Improving Outcomes for Children with Autism Spectrum Disorder in Mainstream Schools.

Submitted by
Miss Rhylee Paige Sulek
BPsych (Hons)

School of Allied Health Sciences
Griffith University

Submitted in fulfilment of the requirements of the degree of
Doctor of Philosophy
February 2019
Abstract

The transition into formal schooling environments is a difficult period of change for many children. For some children with autism spectrum disorder, hereon referred to as autism, delays in their development of school readiness skills (e.g., following directions, attending to tasks) may exacerbate these difficulties. With a large proportion of children with autism educated in mainstream settings, it is critical that teachers in these settings are well equipped to support their transitions. For many children, this includes continuing to support their development of these school readiness skills, into the first year of formal schooling. Reviews of the autism treatment literature have resulted in the identification of empirically supported treatments (ESTs), a number of which specifically target school readiness skills. Whereas previous researchers have examined the extent to which ESTs are used by early intervention providers and special education teachers, this project was designed to investigate knowledge and use of those ESTs targeting school readiness skills in a population of general education teachers. It was also important to understand the factors that influence teachers’ support for students, to develop a process for supporting general education teachers as students with autism enter school. The research presented here involved a mixed-methods design over three phases. In Phase One, a survey was used to investigate general education foundation year teachers’ knowledge, use, and perceptions of social validity of these ESTs. Phase One established that general education teachers were currently using a combination of ESTs and non-ESTs in their support of students with autism and revealed that teachers perceived many of these ESTs to have a high degree of social validity. In Phase Two, qualitative interviews with teachers identified barriers and facilitators to their use of ESTs and support for students with autism more broadly. These interviews highlighted that teachers’ capacity to provide support to students was impacted by
several factors, including their experience, and competing demands of the classroom. The analysis also identified that provision of training, adequate within school supports, and increased collaboration during transitions could assist in mitigating some of the challenges faced. Finally, in Phase Three, a qualitative approach was employed to determine the social validity of a proposed online tool harnessing three key factors likely to be influential during transitions and involved interviews with stakeholders in the transition to school. Stakeholders interviewed reported that the online tool proposed could provide value to users and was an acceptable and appropriate means of accessing information and other professionals. Taken together, these studies provide a unique insight into current capacity, challenges and opportunities for optimising outcomes for students with autism, and a potential avenue to achieve positive change within and across mainstream settings.
Statement of Originality and Ethical Clearance

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

This project was approved by the Griffith University Human Research Ethics Committee, the AEIOU Research Advisory Group (AEIOU 2016-8), and the Queensland Department of Education, Training, and Employment (550/27/1739 and 550/27/1991).

(Signed) ___________________________ 28/02/2019
Rhylee Sulek  Date
Table of Contents

Abstract .................................................................................................................................................. ii

Statement of Originality and Ethical Clearance .................................................................................. iv

List of Tables .......................................................................................................................................... x

List of Figures ......................................................................................................................................... xi

Acknowledgements .............................................................................................................................. xii

Acknowledgement of Financial Support ............................................................................................ xiv

Acknowledgement of Papers included in this Thesis .......................................................................... xv

Invited presentations resulting from this research .............................................................................. xvii

Peer reviewed abstracts and presentations resulting from this research ............................................ xviii

Preface ..................................................................................................................................................... xix

A Note on Autism Terminology ........................................................................................................... xix

Frequently Used Terms ......................................................................................................................... xix

Chapter 1: Introduction ......................................................................................................................... 1

Education and Autism ............................................................................................................................ 2

Education context .................................................................................................................................... 2

Supporting School Readiness in Children with Autism ........................................................................ 4

Research context ...................................................................................................................................... 4

Addressing the Challenge ....................................................................................................................... 5

Chapter 2: Literature Review ............................................................................................................... 8
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Classification of Autism Spectrum Disorder</td>
<td>8</td>
</tr>
<tr>
<td>Education and Children with Autism Spectrum Disorder</td>
<td>11</td>
</tr>
<tr>
<td>Academic Success in Children with Autism</td>
<td>12</td>
</tr>
<tr>
<td>School Readiness</td>
<td>14</td>
</tr>
<tr>
<td>Ecological systems theory.</td>
<td>15</td>
</tr>
<tr>
<td>School readiness skills.</td>
<td>16</td>
</tr>
<tr>
<td>Preparing to Teach Students with Autism</td>
<td>17</td>
</tr>
<tr>
<td>Evidence-based practice and empirically supported treatments.</td>
<td>17</td>
</tr>
<tr>
<td>Autism, evidence-based practice, and empirically supported treatments.</td>
<td>19</td>
</tr>
<tr>
<td>Targeting School Readiness in Children with Autism</td>
<td>20</td>
</tr>
<tr>
<td>Knowledge, and factors influencing use, of treatments.</td>
<td>21</td>
</tr>
<tr>
<td>Strategies to Support Teachers</td>
<td>27</td>
</tr>
<tr>
<td>Supporting knowledge and use of ESTs</td>
<td>27</td>
</tr>
<tr>
<td>Promoting connection across settings</td>
<td>28</td>
</tr>
<tr>
<td>Enhancing professional networks</td>
<td>29</td>
</tr>
<tr>
<td>Devising an appropriate solution</td>
<td>30</td>
</tr>
<tr>
<td>Summary of Project Aims and Research Questions</td>
<td>31</td>
</tr>
<tr>
<td>Chapter 3: Methodology</td>
<td>33</td>
</tr>
<tr>
<td>Chapter Overview</td>
<td>33</td>
</tr>
<tr>
<td>Theoretical Foundations</td>
<td>34</td>
</tr>
</tbody>
</table>
The right to education.................................................................................................................. 34

Child development.................................................................................................................... 35

Knowledge translation.............................................................................................................. 36

Worldview................................................................................................................................ 38

Mixed Methods ....................................................................................................................... 38

Overview of Research Methods .............................................................................................. 39

Phase One .................................................................................................................................. 40

Participants ............................................................................................................................... 40

Approach to data collection .................................................................................................... 41

Materials and measures .......................................................................................................... 42

Approach to data analysis ......................................................................................................... 43

Phase Two .................................................................................................................................. 44

Participants ............................................................................................................................... 44

Approach to data collection .................................................................................................... 45

Materials and measures .......................................................................................................... 45

Approach to data analysis ......................................................................................................... 46

Phase Three ................................................................................................................................ 47

Participants ............................................................................................................................... 47

Approach to data collection .................................................................................................... 48

Materials and measures .......................................................................................................... 48
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach to data analysis</td>
<td>51</td>
</tr>
<tr>
<td>Summary</td>
<td>52</td>
</tr>
<tr>
<td>Chapter 4: Phase One</td>
<td>53</td>
</tr>
<tr>
<td>Statement of contribution to the co-authored published paper</td>
<td>53</td>
</tr>
<tr>
<td>Chapter 5: Phase Two</td>
<td>89</td>
</tr>
<tr>
<td>Statement of contribution to the co-authored published paper</td>
<td>89</td>
</tr>
<tr>
<td>Chapter 6: Phase Three</td>
<td>120</td>
</tr>
<tr>
<td>Statement of contribution to the co-authored published paper</td>
<td>120</td>
</tr>
<tr>
<td>Chapter 7: General Discussion</td>
<td>157</td>
</tr>
<tr>
<td>Outcomes</td>
<td>158</td>
</tr>
<tr>
<td>The role of social validity</td>
<td>158</td>
</tr>
<tr>
<td>Identifying support needs</td>
<td>160</td>
</tr>
<tr>
<td>Co-development of a solution</td>
<td>162</td>
</tr>
<tr>
<td>Overarching Findings</td>
<td>164</td>
</tr>
<tr>
<td>Teacher commitment</td>
<td>164</td>
</tr>
<tr>
<td>A comprehensive view of school readiness</td>
<td>164</td>
</tr>
<tr>
<td>Knowledge translation in practice</td>
<td>165</td>
</tr>
<tr>
<td>Limitations</td>
<td>165</td>
</tr>
<tr>
<td>Future Research Directions</td>
<td>167</td>
</tr>
<tr>
<td>Conclusion</td>
<td>169</td>
</tr>
</tbody>
</table>

viii
References.................................................................................................................................................. 171

Appendix A: Participant Flyer Phase One........................................................................................................ 190

Appendix B: Participant Information Sheet, Phase One..................................................................................... 191

Appendix C: Survey Instrument, Phase One .................................................................................................... 193

Appendix D: Participant Information Sheet, Parent Version, Phase Two.......................................................... 199

Appendix E: Participant Information Sheet, Principal Version, Phase Two....................................................... 201

Appendix F: Participant Information Sheet, Teacher Version, Phase Two......................................................... 203

Appendix G: Semi-Structured Interview Guide, Phase Two............................................................................. 205

Appendix H: Participant Information Sheet, Principal Version, Phase Three.................................................... 207

Appendix I: Participant Information Sheet, Teacher Version, Phase Three....................................................... 209

Appendix J: Participant Information Sheet, Head of Special Education Version, Phase Three....................... 212

Appendix K: User Stories, Phase Three ........................................................................................................ 215

Appendix L: Prototype Online Platform .......................................................................................................... 217

Appendix M: Semi-Structured Interview Guide ................................................................................................ 221

Appendix N: Framework Matrix Example ....................................................................................................... 223
List of Tables

Chapter 4: Phase One

Table 1. Treatments targeting school readiness skills identified in Fleury et al. and definitions of practices used ................................................................. 59

Table 2. Participant demographics ................................................................. 67

Table 3. Overall mean use, knowledge, and social validity scores for ESTs ............ 71

Table 4. Sources of information accessed when learning about interventions used for children with ASD by teachers and their average trust rating ....................... 74

Table 5. Group means for overall use, knowledge, and social validity of ESTs according to demographic variables ......................................................... 76

Chapter 5: Phase Two

Table 1. Participant demographics ................................................................. 98

Chapter 6: Phase Three

Table 1. Participant demographics split by group ........................................... 132

Table 2. Themes, sub-themes, and associated quotes ..................................... 136
List of Figures

Chapter 2: Literature Review
   Figure 1. Overlap Between Evidence-Based Practices Identified by the current National Professional Development Center on ASD and the National Autism Centre National Standards Project ............................................................. 21

Chapter 3: Methodology
   Figure 1. Knowledge to action process ................................................................. 36

Chapter 5: Phase Two
   Figure 1. Themes and sub-themes ................................................................. 102
Acknowledgements

Firstly, I would like to thank the children and families I had the pleasure of working with prior to beginning my PhD. The motivation for this project would not have come about without you. Thank you for being a constant reminder of why I do this research.

The work presented here would also not have been possible without the ongoing support and guidance of my supervisors, Associate Professor David Trembath, Professor Deb Keen, and Dr Jessica Paynter. Not only in their generous offer of time and expertise to this project, but in the example they set as academics both within this institute and the broader research community. Thank you for guiding me through this journey and for providing me with numerous opportunities for growth, both personally and professionally. To my HDR peers, thank you for the laughs, shared commiserations, and constant encouragement over the past 3 years.

I would also like to extend an enormous thank you to the parents, schools, and teachers for their time offered in service of this research. Without your commitment, we would not be able to conduct research that we hope will lead to improved outcomes for children with autism entering primary school.

Finally, I would like to offer some personal thanks to the many important people who have encouraged me throughout my studies. To my beautiful family, thank you for putting up with me from the very beginning, with a special shout out to my brother, Jake. You have always been there to support me, celebrating the little wins, and helping me through the lows with a kind word, joke, or hug. To my friends, thank you for all your words of support, even when you don’t quite understand what it is I do.
Last, but by no means least, thank you to my husband Ben. You have been my most constant and enduring, source of support (and hugs) over these past 3 years. You have never wavered in your belief in me, and that I would reach the end. We did it!
Acknowledgement of Financial Support

I would like to gratefully acknowledge the financial support received from the Australian Government Research Training Program Scholarship. Further, I would like to thank the following organisations for the funds provided in support of my research: Australasian Society for Autism Research (ASfAR) 2017 Asia Pacific Autism Conference Support Grant, International Society for Autism Research (INSAR) 2018 Student/Trainee Award, and Griffith Graduate Research School (GGRS) and International Experience Incentive Scheme (IEIS) 2018 Conference Travel Grant.
Acknowledgement of Papers included in this Thesis

Included in this thesis are papers in Chapters 4, 5, and 6 which are co-authored with other researchers. My contribution to each co-authored paper is outlined at the front of the relevant chapter. The bibliographic details and status for these papers, including all authors, are:

Chapter 4:

(Copyright assigned to Taylor & Francis Group, pre-print version included in thesis).

Chapter 5:

Chapter 6:
(Signed) Rhylee Sulek (Date)

Supervisor: Associate Professor David Trembath

(Countersigned) (Date)

Supervisor: Professor Deb Keen

(Countersigned) (Date)

Supervisor: Dr Jessica Paynter
Invited presentations resulting from this research


Peer reviewed abstracts and presentations resulting from this research


Preface

This thesis consists of seven chapters. Four chapters are presented in a traditional thesis format, while the remaining three chapters (Chapters 4, 5, and 6) are presented as journal articles that have been prepared in a manner suitable for publication (published or submitted for publication). It is important to note that when presenting a thesis which includes individual manuscripts, some repetition is unavoidable, however, an effort has been made to reduce repetition wherever possible.

A Note on Autism Terminology

The focus of this research was on children with autism who are transitioning into their first year of formal schooling in a mainstream school setting. For the purpose of this project, *person-first* language was adopted to describe this population (i.e., ‘children with autism’). Given that this research was focused on children, and education providers, it was important to acknowledge the preferences of parents and professionals around the terminology used. Research suggests that a lack of consensus exists regarding the use of person-first versus *identify-first* (i.e., autistic) language in discourse when discussing both disabilities generally (see Dunn & Andrews, 2015), and autism more specifically (Kenny et al., 2015). In their community consultation study, Kenny et al. (2015) highlighted language preference differed across professionals, parents and individuals on the autism spectrum. Acknowledging these differences, a decision was made to adopt person-first language when describing children with autism transitioning to school, unless otherwise specified.

Frequently Used Terms

The following section contains key terms and their definitions applied in this study.

Evidence-based practice (EBP). A decision making process whereby users (e.g., psychologists, teachers) are required to integrate the best available evidence, with their own clinical or professional experience, while considering client characteristics and values and the contexts in which they operate (APA Presidential Task Force on Evidence-Based Practice, 2006; McGrew, Ruble, & Smith, 2016; Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000)

Empirically-supported treatment (EST). Well defined treatments (also referred to as interventions or programs) that have been found to be efficacious for a specific population through rigorous research (Chambless & Hollon, 1998).

Foundation year. The first year of formal schooling for children, sometimes referred to as ‘Prep’ or ‘Kindergarten’. The foundation year precedes entry into Year One.

General education teacher. For the purposes of this project, a general education teacher is defined as a qualified education professional providing instruction to students in a mainstream school setting. A general education teacher is not special education trained.

Mainstream school setting. For the purposes of this project, a mainstream school setting refers to a non-specialised schooling environment where the child will spend their day. Some mainstream schools within Australia also contain a special education unit which can be used for withdrawal support of students with additional needs. *Note, the terms mainstream school setting and general education setting are used interchangeably in Chapters 4, 5, and 6 to tailor to the readership of each journal.
School readiness skills. Child level characteristics (e.g., ability to follow instructions) that assist children as they enter and participate in formalised school settings.

Transition to school. The process of moving from an early education setting (e.g., early intervention, kindergarten) into a formal education setting.

Typically developing children. For the purposes of this project, typically developing children are defined as children who are not receiving autism intervention or special education services.
Chapter 1: Introduction

Autism spectrum disorder (ASD, hereon referred to as autism), a complex neurodevelopmental disorder, has been estimated to affect 0.7% of the population in Australia and is most prevalent in school-aged children (between 5 and 14 years) (Australian Bureau of Statistics, 2016). Despite two core characteristics being required for diagnosis, impairments in social communication and interaction and restricted and repetitive patterns of behaviours (American Psychiatric Association, 2013), there is considerable variation across the population of individuals with autism (Wozniak, Leezenbaum, Northrup, West, & Iverson, 2017). It is therefore unsurprising that no two individuals diagnosed with autism are expected to follow the same developmental trajectory, leading some to conclude that, “If you’ve met one person with autism, you’ve met one person with autism” (Shore, 2015). With this inherent variability, comes the challenge of providing effective services to this population across the lifespan. The present project explored avenues for improving outcomes for children with autism by addressing the issue of providing effective services to these children as they transition into school.

Children can be reliably diagnosed with autism as early as 2 years of age (Lord et al., 2006), with early identification prompting the need for high-quality early intervention programs targeting the range of impairments observed. While early intervention programs can differ in a number of ways, including their delivery mode (e.g. individual versus group-based therapy), frequency, intensity, and duration (Klintwall, Eldevik, & Eikeseth, 2015; Stahmer, 2007), previous research has highlighted that children with autism who receive early intervention perform better, and acquire skills faster compared to children who do not (Corsello, 2005; Klintwall et al., 2015; Reichow, Barton, Boyd, & Hume, 2012). Although early identification and intervention are important, due to their influence on later outcomes, appropriate and timely
support for a successful transition to school is critical to achieving the best outcomes for children with autism.

**Education and Autism**

**Education context.** The present project outlines research conducted within the Australian education context, with two phases of this research limited to one Australian state. Australia has obligations under the United Nations Convention on the Rights of Persons with Disabilities (The United Nations, 2006) to ensure that inclusive education is made available for all individuals with disabilities. Further, the Disability Standards for Education (Australian Government, 2005), introduced under the Disability Discrimination Act (Australian Government, 1992), outline the responsibilities of schools and other education providers in meeting the needs of students with disabilities, including autism. Among these responsibilities is the need to uphold the right for students with disabilities to be educated in the least restrictive environment, and receive any individualised supports required for their participation in education. Despite a commitment to ensuring equal access to education for all students, results of a Senate inquiry (Commonwealth of Australia, 2016) highlighted that many families and children with a disability do not access education, with common barriers cited including informal gatekeeping (e.g., schools suggesting part-time placement), a negative philosophy of principals and teaching staff towards inclusion, and teachers’ lack of understanding of how, or willingness, to provide support to students with a disability. While it is estimated that the majority (53.6%) of school-aged children with autism are educated in mainstream schools in the Australian context, almost all (96.7%) of these students experience some form of educational restrictions (Australian Bureau of Statistics, 2016). Further, with suggestions that the presence of a disability is one of the major determinants of education outcomes (Australian Government Department of Education and
Training, 2011), and research highlighting variability in academic achievement across children with autism (Keen, Webster, & Ridley, 2016), it is important to ensure that all schools are meeting the requirements of providing inclusive education in order to optimise outcomes for this population.

In Australia, compulsory schooling is required for all children aged between 5 and 6 years to 16 years, with some variations between States and Territories (Australian Government Department of Education and Training, 2016). All schools adhere to a national curriculum that outlines eight key learning areas. These learning areas are English, mathematics, science, health and physical education, humanities and social sciences, the arts, technology, and language (Australian Curriculum Assessment and Reporting Authority, 2016). Children can enrol in their first year of schooling, formally known as the foundation year, if they are turning 5 by June 30 of that year (April 30 for Victoria). While not compulsory in all states, the foundation year is a full-time program that acts as an introduction to school and helps children develop a range of important skills (e.g. literacy, numeracy, following routines) prior to their entry into year one (Australian Curriculum Assessment and Reporting Authority, 2016; Australian Government Department of Education and Training, 2016). As the foundation year is a child’s first experience of formal schooling, it is important to acknowledge that differences exist between foundation year and pre-school education settings (e.g., early intervention service, childcare). Not only is the environment more highly structured in the foundation year, but children are also expected to become more independent. Ensuring that children are equipped with skills and behaviours that will enable them to thrive during the transition to this new environment is therefore important.
Supporting School Readiness in Children with Autism

**Research context.** There is agreement among researchers that a set of skills and behaviours are desirable as children transition to school. Often referred to as school readiness skills, these include skills such as early literacy, motor skills, attending skills, and following directions (Fleury, Thompson, & Wong, 2015; Janus & Duku, 2007; Lara-cinisomo, Fuligni, Ritchie, Howes, & Karoly, 2008; McWayne, Cheung, Wright, & Hahs-Vaughn, 2012; Razza, Razza, & Martin, 2015; UNICEF, 2012). For children with autism, the acquisition of these skills might be impeded by characteristics inherent to the disorder (Fleury et al., 2015). For example, impairments in social interaction and communication can impact the receptive language capabilities of children with autism, therefore impacting their ability to follow teacher directions. Continuing to support these school readiness skills as children with autism transition into their first year of formal schooling might, therefore, be important to achieving improved outcomes for these children.

When looking at supporting the development of school readiness skills in children with autism, research identifying empirically supported treatments (ESTs), targeting a range of skills and behaviours across the lifespan, serves as a starting point. ESTs can be defined as treatments targeting specific skills or behaviours, which have been shown to be efficacious for a specific population after rigorous evaluation (Chambless & Hollon, 1998). While there is currently no single treatment considered effective for all children with autism, researchers have developed a number of treatments to target specific areas of need. Treatments can be focused in nature, targeting a single skill or goal, or can be comprehensive, targeting broad learning goals, in order to address the core impairments of autism and associated learning and behavioural goals (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010; Wong et al., 2015).
In response to development of these treatments, reviews have been conducted to determine which of these are ESTs, which treatments have emerging evidence but need more research, which have little or no research, and which are ineffective or in some cases harmful (the latter two categories will be referred to as non-ESTs throughout this dissertation). Two such reviews are the National Standards Report conducted by the National Autism Centre (NAC: 2015) and the Evidence-Based Practices for Children, Youth, and Young Adults with Autism Spectrum Disorder conducted by the National Professional Development Centre (NPDC: Wong et al., 2015). Of particular relevance to this project, Fleury et al. (2015) further analysed the results of the NPDC review (Wong et al., 2015), identifying 18 ESTs that specifically targeted school readiness outcomes in children with autism aged 3 years – 5 years 11 months. While ESTs exist to target school readiness in foundation year aged children with autism, a crucial next step is to look beyond ‘having’ these treatments, and towards ‘doing’. That is, determining if and how these treatments are implemented and received in real-world settings.

