style-type: none"> Settling into writing tasks Getting to school on time Promoting peer relationships Coping with crowds/school environment
Central theme of support	Promoting teacher self-efficacy
TCC process	<ul style="list-style-type: none"> Initial site visit and final visit Primarily used phone for remote consultation due to issue with collaborative software Teacher used regular tele-class consultations as a resource Weekly phone communication on how to support student to meet individual learning goals TCC process followed was: <ul style="list-style-type: none"> Teacher identified concerns Teacher and therapist discussed possible motivations/functions of student behaviour

	<ul style="list-style-type: none"> Therapist discussed cues/solutions on how to approach problem Teacher implemented and reported back (e.g., therapist gave cues on how to elicit responses from student about interpersonal problems) Use of email in between sessions
Support strategies	<ul style="list-style-type: none"> Modifications to class schedule More visual cues and structure in instructions to student Games and activities to promote positive interactions/resilience Breaking down instructions for learner Collaborated with parent to achieve goal of arriving on time at least three days per week to improve structure/routine/set day up for success Worked with learner to support social understanding and promote peer relationships/increase positive activities with peers Use of sensory equipment and sitting away from noise Reduced speaking and more visual cues in class Implementing rewards Moved preferred activities further down the visual schedule to reward participation and engagement in other activities
Outcomes	<p>Learner outcomes:</p> <ul style="list-style-type: none"> Less time out of the classroom and more time on task Student received a gold reward, fewer negative entries on database, fewer detentions Improvement in learning and behaviour noted Parent reported child keener to go to school <p>Teacher outcomes:</p> <ul style="list-style-type: none"> Created a reflection corner for classroom Implemented and sustained strategies for student Felt motivated as most strategies started to work within a few days to a week Had opportunities to reflect on the strategies Built confidence in trying new things and consulting with others Built skills and grew in professional teacher practice
Sustainability	<ul style="list-style-type: none"> Improved capacity of teachers Psycho-education about autism generalised to other students
Enablers	<ul style="list-style-type: none"> Teacher willingness to learn and engage Parent willing to assist in getting the child to school on time School well-resourced with aides, sensory gym etc. Teacher regularly able to communicate with therapist Teacher found initial face-to-face meeting useful Therapist was focused on supporting and upskilling teachers
Challenges	<ul style="list-style-type: none"> Collaborative software trialled did not work well for education purposes – may have undermined trust in the beginning Phone was then used which limited non-verbal communication Limited teacher relief time
Ideas for improvement	<ul style="list-style-type: none"> Consider other collaborative software options Provide teacher release time for consultation, collaboration and planning

3.1.2 Case Study 2 – WSQS

Table 5: Case Study 2 – WSQS

Student needs	<ul style="list-style-type: none"> Language/literacy needs Sensory issues, social understanding in unstructured environments, academic (reading/writing) Supporting positive behaviour, attention to task in class, positive social interactions
Staff needs	<ul style="list-style-type: none"> Help to support “whole picture” rather than just learner’s behaviour Support teacher to meet needs of learner and other learners on the autism spectrum within class context Preference for remote support to be combination of email and face-to-face visits A better understanding of autism spectrum disorder Help to support parent and student, and encourage communication between stakeholders Support for educators to turn to, get help and reflect about student’s behaviour
Goals	Promoting: <ul style="list-style-type: none"> Social understanding/social emotional learning in class/ playground Language and literacy skills Positive behaviour Attention to task Promoting peer relationships Positively managing periods of transition and unstructured times
Central theme of support	Promoting advocacy and collaboration amongst all stakeholders
TCC process	<ul style="list-style-type: none"> One initial site visit One 2-hour mid-implementation site visit (including whole school professional development session – understanding the needs of learners on the autism spectrum) One final site visit Both school and parent allocated a support team member to ensure they had a key contact Both parent and staff received remote support Regular remote support primarily via phone and email with a member of team. Phone calls were weekly to start with and then fortnightly with emails in between. Regularity responsive to needs of staff and reviewed when checking in Main processes in TCC consisted of: <ul style="list-style-type: none"> Building positive partnership with parent and allowing their input Team approach with speech therapist and OT Support for teachers in identifying and implementing strategies for students Regular access to specialised team via school visits and remote access School visits – review of environment to tailor approach Email – follow ups from discussion around provision of resources

Support strategies	<ul style="list-style-type: none"> Switched lunch and playtime so that learner was calmer in afternoon Used iPad to help support learning needs. Child provided with iPad for use at school and home and was loaded with apps to support academic and self-regulation goals Visual timetable helped learner to understand routine and what was coming next Playground strategy implemented with different activities to support positive social interactions Review of IEP (parent/school collaboration) and adjusted to 3–4 manageable goals Rewards strategy implemented with free time on iPad (brings videos etc. from home) Team included his family and used personal interest to build rapport (including interest in football to support reward system) Team individualised learning/social stories by including learner in them Used visuals, timers and pre-teaching in class Set up structured teaching – reorganised classroom into separate spaces Visual schedules separate for student and class, revised 2–3 times Set up break spaces in class to address social emotional needs of all learners Teacher advocated for lunch strategies as learner's fatigue worse during the end of the week – iPad in library or play with farm set
Outcomes	<ul style="list-style-type: none"> Mother no longer fighting with learner daily to get him to school Transition program to prepare for next year was developed and underway; parent involved collaboratively with school on transition plan Increased understanding of needs of a range of children – good asset for schools Other learners in class benefited from strategies teacher put in place for learner Routine and pre-teaching led to improvement in learner's ability to cope academically and emotionally Learner more relaxed and happier in class Improvements in report card; more willingness to do homework Took four terms to see benefits – 10–12 behavioural incidents in Term 1 to none in Term 4 Learner's behaviour and ability to keep up with learning/processing improved; could see beginnings of improvements in Terms 2 and 3; took a year for strategies to be effectively refined and implemented through problem solving consultation approach Learner was able to go to positive behaviour learning school celebration at end of Term 4 Huge improvement in ability to attend, concentrate, and be motivated to engage
Sustainability	<ul style="list-style-type: none"> Ongoing rapport with school Engaged behaviour support officer Upskilling of staff in autism spectrum disorder and zones of regulation

	<ul style="list-style-type: none"> ▪ Positive collaborative parent–school relationship established ▪ Class teacher felt able to advocate for the learner’s needs in school environment
Enablers	<ul style="list-style-type: none"> ▪ Motivated and supportive parent, class teacher and principal ▪ Parent and school worked together collaboratively with team and external providers ▪ School willing to call parent about issues with student ▪ Teacher found the project team helpful in terms of providing strategies and giving confidence ▪ Principal felt that regular contact with the project team increased confidence of school staff
Challenges	<ul style="list-style-type: none"> ▪ Lack of understanding of autism spectrum disorder in school community – viewing learner as a “naughty boy” ▪ Learning support teacher did not participate; limited understanding of autism spectrum disorder and learner’s needs ▪ Poor internet connectivity limited sending videos/pictures ▪ Class teacher regretted not using the iPad more effectively to meet learner’s needs and especially as a calm down/emotional regulation strategy with learner. More professional development needed to ensure confidence ▪ Required more time and training in iPad to benefit the whole class; need to be made more accountable ▪ Class teacher felt TCC approach was good, but preferred face-to-face sessions as team could really see what was happening as opposed to relying on being told what was happening ▪ Time consuming but worthwhile; had to use non-contact time to consult with team ▪ Use of iPad to record student was distracting; more beneficial to have expert observing the child ▪ Confidentiality and making sure learners did not hear what was being discussed in sessions ▪ Student still needs more support with stress management/zones of regulation ▪ Need for staff upskilling in using the iPad/teleconsult approach ▪ Skills of teacher to use technology – internet capabilities in rural areas
Ideas for improvement	<ul style="list-style-type: none"> ▪ Provide teacher release time for consultation, collaboration and planning ▪ More staff upskilling in using the iPad/teleconsult approach ▪ Upskilling of teachers to use technology ▪ Managing internet capabilities in rural areas needs further addressing