**Addressing the Challenge**

Schools have the potential to be an ideal context for the delivery of ESTs, due in part to the long hours children spend in this environment, the presence of peer models, and teacher experience in tailoring education to suit children with varied learning profiles (Koegel, Matos-Freden, Lang, & Koegel, 2012). Teacher knowledge and use of ESTs for school readiness is therefore important, however, there is a paucity of research in this area. While research conducted in early intervention settings (see Paynter et al., 2017; Paynter & Keen, 2015) and with special education teachers (see Carter, Stephenson, & Strnadova, 2011) reveals that staff in these services use both ESTs and non-ESTs, the extent of general education teachers’ knowledge and use of school readiness specific ESTs is unknown. Beyond understanding the extent to
which teachers both know and use available ESTs, it is also important to consider additional factors which might impact their decision to use these. For example, understanding the value teachers see in using ESTs in their daily routines is important, as teachers are unlikely to use strategies they do not see as valuable. Determining the social validity of ESTs, that is the appropriateness and acceptability of procedures, and desirability of the goals (Callahan, Henson, & Cowan, 2008; Wolf, 1978), can help address this question. Understanding the impact of teacher training in autism and ESTs, and school culture towards inclusion and adoption of these treatments are also worthy considerations when attempting to address the challenge of supporting children with autism as they transition to school.

In summary, despite a push for inclusive practices and individualising education plans for children with autism in schools, not all children are achieving their full potential (Ashburner, Ziviani, & Rodger, 2010). Challenges associated with translating research in ESTs to classroom practice may be contributing to this outcome. To determine this, research is needed into teacher knowledge and use of ESTs which can support students in developing school readiness skills in the foundation year. Determining the social validity of these strategies for classroom use may also reveal potential barriers and facilitators to the uptake of these treatments. The overall objective of this project was to improve the outcomes of children with autism who attend mainstream schools, through the enhancement of teacher knowledge and use of ESTs. With evidence suggesting that the early years of child development can be predictive of later success, the project focused on the foundation year, as this is generally the first exposure to formal schooling all children will receive. The specific aims were to (a) investigate the knowledge and use of ESTs that support the acquisition of school readiness skills in general education foundation year teachers, (b) understand factors which influence knowledge and use of ESTs,
and (c) explore the social validity of harnessing factors identified which support transitions to school in an online support tool.
Chapter 2: Literature Review

The precise nature of autism has been under scrutiny since its description in 1943 by Leo Kanner (Feinstein, 2010). Following the observation of a group of 11 children, whom Kanner believed presented with a unique combination of symptoms, he developed the term *Early Infantile Autism* to describe the novel disorder (Kanner, 1943, 1949). While Kanner had not formally defined diagnostic criteria at this time, two distinct features of the disorder were identified: (a) a lack of interest in the social world and inability to relate to others, and (b) an insistence on sameness (Kanner, 1943, 1949). Additionally, these children sometimes displayed a pattern of delayed speech acquisition (three of his patients were non-verbal), often used abnormal language (echolalic speech, confusion with pronouns), and were found to possess excellent object relations, particularly in their fine motor manipulations (Kanner, 1943, 1949, 1971; Volkmar & Reichow, 2013). While many revisions to the diagnostic criteria for what has come to be known as autism have occurred since Kanner’s (1943) seminal paper, the two distinct features identified by Kanner are still central to the diagnosis of autism today (Volkmar & McPartland, 2014).

**Diagnostic Classification of Autism Spectrum Disorder**

The *Diagnostic and Statistical Manual of Mental Disorders, 5th* Edition (DSM-V: American Psychiatric Association, 2013) and the *International Classification of Diseases, 10th* Revision (ICD-10: World Health Organisation, 1992) are the most commonly used classification systems of mental health disorders. Under the DSM-V criteria, *Autism Spectrum Disorder* is a single disorder. To receive a diagnosis of Autism Spectrum Disorder, children must present with “persistent deficits in social communication and social interactions,” including deficits in social-emotional reciprocity, nonverbal communication, and the development, maintenance and
understanding of social relationships (all must be present), and “restricted, repetitive patterns of behaviour”, including stereotyped motor movements, insistence on sameness, highly restricted interests, and reactivity to sensory input (at least two symptoms) (American Psychiatric Association, 2013, pp. 50-51). These symptoms are required to be present early in life, cause significant impairment in functioning, and not be better explained by intellectual disability or global developmental delays. It is important to note that significant changes to diagnosis were made in this current edition of the DSM.

Previously, the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition (DSM-IV: American Psychiatric Association, 1994), similar to the ICD-10 classification, included the umbrella term of *Pervasive Developmental Disorders* (PDD) which encompassed: *Autistic Disorder, Asperger’s Disorder, Rett’s Disorder, Childhood Disintegrative Disorder*, and *Pervasive Developmental Disorder, Not Otherwise Specified*. The move to the DSM-V classification saw the removal of the multiple diagnostic categories under PDD, and *Autism Spectrum Disorders* was introduced as an overarching label in recognition of the shared features across the autism spectrum (Happé, 2011). To receive a diagnosis of *Autistic Disorder* under the DSM-IV, children had to present with a *triad of impairments* (Volkmar & McPartland, 2014) across the domains of social interaction: marked reduction of non-verbal signs of interest in and pleasure from being with another person, such as making eye contact, responsive social smiles, initiating and responding to physical affection (at least two symptoms), social communication: decreased ability to converse non-verbally and verbally with another person (at least two symptoms), and restricted repetitive and stereotyped patterns of behaviour: inflexible adherence to routine, stereotypes behaviours, restricted patterns of interest (at least one symptom) - with delays in one of these three areas occurring before the age of 3 years. Under the ICD-10,
Childhood Autism appears under the broad category of PDD (World Health Organisation, 1992). Like the DSM-IV criteria, diagnosis under the ICD-10 requires children to present with impairments in social interaction, ‘abnormalities’ in communication, and restricted and repetitive patterns of behaviours, prior to the age of 3 years. Irrespective of the diagnostic classification, or edition used, these criteria establish core characteristics identifiable for the diagnosis of Autism Spectrum Disorder. Despite this, a great deal of variability is observed among individuals with autism, with different profiles of strengths, difficulties, and abilities observed within this population (Reichow et al., 2012).

Historically, the majority of children have been diagnosed with autism around the age of 4 years (Christensen et al., 2016), however, research suggests that children can be diagnosed reliably as early as 2 years of age (Kleinman et al., 2008; Lord et al., 2006). This emphasis on early detection had led to increased efforts to ensure families can access early intervention, which in the Australian context includes support provided through the National Disability Insurance Agency (NDIA). Although the NDIA, through the implementation of the National Disability Insurance Scheme (NDIS) which is currently being rolled out across Australia, aims to provide needs-based individualised support to people living with a disability, the provision of this funding occurs outside of education. Consequently, the responsibility to provide appropriate support to students with autism once they transition to formal schooling lies with the education system and schools. While early intervention is undoubtedly important, it is essential to acknowledge that the most recent statistics in Australia indicate that the majority of individuals with autism are school aged (Australian Bureau of Statistics, 2016), highlighting the necessity to ensure that appropriate supports are being provided for this group.
Education and Children with Autism Spectrum Disorder

Australia follows an inclusive education philosophy, as mentioned in Chapter 1, and accordingly, the majority (53.6%) (Australian Bureau of Statistics, 2016) of children with a diagnosis of autism are educated in mainstream schools. With the high proportion of children with autism being educated in inclusive settings, comes the increased requirement of general education teachers to provide these children with appropriate support. In Australia, there is debate regarding the extent to which general education teachers are currently prepared, through both pre-service training and in-service professional learning, to support students with autism and other disabilities. The *Australian Professional Standards for Teachers* (Australian Institute for Teaching and School Leadership, 2011) specify that all teachers (general education and special education) must understand the legislative requirements around the inclusion of students with disabilities, in addition to teaching strategies which support learning. Despite this, a *Schools Workforce* report (Productivity Commission, 2012) found that there was a lack of appropriately trained teachers in Australia available to work with students with disabilities. Further, the Australian Education Union (2015) submission to a Senate inquiry into the education of students with disabilities (Senate Standing Committee on Education and Employment, 2016) reported that 67% of Australian teachers felt inadequately prepared by their pre-service education programs to support students with disabilities. In support of this, Coates, Lamb, Bartlett, and Datta (2017) in their investigation of teacher education programs in Queensland, Australia, reported that of 10 university programs, only one delivered a course specifically addressing autism, with the 6-week course an elective available to students majoring in special education.

Children with autism have been found to exhibit higher levels of behavioural and emotional difficulties at school (Ashburner et al., 2010), in addition to the variability in their
social and communication needs and repetitive behaviours. It is, therefore, critical to ensure that all teachers are well equipped to address the individual needs of each student and are able to tailor the level of support that is provided (Crosland & Dunlap, 2012; Iovannone, Dunlap, Huber, & Kincaid, 2003; Koegel et al., 2012) in order to avoid placing these students at a disadvantage compared to their typically developing peers.

**Academic Success in Children with Autism**

There is growing evidence regarding the educational experiences and outcomes of students with autism. In a recent review, which encompassed 19 studies reporting academic achievement in children with autism between the ages of 5 and 18 years, Keen et al. (2016) found that academic achievement varied widely across children with autism and different academic skill areas. Among the studies reviewed, differences between students with autism and their typically developing peers were also highlighted. For example, Ashburner et al. (2010) found that in a sample of students aged six to 10 years being educated in mainstream classrooms, teachers reported that more students with autism (54%) were under-achieving academically, compared to their typically developing peers (18%). Mayes and Calhoun (2007) in their comparisons of academic achievement of children with autism (referred to as autistic disorder), ADHD, anxiety, oppositional defiant disorder, and typically developing peers also found that children with autism performed worse than their typically developing peers across all subtests (word reading, reading comprehension, etc). Not only does academic achievement vary across individuals with autism, but research has also highlighted that academic outcomes for students with autism are generally poorer compared to their typically developing peers. Further, children with autism often require more individualised support in the classroom.
In their investigations of outcomes of Australian children diagnosed with autism, Clark, Vinen, Barbaro, and Dissanayake (2018) reported that children diagnosed after the age of three years were more likely to require ongoing support in the classroom compared to children diagnosed before the age of two years. This is consistent with Australian survey data that suggests that 41.8% of children with autism require assistance from a counsellor or disability support worker to participate in the classroom (Australian Bureau of Statistics, 2016). Looking beyond the early years, Australian survey data has also shown that over 81% of young adults with autism who complete secondary education, will not complete any post-school training (Australian Bureau of Statistics, 2012a), compared to 40% of typically developing school leavers (Australian Bureau of Statistics, 2012b). In their longitudinal study of youth transitioning out of special education services in the United States, Shattuck et al. (2012) also found that young adults with autism had lower levels of employment and post-secondary education enrolments compared to students with other disabilities (e.g., learning disability, speech-language disorder). This was particularly prevalent in the first two years following secondary school, with skill level linked to involvement in education and employment (Shattuck et al., 2012).

Failing to provide students with autism access to education, and sufficient support where required can lead to decreased academic achievement and poor post-school outcomes, as outlined above. With research in early intervention suggesting that providing intervention and support at an earlier age is likely to lead to improved outcomes (Anderson, Liang, & Lord, 2014; Corsello, 2005), ensuring children have a positive experience of, and are well supported during, the early years of school is critical. Understanding the readiness of children to attend school, and the readiness of schools and teachers to support students with autism may provide one avenue for addressing this issue.
School Readiness

There are several areas of research that underpin responses to preparing children for school, with the identification of specific skills and behaviours considered imperative for their success in this environment. The skills children require to succeed at school have been termed ‘school readiness’ or ‘school survival’ skills and will herein be referred to as school readiness skills. Several approaches to school readiness have been identified in the literature: idealist/nativist approaches, empiricist/environmental approaches, social constructivist approaches, and interactionist approaches.

Idealist or nativist views of readiness centre around the maturation of children, suggesting that children are ready for school when they can sit quietly, follow directions and engage socially with peers (Meisels, 1999). Indeed, many Western countries require children to begin school at approximately 5 years of age (Kagan & Rigby, 2003; Prior, Bavin, & Ong, 2011). This conceptualisation has implications for interventions targeting school readiness as it suggests that readiness lies within the child and is associated with chronological factors, with environmental factors having little to no impact on child development or readiness (Meisels, 1999). In contrast, the empiricist or environmental perspective places emphasis on external evidence of child learning (e.g., the ability to match, spell own name, identify objects) and behaviour, which can be easily measured, as an indicator of readiness for school (Meisels, 1999). To this end, children who do not demonstrate these skills are, therefore, not ready for school and should be enrolled in preparatory programs explicitly teaching these skills.

A social constructivist view of school readiness, alternatively, rejects the notion that readiness is either within the child, or something external to the child which can be evaluated. Instead, this perspective looks to the context in which the child exists, with school readiness...
dependent on socially constructed meanings, resulting in differing concepts of readiness across communities and school contexts (Meisels, 1999). Finally, the interactionist perspective views school readiness as a bidirectional relationship, focussing on “children's learning and on schools' capacities to meet the individual needs of their students” (Meisels, 1999, p. 49). Accordingly, this perspective considers a variety of factors influencing child development, including past experiences, inherent characteristics, and the interaction of environmental and cultural influences. The interactionist view of school readiness, the perspective adopted in the current study, closely aligns with the Ecological Systems Theory (Bronfenbrenner, 1992), which suggests that development in children does not occur in isolation, thus providing opportunities to identify environmental and relational factors that can be targeted through intervention to enhance school readiness.

Ecological systems theory. Bronfenbrenner (1992) described five environmental systems that impact child development. The *microsystem* is the closest to the child and includes those people and environments the child has the most contact with (e.g., family, peers, school). The next layer is the *mesosystem* which focuses on interactions between components in the microsystem which indirectly influence the child. An example of this would be teachers and parents meeting regularly to ensure the child’s progress in school. The third layer or *exosystem* describes settings that the child is not an active participant in, but which still affect her or him. A mother’s workplace, for example, may indirectly influence the child by requiring her to work long hours. The *macrosystem* encompasses all other environments and systems that influence development, such as the politics in the child’s area, where the child was born, and the economy at the time. The final layer is the *chronosystem*, which includes transitions over the lifespan that
impact development. Parental divorce, or experiencing a natural disaster, are examples of events that occur in the chronosystem.

**School readiness skills.** With both the interactionist perspective and the ecological systems theory in mind, school readiness for the purpose of this project is defined around two dimensions: children’s readiness for school, and schools’ readiness for children (UNICEF, 2012). At a child level, there are several factors which encompass readiness for school: socio-emotional competence (e.g., a child’s ability to regulate emotions, relate to others, and communicate effectively), pre-academic skills (e.g., early literacy and numeracy skills), physical health and wellbeing (e.g., hearing, vision, motor skills), approaches to learning (e.g., motivation to learn, attending skills, compliance, task persistence), and conceptual knowledge and application (e.g., problem solving, reasoning skills) (Fleury et al., 2015; Lara-cinisomo et al., 2008; McWayne et al., 2012; Razza et al., 2015; UNICEF, 2012). Although these child level school readiness skills can be considered preparatory and ideal to have prior to entry into school, this may not be the case, particularly where children are identified as having a disability such as autism (Salisbury & Vincent, 1990).

Behavioural markers apparent in individuals with autism might contribute to the delayed development of school readiness skills. For example, children with autism have been found to demonstrate significantly higher levels of behavioural and emotional difficulties at school, compared to their typically developing peers (Ashburner et al., 2010). The increased incidences of inattention and hyperactivity (Ashburner et al., 2010) observed in some children might, in turn, result in decreased or delayed acquisition of school readiness skills falling within the ‘approaches to learning’ subset. Where children with autism do not acquire these skills or behaviours prior to school entry, continuing to support the development of these skills well into
the first years of formal schooling is necessary. As such, consideration then moves beyond these child-level characteristics, with the focus shifting to the readiness of schools and teachers to support students with autism as they enter the foundation year.

Preparing to Teach Students with Autism

One process through which schools can prepare themselves to support students with autism in the development of school readiness skills is through the identification and implementation of relevant and effective treatments (also referred to as interventions or practices).

Evidence-based practice and empirically supported treatments. It is important when selecting treatments to use with individuals with autism that clinicians, therapists, and teachers are aware of, and operate within, an evidence-based decision-making framework. Known as evidence-based practice (EBP), this movement originated in the field of medicine, recognising the need for medical professionals to integrate research from clinical care into their work with individual patients (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). The EBP approach has since been adopted across allied health fields, in an attempt to reduce the research to practice gap which often prevents clients from receiving the best possible treatments, potentially resulting in poorer outcomes and wasted resources on less effective treatments (Spencer, Detrich, & Slocum, 2012). EBP is commonly described as a decision-making process whereby users (e.g., psychologists, teachers) are required to integrate the best available evidence, with their own clinical or professional experience, while considering client characteristics and values and the contexts in which they operate (APA Presidential Task Force on Evidence-Based Practice, 2006; McGrew et al., 2016; Sackett et al., 2000).
To facilitate professionals in their selection of treatments, efforts have been made to provide guidelines and information around grades, or levels, of available evidence. For example, the Australian National Health and Medical Research Council (NHMRC: 2009) specify six levels of evidence: synthesised reviews of research (i.e., systematic reviews, considered the highest level of evidence), randomised control trials, cohort studies, case-controlled studies, and case series (considered the lowest level of evidence). Despite some variation across evidence hierarchies (see Morsels of Evidence, 2019 for a summary of guidelines), synthesis of research is generally considered the highest level of evidence. In the field of autism, the highest level of evidence is considered to be treatment reviews, resulting in the identification of empirically supported treatments (ESTs). According to Chambless and Hollon (1998), ESTs are well-defined treatments that have been found to be efficacious for a specific population through rigorous research. Further to considering the efficacy of available treatments, that is the extent to which they work under ideal circumstances such as in controlled studies, it is also important to balance this with the clinical utility and effectiveness of treatments, whether or not they work in real-world settings, which includes examining the extent to which they are feasible, accepted, and useful across settings and users (APA Presidential Task Force on Evidence-Based Practice, 2006; Chambless & Hollon, 1998; Slocum, Spencer, & Detrich, 2012; Spencer et al., 2012).

Consideration of client values, characteristics, and preferences are also required when selecting treatments within an EBP framework. Not only is this important in decision making, consulting with clients is both ethical and pragmatic (Spencer et al., 2012). Being conscious of what is important to the client and their family, including religious or philosophical worldviews, their goals, and treatment preferences is required when operating within this framework (APA Presidential Task Force on Evidence-Based Practice, 2006; Spencer et al., 2012). Finally,
professional judgment is an integral aspect of the EBP decision-making process, drawing
together the elements described above. When working with clients such as children with autism,
professionals, in this case teachers, must combine their current knowledge of the child, the
resources available to them, and any restrictions that might exist in their workplace, with
knowledge of available treatments and the extent of research supporting their effectiveness (APA
Presidential Task Force on Evidence-Based Practice, 2006; Slocum et al., 2012; Spencer et al.,
2012).

**Autism, evidence-based practice, and empirically supported treatments.** Central to
adopting an EBP approach to supporting students is the selection of ESTs from the wide range of
proposed treatments available. This has led to an increased need to identify and evaluate the
evidence base of these treatments systematically, to support best practice by professionals
working in this area. Accordingly, and as noted in Chapter 1, two large scale reviews of available
treatments were published in 2015 (National Autism Center, 2015; Wong et al., 2015). In the
most recent release from National Autism Center (NAC: 2015), the National Standards Project,
researchers identified 14 ESTs (referred to as established interventions), with sufficient evidence
of their effectiveness for use with children and adolescents under the age of 22 with a diagnosis
of autism. The National Standards Project further identified 18 emerging treatments, those with a
small body of evidence of effectiveness, and 13 non-ESTs (referred to as unestablished
interventions), with no sound evidence for effectiveness, some of which might be harmful, for
use (National Autism Center, 2015).
The National Professional Development Center (NPDC: Wong et al., 2015) report identified 27
ESTs for use with individuals with autism, and a further 24 treatments that did not meet the
criteria to be classified as an EST for children and adolescents with autism under the age of 22
years. While the number of treatments identified as ESTs in the NAC and NPDC reviews appears to be divergent these can be explained, in part, by how treatments were organised under certain categories within the two reviews. For example, all behavioural treatments were classified under a single heading by the NAC, whereas these treatments (e.g., extinction, functional behavioural assessments) were classified separately in NDPC. Both reviews also specified varying criteria of studies to be classified as empirically supported or not. For a comparison of the two reviews please refer to Figure 1. While the two reviews discussed here were conducted in the United States, efforts to highlight the use of the best available treatments when working with individuals with autism are recognised internationally (e.g., Australia: Early Intervention for Children with Autism Spectrum Disorders: ‘Guidelines for Good Practice’, Prior & Roberts, 2012; UK: National Institute for Health and Care Excellence [NICE], NICE, 2013; NZ: New Zealand Autism Spectrum Disorder Guideline (2nd edn), Ministries of Health and Education, 2016). The reviews described above, based on literature available internationally, serve as a tool for professionals working within an EBP framework to select ESTs and provide a starting point when looking to identify treatments which might assist in supporting the school readiness skills of students with autism as they transition to school.