3.1.3 Case Study 3 – BSNCS

Table 6: Case Study 3 – BSNCS

Student needs	<ul style="list-style-type: none"> ▪ Repeating Prep due to high absenteeism and learning needs ▪ Limited family resources and capacity to support ▪ Focus child is generally well behaved but has limited engagement ▪ Limited verbal skills and low literacy levels ▪ Absenteeism requires teacher to revisit one-on-one ▪ Home School Liaison Officer intervention in place ▪ Previously involved in a whole school literacy/numeracy program (Early Action for Success)
Staff needs	<ul style="list-style-type: none"> ▪ New class teacher with no experience/training in learners on the autism spectrum – needs professional development, feedback and building confidence ▪ Limited access to speech therapist in community (approximately 2–4 times a year) ▪ Support to develop resources/strategies
Goals	<ul style="list-style-type: none"> ▪ Focus on communication and literacy skills ▪ Build child confidence in social and communicative interactions and within class activities and peer group ▪ Increase language and communication skills; improve literacy skills
Central theme of support	Promoting teacher self-efficacy and student confidence
TCC process	<ul style="list-style-type: none"> ▪ Initial and final site visit ▪ Meetings held via virtual collaboration (VC) (Zoom software) on iPad ▪ Meetings held weekly, then later in the project dropped back to bi-weekly, then every three weeks plus as-needed email support ▪ VC used to give suggestions and checking not overwhelming for teacher ▪ Initial face-to-face meeting helped to understand family and teachers and what teachers wanted ▪ Speech therapist used strengths-based approach to look at what learner could do and built on this ▪ TCC held after hours so as not to disrupt class time but class teacher was reimbursed with some teacher release time to cover release from class to do other teaching administrative duties
Support strategies	<ul style="list-style-type: none"> ▪ Practical activities for the teacher to implement with the student ▪ Giving teacher tools to guide student success <p>Student support:</p> <ul style="list-style-type: none"> ▪ Visual timetables/schedules ▪ Visuals (turn taking, colourful semantics) ▪ iPad Apps/resources to focus on phonological awareness
Outcomes	<ul style="list-style-type: none"> ▪ Improved teacher confidence ▪ Helped teacher build toolbox of skills/strategies ▪ Benefit to all students ▪ Student writing sentences with support ▪ Student participated in school dance function on a school night ▪ Student more engaged and verbal at school ▪ Copying and sharing resources amongst staff ▪ Attendance still an issue but had improved

Sustainability	<ul style="list-style-type: none"> ▪ Toolbox of strategies ▪ Intention to maintain communication ▪ Interest in further PD ▪ Copying and sharing resources by others
Enablers	<ul style="list-style-type: none"> ▪ Dedication and willingness of school staff to participate and learn ▪ Learning support teacher's high level of experience and knowledge about the local community ▪ Meeting the family gave the therapist a better understanding and helped to find out expectations and goals ▪ Specialist visit helpful to enable them to experience what the teacher and student experience and to get an understanding of the context ▪ Face-to-face helped to build understanding of school/student context prior to TCC approach ▪ Explicit and specific practical help, strategies, resources ▪ Frequent monitoring and feedback beneficial including discussing what worked/didn't work ▪ Email/text – follow up and sharing resources was helpful ▪ Support provided suggestions and ensured it wasn't overwhelming for the teacher ▪ Good to get parent, school and therapist working together
Challenges	<ul style="list-style-type: none"> ▪ Lack of parent involvement and family educational resources (e.g., many families don't own laptop/tablet/device) ▪ Poor internet connectivity and lack of experience in using technology ▪ Support model may not be sufficient for severe behaviour dysregulation ▪ Community, lack of family resources (e.g., low SES, poor literacy) ▪ Limited access to allied health/external support in the community ▪ Additional site visit mid-year would have been beneficial ▪ Surveys found to be time consuming ▪ Access to funding for apps ▪ Potential issues around videoing and safety with learners who have aggressive/challenging behaviour
Ideas for improvement	<ul style="list-style-type: none"> ▪ Mid-year visit – to review and model strategies, therapists see how strategies are being implemented, technology dropped out sometimes (teachers – how to improve)

3.1.4 Case Study 4 – ESQS

Table 7: Case Study 4 – ESQS

Student needs	<ul style="list-style-type: none"> ▪ Family of eight children ▪ Behavioural traits – cries at reflection in mirror, runs, climbs, tantrums, chews ▪ Student has no fear; lacks personal and road safety skills ▪ Family does not have positive relationship with school ▪ Mother stated “Indigenous are wary of education, don’t value school, stay outside school grounds” ▪ Level of adjustment/modification to classroom tasks being presented is not achievable for the child
Staff needs	<ul style="list-style-type: none"> ▪ Ideas on how to manage classroom with different groups (several high needs students/groupings) ▪ Remote support had great potential due to school’s geographic location; limited regular access to specialists; a large number of new inexperienced staff including class teacher; cut backs to teacher aide time and special needs hours ▪ Limited knowledge of autism spectrum disorder and experience responding to diverse needs ▪ Different perspectives/mixed opinions in school community about child’s needs or what each person could offer ▪ School is a community hub and has strong Indigenous content with a large Indigenous community in region (60%) ▪ Principal perceives a shared purpose in the community is not sustainable, nor school’s role ▪ Felt like child was the centre of what was bringing the community together ▪ No perimeter fence around school ▪ Multi-level class (P–Y1) with several students with high needs ▪ Focus on more inclusive practices needed ▪ Advice around best practice; what works and doesn’t work with learners ▪ Advice around resources that are available to support the student ▪ A contact person to speak to on bad days or when support is needed ▪ Also supporting other learners and establishing best practice across the whole school
Goals	<ul style="list-style-type: none"> ▪ Overarching goal to support and enhance the child’s experience at school ▪ Building a communication system – expressive and receptive language, help him with functional communication to verbalise his needs in a purposeful way and improve his communication skills ▪ Support positive behaviour to understand structures, routines, expectations and implement reward system, reduce behaviours related to high levels of anxiety and emotional distress that have a big impact on the classroom ▪ Anger management, communication and social skills ▪ Assist student to engage with and access curriculum or programs at his level ▪ Provide opportunities to participate with peers in different kinds of activities (e.g., smart moves, physical activity)