**Targeting School Readiness in Children with Autism**

To identify ESTs most relevant for supporting school readiness skills, Fleury et al. (2015) further analysed the NPDC review, classifying ESTs according to their potential relevance in addressing children’s needs across three areas. These included; classroom behaviour (the child’s ability to participate in independent tasks within the classroom; e.g., complying with direction, following routine, attending to activities), social-communication (i.e., behaviours that support the child’s ability to interact with peers and teachers; e.g., reciprocal conversation, appropriately
expressing needs, responding to peer’s social invitations), and challenging behaviour (i.e., problematic behaviours that prevent child or peers ability to learn; e.g., stereotypic behaviours, aggression, pushing tasks away).

Fleury et al. (2015) limited their review of Wong et al. (2015) to studies which were classified as having a school readiness outcome, which resulted in the identification of 25 studies. In addition to the established evaluations of sample appropriateness, design, and quality of data analysis contained in the NPDC report, these 25 studies were further analysed by Fleury et al. (2015) to determine the setting in which treatments were implemented (i.e., were they conducted in an education type setting). From this search, 18 ESTs were found to meet this criterion and included; antecedent-based intervention, differential reinforcement, discrete trial teaching, exercise, functional behaviour assessment, functional communication training, modelling, parent-implemented intervention, prompting, reinforcement, response interruption and redirection, scripting, self-management, technology-aided instruction and intervention, time delay, video-modelling and visual supports. A further three treatments were identified in these studies that did not meet the NPDC criteria for an EST: behavioural momentum therapy, touch therapy, and music therapy (Fleury et al., 2015). Despite the identification of ESTs which can address school readiness behaviours, the extent to which these treatments are utilised in mainstream schools remains unclear. Further, while these reviews (i.e., Fleury et al., 2015; National Autism Center, 2015; Wong et al., 2015) characterise the evidence-base of available treatments, they do not evaluate factors which influence the selection and implementation of ESTs in general education classrooms.

Knowledge, and factors influencing use, of treatments. Fundamental to ensuring the readiness of schools and teachers to support students with autism with regards to ESTs, is
### Evidence-Based Practices Identified by the National Professional Development Center (NPDC) on ASD

<table>
<thead>
<tr>
<th>Antecedent-based intervention</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differential Reinforcement of Alternative, Incompatible or Other Behaviour</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Discrete Trial Teaching</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Extinction</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Functional Behaviour Assessment</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Functional communication training</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prompting</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Reinforcement</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Response-interruption/redirection</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Task Analysis</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Video Modelling</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cognitive-behavioural intervention</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Modelling</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Naturalistic intervention</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Peer-mediated instruction and intervention</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Pivotal response training</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Scripting</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Self-management</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Social narratives</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Social skills training</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Visual support</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td>Classified as an emerging practice in the NSP</td>
<td></td>
</tr>
<tr>
<td>Parent-implemented intervention</td>
<td>NSP looked at parent role in providing a therapeutic environment for family members with ASD, not focused on parents implementing interventions</td>
<td></td>
</tr>
<tr>
<td>Picture Exchange Communication System</td>
<td>Picture Exchange Communication System was identified as an emerging practice by the NSP</td>
<td></td>
</tr>
<tr>
<td>Technology-aided instruction and intervention</td>
<td>Classified under Augmentative and Alternative Communication Devices in NSP, and identified as an emerging practice</td>
<td></td>
</tr>
<tr>
<td>Structured playgroup</td>
<td>Equivalent not found in NSP</td>
<td></td>
</tr>
<tr>
<td>Time delay</td>
<td>Equivalent not found in NSP</td>
<td></td>
</tr>
</tbody>
</table>

### Established Treatments Identified by the National Autism Center (NAC) National Standards Project (NSP)

<table>
<thead>
<tr>
<th>Comprehensive Behavioural Intervention</th>
<th>Language Training (Production)</th>
<th>Parent Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive Behaviour Treatment for Young Children (NPDC on ASD did not review comprehensive treatment models)</td>
<td>Equivalent not found in NPDC</td>
<td>Equivalent not found in NPDC</td>
</tr>
<tr>
<td>Components of Comprehensive Behaviour Treatment of Young Children overlap with many NPDC-identified practices.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Figure 1. Overlap Between Evidence-Based Practices Identified by the current National Professional Development Center on ASD and the National Autism Centre National Standards Project.
addressing their current knowledge and use of treatments and determining the appropriateness of ESTs for the mainstream classroom. Very few studies have investigated teachers’ EST knowledge and use in support of students with autism. Among these, Segall and Campbell (2012) investigated attitudes of education professionals (administrators, general educators, special educators, and psychologists) towards the inclusion of children with autism in mainstream classrooms. They found that general education teachers reported significantly lower levels of knowledge of autism and reported awareness of fewer autism specific treatments compared to special education teachers and school psychologists. Further, general knowledge of autism was found to be predictive of participants’ awareness of treatments, and both knowledge and experience were predictive of the use of these treatments. Hess, Morrier, Heflin, and Ivey (2008) surveyed both special education (79% of the sample) and general education teachers in one American state, investigating the types of treatments used with students with autism. Hess et al., (2008) reported that of 43 treatments listed (derived from Green et al., 2006; National Research Council, 2001; Simpson et al., 2005), less than 10% of their sample reported using those classified as ESTs (referred to as effective interventions), with a further 21% using treatments classified as promising. With a lack of understanding of the current state of knowledge and use of ESTs by general education teachers of students with autism, additional research is required. It is also important to consider the factors which impact the use of ESTs in classrooms and identify influences which might contribute to providing support for children with autism as they transition into formal schooling.

**Social validity.** The social validity of treatments is one factor which might impact the uptake of ESTs, as noted in Chapter 1. Social validity can be likened to consumer satisfaction and is a measure of the appropriateness and acceptability of procedures, and desirability of the
goals of a treatment (Callahan et al., 2008; Wolf, 1978). Accordingly, the implementation of treatments identified as having empirical support is unlikely to occur if it does not meet the current needs and goals of clients and their families. With established best practice guidelines (Roberts, Williams, Smith, & Campbell, 2016), and reviews identifying ESTs (National Autism Center, 2015; Wong et al., 2015), determining and disseminating information regarding the social validity of treatments therefore becomes a “necessary additional consideration” (Callahan et al., 2008; Callahan et al., 2016, p. 2) when looking to provide support to individuals with autism.

In an investigation of the social validity of public school autism-specific program components (e.g. use of individualised programming, use of reinforcement), Callahan et al. (2008) surveyed a sample of special education teachers, parents, and school administrators in the South-Western United States. All components received consistently high ratings of social validity across participants, with 80% reported as being either important or very important. However, the empirical support of treatments was rated lowest, behind individualised programming, data collection, active collaboration, and focus on long term outcomes. Callahan et al. (2016) further analysed the NAC and NPDC reviews and found that while all ESTs had acceptable social validity, when aligned with results of their 2008 study, only 26.7% of the articles cited across the NAC and NPDC reviews specifically outlined the social validity of treatments. Recognising that a failure to establish, and communicate information, on the social validity of ESTs may contribute to their reduced use by education professionals, there is a need to address this gap in the research.

**Teacher training.** In the field of education, there has been a push to adopt an evidence-based policy which sets out to inform decision making at all levels of service (Detrich & Lewis,
Additionally, the use of ESTs has been mandated in countries such as the United States under the No Child Left Behind (NCLB) Act (2002) and Individuals with Disabilities Education Act (IDEA; 2004). Adoption of these policies has proven difficult, with confusion in the use and definition of terms such as ‘evidence-based practice’ and ‘evidence-based interventions’ (or ESTs). It is not uncommon to see terms, such as ‘best-practice’, ‘recommended practice’, ‘evidence-informed practices’, and ‘research-based practices,’ used interchangeably in education literature to describe treatments which are thought to have some degree of research support (Cook & Cook, 2013). However, these terms are not synonymous, with “best practice” in education having no agreed-upon criteria for selection (Cook & Cook, 2013). It is, therefore, unclear if teachers follow an EBP framework or implement ESTs in their daily practice and if not, whether this may be influenced by confusion or lack of understanding of this process and its importance.

Foundational to supporting knowledge and use of ESTs in this population, is to look towards pre-service training of teachers. In a review by O’Neill and Stephenson (2014) of evidence-based classroom behaviour management practices, it was found that both course content and prescribed texts of Australian universities often presented information on both ESTs (referred to as effective strategies) and non-ESTs, without specific instruction in evaluating the effectiveness of these treatments. The likelihood of teachers receiving instruction in autism-specific treatments, therefore, would seem compromised, particularly as Coates et al. (2017) highlight the limited provision of autism-specific coursework in Queensland (north-eastern Australia) university programs, with this usually provided in special education electives. Further, in a survey of 290 final year teachers across 15 Australian education institutions, Carter, Stephenson, and Hopper (2015) found that practicum experience and personal philosophy ranked
above empirical research when looking at the importance of factors in instructional decision making. These results, therefore, highlight opportunities for providing this instruction in the work environment, through in-service professional development.

In Australia, teachers are required to complete a minimum of 20 hours of continuing professional development in order to retain accreditation (Queensland College of Teachers, 2018). This can be in the form of online courses, workshops, or school-based training (Queensland College of Teachers, 2018). While researchers have shown that even small amounts of training can increase knowledge and use of ESTs specific to autism (Leblanc, Richardson, & Burns, 2009; Suhrheinrich, 2011), the extent to which instruction in ESTs is provided through in-service training is relatively unknown. In their investigation of in-service training provided to special education teachers in the United States, Hsiao and Sorensen Petersen (2018) found that over 38% of participants reported that the 25 autism specific ESTs surveyed were not discussed, or were mentioned incidentally, during training received. While undoubtedly important, the provision of training in ESTs, through pre-service or in-service teacher education efforts, is just one factor central to supporting children with autism as they transition to formal schooling.

Culture. In their review of factors important for successful inclusion of students with disabilities in schools, Lipsky and Gartner (1997) highlighted the need for visionary school leadership and support for school staff, with Lynch and Irvine (2009) further emphasising the need to support teachers. Findings from the Australian Senate inquiry into the education of students with disabilities also highlights the potential for the culture of schools towards inclusion to impact optimal outcomes students with disabilities (Senate Standing Committee on Education and Employment, 2016). Researchers have highlighted that families of children with autism may experience difficulties with unsupportive school cultures early in the transition experience, with
some experiencing ‘gatekeeping’ in the form of discouragement to enrol children in schools (Lilley, 2013). Further, Kucharczyk et al. (2015), reported that so-called “buy-in” (p.344) of schools into training and support for teachers to use ESTs, was a challenge in supporting adolescents with autism in schools.

In addition to understanding the current knowledge and use of ESTs which might support school readiness skills, consideration should be paid to the social validity of treatments, the extent of training provided to teachers, the culture of schools towards inclusion, and how these factors can impact support for students with autism as they transition to school. Once a more fine-grained understanding of how these factors impact general education teachers in their support for these students is reached, research must then address the challenge of how to best provide support to children with autism, and their teachers, as they transition into formal schooling.

**Strategies to Support Teachers**

Operating within an EBP framework, possible avenues to address this challenge become apparent. As described above, EBP comprises a three-pronged approach – the integration of best available evidence, consideration of child characteristics and family values, guided by professional judgment (APA Presidential Task Force on Evidence-Based Practice, 2006; McGrew et al., 2016; Sackett et al., 2000).

**Supporting knowledge and use of ESTs.** In order to achieve the provision of best available evidence, teachers must first be aware that ESTs for supporting school readiness in students with autism exist. As described in detail above, limited available evidence suggests that general education teachers are less knowledgable than their special education counterparts regarding available ESTs, and continue to use these treatments in combination with non-ESTs
(Hess et al., 2008; Segall & Campbell, 2012). Providing teachers with access to reviews of the literature (National Autism Center, 2015; Wong et al., 2015), good practice guidelines (Roberts et al., 2016), and readily established free online training in the implementation of these treatments (see National Professional Development Center, 2018; OCALI, 2018) provides a stepping stone for increasing awareness and use of these ESTs.

**Promoting connection across settings.** Consideration of child characteristics during the transition to a new, more formalised, schooling environment is also essential in providing adequate support. To achieve this, the promotion of cross-institute and professional collaboration and communication has been proposed. Fostering collaborative relationships and the continuity between previous and future education settings has been highlighted as an important element in the successful transition to school for all students (Pianta & Kraft-Sayre, 2003). In their attempt to identify factors contributing to positive transitions to school for students with autism, Marsh, Spagnol, Grove, and Eapen (2017) reviewed four studies (Beamish, Bryer, & Klieve, 2014; Denkyirah & Agbeke, 2010; Fontil & Petrakos, 2015; Quintero & McIntyre, 2011) which explored parents and teachers experiences during the transition to school. While there was agreement across studies of the importance of elements such as sharing information about children (preferences, strengths etc.,) and the development of collaborative reciprocal relationships between settings, these were rarely achieved in practice (Marsh et al., 2017). To demonstrate, Quintero and McIntyre (2011) found that for preschool teachers of students with autism and developmental disabilities, 37% desired, but did not have the opportunity, to meet with the child’s prospective school teacher, with a further 16% eager for additional collaboration between settings during the transition process. While not included in the Marsh et al. (2017) review, Levy and Perry (2008) similarly found that while 95% of early intervention staff
reported that teacher meetings should occur prior to the child entering school to address the needs of the child, only 45% of school staff reported this as being important. Notably, while less than half of school-based teaching staff endorsed this, 80% reported contacting early intervention teachers to discuss challenges after children had entered school (Levy & Perry, 2008). Enhancing these connections or providing alternate avenues for these connections to be established, is likely to impact the success of transitions for children with autism, and worthy of consideration in future attempts to address this challenge.

**Enhancing professional networks.** Finally, the establishment of within profession peer support networks is suggested to better equip teachers to use their professional expertise to guide decision making when supporting students with autism. The quality of teachers’ peers can impact teacher performance in several ways, including increased motivation to improve one’s own practice (Jackson & Bruegmann, 2009). Peer learning is also suggested as the preferred way for teachers to learn (Jackson & Bruegmann, 2009). Although on a small scale, Mortier, Hunt, Leroy, Van de Putte, and Van Hove (2010) found that three teachers supporting students with disabilities reported increased problem solving, development of trusting relationships, and increased confidence in their practice as a result of involvement in a peer network. Consistent with these findings, Tseng and Kuo (2014) and Hew and Hara (2007) have also found that membership in peer networks, including those based online, motivates teachers to share their own experiences in order to improve not only their own but the practice of others. With suggestions that general education teachers of students with autism perceive themselves as receiving less informative support in their schools compared to teachers not working with students with autism in their classroom (Cappe, Bolduc, Poirier, Popa-Roch, & Boujut, 2017),
the establishment of autism-specific peer networks, or communities of practice, might help to fill this gap.

**Devising an appropriate solution.** While the three factors explained above are proposed as being important in supporting transitions, these must be applied in a systematic fashion. Drawing from the fields of implementation science and knowledge translation can assist in guiding attempts to provide a solution to the challenge of supporting school transitions for children with autism. Implementation science has been defined as, “the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services” (Eccles & Mittman, 2006, p. 1). Similarly, knowledge translation has been defined by the Canadian Institute of Health Research as “a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective health services and products, and strengthen the health care system” (Straus, Tetroe, & Graham, 2009, p. 165). These processes frequently require the involvement of researchers, organisations, and potential end users of treatments or solutions, such as schools and general education teachers, and assists in identifying gaps which might explain poor uptake of treatments (Bauer, Damschroder, Hagedorn, Smith, & Kilbourne, 2015).

Advancements in information communications technology (ICT), and the role they can play in providing support during the transition to school for children with autism might provide potential avenues for developing an appropriate solution. ICT is increasingly being viewed as a tool to provide connections between individuals and information. For example, tertiary education settings moving to blended models of learning (both online and face to face delivery), utilise platforms such as Blackboard Learn (Blackboard Inc., 2018) and Moodle (Moodle Pty Ltd.,
2018) to connect teaching staff, students, and course resources. Additionally, this shift is being realised within school settings, which in the geographical context for this project includes the development of tools such as ‘OneSchool’ (Queensland Government Department of Education, 2018) for digital records management, curriculum planning, and reporting. Multi-user software applications such as Google Drive, Google Docs, OneDrive, and Dropbox have also been suggested as a means to promote collaboration between teachers and families of students with disabilities, with considerations to be made regarding the type, and availability of information shared through these channels (Riggleman & Buchter, 2017). The extent to which ICT applications might inform the development of potential solutions to improving supports for children with autism as they transition to school was considered in the development of this project.

**Summary of Project Aims and Research Questions**

There is an apparent need for research that addresses the challenges faced by children with autism as they transition into formal schooling. Ensuring general education teachers are well equipped to support the continued development of school readiness skills of these children is one possible approach. With a set of ESTs specific to supporting school readiness identified, the extent to which these are utilised and appropriate for use in mainstream classrooms, outside of a research context, is relatively unknown. Further, factors which impact their use in mainstream classrooms must also be considered. Being guided by implementation science, knowledge translation, and an understanding of evidence-based decision making, the current project sought to gain the knowledge necessary to inform the development of a possible solution to the challenge of supporting children with autism as they transition into formal schooling. The project was divided across three related research phases, addressing the following questions:
Phase One

1. What are general education teachers’ knowledge, use, and perceptions of social validity for ESTs which target school readiness skills in children with autism?

2. What sources of information are teachers accessing in selecting ESTs, and how trustworthy do they rate these sources?

3. What factors are associated with teachers’ knowledge, use, and social validity of ESTs?

Phase Two

4. What factors impact general education teacher selection and implementation of treatments to support students with autism?

5. What supports are available to general education teachers when working with students with autism?

Phase Three

6. Does facilitating the connection between settings, access to resources, and peer to peer knowledge sharing, through the development of a prototype online tool, have social validity according to key stakeholders involved in the transition to school for children with autism?
Chapter 3: Methodology

Chapter Overview

This chapter will provide information around the theoretical perspectives that guided the development of the project, outlining how decisions were reached during the conduct of the research. Further, this chapter will describe the methodological approach undertaken that will assist in explaining the manner in which the research was conducted.
Theoretical Foundations

The conceptualisation, development, and execution of this program of research were informed by several theoretical perspectives and frameworks, including acknowledgment of the right to education, child development theories, and knowledge translation.

**The right to education.** At its core, this project was underpinned by the belief that all children, including children with autism, deserve equal access to quality education. In Australia, the rights of persons with disabilities are outlined in the Disability Discrimination Act (DDA; Australian Government, 1992), as noted in Chapter 1. The DDA requires that no persons with a disability be discriminated against on this basis, underpinning their right to the same educational opportunities as their typically developing peers. To further clarify the role of all education and training providers, the Disability Standards for Education (Australian Government, 2005), herein referred to as the Standards, were created. The Standards outline three obligations of education providers: (a) consultation, ensuring that education providers understand the needs of students and their families; (b) making reasonable adjustments, to ensure that students can fully participate in their education; and (c) eliminating harassment and victimisation, ensuring systems are in place to prevent harassment or encourage reporting when it does occur (Australian Government, 2005).

The requirement of education providers to make reasonable adjustments, where necessary, to ensure that all children can fully engage and participate in their education is of most relevance to the current project. Reasonable adjustments can include physical alterations to an environment (e.g., changing the classroom layout to reduce distractions for students with autism), and modifications to curriculum and assessment plans (e.g., allowing a student to present an oral assessment to the teacher rather than to the whole class). Accessing any necessary
training (e.g., in autism or a specific EST) and support to ensure the child can fully participate in the classroom is also captured under the provision of reasonable adjustments. Despite outlining the requirements of education providers under the Standards, the extent to which legislation has resulted in the inclusion of children in mainstream settings is varied. For example, while research suggests that the majority of children with autism are educated in mainstream schools, this includes children who spend a large proportion of time in special education units within these settings (Australian Bureau of Statistics, 2015). Further, despite a commitment to ensuring that teachers are well-trained to meet the needs of students with disabilities (Council of Australian Governments, 2011), results of the Productivity Commission (2012) Schools Workforce report suggests that teachers in Australia are largely ill-equipped to provide appropriate educational adjustments to ensure that children with all disabilities, including autism, are receiving the best possible education. In this project, understanding the extent of teacher knowledge of available interventions to support children, and establishing a means to improve this was a central priority.

**Child development.** With a focus on positively influencing the lives of children with autism, the current project is underpinned by a theory of child development - the Ecological Systems Theory (Bronfenbrenner, 1992) - as described in Chapter 2. This theory suggests that children do not develop in isolation; rather, a number of environmental and contextual factors influence development. From this perspective, research examining the transition to school for children with autism and their development of school readiness skills must account for external factors influential during this period. As the microsystem, consisting of the child’s family, peers, and school environment, exerts the most direct influence on child development (Bronfenbrenner, 1992), research must take into account the role of teachers in supporting children with autism as they move to school. The current project was developed with a focus on working with teachers.
of students with autism in order to maximise opportunities for the development of skills found to be associated with a positive transition to, and experience of, school.

**Knowledge translation.** As outlined in Chapter 2, implementation science and knowledge translation can be viewed as largely overlapping fields of research, with a common goal of improving practice (e.g., of teachers) and contributing to positive outcomes of individuals (e.g., children with autism). For the purpose of this project, a knowledge translation approach was selected following the framework described below.

The uptake of identified ESTs in real-world settings, such as schools, often takes time and is met with several barriers (Graham et al., 2006), despite research identifying these as being appropriate for use with individuals with autism (see National Autism Center, 2015; Wong et al., 2015). This can often mean that students are missing out on these effective treatments, and alternatively, might be subject to high cost, well marketed, but ultimately ineffective treatments which do little to improve outcomes for students (Graham et al., 2006; T. Smith, 2005). Recognising this at a broader health level, much interest has been devoted to identifying means to close this ‘knowledge to action’ (KTA; Graham et al., 2006) gap. In response to this, Graham et al. (2006) created what has come to be known as the KTA Framework. The KTA framework, as illustrated in Figure 1, consists of both a knowledge creation cycle (inner funnel) surrounded by a related action cycle. While the framework distinguishes between the action and knowledge creation cycles and their associated phases, Graham et al. (2006) acknowledge that the dynamic nature of the KTA process, highlighting that each phase might occur at the same time, rather than sequentially, with the knowledge creation influencing action at any point during the process.

During knowledge creation, existing knowledge undergoes refinement at each stage of the funnel, starting at knowledge gathered through individual studies (knowledge inquiry) and
resulting in tools and guidelines for the use of knowledge (knowledge tools/products) (Graham et al., 2006). Knowledge tools developed in this space, which warrant consideration when working with students with autism, include large scale research reviews (see National Autism Center, 2015; Wong et al., 2015), online training modules and associated resources.

*Figure 1. Knowledge to action process*


https://journals.lww.com/jcehp/Abstract/2006/26010/Lost_in_knowledge_translation__Time_for__a_map__.3.aspx)
(National Professional Development Center, 2018; OCALI, 2018), and good practice guidelines
(Roberts et al., 2016), as previously mentioned. Acknowledging the significant extent of
information that has been produced through this knowledge creation cycle, the current project
sought to apply this existing knowledge through engagement in the action cycle to address the
research questions. The research project was divided into three sequential phases, each tackling
one aspect of the action cycle. With reference to Figure 1, Phase One sought to adapt knowledge
to the local context, Phase Two sought to investigate barriers, and facilitators to knowledge use
and Phase Three focused on selecting and tailoring interventions for implementation. These
action phases will be described in more detail below.

Worldview

The current project sought to develop a solution to a real-world issue: that children with
autism tend to experience more difficulties with transitions to school than their typically
developing peers. This outcome-oriented approach to research can be considered as falling
within a pragmatic worldview (Johnson & Onwuegbuzie, 2004; Patton, 1990). Pragmatism as a
philosophical movement is derived from the work of Dewey, Mead, James, and Pierce in the
early 20th Century (Cherryholmes, 1992). When adopting a pragmatic worldview, researchers are
offered a degree of freedom in the way in which research problem is addressed, with no single
philosophical perspective or method tied to this approach (Cherryholmes, 1992; Creswell &
Creswell, 2018).

Mixed Methods

Adopting a pragmatic foundation enables researchers to draw from multiple methods,
theories, and approaches to data collection, and is commonly associated with a mixed methods
research design. A primary assumption of mixed methods research is that the utilisation of both
quantitative and qualitative methods will lead to a greater understanding of the research problem than either approach used alone (Creswell & Creswell, 2018). While examples of mixed methods research can be traced back to sociology and anthropology in the early 1900s, it is only recently that this approach has been recognised as a distinct research methodology (Johnson, Onwuegbuzie, & Turner, 2007). Despite debate arising regarding the legitimacy of mixed methods approaches in combining quantitative and qualitative approaches to data collection (Johnson et al., 2007), a defining feature of mixed methods research is the ability to highlight the strengths and minimise the weaknesses of these approaches when used in combination (Johnson & Onwuegbuzie, 2004; Johnson, Onwuegbuzie, & Turner, 2007). Further to this, it has been argued that the eclectic nature of mixed methods research, including the ability to draw from multiple theoretical perspectives, is an important aspect of this approach (Greene, 2008; Johnson et al., 2007).

For this project, utilising multiple methods was deemed essential in understanding the current practice of teachers and capturing the complexities around supporting students with autism in the classroom. Quantitative research methods were used to determine teacher knowledge and use of ESTs, providing an understanding of the current state of practice. Qualitative methods were then used to build on this knowledge, determining barriers to the use of ESTs in classroom settings to inform the development of and gather feedback on, a prototype online tool to support teachers during transitions.

**Overview of Research Methods**

The KTA framework helped inform the design of the current project, which sought to build and expand on existing knowledge creation efforts, further refining these tools as the knowledge is applied through the action cycle. Following identification of the research problem
and a review of the relevant knowledge, the project was divided into three phases to address the aims, and associated research questions, presented in Chapter’s 1 and 2. The rationales, methods, results, and interpretation of findings for each phase are presented in the following chapters as published and unpublished manuscripts. However, given the word-limit constraints within manuscripts, the following provides greater information on the rationale for each study within the overall design of the project, including key methodological considerations and decisions.

**Phase One**

The first phase involved surveying teachers to gain an understanding of the current state of EST knowledge and use in Australian classrooms by general education teachers. Specifically, the following research questions were addressed:

1. What are general education teachers’ knowledge, use, and perceptions of social validity for ESTs which target school readiness skills in children with autism?
2. What sources of information are teachers accessing in selecting ESTs, and how trustworthy do they rate these sources?
3. What factors are associated with teachers’ knowledge, use, and social validity of ESTs?

**Participants.** Participants for Phase One were general education teachers of the foundation year. Although transitions occur each school year, the decision was made to target foundation year teachers as this first experience of formalised learning for children with autism is likely to be vastly different from previous learning environments they have been exposed to (e.g., early intervention settings, home, playgroups). While previous research has focused largely on special education teachers and their use of autism-specific treatments (see Hess et al., 2008; Segall & Campbell, 2012), it was important to target general education classroom teachers in this
research with data suggesting that children with autism are primarily educated in mainstream school settings (Australian Bureau of Statistics, 2015). Teachers recruited were required to be currently teaching or had previously taught, a child with autism. Using G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007) a sample size of between 120 and 200 participants was calculated as necessary to detect medium to large statistically significant effects across the analyses. Due to participant drop out across the survey, data from 155 teachers were analysed, and participant characteristics are outlined in the following chapter (Chapter 4). Social media were selected for use in recruitment as it enabled access to a large participant pool, allowing the survey to be distributed to teachers across Australia with little, to no, cost. The identification of teacher-specific Facebook groups further ensured that the details of the study were reaching our target population. A flyer (Appendix A), outlining the details of the study and the web-link for access, was shared to three Facebook pages. Additionally, the research team identified relevant individuals (e.g., teachers, academics in education) in their professional networks who agreed to distribute details of the study. Prior to completing the survey participants were required to read the Participant Information Sheet (Appendix B) and Consent Form, indicating consent by continuing to the survey.

**Approach to data collection.** Phase One was guided by the “adapting knowledge to the local context” (Graham et al., 2006, p. 20) step of the action cycle. This step seeks to determine whether the available knowledge, in this case, identified ESTs supporting school readiness skills in children with autism, is valuable, useful, and appropriate to the local context in which it will be used (Graham et al., 2006). As highlighted in Chapter 4, despite significant research efforts to identify ESTs specific to supporting school readiness skills in young children with autism, there is a gap in the research highlighting the extent to which these are used in mainstream school
settings. Research in early intervention (e.g., Paynter et al., 2017; Paynter & Keen, 2015) and special education (Carter et al., 2011; Hess et al., 2008) suggests that both ESTs and non-ESTs are used in practice. As general education teachers are less likely to have specialised knowledge and training in disabilities compared to special education and early intervention staff, the generalisability of these findings to a population of general education teachers might, therefore, be limited. Further, as the context of the classroom is likely different from that within early intervention services, or withdrawal support/small group support provided by special education teachers, it was also imperative to determine the extent to which teachers believed these treatments were appropriate to mainstream classroom environments. Specifically, Phase One sought to determine whether a sample of general education teachers had knowledge of, used, and considered the identified ESTs to be acceptable for use in school settings. With a view to identifying potential avenues to enhance knowledge and use of ESTs, information regarding sources teachers were accessing when working with students with autism was also investigated.

Materials and measures. A 21-item online survey (Appendix C) was developed to address the research questions outlined in Chapter 2: (1) What are general education teachers’ knowledge, use, and perceptions of social validity for ESTs which target school readiness skills in children with autism; (2) What sources of information are teachers accessing in selecting ESTs, and how trustworthy do they rate these sources, and; (3) What factors are associated with teachers’ knowledge, use, and social validity of ESTs. The survey consisted of a short demographics survey, an adapted Intervention Practices Scale (Paynter et al., 2016; Paynter & Keen, 2015) used to determine current knowledge, use, and perceived social validity of ESTs, and an adapted Sources of Information Scale (Carlon, Stephenson, & Carter, 2015), to determine the sources teachers used when working with students with autism. These items are discussed in
more detail in Chapter 4. The survey was administered using the SurveyMonkey online tool, with participants accessing the survey via an anonymous weblink.

As the purpose of Phase One was to describe the current practices of general education teachers, surveys were selected as the most appropriate research method to achieve this aim. Surveys offer the advantage of capturing a large target population, whilst being an effective and inexpensive means of achieving this, particularly when utilising online survey platforms (Cohen, Manion, & Morrison, 2017). However, this approach is not without limitations. Among these limitations is the chance for participant bias in their self-report, resulting in participants either under or over-reporting behaviours and low response rates or incomplete survey responses (Cohen et al., 2017). Further, the use of online surveys can exclude members of the target population if they do not have access to the internet (Cohen et al., 2017). Incomplete responses were observed in Phase One, with participants dropping out at multiple time points during the survey. Further, without additional observations of teachers in practice, we are unable to determine the extent to which teachers self-reported use of the ESTs was reflective of actual use. These limitations contributed, in part, to the decision to utilise a qualitative approach in Phase Two to gain a richer understanding of the barriers and facilitators to EST use.

**Approach to data analysis.** To answer the research questions, Phase One employed quantitative analysis, specifically the calculation of descriptive statistics, t-tests, and a series of one-way ANOVAs. To reduce the risk of family-wise error, all ANOVA post-hoc comparisons used the Tukey adjustment. As noted above, participant drop out is a common limitation of survey research. Accordingly, an *a priori* decision was made to use list-wise deletion of missing data if data were determined to be missing completely at random. A detailed overview of the data analysis is provided in Chapter 4.
Phase Two

Phase One provided insight into the current situation regarding knowledge and use of the selected ESTs. Consistent with the KTA cycle, the next step was the address the following question: What factors impact general education teacher selection and implementation of treatments to support students with autism?

Participants. The target population for this phase of the research were teachers who were currently teaching one or more children with autism. A decision was made to recruit participants through the identification of students who were exiting four sites of a local early learning and intervention program to transition into a mainstream classroom the following year. The service delivers a comprehensive curriculum, following the Australian Good Practice Guidelines (Prior & Roberts, 2012), and aims to support preschool-aged children with ASD in their social, communication, and cognitive development (Paynter, Riley, Beamish, Scott, & Heussler, 2015; Paynter, Scott, Beamish, Duhig, & Heussler, 2012). As a standardised transition package is offered to all children exiting the service, including the provision of an exit report and visits with a staff member to the child’s new school, teachers in the target population were expected to have had similar experiences of transition. Details regarding the study were distributed to 32 families who had a child exiting the service in 2016. After reading the Participant Information Sheet (Appendix D), 18 families provided consent and shared details regarding their children’s new school placements. School principals were then contacted in early 2017 to determine their willingness to participate in the project, with consent received from 12 principals after reading the Participant Information Sheet (Appendix E). Following this, 11 foundation year teachers were identified and agreed to participate after reading the Participant Information Sheet (Appendix F), with two schools requesting that additional staff members would be interested in
providing feedback. These were a Head of Special Education and Services (HOSES) and a special education support teacher. The characteristics of the participants are described in detail in Chapter 5. While there are no pre-determined rules for selecting sample size when using qualitative approaches to data collection, Creswell and Creswell (2018) have suggested that between three and 10 participants is often appropriate. These guidelines were taken into consideration when recruiting participants.

**Approach to data collection.** Phase Two was guided by the “assess barriers to knowledge use” (Graham et al., 2006, p. 20) of the KTA framework. The identification and assessment of barriers to knowledge use is a critical step in knowledge translation, as it equips those who wish to bring about change with the necessary information to work towards this change (Graham et al., 2006). In addition to identifying any potential impediments to knowledge translation, facilitators of change are also acknowledged during this stage (Graham et al., 2006). As findings from Phase One ultimately highlighted that teachers were using a combination both ESTs and non-ESTs, it was important to determine how and why they selected treatments for use and what supports were available to teachers when working with this population (i.e., investigating barriers and facilitators to use). Therefore, a qualitative approach was adopted for Phase Two with the decision made to conduct a series of one on one interviews with teachers of students with autism in the foundation year.

**Materials and measures.** In adopting a qualitative approach, a semi-structured interview guide (Appendix G) was developed for the study. Semi-structured interviews involve the use of pre-determined, open-ended questions, which enable the interviewer to cover a specific range of topics. A distinct benefit of this approach is its ability to provide interviewers with flexibility in the format with which the interview is conducted, allowing questions to be covered in any order
and the ability to stray from the ‘script’ when needed (Cohen et al., 2017). As such, this interviewing technique allows interviewers to gather rich data on both broad and more specific concepts while allowing ease of comparisons across transcripts during data analysis (Cohen et al., 2017). The semi-structured interview guide developed consisted of 14 open-ended questions which broadly examined teachers’ knowledge of the student, the treatments (referred to as strategies) they were currently using, and the supports available to teachers of students with autism. In addition to understanding the barriers and facilitators to the use of ESTs by teachers of students with autism, the interview guide was also developed to elicit responses from teachers with regards to improving supports provided to teachers as children with autism transition into school.

**Approach to data analysis.** In line with the qualitative approach to data collection, a decision was made to employ Thematic Analysis to analyse participant interviews. Thematic analysis is one of the foundational methods of qualitative analysis, with the generation of themes to develop meaning across the data common among various methods of qualitative approaches (Braun & Clarke, 2006; Holloway & Todres, 2003). Unlike many qualitative approaches to data analysis, thematic analysis is not bound to a particular epistemological or theoretical viewpoint and can instead be applied across a number of theoretical approaches (Braun & Clarke, 2006), consistent with the pragmatic approach adopted for this project. Through the application of thematic analysis, patterns or themes within the data were identified and reported. Unlike content analysis, where researchers seek to quantify statements made by participants, thematic analysis allows researchers to give equal consideration to all views expressed by participants. As such, themes are not required to be produced from the most commonly occurring statements, and instead capture the essence of the data in relation to the overall research questions (Braun &
Clarke, 2006). The six steps outlined by Braun and Clarke (2006) were followed for Phase Two and are described in more detail in Chapter 5.

**Phase Three**

Phase Two was successful in identifying numerous factors which influence the use of ESTs, in addition to the current supports available to teachers as a child with autism transitions into the foundation year. With these in mind, the goal of Phase Three was to develop an alternative means to providing support to teachers during the transition to school and gather feedback regarding its social validity from key stakeholders in the transition to school for children with autism. The specific research question was: Does facilitating the connection between settings, access to resources, and peer to peer knowledge sharing, through the development of a prototype online tool, have social validity according to key stakeholders involved in the transition to school for children with autism?

**Participants.** The target population in Phase Three were individuals involved in the transition to school for children with autism. As the focus was on supporting children as they entered the foundation year, a decision was made to focus on individuals involved in transition at the ‘new’ school setting. As such, the following groups of participants were recruited; parents of children with autism (n = 5), including one parent who was herself autistic, teachers of the foundation year (n = 7), Heads of Special Education Services (HOSES, n = 4), and special education teachers (n = 4). As mentioned previously, Creswell and Creswell (2018) suggestions around sampling in qualitative research were adopted when recruiting participants across groups. For a full description of participant characteristics, please see Chapter 6. A purposive sampling method was used, utilising professional networks, to ensure recruitment of participants across the identified groups who were ideally placed to help answer the research question. As our primary
aim in Phase Three was to determine the social validity of a prototype online tool aimed at supporting teachers of students with autism as children transition to school, it was important to gather multiple perspectives from individuals typically involved in the transition to school. Participants were first contacted by email to determine their interest in the project and were provided with the Participant Information Sheet (Appendices H, I, and J).

**Approach to data collection.** Phase Three was guided by the “select, tailor and implement interventions to promote the use of knowledge” (Graham et al., 2006, p. 20) step of the KTA framework. During this stage of the action cycle, researchers are most concerned with the dissemination of knowledge, establishing methods through which knowledge awareness, and implementation of the knowledge, can be increased in the target population (Graham et al., 2006). Utilising the data collected in Phases One and Two of the research, Phase Three aimed to provide a means to increase support for teachers of students with autism during the transition process. Specifically, a prototype online tool was developed, harnessing three key factors, and its perceived social validity explored through interviews with key stakeholders involved in the transition process.

**Materials and measures.**

**User stories.** To determine the required components of the prototype online tool, a series of user stories were developed based on comments expressed during interviews in Phase Two and informal conversations with professionals in early intervention and education known to the research team. Developing user stories are a method used, most commonly in IT, to determine the requirements of a particular tool such as an app or software (Lucassen, Dalpiaz, van der Werf, & Brinkkemper, 2016). User stories generally follow the format, “As a (role), I want (goal), [so that (benefit)]” and have been found to be beneficial to the development of the ‘right’
software for end users (Lucassen, et al., 2016, p. 205). Following the above format, eight user stories were generated (see Appendix K). User stories were then reviewed to determine the extent to which they could be operationalised in the prototype online tool. Some user stories (e.g., which staff member conducts transition visits), while desirable, were considered outside the scope of the current project and were not included in the online tool. Those which were both desirable, and considered achievable, were targeted and utilised in the development of the online tool. These user stories centred around three factors; (a) the need for better connection and communication between settings for students with autism transitioning to school, (b) the need for better access to resources and training that are most relevant during the transition to school, and (c) the importance of having supportive peer networks. These factors were then operationalised into components of the prototype online tool.

**Development of online tool and sample resources.** The Blackboard Learn (Blackboard Inc., 2018) software was selected to host the prototype online tool. Blackboard Learn is frequently used by higher education institutes to provide a connected learning experience to students enrolled, enabling opportunities for blended learning (i.e., face to face and online), and distance education (Blackboard Inc., 2018). The ability to connect users across different settings was a necessary component of the prototype online tool, which sought to connect teachers across schools, and with previous service providers. Further Blackboard Learn software provides a secure platform for the transfer of information between users enrolled, an important consideration when sensitive information, such as therapy reports, could be stored within the proposed tool. The online tool centred around three components; connections between settings, access to resources, and peer to peer networks, as described above. As such, the prototype online tool had three corresponding elements which will be described below.
To facilitate connections between a child’s current school and a staff member at their previous service (e.g., early intervention service, kindergarten) a series of closed membership pages were created within the prototype online tool. To access closed pages, group members (i.e., the child’s current and former teachers) would be enrolled by the site administrator. Within these closed pages, members would be provided with a direct line of contact with one another, with the option to upload relevant reports, with necessary permissions granted, to the group.

To facilitate access to relevant and high-quality resources, an open access page was created which could be entered by all users (e.g., teachers, parents, previous service providers) enrolled in the online tool. Sample resources were created and included information about working with children with autism (school readiness skills that might need to be supported, local services that provide support, classroom tips), goal setting for students with autism, highlighting the importance of EBP, and tips on matching ESTs to target behaviours. Providing access to resources in one easy to access location was proposed to reduce the time needed for teachers to seek out information to support their work with students with autism while increasing their confidence in the quality of information being accessed (i.e., adherence to EBP).

Finally, to facilitate supportive peer networks a second closed discussion group was created for current teachers only. This closed discussion group encouraged the sharing of experiences, resources, and recommendations to establish an online community of teachers working with students with autism. The discussion board would be monitored by the site administrator (proposed as the author for the purpose of the study) to ensure that all posts met community guidelines (e.g., no identifying information of children/school shared, posts in line with emphasis on EBP and use of ESTs), with the site administrator also posting ‘talking points’
to stimulate discussion between members. An example of the layout of the prototype online tool can be seen in Appendix L.

**Semi-structured interview guide.** Semi-structured interviews, using a semi-structured interview guide, were conducted to answer the research question. The semi-structured interview guide allowed a flexible approach to guiding interviews, enabling opportunities to tailor questions to suit the specific roles of each group of participants in the transition process, and thus gather their different perspectives on the prototype online tool. The three factors, as reflected in the user stories, were first described to participants, followed by a description of how these factors were operationalised into each component of the online tool. Participants were then asked to comment on the suitability of each component’s inclusion in an online tool to support transitions, whether it was considered useful, any recommendations for improving the method with which it was included in the prototype, and any further suggestions for refining the online tool. Please see Appendices M for a copy of the semi-structured interview guideline.

**Approach to data analysis.** The Framework Method of analysis was employed in Phase Three. The Framework Method of managing qualitative data, originally developed for use in social policy research in the 1980s (NatCen Social Research, 2018), is a frequently used analytic method in health research (Gale, Heath, Cameron, Rashid, & Redwood, 2013). The systematic approach of the Framework Method enables researchers to organise and manage large data sets through the creation of themed matrices (see Appendix N) (NatCen Social Research, 2018). Matrices are designed so that each case (usually a participant) can be compared across each code generated through analysis (Gale et al., 2013; NatCen Social Research, 2018). As the Framework Method is not tied to a particular philosophical or theoretical approach (Gale et al., 2013), it was in line with the pragmatist approach adopted in this project. The development of codes and
themes was largely deductive in nature, being guided by the research questions around the perceived social validity of the prototype online tool. For a detailed overview of the stages of data analysis, please see Chapter 6.

Summary

The purpose of this chapter was to present the theoretical framework underpinning the research process and to describe the methodological approach taken. As demonstrated above, the mixed methods approach adopted in this project was essential in addressing the research questions. The results of each phase are presented in three separate journal articles in Chapters 4, 5, and 6, ahead of a general discussion in Chapter 7.
Chapter 4: Phase One

Statement of contribution to the co-authored published paper

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to this paper involved:

Designing the study, development of the survey tool, ethics approval, recruitment, distribution of the survey, data analysis, and leading the writing of the manuscript including the complete first draft and subsequent revisions based on co-author and reviewer feedback.