	<ul style="list-style-type: none"> ▪ Ideas or strategies for child, parent and school to help him with communication, speech and to understand facial expressions ▪ Functional communication so that he can express his wants and needs in a purposeful way ▪ Support to better understand the student's needs ▪ Development of strategies of how to build structures and routines effectively within the school ▪ Support to minimise behaviours of running and aggression ▪ Support for setting measurable goals and collection of data to support this ▪ Giving him space before making requests ▪ Support for social/emotional needs to minimise challenging behaviours. Manage communication, express self and understanding what's been said/shown to them. Emotional needs – predictable/routine to reduce anxiety. Structure/known what's going to happen ▪ Support for toileting needs
Central theme of support	Improve communication skills and address behaviours related to high levels of anxiety and emotional distress that were impacting on classroom and his ability to make friends
TCC process	<ul style="list-style-type: none"> ▪ Specialist support staff sat with key personnel at school and worked out goals. Carer/mother was at meeting as well, so there was potential for shared interest/purpose. Providing best practice and resources available for support; contact person when having a bad day ▪ Providing training and support for all relevant staff at school through professional development presentations ▪ Training of teacher aides ▪ Team approach to implementing new teaching practices, and consistency for students ▪ Teleconference/Zoom every 2–3 weeks ▪ Initial site visit, training workshops ▪ Remote communication was with classroom teacher ▪ Email/computer easier – very hard to be available for phone calls ▪ Goal setting tool used, reset every 6–10 weeks, specialist support staff prepared resources ▪ Whole school professional development, two practical workshops for five teacher aides, PECS training ▪ Modelling of teaching practices ▪ Project iPad with protective case supplied mid-intervention ▪ Parent attended site visits ▪ School Indigenous Liaison Officer involved ▪ Project continued with child when he/his family relocated to another school
Support strategies	<ul style="list-style-type: none"> ▪ Child provided with iPad at home with Prologue to channel anxiety ▪ Child included into a lot of classroom activities and encouraged to try new things/establish friendships ▪ Parent went to school meetings to advocate for student's needs ▪ Support for anger management, communication and social skills and high levels of anxiety and emotional distress ▪ Transitional support and toilet training ▪ Created an individual support plan in collaboration with the school that looked at a range of areas of the child:

	<ul style="list-style-type: none"> ▪ learning goals ▪ reducing factors causing anxiety ▪ responses to behaviour ▪ Plan addressed behaviour by looking at different areas of need: <ul style="list-style-type: none"> ▪ communication needs ▪ lack of understanding of what's happening ▪ skill needed to participate ▪ Prepared visuals, photos of tasks, timetables and received support in using visuals to help learner understand what was expected of him in class and be included in class ▪ Play skills – engaging in play – group and social skills, engagement in group learning
Outcomes	<ul style="list-style-type: none"> ▪ Improved confidence in 1–2 staff working with student but not across all staff ▪ Parent more self-confident and knowledgeable ▪ Progress, but still some resistance to including high needs students in the classroom ▪ Student follows directions more readily, improved ability, and willingness to use visual schedules ▪ Student calmer and happier over time ▪ Learning to cope with school environment; appeared calmer towards the end of the year – possibly due to more exposure to what school means. Had time to learn more of the routines which might have reduced his anxiety. Small increase in ability to understand visual strategies ▪ Involvement in project supported PBS goals ▪ Teacher aides felt much more confident with learner and included him in peer lunch ▪ Student now outside for 90–95% of the time for his lunch break ▪ More willingness to participate in a wider variety of activities, now joins peers during lunch, on playground, during Smart Moves, Yumbin (this was often not happening during Term 1), follows directions more readily, improved ability, and willingness to use visual schedules ▪ Staff more comfortable in allowing learner more independence even though a staff member is always supervising ▪ On the junior playground, teachers no longer hold his hand constantly but rather stand back and watch, and learner will usually follow directions to return to the playground, or run to the fence, steps, building, etc. but usually returns of his own accord ▪ Staff are becoming more aware of what learner is communicating; behaviours have reduced dramatically. He will still cry, lay on the floor, kick, etc. if he is being asked to participate in a non-preferred activity or if he is tired, but strategies are being used for these occasions ▪ Ongoing support from a range of sources has resulted in an improvement in confidence of staff working with learner
Sustainability	<ul style="list-style-type: none"> ▪ Support team helped condense information and write fewer, more specific goals to be worked on by the student, as previously the input from so many people was becoming very overwhelming (for class teacher) ▪ School environment more inclusive ▪ Approach can be applied to many school settings, with different schools and students

	<ul style="list-style-type: none"> ▪ Family upskilled to help student
Enablers	<ul style="list-style-type: none"> ▪ School committed to inclusive education and open to using TCC process ▪ Project gives teachers and school communities permission to protect [commit] time for student ▪ Supported collaborative networks ▪ Everyone had student's best interest at heart ▪ Face-to-face helped to build rapport and trust, learn about the school environment. Face-to-face catch up would have been harder if no video ▪ Multidisciplinary team suggested and commented on factors that they had expertise in ▪ Providing training, education and support to more than one person was very effective – training five teacher aides – getting people together to train and promote a sense of team/shared responsibility ▪ Collaborative software provided more of a sense of connectedness than email or phone ▪ TCC was considered more personable than just email, or just voice over the phone ▪ Having everyone on board; everyone is on the same page with hopefully a lot more buy in from the school to put suggestions in place. Having an honest/open relationship so things can be altered if certain strategies aren't working; having the capacity to keep in touch and make alterations within a reasonable frame of time without having to wait until the next face-to-face visit ▪ Strategies suggested change the environment, change ways of communicating with children – can help other learners with anxiety, slow cognitive processing, other needs. Some strategies are generalisable. Once they are better supporting the learners on the spectrum, more staff time to help other learners. Reduce teacher stress – classroom stress
Challenges	<ul style="list-style-type: none"> ▪ School often didn't respond or report back to specialist staff and had to contact school, direct process, identify issues ▪ School staff not confident using collaborative software, avoided technology, prefer face-to-face ▪ iPad with class teacher, not used for communication ▪ Challenge having so many TCC research people in the classroom at once ▪ Successful outcomes minimised due to lack of leadership, trust and team cohesion around student ▪ Lack of communication/engagement by school ▪ Specialist staff not updated on what was happening between visits ▪ 1-way communication (no input from school) ▪ Culture of school is difficult to change ▪ Class teacher too busy, overwhelmed ▪ Communication lacking from school to parent. Perceived mistrust by parent ▪ Need time, people and funding to provide support, prepare resources ▪ Most families without internet at home ▪ Lack of confidence/fear factor in using TCC technology ▪ Lack of staff awareness of strategies to support learners on the autism spectrum

- Staff capacity on the ground
 - Teacher aide training; no leadership to ensure strategies were practiced/followed through
 - More time for the project team to get to know the student better
 - Too much space between visits. Staff continue doing what they've always done as there is no follow up. Specialists or therapists or people in roles that haven't been a regular part of a school may not necessarily understand the way schools and staff teams tend to function and the inclusive approach may still be seen as optional
 - Frequency, length and timing of visits needs to be considered to increase support in earlier phases and taper off towards the end of the project; need more planning involved
 - Communication was happening between the therapists and family, and principal and teacher, but wasn't filtered down correctly. A lot of things being suggested weren't happening
 - Needs to be convenient, consistent and routine for staff to fit in their full day schedule
 - Distance – have to video behaviour and send it to team
 - School environment, safety of play areas
 - Staff were reluctant to change their approach to working with student because his behaviours/needs were very different to other students; staff afraid of change, wary of strangers, stick to what they've done in their own comfort zone
 - Rural schools – teachers have less support, and there is a greater expectation for them to support a more diverse range of students. Impacts on teacher stress, feelings of helplessness and hopelessness. Lack of resources/access to education/info on how to support students with unique needs
 - Need to take time to build relationships and trust with new people coming in
 - Relationship between school and professionals needs to be back and forth/two way; a partnership
 - Specialist support staff need the information from the school to give the best advice and support they can
 - A big team of support staff and people were less involved – bigger community of support staff who had less involvement individually, harder to draw information from them and form relationships
 - Reduced capacity for strategies to be trialled with consistency when so many staff were involved
 - Difficult to get a clear sense of the student's learning needs from the people supporting him at school
 - Older people might prefer face-to-face as opposed to people who are used to Skyping or using electronic means of communication
 - Not a strong team dynamic
 - Strategies suggested by support staff not being filtering out to the people who really needed to understand/know them
 - Willingness to engage and be partners in this process was biggest factor in whether or not the project worked
 - Different opinions about way the approach should look
- Ideas for improvement
- Things will change for the children over time as they grow and develop. Some things become less of an issue and new challenges are presented so more ongoing access to TCC may be needed

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- Staff have greater awareness of autism spectrum disorder and common and effective strategies. The sustainability challenge will be how well staff will be able to continue to take knowledge and individualise it for the child. The support to individualise and workshop strategies and approach different issues is where ongoing access to TCC approach on as need basis to continue support for children may be required
 - Frequency of visits – having 1.5–2 days or two visits to increase support in earlier phases and taper off towards the end of the project would be beneficial – but more planning involved
 - School's ability to engage with team and how best to support staff with limited experience with working with learners on the spectrum
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3.1.5 Case Study 5 – QCSL

Table 8: Case Study 5 – QCSL

Student needs	<ul style="list-style-type: none"> ▪ Nonverbal; communication a priority as learner cannot tell us what he needs or how he's feeling ▪ Needs toilet training ▪ Anxiety, aggressive behaviour ▪ Not engaging in learning or socially ▪ Runs out of playground ▪ Out of control with body/out of control with environment and people – hitting ▪ Stress/anxiety increases his need to control/stubbornness and he doesn't listen to what staff say ▪ Unpredictable behaviour ▪ Sees paediatrician and speech therapist every three months ▪ Medication for anxiety, Ritalin for ADHD, Melatonin (sleep), asthma ▪ Talks when really frustrated, grunting, sings/hums to music, makes bedtime noises ▪ Good receptive communication (unless stressed) ▪ PECS books for school and home to communicate, request food/movies ▪ Uses iPad at home– YouTube music, songs, rhymes, alphabet, numbers, repetitive, credits in movies ▪ Good problem solver and very determined ▪ Some noise sensitivity ▪ Hand flapping/biting hand, has chewy toys but prefers hands (anger/happiness) ▪ Poor receptive and language skills – anxiety about what was going to occur across the day
Staff needs	<ul style="list-style-type: none"> ▪ Multi-grade class, very small school, teaching principal ▪ Teacher had limited experience with learners on the autism spectrum ▪ Child had access to four hours of aide time a week ▪ Fewer teacher aide and specialist contact hours being provided
Goals	<ul style="list-style-type: none"> ▪ Functional communication ▪ Social engagement ▪ For staff to reduce language to allow more processing time ▪ Level of adjustment/modification to classroom tasks being presented to ensure expectations are achievable to the child ▪ Reduce unscheduled time outside and provide more structures, routines in the school day ▪ Develop a positive behaviour support plan ▪ Build staff capacity, confidence and give staff some tools to look beyond behaviour and provide positive feedback to affirm strategies ▪ Staff need to build capacity to feel confident that they are doing the right thing and to know the next thing they need to be working on ▪ Mindful of approaches school is supporting; building capacity within staff so everyone feels they can give the best outcomes for the student

	<ul style="list-style-type: none"> Involve additional staff (administration, physical education) who are only in school part time
Central theme of support	Support advocacy: collaborative team approach, common goals and understanding of child's needs and how to best support him as a learner
TCC process	<ul style="list-style-type: none"> Initial site visit to develop understanding of the learner and the school context including staff capacity Two more visits per year Teleconference every 2–3 weeks Week by week goals Support for scaffolding tasks Scaling back expectations to ensure success Real time advice on issues and behaviours, help focused on what data to collect and record, setting goals, support plan and learning Problem solving together Identifying, trialling and reflecting on strategies with the team Quick feedback Combination of face-to-face visits and email/tele link Four goals set for student: <ul style="list-style-type: none"> communication – exposure to PODD reducing unscheduled time outside following a visual schedule three days out of five using the timer to finish an activity Use of a video to show specific modelling of how to implement new routines and lessons. Better understanding of how to simplify a visual schedule so it better suited the learner's needs and ability level. Videos could be used to ensure consistency and viewed by a range of staff as training and modelling Assist with resource development and regular real time contact Created an individual support plan in collaboration with the school that looked at a range of areas of the child: <ul style="list-style-type: none"> learning goals reducing factors causing anxiety responses to behaviour Plan addressed behaviour by looking at communication needs Rated child's performance at start and again at end of term Getting the whole team approach in terms of what was going on with the behaviours, what were the triggers for certain behaviours, what were the most effective strategies to put in place, most practical strategies Support around toileting (relevant to OT) Support staff gave positive feedback and reinforcement and helped give confidence to try new things (e.g., toilet training, 3-step schedule helped to get into a routine and make student less anxious), reduced physical behaviours, visual schedules and strategies to help cope, teaching how to prepare a change in routine and prepare for events like swimming lessons/fire drills
Support strategies	<ul style="list-style-type: none"> Visual schedule, supports Functional communication support Positive behaviour support Toilet training Reduction of anxiety