(Signed) Signature removed

Rhylee Sulek

(Countersigned) Signature removed

Primary Supervisor: Associate Professor David Trembath
Empirically supported treatments for students with autism: General education teacher knowledge, use, and social validity ratings

Rhylee Sulek1, David Trembath1, Jessica Paynter1, Deb Keen2

1Menzies Health Institute Queensland, Griffith University

2Autism Centre of Excellence, Griffith University

Contact Details:
Rhylee Sulek, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia
David Trembath, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia
Jessica Paynter, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia
Deb Keen, Autism Centre of Excellence, Griffith University, Brisbane, Australia.

Corresponding author:
Rhylee Sulek
Email: R.Sulek@griffith.edu.au

This is the final version submitted to Developmental Neurorehabilitation, accepted on 16 September 2018. The published version can be accessed at
Abstract

Objective: To examine teachers’ knowledge and use of empirically supported treatments (ESTs) for children with autism spectrum disorder (ASD), and the extent to which they deem them socially valid in general education settings.

Method: 155 general education teachers completed an online survey examining knowledge, use, and perceived social validity of ESTs targeting school readiness skills. Sources of information accessed and the relationship of knowledge, use, and social validity with demographic variables was investigated.

Results: Teachers reported knowledge of, and were using, all ESTs. ESTs were used more frequently than non-ESTs. Knowledge, use, and social validity of ESTs were strongly associated. Teachers reported accessing a range of sources of information, with varying degrees of trust placed in these sources.

Conclusion: Teacher knowledge of available ESTs for children with ASD is linked to their use. Increasing awareness of social validity of ESTs, and how they can be successfully translated into classroom settings will influence uptake.

Key words:

ASD, evidence-based practice, education, empirically supported treatments, social validity, teachers
1.0 Introduction

Autism spectrum disorder (ASD) is a lifelong neurodevelopmental disorder in which individuals present with impairments in social-communication skills and restricted and repetitive patterns of behaviours. In Australia, children with ASD are largely educated in general education classrooms. In fact, results of a recent survey conducted with 1500 families of children with ASD found this to be true for 73% of children in the sample. With such a high proportion of children with ASD being educated in these environments, and the long hours spent in schools daily, general education teachers are well placed to support the development of a range of skills in these students. In Australia, compulsory schooling is required for children aged between five and six years to 16 years, with the first year of schooling, formally known as the foundation year, available to children turning five by June 30 of that year (April 30 for Victoria). While not compulsory in all states, the foundation year acts as an introduction to school and helps children develop skills (e.g., literacy, numeracy) prior to their entry into year one. With a reported 31% of children with ASD educated in general education settings not receiving additional school funded support in the classroom (see ref. 2) it is crucial that teachers are equipped with the tools and resources to best support their development. This is particularly salient as children transition into the foundation year, with early school experiences for all children thought to impact later development and well-being.

As recognised in ecological theories, child development is influenced by the cultural and environmental systems in which the child exists. These environmental systems include influences from the school, peers, and teachers with whom the child will have direct contact. This fact further reinforces the previously mentioned notion that teachers are well placed to support the development of a range of skills in children with ASD as they transition to school.
The emphasis on equipping teachers to best support children with disabilities is outlined in a 2012 report by the Productivity Commission into Australia’s Schools Workforce. The report specified that preparing teachers to respond to the needs of children with disabilities is ‘to the benefit of all children’ (p.262), a sentiment that is reflected in both Every Student Succeeds Act (ESSA) and Individuals with Disabilities Education Improvement Act (IDEIA). In supporting students with ASD, teachers will benefit from knowledge and use of a number of interventions identified in research as demonstrating positive outcomes for this population.

1.1 Identifying empirically supported treatments for the transition to school

In the field of education several terms such as ‘best-practice’, ‘recommended practice’, ‘evidence-informed practices’, and ‘research-based practices’ are used to describe teaching practices which have at least preliminary research evidence. Further, the term evidence-based practice (EBP) has been used to describe both interventions that have demonstrated efficacy and clinical utility, and a decision-making framework. This framework involves users (e.g. teachers, psychologists, speech pathologists) integrating the best available research, with their own clinical or professional experience, while considering client characteristics to deliver high quality services to clients. For this paper, we use the term empirically supported treatments (ESTs) to refer to effective interventions (here on referred to as effective treatments), and the term EBP to describe the decision-making framework. It is important to highlight that although some overlap might occur between ‘best-practices’ and ‘research-based practices’ in education, and ESTs in allied health and medicine, these ‘research-based practices’ are typically not subject to the same level of rigor for determination as ESTs.

In the field of ASD research, substantial work has been done to identify ESTs for use with this population, which have the potential to be implemented in education settings. Drawing
on the findings of the National Professional Development Centre (NPDC) review of available ASD treatments, Fleury et al. identified a subset of ESTs with the most relevance to children starting school (five to six years). These ESTs largely target a group of skills or behaviours commonly referred to as ‘school readiness’ skills. Reduced school readiness might be identified in children with ASD as they transition to school, with acquisition of these skills impacted by their unique characteristics. Early definitions of school readiness skills identify these as the critical or functional skills which help to prepare children for a range of environments, such as school; or describe them as the pre-requisite skills which precede acquisition of academic skills. School readiness skills can be considered preparatory and ideal to have prior to entry into school however, as mentioned, this may not be the case where students are identified as having a disability such as ASD.

Fleury et al. further defined these school readiness skills across four categories: classroom behaviour (e.g. following directions), social-communication and social interaction (e.g. requesting), and challenging behaviours (e.g. refusal to participate). For the complete list of ESTs identified in Fleury et al. please see Table 1. The NPDC developed online training modules following their review (see ref. 26), with a focus on providing educators with step-by-step guides around using ESTs with learners with ASD. Further, these free modules can contribute to ongoing professional development requirements of educators. Despite these efforts to highlight available ESTs, and governmental emphasis on the use of treatments that are based on research evidence (see refs. 12 and 27), little is known about the uptake of these treatments.
Table 1

*Treatments targeting school readiness skills identified in Fleury et al.\textsuperscript{24} and definitions of practices used*

<table>
<thead>
<tr>
<th>Treatment Name</th>
<th>Cat.</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antecedent-based intervention</td>
<td>EST</td>
<td>Arrangement of events or circumstances that precede the occurrence of an interfering behaviour and designed to lead to the reduction of the behaviour.</td>
</tr>
<tr>
<td>Differential reinforcement*</td>
<td>EST</td>
<td>These behavioural bases strategies focus reinforcement or positive consequences for behaviours that are incompatible with, alternative to, or lower rates of interfering behaviours in order to reduce its occurrence and replace with more functional behaviours.</td>
</tr>
<tr>
<td>Discrete trial teaching*</td>
<td>EST</td>
<td>One on one instruction over massed trials aimed at teaching skills/behaviours systemically.</td>
</tr>
<tr>
<td>Exercise*</td>
<td>EST</td>
<td>Promotion of physical activity in order to reduce challenging behaviours and increase appropriate behaviours.</td>
</tr>
<tr>
<td>Functional behaviour assessment*</td>
<td>EST</td>
<td>Collection of information about a challenging behaviour in order to learn the underlying function or purpose.</td>
</tr>
<tr>
<td>Functional communication training*</td>
<td>EST</td>
<td>Replacement of challenging behaviour that is driven by communication needs, with more appropriate communication which accomplishes same target.</td>
</tr>
<tr>
<td>Modelling</td>
<td>EST</td>
<td>Demonstration of desired target behaviour that results in imitation of the behaviour by the learner and that leads to the acquisition of the imitated behaviour. Modelling is often combined with other strategies such as prompting and reinforcement.</td>
</tr>
<tr>
<td>Music Therapy</td>
<td>USP</td>
<td>Songs and music used as a medium through which student’s goals may be addressed.</td>
</tr>
<tr>
<td>Parent-implemented intervention</td>
<td>EST</td>
<td>Parents provide individualised intervention to their child to improve/increase a wide variety of skills and/or to reduce interfering behaviours. Parents learn to deliver instructions in their home and/or community through a structured parent training program.</td>
</tr>
<tr>
<td>Peer-mediated instruction and intervention</td>
<td>EST</td>
<td>Typically developing peers interact with and/or help children and youth with ASD to acquire new behaviour, communication and social skills by increasing social and learning opportunities within natural environments. Teachers/service providers systematically teach peers strategies for engaging children and youth with ASD in positive and extended social interactions in both teacher-directed and learner-initiated activities.</td>
</tr>
<tr>
<td>Prompting</td>
<td>EST</td>
<td>Verbal, gestural, or physical assistance given to learners to assist them in acquiring or engaging in a targeted behaviour or skill.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Prompts</td>
<td>Generally given by an adult or peer before or as a learner attempts to use a skill.</td>
<td></td>
</tr>
<tr>
<td>Reinforcement</td>
<td>An event, activity, or other circumstance occurring after a learner engages in a desired behaviour that leads to the increased occurrence of the behaviour in the future.</td>
<td></td>
</tr>
<tr>
<td>Response interruption and redirection</td>
<td>Introduction of a prompt, comment, or other distracters when an interfering behaviour is occurring that is designed to divert the learner’s attention away from the interfering behaviour and results in its reduction.</td>
<td></td>
</tr>
<tr>
<td>Scripting</td>
<td>A verbal and/or written description about a specific skill or situation that serves as a model for the learner. Scripts are usually practiced repeatedly before the skill is used in the actual situation.</td>
<td></td>
</tr>
<tr>
<td>Self-management</td>
<td>Instruction focusing on learners discriminating between appropriate and inappropriate behaviours, accurately monitoring and recording their own behaviours, and rewarding themselves for behaving appropriately.</td>
<td></td>
</tr>
<tr>
<td>Technology-aided instruction and intervention</td>
<td>Instruction or interventions in which technology is the central feature supporting the acquisition of a goal for the learner. Technology is defined as “any electronic item/equipment/application/or virtual network that is used intentionally to increase/maintain, and/or improve daily living, work/productivity, and recreation/leisure capabilities of adolescents with autism spectrum disorders” (Odom, Thompson, et al., 2013).</td>
<td></td>
</tr>
<tr>
<td>Time delay</td>
<td>In a setting or activity in which a learner should engage in a behaviour or skill, a brief delay occurs between the opportunity to use the skill and any additional instructions or prompts. The purpose of the time delay is to allow the learner to respond without having to receive a prompt and thus focuses on fading the use of prompts during instructional activities.</td>
<td></td>
</tr>
<tr>
<td>Touch Therapy</td>
<td>Systematic touch or massage.</td>
<td></td>
</tr>
<tr>
<td>Video-modelling</td>
<td>A visual model of the targeted behaviour or skill (typically in the behaviour, communication, play, or social domains), provided via video recording and display equipment to assist learning in or engaging in a desired behaviour or skill.</td>
<td></td>
</tr>
<tr>
<td>Visual supports</td>
<td>Any visual display that supports the learner engaging in a desired behaviour or skills independent of prompts. Examples of visual supports include pictures, written words, objects within the environment, arrangement of the environment or visual boundaries, schedules, maps, labels, organization systems, and timelines.</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Cat. = category, EST = empirically supported treatment, USP = unsupported practice*

Definitions were taken from ref. 23

* indicates where a definition was modified from what appears in ref. 23
1.2 Teachers’ knowledge and use of empirically supported treatments

There is a dearth of information on general education teacher uptake of ESTs. However, a small number of studies conducted with special education teachers might provide insight into the extent to which education professionals utilise ESTs. Carter et al.\textsuperscript{28} surveyed a population of Australian special school educators and found that while many ESTs were being implemented in classrooms, several non-ESTs (e.g., perceptual motor programs) were being used at least once a week by approximately half the population surveyed. Similarly, mixed results were found by Borders et al.\textsuperscript{29} in their investigation of familiarity and use of ESTs by special educators of children with hearing impairments and a comorbid diagnosis of ASD. Familiarity with ESTs ranged between 20-100\%, however for 16 ESTs that were rated as familiar to teachers, less than half of these respondents reported using these in the classroom. A further study by Hess et al.\textsuperscript{30} surveyed both special education and general education (17\% of sample) public school teachers in one American state. Hess et al.\textsuperscript{30} reported that less than 10\% of the treatments used by participants were classified as an EST, at the time of the study.

While the available research with special education teachers suggests that both ESTs and non-ESTs are being utilised, fundamental differences in the pre-service training received by special educators, and differences in the settings and capacity with which they support students with ASD, might limit the generalisability of these findings to general educators. For example, in Australia, special education teachers are required at a minimum to hold an undergraduate degree in teaching which a major in special education, with many states requiring further postgraduate training. General educators who do not receive this additional training are likely to be less familiar with ESTs for students with a disability. Further, while special education teachers might be employed in general education schools, the manner in which they provide support to students
with additional needs in the classroom differ from that of a general education teacher. For example, a special education teacher providing small group and one on one instruction will likely have more opportunities to implement ESTs compared to the general education classroom teacher. Although the research with special education teachers does begin to shed some light on the current awareness and uptake of these ESTs, the differences in training and context highlight the need for further research with general education teachers.

Similarly, evidence from early intervention providers within Australia has indicated that staff surveyed used a combination of both ESTs and non-ESTs, however ESTs were implemented more frequently overall compared to non-ESTs.\textsuperscript{31, 32} Paynter et al.\textsuperscript{32} also highlighted the importance of understanding the sources of information professionals draw from, with the potential for trusted sources to relay both inaccurate and accurate information regarding ESTs. In addition to the research reviews and AFIRM modules discussed above, good practice guidelines are available in early intervention which provide some guidance for teachers (see refs. 33 - 35). The extent to which these sources are utilised by teachers and educators more broadly has, however, received little attention. Personal factors, such as experience and training, might also be significant in determining teachers’ awareness and uptake of ESTs and similarly deserves attention.\textsuperscript{32} The literature in special education and early intervention appears to suggest that despite the identification of ESTs, teachers continue to use a combination of both ESTs and non-ESTs in their classrooms, however this is yet to be investigated in general education settings. The disconnection that exists between available ESTs and their implementation in education settings appears to reflect the research to practice gap that is frequently cited in ASD research\textsuperscript{36, 37} and provides an opportunity for investigation in general education settings when seeking to improve teachers’ ability to support students with ASD.
1.3 Social validity as a barrier to EST uptake

A possible explanation for the disconnection cited above is the perceived social validity of ESTs for education settings. Social validity refers to the acceptability of the goals, procedures and outcomes of interventions. As Greenway et al. emphasized, increasing awareness around the perspectives of teachers, and the influence of the context in which they work, is important in understanding their use or non-use of ESTs. With a lack of ‘fit’ between available ESTs and students cited as a barrier to uptake (see ref. 43), more information on social validity of ESTs is warranted. Callahan et al. in their research surveying special education teachers, parents, and school administrators to identify the social validity of specific components (e.g. use of individualised programming, use of reinforcement) of public school ASD programs, reported high ratings of components across the sample. While this is encouraging, increased efforts to evaluate and disseminate social validity findings in research are needed, with less than 27% of articles included in the NPDC and National Standards Project (NSP) reviews, reporting this outcome (see ref. 39).

1.4 Research aim and questions

EST use in general education settings has the potential to benefit students with ASD, and their use by teachers is supported by governmental initiatives (see refs. 12 and 27). Unfortunately, with limited research in the area, it is difficult to ascertain the current knowledge and use of ESTs by teachers in these settings. Further investigation is warranted, as the use of non-ESTs is a drain on resources at best, and harmful to children at worst. As such, the aim of this study was to investigate the knowledge, use, and perceived social validity of the most recently identified ESTs that target school readiness outcomes in a sample of Australian general education teachers, teaching the foundation year of school. ESTs targeting school readiness skills
were selected, as previously mentioned, due to their potential to influence child outcomes during the critical transition to school period. The following research questions were addressed:

1. What is general educations teachers’ knowledge, use, and perceptions on social validity for ESTs which target school readiness skills in children with ASD?

2. What sources of information are teachers accessing in selecting ESTs and how trustworthy do they rate these sources?

3. What factors are associated with teachers’ knowledge, use, and perceptions regarding the social validity of ESTs?

Based on previous research (see refs. 31 and 32) it was hypothesised that greater knowledge of ESTs would be related to increased use. It was further hypothesised that greater knowledge and use of ESTs would be associated with increased ratings of social validity.

2.0 Method

2.1 Design

The study was conducted with the approval of the Human Research Ethics Committee of the authors’ University (2016/296). We employed a survey methodology, with a sample of Australian general education foundation year teachers to answer our research questions. The online survey was created and completed using the SurveyMonkey software, with data collected over a period of three months, during terms two and three of the school year.

2.2 Participants and procedure

Five organisations and groups (private teacher groups, teachers’ unions/ federations) on the social media site Facebook were contacted to determine their willingness to distribute the online survey. Two private teacher groups agreed to distribute the link to members. Additionally, individuals within the authors professional networks agreed to distribute surveys. As a generic
link was used to access the surveys, we were unable to determine the proportion of participants from each recruitment avenue. After accessing the survey via the link provided, participants first read the information sheet, and were required to indicate consent before proceeding. To be eligible for inclusion in the study, teachers were required to be teaching in a general education, foundation year classroom. Teachers were also required to be currently teaching or having previously taught a child with ASD. Participants then completed the survey which took approximately 20 minutes. All survey responses were anonymous.

The demographic information for 155 participants is presented in Table 2. Most participants were female (96.10%), between the ages of 36-50 years who taught a mixture of foundation year only (81.90%) and foundation year and year one (28.10%) classes. Most respondents had completed a university degree (Bachelor qualification) and had been working as a teacher for over 20 years. Of those surveyed, 91.60% were teaching a child with ASD at the time of the survey, with the remaining participants reporting having previously taught a child with ASD. Overall, participants primarily taught across the state of Queensland Australia (population of approximately 4,985,504)\(^47\), at schools in metropolitan locations, and worked in government funded general education schools. The proportions of participants in each setting - mainstream, independent, and catholic (separate education system in Australia) - were consistent with statistics which highlight that more children are educated in government funded schools than non-government schools (catholic and independent).\(^48\) Participants varied in the number of children they had taught with ASD, with 41.9% reporting having taught between five and 10 children with ASD throughout their career (37.4% had taught over 10, and 20.6% less than five). Most participants (82.6%, \(n = 128\)) reported accessing at least one form of training specific to ASD during their careers, with the most commonly accessed training being multiple workshops
EMPIRICALLY SUPPORTED TREATMENTS FOR STUDENTS WITH ASD

(29.7%) and online training modules (22.6%). All participants reported having some knowledge of ASD ($M = 4.79$, $SD = 1.24$), rated on a seven-point Likert scale where 1 = no current knowledge, and 7 = excellent knowledge.

2.3 Measures

The online survey comprised 21 questions, including a demographics section and two scales, described below. For a copy of the survey tool, please contact the first author.

2.3.1 Demographics. Questions included age bracket, school location and type taught at, highest academic qualification, ASD specific training, number of children with ASD taught, and time in profession.

2.3.2 Knowledge, use, and social validity of treatments. The scale used was an adapted version of the Early Intervention Practices Scale (see ref. 31 and 32 for scale development) and drew on treatments identified by Fleury et al.,\textsuperscript{18} with definitions provided. While Fleury et al.\textsuperscript{18} originally included 21 treatments (18 ESTs, three non-ESTs), the authors excluded behaviour momentum therapy (a non-EST). This decision was reached after initial pilot testing by the second, third, and fourth authors, who have considerable experience in educational support for students with ASD, determined that the definition provided would be unfamiliar to teachers. All definitions provided to participants were drawn from the Wong et al.\textsuperscript{17} review, with six of these modified to better reflect the language used in schools, by teachers.

Knowledge and use were both rated on five-point Likert scales (Knowledge: 0 = Very Little ‘I know nothing about this practice’, 1 = To a slight extent ‘I have heard of this practice’, 2 = To a moderate extent ‘I know a little about this practice’, 3 = To a Great Extent ‘I have a good amount of knowledge of this practice’, 4 = To a Very Great Extent ‘I know a great deal and could instruct others on this’; Use: 0 = Never ‘I do not use this practice’, 1 = On Rare Occasions ‘Less
Table 2

Participant demographics

<table>
<thead>
<tr>
<th>Participant Demographics</th>
<th>% (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Bracket (years)</strong></td>
<td></td>
</tr>
<tr>
<td>Under 25</td>
<td>5.20 (8)</td>
</tr>
<tr>
<td>26 - 35</td>
<td>23.20 (36)</td>
</tr>
<tr>
<td>36 - 50</td>
<td>47.10 (73)</td>
</tr>
<tr>
<td>Over 50</td>
<td>24.50 (38)</td>
</tr>
<tr>
<td><strong>State/Territory Employed in</strong></td>
<td></td>
</tr>
<tr>
<td>Queensland</td>
<td>74.20 (115)</td>
</tr>
<tr>
<td>Western Australia</td>
<td>2.60 (4)</td>
</tr>
<tr>
<td>New South Wales</td>
<td>2.60 (4)</td>
</tr>
<tr>
<td>South Australia</td>
<td>3.20 (5)</td>
</tr>
<tr>
<td>Victoria</td>
<td>16.80 (26)</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>0.60 (1)</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
</tr>
<tr>
<td>Regional</td>
<td>46.50 (72)</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>53.50</td>
</tr>
<tr>
<td><strong>School System</strong></td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>21.30 (33)</td>
</tr>
<tr>
<td>Government</td>
<td>67.70 (105)</td>
</tr>
<tr>
<td>Catholic</td>
<td>10.30 (16)</td>
</tr>
<tr>
<td>Other</td>
<td>0.60 (1)</td>
</tr>
<tr>
<td><strong>Highest Academic Qualification</strong></td>
<td></td>
</tr>
<tr>
<td>Certificate (e.g. Tafe)</td>
<td>1.20 (2)</td>
</tr>
<tr>
<td>Diploma (e.g. Tafe)</td>
<td>3.10 (5)</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>66.50 (103)</td>
</tr>
<tr>
<td>Postgraduate Degree</td>
<td>29.00 (45)</td>
</tr>
<tr>
<td><strong>Number of Years in Profession</strong></td>
<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td>0.60 (1)</td>
</tr>
<tr>
<td>1 - 2</td>
<td>4.50 (7)</td>
</tr>
<tr>
<td>3 - 5</td>
<td>13.50 (21)</td>
</tr>
<tr>
<td>6 - 10</td>
<td>23.90 (37)</td>
</tr>
<tr>
<td>11 - 20</td>
<td>27.70 (43)</td>
</tr>
<tr>
<td>Over 20</td>
<td>29.70 (46)</td>
</tr>
<tr>
<td><strong>Class Size</strong></td>
<td></td>
</tr>
<tr>
<td>Less than 10</td>
<td>4.50 (7)</td>
</tr>
<tr>
<td>10 - 15 children</td>
<td>4.50 (7)</td>
</tr>
<tr>
<td>16 - 20 children</td>
<td>20.00 (31)</td>
</tr>
<tr>
<td>21 - 25 children</td>
<td>52.30 (81)</td>
</tr>
<tr>
<td>26 - 30 children</td>
<td>18.70 (29)</td>
</tr>
</tbody>
</table>
than once per week’, 2 = Sometimes ‘one or more times a week, but not every day’, 3 = Often ‘about once per day’, 4 = Frequently ‘more than once per day’). To assess teachers’ perceptions of social validity an additional rating was collected for each intervention (0 = Not Applicable ‘Not appropriate or feasible for my classroom’, 2 = Somewhat Applicable ‘Somewhat applicable and feasible for my classroom’, 4 = Definitely Applicable ‘Definitely appropriate and feasible for my classroom’). Ratings for the 18 ESTs were averaged for knowledge, use, and social validity to create three scales (knowledge of ESTs, use of ESTs, and social validity of ESTs), each having good internal reliability (Cronbach’s $a = 0.94, 0.90, \text{ and } 0.92$, respectively).

2.3.3 Sources of information. The Sources of Information scale was modified from a version used by Carlon et al.49 The scale included 16 items that identified possible sources of information that teachers might access when learning about interventions used for children with ASD (e.g., school administration, other teachers) rated on a dichotomous yes/no as to whether participants received information from each. Additionally, when participants indicated a source had been used, they were asked to complete a 5-point rating of trust (1 = Not at All Trustworthy to 5 = Very Trustworthy) for each source. For the full list of sources, please refer to Table 4.

2.4 Plan for analyses

To address our first research question, descriptive statistics for knowledge, use, and perceived social validity of the 18 ESTs and two non-ESTs were calculated. Further, to assess the relationship between knowledge, use, and social validity of ESTs only, correlational analyses were performed using the averaged total scale scores. To address our second research question, descriptive statistics for sources of information, and their perceived trustworthiness were also performed. Our third research question was addressed using a series of one-way ANOVAs, and
t-tests comparing each participant’s mean response to knowledge, use, and social validity for the 18 ESTs across pre-determined groups based on participant demographics (training received, number of years teaching, and number of years working with students with ASD). All post-hoc group comparisons were performed using the Tukey method, which controls from familywise error.

3.0 Results

3.1 Data screening

The initial data set included 194 cases, however nine participants were removed based on inclusion criteria, with an additional 30 removed as they did not proceed beyond participant demographics. These participants were excluded from all analyses (including demographics). Of the remaining 155 participants, 109 completed the entire survey. Missing values analysis revealed non-completions at the item level (25.8% to 31.6%), however data were missing completely at random (Little’s MCAR test $\chi^2 = 459, df = 414, p = .061$), leading to the decision to use listwise deletion (see ref 50). Further, as total scale scores were used in analysis, listwise deletion ensures that only participants with complete responses to scales were included, where relevant. Inspection of box plots identified thirteen potential outliers. Upon closer investigation, seven of these were found to be instances of careless responding of participants (e.g., participants had selected the same response for all items), and as such were removed from the analyses. The remaining outliers were retained as they appeared to be genuine data points.

Data were screened for assumptions for parametric analysis. Assumptions of normality were violated for four demographic variables used for group comparisons (Shapiro Wilk’s $p < .05$). Investigation of these variables showed positive kurtosis among some of the groups, however no
transformations were performed due to the ANOVAs robustness against such violations. No other violations of assumptions for correlations or ANOVAs were detected.

3.2 Knowledge, use, and social validity of treatments

Descriptive statistics for the use, knowledge, and social validity of the 18 ESTs, and two non-ESTs for remaining participants are reported in Table 3. Teachers reported using all ESTs and non-ESTs at least some of the time. The most frequently used treatments, reported as being used either sometimes, often, or frequently (in order from most to least) were visual supports ($M = 3.19$), modelling ($M = 2.99$), reinforcement ($M = 2.95$), prompting ($M = 2.86$), and response interruption and redirection ($M = 2.47$). These five treatments are all ESTs. The least used treatments used multiple times a week (but not every day) were (in order from least to most): video modelling ($M = 0.68$), touch therapy ($M = 0.98$), parent implemented intervention ($M = 1.14$), music therapy ($M = 1.20$), and self-management ($M = 1.25$). Music therapy and touch therapy are non-ESTs. As shown in Table 3, no treatment was used by all respondents, regardless of classification as an EST or non-EST.

Participants reported having at least some knowledge of all ESTs and non-ESTs. The interventions for which participants reported highest knowledge - having a great extent to very great extent of knowledge (in order from most to least) - were visual supports ($M = 3.34$), reinforcement ($M = 2.94$), modelling ($M = 2.79$), prompting ($M = 2.68$), and response interruption and redirection ($M = 2.38$). The interventions participants reported being least familiar with – between slight to moderate knowledge (in order from least to most) - were video modelling ($M = 1.02$), parent implemented intervention ($M = 1.35$), touch therapy ($M = 1.46$), time delay ($M = 1.48$), and functional communication training ($M = 1.50$).
Table 3

Overall mean use, knowledge, and social validity scores for ESTs

<table>
<thead>
<tr>
<th>Intervention Practice</th>
<th>Cat.</th>
<th>n</th>
<th>M (SD)</th>
<th>Freq.</th>
<th>n</th>
<th>M (SD)</th>
<th>n</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Supports</td>
<td>EST</td>
<td>105</td>
<td>3.19 (1.08)</td>
<td>4</td>
<td>106</td>
<td>3.34 (0.87)</td>
<td>103</td>
<td>3.34 (1.00)</td>
</tr>
<tr>
<td>Modelling</td>
<td>EST</td>
<td>106</td>
<td>2.99 (1.12)</td>
<td>7</td>
<td>107</td>
<td>2.79 (1.12)</td>
<td>104</td>
<td>3.05 (1.20)</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>EST</td>
<td>105</td>
<td>2.95 (1.07)</td>
<td>5</td>
<td>106</td>
<td>2.94 (1.00)</td>
<td>103</td>
<td>3.10 (1.06)</td>
</tr>
<tr>
<td>Prompting</td>
<td>EST</td>
<td>105</td>
<td>2.86 (1.16)</td>
<td>6</td>
<td>107</td>
<td>2.68 (1.17)</td>
<td>105</td>
<td>3.05 (1.00)</td>
</tr>
<tr>
<td>Response interruption/redirection</td>
<td>EST</td>
<td>105</td>
<td>2.47 (1.34)</td>
<td>14</td>
<td>106</td>
<td>2.38 (1.27)</td>
<td>103</td>
<td>2.82 (1.23)</td>
</tr>
<tr>
<td>Exercise</td>
<td>EST</td>
<td>106</td>
<td>2.18 (1.32)</td>
<td>18</td>
<td>107</td>
<td>2.18 (1.32)</td>
<td>104</td>
<td>2.48 (1.31)</td>
</tr>
<tr>
<td>Differential reinforcement</td>
<td>EST</td>
<td>106</td>
<td>2.01 (1.40)</td>
<td>23</td>
<td>107</td>
<td>1.86 (1.36)</td>
<td>104</td>
<td>2.42 (1.31)</td>
</tr>
<tr>
<td>Antecedent-based intervention</td>
<td>EST</td>
<td>106</td>
<td>1.96 (1.41)</td>
<td>24</td>
<td>107</td>
<td>1.98 (1.35)</td>
<td>104</td>
<td>2.31 (1.37)</td>
</tr>
<tr>
<td>Functional behaviour assessment</td>
<td>EST</td>
<td>105</td>
<td>1.90 (1.33)</td>
<td>23</td>
<td>108</td>
<td>2.13 (1.36)</td>
<td>104</td>
<td>2.38 (1.27)</td>
</tr>
<tr>
<td>Scripting</td>
<td>EST</td>
<td>103</td>
<td>1.76 (1.32)</td>
<td>23</td>
<td>105</td>
<td>2.02 (1.29)</td>
<td>101</td>
<td>2.16 (1.35)</td>
</tr>
<tr>
<td>Functional communication training</td>
<td>EST</td>
<td>106</td>
<td>1.51 (1.37)</td>
<td>35</td>
<td>107</td>
<td>1.50 (1.33)</td>
<td>104</td>
<td>1.92 (1.33)</td>
</tr>
<tr>
<td>Discrete Trial Teaching</td>
<td>EST</td>
<td>107</td>
<td>1.50 (1.40)</td>
<td>39</td>
<td>106</td>
<td>1.52 (1.40)</td>
<td>104</td>
<td>1.83 (1.30)</td>
</tr>
<tr>
<td>Peer-mediated instruction and intervention</td>
<td>EST</td>
<td>106</td>
<td>1.44 (1.27)</td>
<td>35</td>
<td>107</td>
<td>1.52 (1.25)</td>
<td>104</td>
<td>2.03 (1.39)</td>
</tr>
<tr>
<td>Time delay</td>
<td>EST</td>
<td>105</td>
<td>1.41 (1.31)</td>
<td>37</td>
<td>106</td>
<td>1.48 (1.32)</td>
<td>102</td>
<td>1.80 (1.37)</td>
</tr>
<tr>
<td>Technology-aided instruction and intervention</td>
<td>EST</td>
<td>105</td>
<td>1.35 (1.27)</td>
<td>40</td>
<td>106</td>
<td>1.58 (1.27)</td>
<td>103</td>
<td>1.91 (1.35)</td>
</tr>
<tr>
<td>Self-management</td>
<td>EST</td>
<td>104</td>
<td>1.25 (1.32)</td>
<td>43</td>
<td>106</td>
<td>1.52 (1.29)</td>
<td>104</td>
<td>1.73 (1.36)</td>
</tr>
<tr>
<td>Music Therapy</td>
<td>N</td>
<td>106</td>
<td>1.20 (1.25)</td>
<td>41</td>
<td>107</td>
<td>1.57 (1.27)</td>
<td>104</td>
<td>1.78 (1.39)</td>
</tr>
<tr>
<td>Parent-implemented intervention</td>
<td>EST</td>
<td>106</td>
<td>1.14 (1.35)</td>
<td>51</td>
<td>107</td>
<td>1.35 (1.33)</td>
<td>104</td>
<td>1.69 (1.46)</td>
</tr>
<tr>
<td>Touch Therapy</td>
<td>N</td>
<td>105</td>
<td>0.98 (1.28)</td>
<td>55</td>
<td>105</td>
<td>1.46 (1.40)</td>
<td>103</td>
<td>1.43 (1.43)</td>
</tr>
<tr>
<td>Video Modelling</td>
<td>EST</td>
<td>104</td>
<td>0.68 (1.05)</td>
<td>66</td>
<td>106</td>
<td>1.02 (1.25)</td>
<td>103</td>
<td>1.46 (1.39)</td>
</tr>
</tbody>
</table>

*Note.* Freq = frequency of participants who responded they “never” used this practice, EST = empirically supported treatment, N = non-EST.
Participants were also asked to rate social validity of ESTs and non-ESTs, indicating the extent to which they would found the intervention applicable for use in their classroom. Those rated as most applicable (between somewhat and definitely applicable) in the classroom setting were visual supports ($M = 3.34$), reinforcement ($M = 3.10$), modelling and prompting ($M = 3.05$), and response interruption and redirection ($M = 2.82$). Those rated as being least applicable (not at all applicable to somewhat applicable) to the classroom were touch therapy ($M = 1.43$), video modelling ($M = 1.46$), parent implemented intervention ($M = 1.69$), self-management ($M = 1.73$), and music therapy ($M = 1.78$).

3.3 Correlations between overall mean knowledge, use and social validity

A strong positive correlation was found between the overall scale scores of mean use and knowledge of ESTs, $r = 0.795, p < .001$; mean use and social validity of ESTs, $r = 0.773, p < .001$; and mean knowledge and social validity of ESTs $r = 0.556, p < .001$. A weak positive correlation was found between participants’ self-reported current knowledge of ASD and mean use of ESTs $r = 0.289, p = .004$; and a moderate positive correlation was found between self-reported current knowledge of ASD and mean knowledge of ESTs, $r = 0.483, p < .001$.

3.4 Sources of information

Participants rated personal experience as the most trusted source of information ($M = 4.53$) between somewhat and very trustworthy, with 67.1% of participants reporting using personal experience (see Table 3). The most frequently accessed, as well as next highly trusted, source of information however, were parents of children with ASD (68.4%, $M = 4.18$), followed by therapists (67.7%, $M = 4.45$), and other teachers (67.1%, $M = 4.46$). The least commonly accessed sources were complementary and alternative medical practitioners (CAMs) (33.5%), newsletters (40%), medical doctors (47.7%) and social media (49%). The least trusted sources
were social media \((M = 2.67)\), friends and relatives \((M = 2.89)\), CAMs \((M = 3.00)\) and newsletters \((M = 3.06)\) and were rated between untrustworthy and neither trustworthy nor untrustworthy. For more information, refer to Table 4.

3.5 Group comparisons with demographics

3.5.1 ASD specific training. Participants with training reported significantly higher use of ESTs compared to participants with no training, \(t \(103) = 4.59, p < .001, d = 0.80\). Participants who had accessed training also reported significantly higher levels of knowledge than participants with no training, \(t \(103) = 3.80, p < .001, d = 0.88\). No significant differences were found between groups for social validity, \(t \(103) = 1.03, p = .306, d = 0.25\). Group means are presented in Table 4.

3.5.2 Number of years teaching. Mean use of ESTs was found to be statistically different between groups, \(F \(4,93) = 3.96, p = .005, \eta p^2 = 0.13\). Teachers with over 20 years of experience reported higher use of ESTs than those with between 11 and 20 years \((p = .025)\) using Tukey’s post hoc analysis. No other group differences were found. Reported mean knowledge of ESTs approached significance between groups, \(F \(4,93) = 2.39, p = .056, \eta p^2 = 0.08\). Reported mean social validity of ESTs significantly differed between groups, \(F \(4,93) = 2.51, p = .047, \eta p^2 = 0.10\), however further investigation of Tukey’s post hoc analyses did not reveal any group differences. See Table 4. for group means.

3.5.3 Number of children with ASD taught (career). Use of ESTs was not found to significantly differ between groups, \(F \(2,95) = 2.51, p = .087, \eta p^2 = 0.05\). Differences in reported knowledge of ESTs were found between groups: \(F \(2,95) = 4.13, p = .019, \eta p^2 = 0.07\). Teachers who had taught over 10 students with ASD reported significantly higher knowledge than
## Table 4

*Sources of information accessed when learning about interventions used for children with ASD by teachers and their average trust rating.*

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean trust rating $(SD)$</th>
<th>Received information $(%)$</th>
<th>Trustworthiness Rating Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal experience</td>
<td>4.53 (0.59)</td>
<td>67.1</td>
<td>0 0 5 39 60</td>
</tr>
<tr>
<td>Other teachers</td>
<td>4.46 (0.54)</td>
<td>67.1</td>
<td>0 0 2 52 50</td>
</tr>
<tr>
<td>Therapists</td>
<td>4.45 (0.73)</td>
<td>67.7</td>
<td>1 1 6 39 58</td>
</tr>
<tr>
<td>Specialist advisor within your school system</td>
<td>4.44 (0.71)</td>
<td>65.8</td>
<td>0 3 4 40 55</td>
</tr>
<tr>
<td>Autism associations and websites (e.g. Positive Partnerships)</td>
<td>4.35 (0.87)</td>
<td>58.7</td>
<td>1 3 9 28 50</td>
</tr>
<tr>
<td>Parents of children with ASD</td>
<td>4.18 (0.67)</td>
<td>68.4</td>
<td>0 3 7 64 32</td>
</tr>
<tr>
<td>Research literature (e.g. journal articles)</td>
<td>4.13 (0.71)</td>
<td>63.2</td>
<td>0 2 13 53 30</td>
</tr>
<tr>
<td>School administration</td>
<td>3.81 (0.83)</td>
<td>66.5</td>
<td>1 6 23 55 18</td>
</tr>
<tr>
<td>Medical Doctors</td>
<td>3.76 (1.08)</td>
<td>47.7</td>
<td>2 9 15 27 21</td>
</tr>
<tr>
<td>Print media (e.g. books and newspapers)</td>
<td>3.33 (0.93)</td>
<td>58.7</td>
<td>6 16 35 29 4</td>
</tr>
<tr>
<td>Information from general internet searches (e.g. google)</td>
<td>3.10 (0.97)</td>
<td>58.1</td>
<td></td>
</tr>
<tr>
<td>Newsletters</td>
<td>3.06 (0.90)</td>
<td>40.0</td>
<td>3 13 24 21 1</td>
</tr>
<tr>
<td>Complementary and alternative medicines (e.g. naturopath)</td>
<td>3.00 (1.10)</td>
<td>33.5</td>
<td>4 16 11 18 3</td>
</tr>
<tr>
<td>Friends/Relatives</td>
<td>2.89 (1.11)</td>
<td>51.0</td>
<td>10 17 30 16 6</td>
</tr>
<tr>
<td>Social Media</td>
<td>2.67 (1.11)</td>
<td>49.0</td>
<td>15 16 26 17 2</td>
</tr>
</tbody>
</table>

*Note.* $n = 109$

Frequency with which participants rated sources as not at all trustworthy – very trustworthy also included. Ranked according to trustworthiness.
teachers who had taught less than 5 students with ASD ($p = .027$) using Tukey’s post hoc analysis. No other group differences were found. Reported social validity of ESTs was not found to differ between groups, $F (2,95) = 1.77$, $p = .175$, $\eta^2_p = 0.04$. See Table 5. for group means.

4.0 Discussion

We sought to investigate the extent to which a population of general education teachers know and use ESTs which target school readiness skills for children with ASD, determine perceived social validity of these ESTs, and investigate associations between these. In addition, sources of information accessed, and associations between knowledge, use, social validity of ESTs and demographic factors were explored. Both of our hypotheses were met, with knowledge and use of ESTs correlated, and perceived social validity of ESTs correlated with both use and knowledge.

The finding that teachers in the current sample reported knowledge of all the treatments surveyed provides a promising foundation for work seeking to increase uptake of ESTs. While much of the research in the area has focused solely on use of ESTs and non-ESTs, our study additionally investigated teachers reports of knowledge, focussing on those ESTs which have demonstrated effectiveness for addressing school readiness skills. While knowledge does not always translate to use (see ref. 29), the findings are encouraging and are in line with the commitment to providing the best possible support to children with ASD, an important consideration during the early years of schooling. Our study is the first to highlight that general education teachers’, who are largely responsible for the education of children with ASD, were found to most frequently use those treatments classified as ESTs (e.g. modelling, reinforcement, prompting), with non-ESTs (e.g. music therapy, touch therapy) among the least
Table 5

*Group means for overall use, knowledge, and social validity of ESTs according to demographic variables.*

<table>
<thead>
<tr>
<th></th>
<th>Training</th>
<th>Years teaching</th>
<th>No. of children taught</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>1 – 2</td>
</tr>
<tr>
<td>$n$</td>
<td>82</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>$M$ Use</td>
<td>2.22</td>
<td>1.32</td>
<td>1.33</td>
</tr>
<tr>
<td>$SD$ Use</td>
<td>(0.85)</td>
<td>(0.75)</td>
<td>(0.97)</td>
</tr>
<tr>
<td>Range Use</td>
<td>0.39 – 4.00</td>
<td>0.22 – 3.06</td>
<td>0.50 – 2.61</td>
</tr>
<tr>
<td>$M$ Knowledge</td>
<td>2.10</td>
<td>1.42</td>
<td>1.19</td>
</tr>
<tr>
<td>$SD$ Knowledge</td>
<td>(0.76)</td>
<td>(0.78)</td>
<td>(0.89)</td>
</tr>
<tr>
<td>Range Knowledge</td>
<td>0.50 – 4.00</td>
<td>0.22 – 3.11</td>
<td>0.39 – 2.28</td>
</tr>
<tr>
<td>$M$ Social Validity</td>
<td>2.34</td>
<td>2.14</td>
<td>2.01</td>
</tr>
<tr>
<td>$SD$ Social Validity</td>
<td>(0.74)</td>
<td>(0.88)</td>
<td>(1.16)</td>
</tr>
<tr>
<td>Range Social Validity</td>
<td>0.11 – 4.00</td>
<td>0.28 – 3.89</td>
<td>0.28 – 2.67</td>
</tr>
</tbody>
</table>
used. Previous research in specialist settings (see refs. 28, and 30 - 32) has also found that service providers utilise both ESTs and non-ESTs in their practice.

While these results are encouraging, it is important to highlight that music therapy and touch therapy, both non-ESTs, were used by 59% and 45% of participants respectively at least some of the time. While Hess et al.\textsuperscript{30} suggests that the continued use of non-ESTs could be due, in part, to a lack of guidance for professionals when making decisions, the availability of easy to access online information in the form of research reviews (see ref. 23 and 45), and easy to understand websites (see ref. 52) undermines this assumption. However, as discussed below, it appears that teachers primarily seek out within school supports (e.g., other teachers, administration) when accessing information. Carter et al.\textsuperscript{28} proposed an alternate explanation, suggesting that while tertiary education courses do well to promote EST use, they are less adept at providing instruction around what not to use.