	<ul style="list-style-type: none"> ▪ Child had 30 minutes per day on iPad/PECS to communicate, make requests ▪ Inclusive activities with peers ▪ Week by week goals ▪ iPad at home– YouTube music, songs, rhymes, alphabet, numbers, repetitive, credits in movies
Outcomes	<ul style="list-style-type: none"> ▪ Project was meaningful. Rewarding to see big changes and improvements beyond what shared community expected ▪ Team part of community, common link of what team is working towards. Support staff - was excellent to have extra advice and support, gave school staff better understanding of what was happening and why ▪ Enabled community that would otherwise struggle to access information in a timely manner to access specialist support staff who held professional specific knowledge in relation to autism spectrum disorder ▪ Staff capacity and confidence managing/supporting student increased ▪ Increased use of autism spectrum specific teaching strategies to support learner's needs ▪ Establishing daily routine that included regular outside time reduced his anxiety ▪ Greater sense of connectedness and collaboration ▪ More comprehensive and open, honest process with more relevant and accurate learning needs identified ▪ More able to focus on augmentative and alternative communication (AAC) learner used – were able to model it and use it more with learner ▪ Behavioural improvements evident by Term 3, student no longer running away ▪ A much calmer learner ▪ Learner now going to school and is happier now it's structured, and he understands expectations ▪ Student spends less time outside class (was 75%, now 10% of day) and is engaged for longer, more active. Used to be 10 mins inside in inclusive environment, now 110 minutes per day in inclusive environment and 40 minutes as an active group participant ▪ Team supportive in identifying the needs of the learner, taking into account the school setting and resourcing, and provided strategies and suggestions for staff to use ▪ Establishing a daily routine that included regular outside time reduced his anxiety ▪ Learner needs are being much better met as a result of the level of knowledge and understanding that the staff have developed being involved in the TCC approach. A big change for learner in engagement in whole class activities ▪ More achievable expectations for the learner ▪ By about Term 3, there was a real improvement where strategies and advice started to take effect – improvement in behaviour, confidence in staff with managing and supporting the child ▪ Learning and trialling new things ▪ Staff feel less 'alone' when they have regular contact to specialist support staff – confidence developed. Feel less alone in dealing

	with student as they have a team to contact who are non-judgemental
Sustainability	<ul style="list-style-type: none"> Particularly in a small school, these strategies have a ripple effect on everything else within schools. If you have staff who are feeling confident in one aspect it flows on Staff confidence managing/supporting student Increased autism specific teaching strategies Greater sense of connectedness and collaboration Able to advocate to be able to resource the intensive support student needs Autism specific knowledge shared with others and used to support other learners School has skills, knowledge and confidence to continue the goal setting process Strengthened school community, built capacity and knowledge, better able to provide best possible outcomes for learners with resources, better understanding of autism spectrum disorder and deepened understanding of why we needed to do things a particular way/why we were seeing a behaviour
Enablers	<ul style="list-style-type: none"> Face-to-face was beneficial to see context and build a rapport and trust with key people; learn about the school environment School was very invested in supporting child Parent has close relationship with the school Thorough process of collecting and sharing data Shared purpose and dynamic 2-way communication between school, family and multidisciplinary team approach Staff were well briefed about project School is a community hub Specialist support staff provided resources, goal setting tool, data collection and sharing and modelled staff teaching practices Educators' willingness to engage and be partners in the process Building trust and rapport with staff before implementing new strategies and ideas Slowing the process down and listening to educators' perspectives first and taking time to understand the situation before coming in with ideas and supports
Challenges	<ul style="list-style-type: none"> Fear factor of using technology – needs to be explicit and easy to use, IT support Student non-verbal, can't communicate his needs/feelings Can't expect student to be in the classroom all the time Confidence in using technology/Zoom, iPad link not always ideal option Concern that the connection is good enough to support video calls; never had video calls Laptops/computers might be better/more reliable than iPads for webinars Staff were more invested in remote communication – didn't use a lot of video linking – mostly via phone and email Multi-level classroom environment: student can't cope with many people talking at once
Ideas for improvement	<ul style="list-style-type: none"> Need someone at the school to be a point of contact with the team to oversee when meetings need to take place, or to be involved in complex cases

3.2 Cross-Case Study Findings

There were six final key themes to emerge from the data regarding the TCC approach including the importance of the following considerations when implementing this approach: 1) school climate, 2) relationships, 3) sustainability, 4) support strategies, 5) benefits, and 6) barriers. These themes are used to inform the development of guiding principles for this approach.

3.2.1 School Climate

Essential to the TCC approach was engaging with school communities that had a focus on supporting inclusion in their school community. Their level of understanding and experience of teaching learners on the autism spectrum was not as important as being prepared to learn what the needs of this group of learners are and how they can further refine or adjust what they are doing in order to meet the needs of this groups of students and all learners. As a result, they needed the capacity, willingness and motivation to reflect on and be prepared to change what they were doing in their daily practice in order to maximise their ability to meet the needs of all students in their care including learners on the autism spectrum. They needed to embrace the TCC approach as a non-threatening way to engage in in-situ professional development that could help build the school community's confidence to meet the needs of all learners across a classroom and school context.

3.2.2 Relationships

Foundational to the TCC approach was a focus on building and sustaining positive relationships with relevant stakeholders within the school community including, parents, class teachers, principals and administrative staff, specialist support staff and teacher aides. Key elements of these relationships were the face-to-face visits, long-term remote support, processes to support positive communication and collaboration and involvement of all key stakeholders including parents. The approach was also considered to reduce isolation experienced by class teachers when managing the needs of all learners in their class and school.

3.2.2.1 Face-to-Face Visits

Essential to the building of these relationships was the integration of face-to-face visits interlaced in the remote support provided. These face-to-face visits helped bring together all key stakeholders including parents, class teachers, principals and administrative staff, specialist support staff and teacher aides. The problem solving consultation approach promoted the establishment of positive and collaborative partnerships and a team approach to meeting the needs of the learner where

everyone had an important role to play, and everyone's contribution was important and established connectedness, shared goals, purpose and perspectives. The face-to-face visits had an important role to play in helping understand contextual and individual needs of the school, school personnel, learners and parents. These face-to-face visits also helped to establish trust and rapport with all stakeholders and establish communication networks across the school, community and family. These visits provided the opportunity to identify what was currently happening through assessment, discussion and observation in-situ. Results suggest the more challenging and complex the needs of the student and/or the more personnel that are involved, the more frequent the face-to-face visits need to be to help support staff uptake of practices and promote the collaborative nature of the relationship and provide in-situ problem solving consultation. These face-to-face visits enabled a plan for the TCC approach to be developed that was responsive to the needs of all involved including the learner, school community and families. This approach empowered stakeholders to identify what their needs were, how they wanted the approach to work and with what frequency and enabled the approach to be responsive to the contextual needs of all stakeholders.

3.2.2.2 Communication

Communication was key to this approach. The TCC approach enabled positive lines of communication to be established and sustained and was key to the success of this approach. The long-term remote approach (through emails, phone contact and virtual collaborative software) that was integrated with face-to-face visits allowed for lines of communication to be consolidated and sustained with all relevant key personnel and provided the opportunity to conduct problem solving consultation around practices so that they could be reviewed, refined and revised in an ongoing manner in order to tailor them to the needs of the context. This communication also allowed for relationships to be consolidated and sustained long term and professional development to continue beyond face-to-face visits and kept the goals as a key focus for all involved. It also promoted the involvement of all key stakeholders and a positive avenue for feedback and consultation and ensured consistent communication amongst all stakeholders.

3.2.3 Sustainability

The TCC approach enabled the implementation of sustainable inclusive practices through the utility of the approach and its application/generalisation to other learners' needs. The approach achieved this in several ways, including through promoting involvement of all stakeholders including parents in positive collaborative ways, and the delivery of a flexible approach that could be tailored to meet the individualised needs of all involved while being responsive to the context. The ongoing nature

of contact in a range of modes allowed practices to be tailored and tweaked long term, feedback and professional development to be ongoing and contextualised and allowed access to practices developed by a multidisciplinary team. A spin off of the approach was that many practices and/or resources had application across the whole class or other students in the class or school environment and were shared with other staff in the school community.