This is the first study to investigate the relationship between perceived social validity of ESTs, and the knowledge and use of these ESTs among general education teachers. While the current study revealed strong correlations between these variables, the specific nature of their relationship is still to be determined. For example, knowledge of available strategies is a necessary foundation for potential use, and it may be that teachers with greater knowledge of specific ESTs are also more aware of how to make ESTs work in their classrooms, in turn increasing their use. Alternatively, greater social validity of treatments, or their ‘fit’ for the classroom, may influence teachers’ attitudes towards training in and adopting these treatments, thus increasing both their knowledge and use. If social validity is indeed found to be the key factor influencing knowledge and use of ESTs, researchers would do well to document examples
of where ESTs have been implemented in classrooms with success and promoting this research among teacher networks. Further investigation of this relationship is therefore required.

Teachers reported accessing a variety of sources when seeking information on interventions for children with ASD. Among the most commonly accessed sources were personal experience and other teachers, consistent with research that has found education professionals often rely on within-school supports (e.g., personal experience, other teachers, school advisors) to determine what works in the classroom. Therapists (e.g., speech language pathologists) were also amongst the most highly accessed and trusted sources, with complementary and alternative medicines (e.g., naturopathy) and medical doctors amongst the least accessed and trusted sources. A small minority reported accessing and using sources of information where practitioners are likely to endorse and encourage non-EST use (e.g., complementary and alternative medicines), which highlights a challenge to uptake of ESTs by teachers. While over half (63%) of the teachers in the current study reported accessing the research literature, this does not appear to be translated into practice, with participants continuing to use non-ESTs (i.e., music therapy and touch therapy). Trembath, Paynter, Keen, and Ecker propose that while research literature is available on ESTs, some professionals might find it difficult to critically evaluate the quality of this information (e.g., poorly conducted research which promotes the use of non-ESTs).

Teachers with more experience (number of children worked with and ASD specific training) working with children with ASD were also found to report higher knowledge and use of ESTs. Teachers who reported having accessed at least one form of ASD specific training reported higher levels of knowledge and use of ESTs. This appears to support previous claims that even relatively short training sessions can increase teachers’ knowledge and use of.
Teachers who had more experience working with children with ASD were also found to have increased knowledge of ESTs, compared to those who reported limited experience. Additionally, teachers with more industry experience reported higher levels of use of ESTs than those with less experience. With similar findings highlighted in research with special education teachers (see ref. 56), these results suggest improving teacher knowledge (through exposure to or training in ASD) and increasing the awareness of ESTs with established social validity have potential to contribute to increased uptake of ESTs.

4.1 Limitations and future research

The current study provides novel insights into knowledge, use, and perceived social validity of ESTs targeting school readiness outcomes in a sample of general education teachers. While this paper builds on previous research, providing new contributions to the field, there are limitations which must be acknowledged when interpreting the findings. First, due to the recruitment method, we are unable to determine the response rate or representativeness of the population surveyed. Nevertheless, these findings provide insight into the current state of EST use among the population sampled. Additionally, it is possible that due to the recruitment method used, a selection bias might be present. As the survey was opt in, with no reimbursement for participation, it is possible that teachers in the current study were those with a higher motivation to seek out additional information on available ESTs when working with students with ASD. Further, survey methodology only allows for participants’ self-reported data to be collected. While self-report survey data is useful when beginning to understand a research area, teachers’ self-reported knowledge and use of ESTs may not translate to actual knowledge and use. Survey methodology, relying solely on self-report data, also limits our understanding of the fidelity with which the ESTs are being implemented. Additional observational data, which was beyond the
scope of the present study, would be useful to determine whether the self-report data was reflected in daily practice, and provide information on the fidelity with which ESTs are being implemented. Finally, it is possible that despite providing definitions of interventions, some participants might have misunderstood some of the interventions listed. Exercise, for example was one of the ESTs included in the survey, however participants might have interpreted this as providing opportunities to exercise as part of their weekly curriculum rather than using exercise as a targeted intervention to increase a desired behaviour.

In addition to observational data needed to support the results of the current study, future research is also needed to identify how we can best support teachers to effectively implement these strategies in their classroom. Teacher interviews would also be useful in determining what is currently being done, where improvements could be made, and assist in bridging the research to practice gap. Such interviews might also assist in understanding how social validity of treatments influences knowledge and use. Further, through interviewing teachers, researchers can better understand the extent to which teachers utilise a framework such as EBP in guiding their decision making when selecting treatments for use.

4.2 Implications

With the substantial amount of time children with ASD spend at school, teachers are uniquely placed to significantly, and positively, impact their development and potential for success. It is therefore essential that research is committed to understanding the extent to which teachers know and use treatments that have been shown to be effective with this population and begin to identify avenues through which we can support teachers in this. This research indicates that general education foundation year teachers in the Australian context have knowledge of, and report using, several available ESTs which target school readiness type skills. Our research also
contributes to the research on social validity of ESTs, with teachers reporting that many of the ESTs listed would be acceptable and appropriate for use in their classroom. The finding that social validity was associated with both use and knowledge of ESTs highlights the need for additional investigation, particularly for future projects seeking to promote use of these treatments. With teachers rating within school supports (other teachers, own experience) among their most accessed and trusted sources of information when working with students with ASD, efforts should focus on accessing these channels for the dissemination of accurate information. Our findings highlight the potential for supporting teachers in their knowledge and use of ESTs and provides insight into avenues and opportunities for how this might be achieved.

Acknowledgements

We thank all of the teachers who took the time to participate in this research project.

Disclosure Statement

The authors report no conflicts of interest.

Funding

This research will form part of Miss Sulek’s Doctor of Philosophy dissertation and was supported by funds made available through her Australian Postgraduate Award Scholarship from the Australian Government. David Trembath was supported by NHMRC Early Career Fellowship (GNT1071811).
References


41. Wolf MM. Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. Journal of Applied Behavior Analysis. 1978;11(2). 203-214.


   http://raisingchildren.net.au/parents_guide_to_therapies/parents_guide_to_therapies.html/context/1534


Chapter 5: Phase Two

Statement of contribution to the co-authored published paper

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to this paper involved:

Designing the study, ethics approval, development of semi-structured interview guideline, recruitment of participants, data collection through semi-structured interviews, data analysis, and leading the writing of the manuscript including the complete first draft and subsequent revisions based on author and reviewer feedback.

(Signed)  Signature removed
Rhylee Sulek

(Countersigned)  Signature removed
Primary Supervisor: Associate Professor David Trembath
Factors influencing the selection and use of strategies to support students with autism in the classroom.

Rhylee Sulek¹, David Trembath¹, Jessica Paynter¹, Deb Keen²

¹Menzies Health Institute Queensland, Griffith University
²Autism Centre of Excellence, Griffith University

Contact Details:
Rhylee Sulek, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia
David Trembath, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia
Jessica Paynter, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia
Deb Keen, Autism Centre of Excellence, Griffith University, Brisbane, Australia.

Corresponding author:
Rhylee Sulek
Email: R.Sulek@griffith.edu.au
Abstract

Children with Autism Spectrum Disorder (ASD) may have additional needs in the classroom, resulting from delays in their development of critical school readiness skills, which include following directions and attending to tasks. Consequently, empirically supported strategies targeting these skills have been developed, however, there is evidence to suggest they are not being utilised. The aim of this study was to address this research to practice gap, by working with teachers to identify factors that contribute to their decisions to select and implement these strategies. Using a qualitative methodology and purposive sampling, 13 Australian educators were interviewed to determine factors that influence their selection of strategies to use with children with ASD, including information sources they utilised. Teachers reported that individual characteristics of the children, their own professional experience, and the need for strategies to work within their settings strongly influenced their decision making. Further, in their efforts to make good decisions surrounding the support of students with ASD, teachers not only accessed supports provided by their school but in some cases sought out additional resources. This study helps to identify the practical considerations that influence the knowledge and use of empirically supported strategies by mainstream teachers.

Keywords:

ASD, empirically supported treatments, education, teachers, intervention
Factors influencing the selection and use of strategies to support students with autism in the classroom.

The education of individuals with autism spectrum disorder (ASD) is becoming increasingly common in general education settings. This increase can be attributed to legislative requirements (e.g., Australia: Disability Discrimination Act, Australian Government, 1992; USA: Individuals with Disabilities Education Act of 2004; Ireland: Education for Persons with Special Educational Needs Act 2004, Government of Ireland, 2004) which outline the rights of individuals with disabilities to receive education in the least restrictive environment. In Australia, which was the context for this study, the results of a recent survey indicated that 96.7% of school-aged children with ASD experience some degree of educational restriction (e.g., attending special school, attending special class in general education school, requiring special assistance) (Australian Bureau of Statistics, 2017). In attempting to achieve successful inclusion of children with ASD, and reducing these educational restrictions, two main factors can be considered: how to best prepare the child for school, and how the school can prepare for the child.

At the child level, a set of skills often referred to as ‘school survival’ or ‘school readiness’ skills (hereon referred to as school readiness skills) have long been identified (e.g., Vincent et al., 1980) as critical to children’s educational success as they enter the foundation year of schooling. These school readiness skills extend beyond academic skills (e.g., pre-literacy and numeracy skills) to include skills such as the ability to work independently, follow directions, attend to task and instructions, and regulate emotions (Hops & Cobb, 1973; McCormick & Kawate, 1982; Vincent et al., 1980; Welchons & McIntyre, 2017). Welchons and McIntyre (2017), in their study investigating the predictors of social and behavioural outcomes in the first year of school, reported that higher levels of adaptive behaviours and fewer problem
behaviours predicted positive transition to school for children with and without disabilities. The authors further highlighted the importance of targeting these school readiness skills during early intervention, to facilitate positive transitions. However, attaining these skills prior to entry into school may not always be achievable for children with ASD (Salisbury & Vincent, 1990) and preparing teachers to continue to support the development of these skills as children transition to formal schooling is necessary (Kemp & Carter, 2006).

Ensuring that mainstream classroom teachers are prepared to teach students with special needs is an important contributing factor to the success of students with ASD at school (Ashburner, Ziviani, & Rodger, 2010; Goodman & Williams, 2007; Jordan, Schwartz, & McGhie-Richmond, 2009; UNICEF, 2012). However, in Australia, a Productivity Commission (2012) report into the education workforce identified a lack of teachers with suitable qualifications and training to support students with additional needs at the time. Partly in response, the Nationally Consistent Collection of Data on School Students with Disability (NCCD) (Commonwealth of Australia, 2016) program has been implemented to ascertain the number, and adjustments being provided, for students with a disability with the view to better meeting their needs. However, there remains a need for research to address the extent to which teachers are equipped to support students with ASD and their application of empirically supported strategies.

While no single strategy is universally effective in meeting the learning and participation needs of all children with ASD, it is important that clinicians and teachers working with this population engage in evidence-based practice (EBP). EBP is a decision-making process whereby users integrate the best available research, with clinical or professional experience, while considering client characteristics (Anderson, 2006; McGrew, Ruble, & Smith, 2016; Sackett,
2000). When considering the best available research, there are a number of empirically supported strategies, which have been implemented to target school readiness skills, that have demonstrated efficacy and clinical utility (Fleury et al., 2015). Fleury et al. (2015) identified 18 empirically supported strategies reviewed in the National Professional Development Center report (Wong et al., 2015) which targeted school readiness skills in school-aged children with ASD. These strategies included prompting, reinforcement, and antecedent-based interventions, broadly classified across three domains: classroom behaviours, social communication and social interaction, and challenging behaviour (Fleury et al., 2015). However, there is a distinct lack of information available on the extent of their uptake by general education teachers.

To address this gap, the current authors investigated the knowledge, use, and perceived social validity of 20 strategies (18 empirically supported, two non-empirically supported) identified by Fleury et al. (2015) in a sample of Australian mainstream foundation year teachers (citation withheld for blind review). Teachers surveyed reported using all strategies at least sometimes, with empirically supported strategies being used more frequently than non-empirically supported strategies (citation withheld for blind review). The results were consistent with findings of research in special education (Borders, Bock, & Szymanski, 2015; Carter, Stephenson, & Strnadova, 2011; Hess, Morrier, Heflin, & Ivey, 2008) and early intervention (EI) settings (Paynter et al., 2016) indicating that educators frequently use a combination of both empirically and non-empirically supported strategies. Further, teachers in the study reported seeking information on ASD most frequently from within school supports (e.g., other teachers) and drawing from their own experience (citation withheld for blind review). While professional judgment and experience is one aspect of the EBP approach, it is critical that teachers combine this with the best available research, while considering client values and needs.
While this research provides insight into the extent to which teachers are likely to be utilising empirically supported strategies when working with children with ASD in the classrooms, survey research is limited in its ability to gain a richer understanding of the phenomenon. For example, survey research fails to capture the processes teachers undergo when making decisions on strategies they wish to implement. Understanding the nature of these processes and factors which might influence decision-making, such as access to resources, is needed to determine possible mechanisms for change in strengthening uptake in this population. To achieve this, it is important to involve the end users of these strategies in research which contextualises the findings from the above studies, in their day to day experiences of supporting children with ASD in the classroom.

Our aim in this study was, therefore, to explore the experience of teachers working with children with ASD, with a focus around their role in selection and implementation of strategies to support these students, the supports they access as a teacher, and any suggestions they have around improving supports for themselves and their students. Given the lack of previous research examining these issues, a qualitative approach was used to gain a rich understanding of the phenomenon.

Method

Design

A qualitative design was employed, involving a series of semi-structured interviews analysed using thematic analysis, to explore teachers’ views and experiences of working with children with ASD in the classroom. Thematic analysis was chosen as it can generate an abstract account of participants’ views and experiences of the phenomenon, through the identification and analysis of patterns, often referred to as themes (Braun & Clarke, 2006). Thematic analysis
also enables the integration of information and ideas across participants and is considered an approach to qualitative analysis in its own right (Braun & Clarke, 2006). Unlike content analysis, where researchers seek to quantify statements made by participants, thematic analysis allows researchers to give equal consideration, during analysis, to all views expressed by participants. Our approach to thematic analysis was contextualised within the social constructivist theory, which enables researchers to better understand how learning occurs, within specific contexts and cultures, and further how knowledge is created, disseminated, and informs practice (Thomas, Menon, Boruff, Rodriguez, & Ahmed, 2014).

**Participants**

Participants were 11 general education teachers, one Head of Special Education (HOSES: the lead administrator of the schools’ special education program), and one special education support teacher working across 11 schools in Australia. As the inclusion of participants with diverse perspectives can assist in stimulating discussion across interviews, all participant data were analysed together. Participants' roles (i.e., teacher, HOSES, special education teacher) have been clearly labeled in the presentation of results, with pseudonyms used to maintain privacy. All participants worked directly with children with ASD at the time of the study, either as their classroom teacher or in a supporting role (i.e., worked across multiple classrooms). The children with ASD were in their foundation year of school, also known as ‘Prep’, having transitioned from an early intervention (EI) service within the past three months. All participants were female, aged between 25 and 56 years ($M = 40.27$ years, $SD = 10.65$ years) who had been teaching between 1.58 and 34 years ($M = 15.58$ years, $SD = 12.38$ years). Participants worked largely in government-funded public schools (92.3%) in metropolitan locations (76.9%). Many participants (53.8%) had completed post-graduate qualifications. The average class size for
classroom-based teachers in the study was 26 children, and participants indicated having taught between one and 20 children with ASD across their careers ($M = 8.15$, $SD = 5.06$). See Table 1 for more details.

Table 1.

**Participant demographics**

<table>
<thead>
<tr>
<th>Participant Characteristics</th>
<th>$n$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Academic Qualification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>1</td>
<td>(7.7)</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>5</td>
<td>(38.5)</td>
</tr>
<tr>
<td>Post Graduate Degree</td>
<td>7</td>
<td>(53.8)</td>
</tr>
<tr>
<td>Training Accessed by Participants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online</td>
<td>7</td>
<td>(53.8)</td>
</tr>
<tr>
<td>School based workshop</td>
<td>9</td>
<td>(69.2)</td>
</tr>
<tr>
<td>University subject/course</td>
<td>4</td>
<td>(30.7)</td>
</tr>
<tr>
<td>Postgraduate qualification</td>
<td>1</td>
<td>(7.7)</td>
</tr>
<tr>
<td>In person half day workshop</td>
<td>3</td>
<td>(23.1)</td>
</tr>
<tr>
<td>In person three-day workshop</td>
<td>3</td>
<td>(23.1)</td>
</tr>
<tr>
<td>In person multiple workshops</td>
<td>4</td>
<td>(30.7)</td>
</tr>
</tbody>
</table>

**Procedure**

Ethics clearance was obtained by the authors’ research institute [blinded for review], and the Department of Education [location blinded for review]. Purposive sampling was used to recruit for this study and included parents whose child attended one of four sites operated by a large EI service provider in Australia. The EI service, which operates nine sites nationally, was selected as it is the only service which provides a comprehensive program for students with ASD in the region. The EI service fees were comparable to the average fee for children attending local
childcare services, after government funding and fund-raising. Families attending the EI service were also eligible for the same rebates and concessions of up to 50% of the weekly cost up to a maximum amount per year (Vivanti et al., 2014). Further, the organisation also provided bursaries to low-income families to ensure accessibility. Thus, families attending were representative of the population in those locations. The EI site managers were invited to share the information sheet and consent form for the study with families whose children were leaving the service to attend general education schools in 2017. Across the four sites, 18 families consented, providing details of their child’s prospective school. No further commitment was required by families. Prior to contacting schools, two families were excluded from the study on the following grounds: one child was attending school on a part-time basis, and one child was attending an ASD-specific school.

Principals of the remaining schools were contacted by the first author in term one of 2017 (January – April) and provided with the information and consent forms for the study explaining that teachers who consented to participate in the project would be interviewed by the first author. Of the schools approached, four principals declined participation in the project. Principals who agreed to participate then provided the first author with details of the relevant teachers who were then provided with information sheets and consent forms. All teachers approached consented to participate in the interviews.

Each participant was interviewed separately, by phone, between weeks six and 10 of term one. Prior to the interview, teachers were provided with a copy of the semi-structured interview guide (see Appendix A) which encouraged participants to comment on (a) the transition to school process for the child, (b) any strategies they were currently using when working with the child, and what types of skills and behaviours these targeted, (c) how they selected strategies, (d)
the supports that were available to themselves and the child, and (e) any suggestions for how support and transition could be improved. Teachers were encouraged to speak freely on these topics. At the start of the interviews, participants were reminded of the information contained in the Participant Information Sheet, specifically that all information provided would remain confidential, that they were free to withdraw from the research at any time, and that interviews would be audio recorded. Interviews took between 15 and 30 minutes to complete, except for one interview which took 60 minutes. Recordings were transcribed by a research assistant, with transcriptions being provided in a word.doc format. Transcriptions were sent to participants to complete member checks, to ensure that statements made during interviews reflected their attitudes and thoughts regarding the phenomenon. Three teachers made amendments to their transcripts to correct expression (e.g., grammar). After thematic analysis was completed, a summary of the results was sent to principals, teachers, and families who had participated in the research.

**Data Analysis**

As outlined by Braun and Clarke (2006), thematic analysis consists of a series of six stages: “(1) familiarizing yourself with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report” (p.87). First, following transcription, the first author read through each interview multiple times to familiarise herself with the data, a process known as immersion. Second, using the NVivo software (QSR International Pty Ltd, 2015) the first author isolated significant statements in the data, giving equal attention to all data contained in the interviews. These significant statements were used by the first author to generate codes. Across the first five interviews, 90% of the codes were developed, leading to confidence that data saturation was achieved across the sample.
Third, codes were then sorted and grouped together to form initial themes, along with relevant extracts from the text. During this stage, a thematic-map was developed to assist the researchers in understanding relationships between themes. Next, themes were refined by the first and second authors, ensuring that themes were coherent and distinguishable from one another. The thematic map was also refined. In the next stage, themes were defined and named, with a detailed analysis produced for each theme. During this analysis, sub-themes within the overarching themes were identified. A final thematic map of themes, sub-themes, and their relationships was then produced (see Figure 1). Finally, the report was produced and extracts from transcripts to illustrate themes and sub-themes were identified.

Results

Two central themes were developed during the analysis. The first theme ‘Trying the best we can’ encompassed the daily challenges teachers faced in providing support to students with ASD, and their efforts to provide a safe, inclusive environment for the students. The second theme ‘Behind the scenes’ captured the various supports accessed by teachers of students with ASD, and desired changes to the supports available. Theme one and two, and their associated sub-themes are presented below using the participants’ own words.

Theme One: Trying the Best We Can

In sharing their experiences of working with children with ASD in their classroom, participants expressed that there were several factors influencing their decision to use, or not use, specific strategies. These factors clustered around three core sub-themes – the impact of experience, dealing “moment to moment”, and making it work, whatever that looks like – indicating the various challenges faced by teachers. The nature of these factors is presented below.
Figure 1. Themes and sub-themes

The impact of experience

Regardless of whether participants had taught 20 children with ASD, or one child with ASD, they reflected on the impact of experience on their ability to support these children. Erica, a teacher, expressed that having extensive experience had helped prepare her for what to expect when teaching students with ASD:

I was really lucky in the sense that I’ve worked as a teacher-aide and a practical teacher [across a number of settings] … So, I’ve always been around it over the last three or four years, and a lot of my practical [teaching] placements had children with ASD in the room.
However, she also highlighted that ‘it’s certainly still challenging’, irrespective of the degree of experience. Having experience was not always associated with feelings of being well equipped to support students with ASD, as Sarah (teacher) expressed, ‘I’ve taught other children with ASD… [but] I wouldn’t say my knowledge [of ASD] is great.’ A lack of experience also appeared to impact on some participant’s knowledge of, and ability to effectively select, strategies to use with students, as Rhiannon (teacher) explained, ‘I would have to say I didn’t have the biggest bank of knowledge and strategies, for working with children with autism, so it’s been a bit of learning curve for me.’ In some cases, a lack of experience did not hinder teacher’s optimism in their ability to educate students with ASD, with on the job learning viewed as a positive by-product of experience gained in the classroom. Fiona (teacher), for example, noted that ‘I’m learning a lot as a classroom teacher … just in the short time that I’ve had Chris I’ve learnt a lot about the sort of strategies that I can use with him.’