3.2.3.1 Commitment

The approach had a substantial commitment with regular and ongoing collaborations needing to occur and be delivered in a range of modes, as suggested by staff involved. Time was a real barrier to providing support in schools; however, the project gave teachers and school communities permission to protect or commit time for students and their needs. Staff could see the benefit of this commitment if they could see how practices could apply to other learners on the autism spectrum or applied to other students. It was also considered by participants as a valuable professional development experience for staff. However, it was difficult to sustain the ongoing nature of this collaboration unless given allocated time to do so through teacher release time.

3.2.4 Benefits

There were a range of benefits identified by this approach including improvements of varying degrees across all five case studies with reductions in behavioural incidents and improvements in literacy, social engagement, positive behaviour, reduced anxiety and increased participation. The benefits also included reduced feelings of isolation, increased teacher confidence and ability to advocate for the needs of learners in their care, the opportunity to receive intensive, ongoing specific and tailored advice, and receiving ongoing professional development and access to multidisciplinary expertise. Another benefit was the support this approach provided to manage and improve relationships with all stakeholders through establishing positive and collaborative practices with a shared purpose and goals.

3.2.5 Barriers

Several barriers to the TCC approach were identified, including turnover of staff, student absenteeism and students transferring to other school settings or locations. A key barrier was finding a suitable virtual collaborative software that was quick and easy to use with limited training or IT knowledge as well as internet capacity/connectivity in some rural regions. Other barriers identified were time constraints and finding a private space to consult online that allowed confidentiality and the need for ongoing support to be sustained beyond the life of the project.

Many schools would have liked support to continue and more face-to-face visits included when the needs of the learner were very complex or challenging for the school.

4. PhD Projects Linked to the Early Years Behaviour Support Project

There were two PhD projects that received some funding from the Autism CRC that were linked to this project.

4.1 PhD Study 1 – Communities of Practice

Full time funding was received from the Autism CRC to conduct a PhD within the larger 3-year EYBSP research project. This PhD, through a multiple-case research design, explored how utilising a TCC approach could support and sustain a community of practice (CoP) for educators in two of the five rural schools where the TCC approach was being implemented. Wenger, McDermott and Snyder (2002, p. 4) have defined CoPs as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis”. A CoP is comprised of three key elements:

- Domain – a shared interest that brings a community together to address a problem or issue,
- Community – a construct sustained through the conduct of joint-activities that encourage participants to develop a shared set of Practices, and
- A shared set of Practices to effectively manage the Domain (Wenger et al., 2002).

Within education, CoPs have been widely applied as a method of professional development for educators to address challenges and improve student outcomes (Goodnough, 2004; Vescio, Ross, & Adams, 2008) but, to date, there has been minimal application of this approach to support educators of students on the spectrum. In this study, the PhD research was conducted in EYBSP school study site 4 (ESQS) and school study site 5 (QCSL) and investigated how a TCC approach may support and sustain a community of practice within the school community. Several sub-questions included:

- How were the CoP elements supported within the TCC approach?
- How did community members benefit from their participation within the CoP?
- What elements of a CoP can be expressed within a TCC approach? If they were present, how did they change throughout the intervention?
- What short-term outcomes do members of a community associate with their participation within a CoP?

Data were collected through observation and interviews at two key stages approximately one year apart – pre and post implementation – and the data analysis process was guided by a grounded theory approach (Charmaz, 2006). The present study provides insight into an innovative approach that uses a TCC approach to support a CoP in schools to better equip educators to support learners on the spectrum. This study contributes to the limited research on the successful application of teleconsultation within education by providing professional development to much needed rural and remotely based educators of young learners on the spectrum and demonstrated the success that TCC technology can have in supporting CoPs in rural and remote Australian educational settings. The results provided insight into how the TCC approach supported the evolution of CoPs within the two sites. While study site 4 exhibited only minor developments to the pre-existing CoP, study site 5 saw extensive growth to the pre-existing CoP as well as various short-term benefits for educators. Various factors were identified within the data that can explain the discrepancy in practice uptake between the two sites and the level of development in the CoP that developed in the two sites. The short-term values of the CoP that evolved due to the TCC approach implemented in both schools included:

- opportunity to reach out to knowledgeable individuals,
- opportunity to receive support to overcome challenges experienced in the school setting,
- enjoyment working with community members, and
- growth in staff confidence.

4.1.1 Recommendations for Supporting a Community of Practice:

Implications for Practice

The following are essential when implementing practices through a TCC approach to support a CoP:

- Positive change is more likely to occur when supported by a shared goal (Domain) and supportive community (Community). Therefore, when trying to promote changes to teaching practices, it is important to consider the Domain and Community elements of the CoP in conjunction with the Practices. In practical terms, professional development therefore can have a better chance of success when the program is centred around a shared interest or common goal for members. Furthermore, the benefits can be promoted through a program that strengthens community relationships and promotes communication as it can increase learning opportunities and knowledge sharing between members. The shared interest and strengthened community relationships can promote the likelihood of members adapting teaching practices through a professional development program.

- Face-to-face time is essential. Given the need for individualised and context-specific feedback to support students on the spectrum, face-to-face time is essential in the teleconsultation and can better promote an understanding of changes taking place within the CoPs.
- Communication is key to promoting a successful CoP. Without communication there is only so much that individual members and the CoP can achieve and differences in results across the two school sites is reflective of poorer reciprocal communication in one school site.
- Development of a CoP is a gradual process. A CoP is not designed to be a quick fix and needs time and support to develop and mature and give the educators time to effectively adopt new practices and shape them to fit their own context and teaching style.

4.2 PhD Study 2 – Co-Design Digital Strategies for Supporting Strengths- and Interests-Based Learning with Children on the Autism Spectrum

A second PhD study received some top up funds from the Autism CRC to conduct a PhD within the larger 3-year EYBSP research project. Technologies offer the opportunity to personalise a child's learning with their own content. Under the auspice of the EYBSP, this project focused on using technologies to mobilise the child's specific interests, strengths and capabilities and promote self-expression. This project engaged children on the spectrum to record and express their own interests within the contexts of their home and classroom. The technology used for self-expression was an existing concrete audio-visual calendaring app prototype called MeCalendar for the iPad (see Figure 4). The prototype is set up in a typical calendar-view layout. The app can help children to communicate daily personal activities through photos and videos. Children, teachers and parents can click on the date in the app and choose to either upload a photo or video from the device's gallery or take a new photo or video. These can be annotated in the notes section with written information about the photo or video and audio clips can be added to photos. These are then inserted as an entry for that day and can be shared between home, school and other settings.

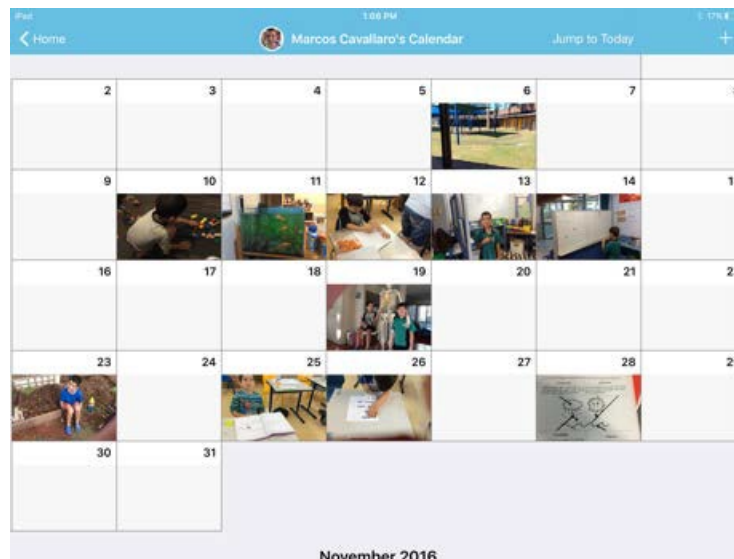


Figure 4: Image of MeCalendar technology application.

The prototype was trialled in two autism specific classroom settings with six children aged 6–7 years with varying levels of ability and two classroom teachers. The aim of the research was to explore how children on the spectrum and their teachers adopt the open-ended design of supportive technologies for use in classroom settings. The children were each provided with an iPad mini 2, with the internet access disabled, and the iPads were used solely for MeCalendar. Within these contexts, to ensure a contextual fit between the introduction of this technology and their current practices, how the technology was implemented was kept open-ended and teachers were therefore asked to use the app in any way they wished in the classroom and had complete freedom over how it was implemented. Data were collected through diary entries, participant observation and interviews. In the diary entries, teachers were asked to reflect on their use of MeCalendar in a diary or teacher reflective log and observations were recorded as field notes. Additionally, photos and video-recorded data from over 20 hours of classroom interactions involving the children and teachers interacting with MeCalendar was collected. Finally, interviews were conducted with each teacher before, during and after the end of the term to discuss their experiences with MeCalendar and to reflect on observations of MeCalendar use. Data analysis used a thematic analysis approach using teacher diary entries, observation field notes and transcripts from interviews with teachers, and video, audio, photo-visual and text data collected from the children's iPads. The data analysis sought to define the themes emerging from the data from the perspectives of both the teachers and the children, the aim being to show how the design may empower teachers to support their ways of teaching, and to support the children's learning and interest-based engagement.

The results suggested the app was used in both teacher-led ways mainly for learning and behavioural outcomes and child-led ways that were based on their own interests. The teachers used the app in different ways for both structured and free-use activities. For example, Teacher 1 used the app in a very structured manner to support language and handwriting tasks, while Teacher 2 used the app more organically to help model positive behaviours and as a motivational tool. While both teachers used the tool to support similar teaching tasks such as “show and share” sessions, the tool had flexible applications that could be embedded in existing teaching practices to support learning.

Results demonstrated that for the classroom teachers the app supported:

- Verbal ability of minimally verbal students
- Class-based tasks particularly in relation to individual education goals
- Socialisation amongst peers
- Positive behaviour and video modelling
- Concepts of time and passing of time due to calendar format
- Using the child’s own interests for learning

In contrast, for the children the app supported them to:

- Try something new or break with routine
- Engage in handwriting spontaneously
- Adjust class tasks and learn in different ways
- Be proud of their achievements
- Have fun, play, engage with others and share interests

The findings indicate that when used in an open-ended implementation approach, teachers utilise the technology in contextually responsive, open and flexible ways to support a range of individual needs of their learners, supporting an interest-focused approach. They could adjust how they used the app to suit their teaching style, to scaffold activities and to meet the learning goals in their classrooms. The app was easily integrated into the classroom activities. In contrast, the learners used the technology to support the communication and scaffolding of their own interests; for example, to verbally express or to visually represent interests and integrate this into their daily lives. This aspect of the EYBSP research highlights the importance of encouraging open-ended implementation and use, suggesting this approach can empower the imagination, expertise and interests of teachers and children alike. It also highlights that audio-visual technologies can act as a catalyst for confidence in the expression of interests and competencies and support a focus on more child-led use based on personal interests that motivate and support success in learning.

5. Discussion

Overall, the TCC approach trialled in EYBSP provided an in-depth and positive analysis into the delivery of professional learning and support to parents, educators and specialists in rural and remote regions to meet the needs of early years learners on the autism spectrum. A number of guiding principles that inform this approach were highlighted by the results of this exploratory research.

5.1 Limitations

Some limitations to the TCC approach were identified by the therapist, principal, educator and parent participants. These included time constraints for teachers in attending sessions; functionality of the technology and technological literacy of participants; internet capabilities within the geographic region; and the monitoring of iPad and device use by students between home and school. While the findings provide important information to the field, limitations in this research included the self-report nature of some of the findings, not all participants completing all of the time point interviews and data collection instruments as well as children and teachers transferring out of research sites. Other limitations included not considering the student perceptions in the findings of this exploratory study.

5.2 Future Directions

5.2.1 Implications for Future Research

There are several implications for future research, including research which trials a TCC approach:

- i) Longer term implementation within the same school environment for more than one school year
- ii) With a wider range of age groups, personnel and school contexts (e.g., high school, childcare)
- iii) Across a range of geographical contexts (e.g., metropolitan, rural, regional and remote)
- iv) with a whole school autism-friendly focus

In line with Halsey (2018), a TCC approach could provide further support to rural and remote policies that promote the needs of all stakeholders including parents, educator, professionals and learners on the autism spectrum in the following ways:

- i) Drawing together a national focus around education, training and support to better support all individuals in rural and remote Australia including those on the autism spectrum.
- ii) Ensuring that all children including those on the autism spectrum in rural and remote locations start school with a strong foundation to education and learning.
- iii) Supporting the needs of rural and remotely based educators who require additional support and professional development opportunities especially in relation to learners on the autism spectrum.
- iv) Support in an ongoing manner the needs of newly qualified/placed educators in rural and remote regions.
- v) The use of teleconsultation to support professional learning for educators in rural and remote regions.

5.2.2 Implications for Future Practice – Key Recommendations

The TCC approach is useful for supporting teachers to address a range of different individualised needs, help them to advocate for students' needs, reduce feelings of isolation, and provide professional learning and advice on individualised and group intensive, ongoing, specific, tailored strategies that are contextualised for their situation and teaching needs. This builds teacher confidence to support the needs of all students in their context and gives them professional learning and a toolbox of skills and strategies that may help them meet the needs of future learners.

There are several key recommendations that can be derived from the findings of this project:

- **Face-to-face is an essential element** of a TCC approach and needs to occur at a frequency that meets the needs of the contexts and stakeholders. This is an important part of establishing rapport, trust and a relationship with key stakeholders. It also helps identify the needs of the context and helps identify and establish how the TCC approach will be implemented for the stakeholders and context.
- It is imperative that **adequate time is taken at the beginning of the TCC approach to identify and gather accurate information about the context and all key stakeholders'**

needs including the needs of the teacher, student and family and any specialist support or external agencies involved. This ensures that a plan of support and professional learning can be developed that addresses the real barriers to inclusion in the school and ensures support can be implemented that is appropriate in meeting the needs of the context, educators, student and family.

- It is important when **implementing this approach that whole school professional learning opportunities, whole class as well as individualised strategies**, are considered and may need to be implemented in order to help participants orchestrate learning and mobilise resources.
- The more **challenging the needs of the context and learner, the more face-to-face may be necessary** to support uptake of practices.
- **Ongoing communication through more remote support is critical** to sustain relationships and ensure ongoing feedback and review of practices can occur to ensure they continue to effectively meet the needs of all involved.
- The **regularity of the TCC approach and the mode of delivery needs to be negotiated** with relevant stakeholders to ensure it can effectively meet their needs and be manageable.
- The **approach is a big and ongoing sustained commitment both on time and resources** of staff with regular and ongoing collaboration needed in a variety of modes to ensure success. As much of the collaboration discusses confidential information, staff need to have professional time quarantined to allow them to consult through the tele-classroom consultation. It is difficult for staff to sustain the ongoing nature of collaboration unless given allocated time to do so through teacher release time.
- **Staff see the value of committing this time if they can see how the practices can be applied to meet the needs of other learners.**
- In recognition of the commitment involved in this approach, moving forward it would be **beneficial for the professional learning that occurs through teleconsultation to be recognised as contributing towards continuing professional development hours** for professional registration of teaching and professional staff.
- **Virtual collaborative software needs to be simple and easy for participants to connect with and require minimal bandwidth and training** to be used. In this project, the most success was with Zoom collaborative software which was the easiest and simplest for participants to use.
- **Remote support needs to include a range of different delivery options** including phone calls, email and virtual collaboration and be responsive to the needs of the participants.

- **Internet capacity of the context and IT knowledge of participants also needs to be taken into consideration.** In this project, each site was supplied with an iPad with its own 4G network sim card to ensure connectivity issues could be kept to a minimum.
- **Important for dual case management** – the TCC team needs to have a delegated case manager and the educational site needs a delegated case manager through which all communication and consultation is filtered.

5.3 Guiding Principles of a TCC approach

Key elements or guiding principles that inform and support the delivery and focus a TCC approach should take in educational contexts are detailed in the following list and are illustrated in Figure 5.

- Relationship building with all stakeholders
- Shared goals with all stakeholders informed by multiple perspectives
- Equitable, consultative and collaborative partnerships with shared power
- Connections and ongoing reciprocal communication amongst all stakeholders
- Ongoing professional learning that is in-situ, not static but fluid and responsive to the needs of contexts, educators, families and learners
- Problem solving consultative approach to professional learning using a multi-tiered systems of support framework
- Multi- and inter-disciplinary approaches to TCC delivery
- Responsiveness to the needs of all stakeholders and context
- Individualised and tailored approaches to meet all stakeholders' needs (families, students, educators, school context)
- A feedback and review loop that is essential to constantly review and refine the approach, practices and strategies
- Ongoing, flexible and responsive delivery in a range of modes (face-to-face and remote)
- A focus on building understanding and professional learning in order to support positive advocacy of student needs

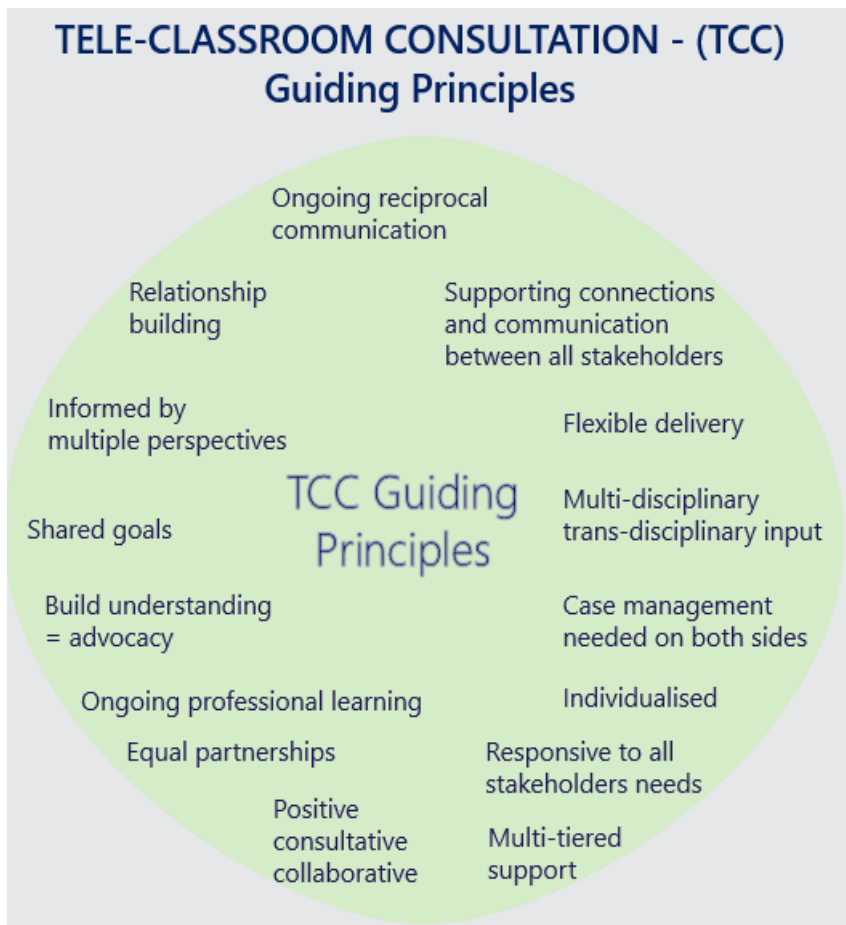


Figure 5: Tele-classroom consultation (TCC) – Guiding principles.

6. Conclusion

The TCC approach trialled in EYBSP provided in-depth analyses investigating the delivery of professional learning and support provided through a combination of face-to-face visits, electronic communications and technology. The approach employed a problem solving consultative approach to provide and support the delivery of services when distance separated the participants (Darkins, 2001). The format and regularity of the TCC support was determined in consultation with the participants and also responded to their preferences for the mode of delivery of the remote support (email communication, phone calls or video conferences) in combination with scheduled face-to-face visits. The regularity of the support and when and how it was delivered was also determined in consultation with individual participants. This ensured the approach was responsive to participant needs and preferences allowing for timely responses to teacher needs and ongoing support and was responsive to individual needs and delivered in a cost-effective manner. Professional learning delivered using this approach not only increases skills, morale and generalisation but allows teachers in rural and remote regions, and ultimately their learners, to feel supported and valued and enhances the successful inclusion of learners on the autism spectrum in schools, specifically in schools in rural and remote areas. In the EYBSP, the initial training and ongoing consultation/collaboration combined both face-to-face interactions (for initial trainings and rapport building) and web-based consultation (for ongoing interactions). The research investigated how these partnerships could be forged and how new technologies can be utilised to support a range of consultation services that were once difficult to administer due to distance and cost constraints.

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AutismCRC

Autism CRC

The University of Queensland
Long Pocket Precinct
Level 3, Foxtail Building
80 Meiers Road
Indooroopilly QLD 4068

T +61 7 3377 0600

E info@autismcrc.com.au

W autismcrc.com.au



@autismcrc



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