Dealing “moment to moment”

It became apparent across the interviews that participants’ considerations for providing support to students with ASD were often not based on the quality or research support of the strategy, or ensuring it matched the children’s needs. Instead, the focus of conversation often centred on what the child, or the class, needed on that day, at that time. As Matilda (teacher) noted, ‘it’s always a steep learning curve, especially because each child is so vastly different.’ Not only did differences between children with ASD impact on participants’ ability to provide support, but daily changes within the children themselves, including their mood, interests, or behaviours at the time, contributed to the challenge of selecting and implementing effective strategies. The following excerpt from Jacqueline’s (teacher) interview demonstrates this challenge:
I found with Timothy that he responds to very different things from one day to another, so one day just ignoring him, and moving to the space where he needs to be, you know, and he’ll follow you. Some days you know pulling out the iPad … you know, directly going ‘no, we need to sit’, will work sometimes the first [time]… but it’s, he’s really variable. He changes from day to day as to what he’s going to respond to.

Reflecting on her experience in managing challenging behaviours with a student, Kendra, a special education support teacher said, ‘… so we see what works best for Cooper, what he responds to, um if we try something and it’s not working, then we are not going to do it again. This tendency to adopt a ‘trial and error’ approach to selecting and implementing strategies, and frequently changing strategies when deemed to be ineffective, highlights the sentiment that participants were required to be flexible in their approach to support students with ASD.

Despite the reported challenges of selecting and implementing strategies, participants conveyed a high level of confidence in recognising when strategies were ineffective, as Sarah (teacher) noted, ‘… you can see whether it’s positive or not for them. So, I don’t stick at strategies for long…’ While participants identified individual differences in children as an important consideration when selecting from an implied bank of strategies available, across the interviews only a small number of strategies were mentioned. Several of these were empirically supported and included modifying the environment and tasks, using teacher and peer modelling, visual supports, social stories, prompting, and reinforcement. However, four participants also reported using non-empirically supported strategies such as sensory therapies (e.g., weighted and sensory toys).

Making it work – whatever that looks like
Participants spoke of a common overarching commitment to including students with ASD in the broader classroom environment. However, while ultimately the goal for many participants was to have the student in the classroom full time (not spending any time in support units at the schools) and engaging in all activities alongside their typically developing peers, this was often met with various challenges. Safety concerns were a paramount priority in Amy’s (teacher) classroom, as she noted that Mila (student with ASD) ‘pushes children and lashes out at them as she doesn’t want them near her’, ultimately impacting her ability to fully integrate into the classroom. Graduated exposure to the general classroom, interspersed with time spent in the support unit, was the approach adopted by Dara (teacher) whose end goal was to have the student ‘functioning really well in the classroom.’ Other participants, such as Jacqueline (teacher), reported that their creative approach to teaching helped with integrating children with ASD, ‘[he] absolutely hates writing, but will engage with the iPad. So, if I can put a writing task on the iPad, then he does it with a stylus, so we’re still getting the grip [motor skill being targeted].’

Utilising ‘strategies for [the student with ASD] with the whole class’ was another approach adopted by Erica (teacher). For example, 12 of the 13 participants noted using visual schedules for the whole class to promote predictability and routine for the student with ASD. Despite the many and varied steps taken by participants to promote inclusion of the student with ASD into the classroom, there were indications that not all participants felt this was always possible. Harriet (teacher), for example, described the challenges she faced, ‘unfortunately with twenty-four other children in the class I’m not always able to, to deliver him exactly what he needs of every moment of every day’. Rhiannon (teacher) also expressed a similar sentiment, reflecting that without the support of her teacher aide in her classroom it would be ‘impossible to do [her] job.’ Leanne (HOSES), used the analogy that attempting to include children with ASD
in the classroom, is akin to having ‘square peg[s] that we are trying to fit into a round hole’, particularly where they have transitioned from highly structured and routinized environments such as early intervention.

Theme Two: Behind the Scenes

During analysis, it became apparent that teachers were engaging in multifaceted processes to better understand and support students with ASD. Notably, much of this appeared to be going on behind the scenes, often taking into account support available at hand as well as drawing on other sources. The nature of this and implications for teachers’ ability to support children formed theme two. This theme was divided among three sub-themes – school support, training, and connection.

School support.

Participants appeared to be accessing a variety of resources made available to them through the school, including; accessing special education teachers, having teacher aide support in the classroom, and liaising with HOSES. While having these supports available was important to participants, their views on the quality and ease of accessing these supports varied. While participants such as Matilda (teacher) expressed that she felt ‘very fortunate… that [she was] really well supported’ by her school’s special education staff, others, including Loretta (teacher), lamented the lack of structure around the support provided, highlighting that it was often given ‘on a needs basis when you think of something…’ Conversely, Harriet (teacher) discussed that while the access to support in her setting was not timetabled, she felt confident enough that when it was required she would be able to seek it out:
…If I felt like there was, if I needed more help to do a better job, then I would go and seek it. I would go and see Astrid [the HOSES] and see what’s available and, you know, ask for some more help.

A positive relationship with special education support staff also appeared to foster trust in the information provided for teachers like Fiona, ‘I know I can go to the head of SEP [special education program], or the SEP teachers and ask them because of the relationship I have with them, and I would like I would be able to access that through them.’ At an administrative level, Lauren (HOSES) felt that despite recognition that having a student with ASD can pose additional challenges to teachers, the logistics of finding time and funding to provide adequate support was not always available:

Getting that teacher regular time to meet [with me], not just in their own time after school, and before school, but during class time. [Getting that teacher] extra non-contact time. Recognising the teacher aides that are working in there, that they’re needing upskilling as well. And that’s part of my role, but it’s very hard.

Training.

Consistent with the demographic information presented in Table 1, all participants reported having had access to some form of ASD specific training during their career, ranging from workshops to courses undertaken in tertiary education. Across the interviews, however, it became apparent that training was often provided via a whole school approach and was not specific to participants’ needs, as Loretta (teacher) explained, ‘I wouldn’t say me personally. Our school has done some professional development around children with autism as part of a whole school professional development.’ In comparison, while Kendra, a special education teacher at her school, had been fortunate to receive additional training opportunities, she appeared to
greatly value the on-the-job training received, ‘mainly I guess [I] learnt by, from the HOSES and just doing the job.’ Erica (teacher) highlighted her feelings towards the inadequate preparation of teachers of students with ASD provided by her tertiary education, saying ‘it’s becoming so much more common now to have a child in your class with ASD, and you feel like, as a teacher, you’re not equipped to support them [through tertiary education].’

It was clear, for teachers such as Harriet and Sarah, that although the training they received through a whole school approach might not be specific to their current needs, processes existed within their schools to request additional support. While Harriet felt ‘confident that they would say yes’ to requests for more training, Sarah was more equivocal in her explanation, suggesting that while she would request additional training, as required, ‘it’s not guaranteed that the school would let [her] access it.’ Unfortunately, it appeared that not all schools followed this process for requesting training, leaving teachers such as Loretta to seek out training in their own time. While motivated to further her knowledge, Loretta highlighted the obvious financial and time constraints that limit teachers in achieving this:

Expense and time is a factor. So even if there were like um, like almost scholarships or something, or funding that could be accessed for those staff who do want to go on and do more study and be upskilled in, you know, in having students with special needs in the class.

Connection.

Connecting and forming networks with professionals both within and external to their current setting was commonly alluded to across the interviews. For some participants, connection with the previous EI setting was particularly important. Where participants had been given the
opportunity to connect with the EI service, such as Harriet (teacher), this was reported to be a positive experience:

[During the transition] he came with one of his [EI service] teachers, um along with all the other children who are now [in prep]. Um and he was supported through that, and it gave me an awesome opportunity to talk with one of his [EI service] teachers.

While the EI service in question had a standardised transition procedure in place for students exiting the program; which includes a teacher visit to the EI service, and a visit from the EI service to the school, some participants reported that no contact had been received. Lauren (HOSES) described the importance of children with ASD having ‘the opportunity to come and experience our school’ and engaged the EI service to ensure transition visits were arranged.

Other participants such as Erica (teacher) described that while the school had been in contact with the EI provider, she was not involved in any transition activities, limiting her knowledge of the child, ‘I would have loved to have visited [EI service] last year too, to see um what they’re doing there, like and would have loved to have seen Samuel in his environment too.’ This was further emphasised by Matilda (teacher), who reflected that being directly involved in the transition process better-prepared teachers in what to expect from students with ASD:

At my previous schools to here [previous places of employment] I used to visit the centres of children that were coming into my room… to see where they actually were, what issues there were, so that we, we’re already aware.

Other participants highlighted that forging connections with other teaching professionals outside their own school had provided them with opportunities to increase their knowledge and awareness of available strategies. Teachers supporting children with additional needs at the
school in which Jacqueline (teacher) worked, frequently met with staff from another local school as part of a collaborative arrangement. However, these arrangements were not reflective of most participants’ education settings.

… sometimes just having someone external to it, going ‘ok I’m seeing this’, it just gives it that whole different point of view. They’ll just pick up on something that you haven’t thought about … like it’s still working with a collaborative team, but it’s sort of external to the situation.

Discussion

The aim of the current study was to explore the experience of teachers working with children with ASD, and specifically their role in selection and implementation of strategies to support these children through the transition into formal schooling. The analyses revealed that teacher decisions to select and implement strategies were influenced by multiple factors. While teachers discussed several supports available to assist them in preparing to educate a child with ASD in their classroom, it was also apparent that areas exist for supports to be reinforced and in some cases expanded upon.

Drawing on experience, whether their own or that of their colleagues, was frequently cited throughout the interviews as influencing teacher’s decision making. This result is not surprising, with research in the field of special education (see Cook & Cook, 2013) suggesting that accessing ‘within school supports’ are frequently used by teachers, with colleagues considered a highly reliable source of information. This finding further builds on the results of Boardman, Argüelles, Vaughn, Hughes, and Klingner (2005) who reported that special educators frequently relied on their own expertise in their selection of strategies when working with students with ASD. In fact, Boardman et al., (2005) noted that that within their sample, the
professional experience of teachers were viewed as more important than consideration of available research evidence. As highlighted by participants in the current study, the reliance on professional expertise, over and above available research evidence, may be due to the increased trust placed in individuals with this knowledge. Furthermore, the belief that research conducted in highly controlled settings has little relevance to community settings, might also play a role. While the application of professional judgement is a fundamental aspect of decision-making within an EBP framework, drawing from the experiences of one’s self or others can be influenced by personal biases (Spencer, Detrich, & Slocum, 2012). Future attempts to train teachers would, therefore, benefit from additional information emphasising the importance of balancing professional judgement with consideration of client values and characteristics and the best available research evidence, within the EBP framework, to achieve best outcomes for students with ASD.

Within the population sampled, the consideration of client values and characteristics appeared to play a key role in the selection of strategies. Teachers frequently cited the need to modify and replace strategies daily, to meet the ever-changing needs of children with ASD. This approach supports the findings of Stokes et al., (2016) who highlighted in their research involving mainstream teachers and principals, the value of flexibility and availability of multiple options when working with students with ASD in inclusive classrooms. Despite acknowledging the need for flexibility, teachers in the present study reported using a limited range of empirically supported strategies (e.g., visual supports, antecedent-based interventions). This appears to be in contrast with our previous research (citation withheld for blind review), which found that in a sample of Australian general education teachers, all teachers surveyed reported using the 18 empirically supported strategies listed ‘at least sometimes.’ It might be that the frequently used
strategies in the present study reflect those most suited to the classroom environment, with the appropriateness of strategies a factor which Boardman et al., (2005) found impacted on strategy selection. However, results of our previous work suggest that all 18 empirically supported strategies were at least ‘somewhat appropriate’ for use in the general education classroom (citation withheld for blind review). With appropriateness of strategies, an aspect of their social validity, linked to teacher knowledge and use in the classroom, it is imperative that in addition to highlighting available strategies which have evidence to support their effectiveness, emphasising their ‘fit’ for the classroom might contribute to better uptake.

A desire for more adequate preparation to support students with ASD entering their class was also highlighted by teachers, whether through greater access to more tailored professional learning, or increased connection with other professionals working with the child. With evidence to suggest that pre-service teacher education programs are not adequate in preparing teachers to support students with disabilities in general education settings (see Australian Education Union, 2015), the provision of high quality, relevant, in-service training should be prioritised. In-service professional learning for teachers often consists of one-day workshops (Brock, Huber, Carter, Juarez, & Warren, 2014), which is reflective of the training received by teachers in the current sample. While these school-based workshops are effective in disseminating information to large groups, the lack of additional coaching and feedback often results in limited changes in actual teaching practice (Alexander, Ayres, & Smith, 2015; Bethune & Wood, 2013; Brock et al., 2014). Indeed, teachers in the present study reported that general ASD training, provided to all teaching staff, was often insufficient in meeting their specific needs or contributing further to their knowledge of ASD. Providing teachers with access to the myriad of available resources and training modules made freely available online (e.g., AFIRM modules), and coupling this with
effective coaching and monitoring of practice should, therefore, be prioritised in future attempts to improve training for this population.

Further, despite teachers highlighting the importance of connecting with professionals from the child’s previous setting, this was often met with communication roadblocks. LoCasale-Crouch, Mashburn, Downer, and Pianta (2008), highlight that providing connections between the teachers of two settings (e.g. preschool and year one) for typically developing children can influence teachers’ ratings of their social competence and behaviours. While this connection appears to be important during the transition to school, Quintero and McIntyre (2011) found that in 10% of their participants (preschool and kindergarten teachers) difficulties in collaboration between settings, was reported as a barrier in the transition process. As the transition to school for children with ASD might be more challenging due to their delayed development of critical ‘school readiness skills’, ensuring the connection between professionals supporting these children may, therefore, improve teacher awareness of the capabilities of students and contribute to a more effective transition process.

Limitations and future research

The present study has several limitations which should be taken into consideration when interpreting the results. We used purposive sampling to obtain information from a group of teachers who were working with children transitioning from a single early intervention service. While this has methodological strength in terms of reducing variability in the children’s experience prior to school, it nevertheless may limit generalisability of findings. Furthermore, all but one of the teachers included in our study were all working across government-funded schools, in one Australian state, and were interviewed once only. However, teachers were asked to conduct member checks on their transcripts approximately one month after completing
interviews, to determine that transcripts accurately reflected their experiences. Of the 13 participants, only three amended their transcripts, which suggests that overall participants’ experiences had not changed in that time. It is also important to note that a decision was made to analyse and present the data of a special education support teacher and HOSES alongside that of teachers, with participant roles indicated throughout the results. Although these participants differ in extent to which they interact with students within the classroom, their inclusion in this study assists in providing a more comprehensive understanding of the phenomenon.

Despite the nature of the sampling method, we were nevertheless able to capture the experiences of teachers with a diverse background in teaching, time in the role, and experience with children with ASD. It is possible, therefore, that the results reflect the experiences of other teachers in similar contexts, however, future research should extend to include both government and independent school systems. It is also important to point out that the characteristics of the 11 children with ASD being taught were not assessed by the authors. However, as mentioned, all children had transitioned from multiple locations of an EI service and were currently being taught in an inclusive mainstream classroom, or, for one child an inclusion attachment classroom.

The findings of the study highlight the importance of including the end users of empirically supported strategies in research to understand what drives decisions to select and implement these strategies. By doing so, researchers can better understand the impact of specific contexts such as a mainstream classroom, and the challenges this brings. The participants in this study highlighted several factors that contributed to their decisions to choose strategies, however, referring to the available research was rarely acknowledged as assisting in decision-making. An important avenue for future research should, therefore, focus on increasing teacher knowledge
and awareness of the available research in the field, and determining how this can assist their selection of strategies to use in the classroom. Increasing teacher engagement in the research literature might be achieved by the consideration of stakeholder perspectives when designing research projects.

Future research directions could also assess the effectiveness of establishing professional networks, which extend beyond a teacher’s current educational context. As participants in this study suggested, the relationships they had formed with other teaching professionals were an important source of information and support. Providing this level of connection with professionals outside a teacher’s current network, including establishing connections with a child’s previous EI service provider, has the potential to open new avenues for bidirectional information sharing. As one participant, Erica, explained when discussing the benefits of collaborating with other professionals “… that team approach, because at the end of the day the focus is that child and supporting their needs in the classroom”.

Acknowledgments

This research will form part of Miss Sulek’s Doctor of Philosophy dissertation and was supported by funds made available through her Australian Postgraduate Award Scholarship from the Australian Government, and Dr Trembath’s NHMRC Early Career Fellowship (GNT1071811).

Declaration of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship, or publication of this article.
References


**Appendix**

To avoid repetition within the thesis, Appendix A (labelled *Appendix G: Semi-Structured Interview Guide, Phase Two*) can be found on page 205.
Chapter 6: Phase Three

Statement of contribution to the co-authored published paper

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:

Sulek, R., Trembath, D., Paynter, J., & Keen, D. Social validation of an online tool to support transitions to primary school for children with autism. Manuscript accepted for publication 7 June 2019.

My contribution to this paper involved:
Designing the study, ethics approval, development of prototype online tool, recruitment of participants, data collection through semi-structured interviews, data analysis, and leading the writing of the manuscript including the complete first draft and subsequent revisions based on author and reviewer feedback.

(Signed) Signature removed

Rhylee Sulek

(Countersigned) Signature removed

Primary Supervisor: Associate Professor David Trembath
Social Validation of an Online Tool to Support Transitions to Primary School for
Children with Autism

Rhylee Sulek¹, David Trembath¹, Jessica Paynter¹, & Deb Keen²

¹Menzies Health Institute Queensland, Griffith University
²Autism Centre of Excellence, Griffith University

Author Note

Rhylee Sulek, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia; David Trembath, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia; Jessica Paynter, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia; Deb Keen, Autism Centre of Excellence, Griffith University, Brisbane, Australia.

Correspondence concerning this article should be addressed to Miss Rhylee Sulek, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia.

Email: r.sulek@griffith.edu.au
Abstract

Background: Successful transitions into primary school for children with autism relies on both the readiness of children to attend school and the readiness of schools and teachers to support students with additional needs. There is evidence that (a) connections between education settings, (b) teachers’ access to quality resources, and (c) support from other professionals, have the potential to contribute to successful transitions (see Hess, Morrier, Heflin, & Ivey, 2008; Jackson & Bruegmann, 2009; Pianta & Kraft-Sayre, 2003), however, the extent to which they are present is varied. This study examined the views of parents, teachers, heads of special education, and inclusive support staff regarding the social validity of harnessing these three factors in an online tool to support transitions to primary school.

Method: Using a qualitative approach, 21 stakeholders participated in interviews in which they (a) shared their views regarding the relevance of the three factors and (b) considered the application of these factors within a prototype online tool.

Results: The ‘Potential Value’ of the factors was explored, highlighting opportunities for the prototype online tool to increase the capacity of teachers working with students with autism while providing access to information and professional support. While the combination of factors, packaged as an online tool, was ‘Acceptable and Appropriate’ participants also emphasized that in development of any new tool there is a need to be conscious of, and not undermine, existing processes and systems.

Conclusions: These findings highlight the potential value and appropriateness of combining and presenting the identified factors in tools to support transitions to primary school for students with autism.

Keywords: autism spectrum disorders, transition to school, education, qualitative research
Social Validation of an Online Tool to Support Transitions to Primary School for Children with Autism

The transition from early childhood learning environments to formalized schooling is an important juncture in the lives of all children and their families (Eckert et al., 2008; Hirst, Jervis, Visagie, Sojo, & Cavanagh, 2011). Although the transition into primary school brings opportunities for growth and independence, children are faced with more formalized academic demands and multiple transitional periods throughout their day, with support for families often reduced (McIntyre, Blacher, & Baker, 2006; Pianta & Kraft-Sayre, 2003). While this period of change can be difficult for all children, children with additional needs have been identified as an “at risk” group in reviews of the literature (Fane, MacDougall, Redmond, Jovanovic, & Ward, 2016, p. 133). Accordingly, children with autism spectrum disorder (herein referred to as autism), who are the focus of the present study, face challenges during this transition that are compounded due to social-communication and behavioral difficulties inherent to the disorder (Denkyirah & Agbeke, 2010; Forest, Horner, Lewis-Palmer, & Todd, 2004; Marsh & Eapen, 2017; McIntyre et al., 2006). With agreement in the literature that the ‘success’ of a child’s transition to school, and their experience in the early school years play an important role in later school engagement and outcomes (Hirst et al., 2011; Melhuish & Barnes, 2012), there is a need for focused efforts ensuring successful transitions into primary school for children with autism.

There is evidence to suggest that the readiness of children to attend school is a critical factor that deserves consideration during transitions (Welchons & McIntyre, 2017). Although school readiness is a heavily debated topic (see Graue, 2006), there is some shared understanding that school readiness incorporates a range of key skills, including the ability to follow instructions, work independently, attend to tasks, communicate with others, which assist all
children in preparing for, and making the transition to, their next learning environment (Janus & Duku, 2007; Welchons & McIntyre, 2017). While the acquisition of these skills prior to school entry is not always achieved for children with autism, research has demonstrated their importance in successful transitions. For example, Marsh and Eapen (2017) found that skills such as attending, communication, and adaptive skills were associated with classroom participation in new school environments for children with autism. Looking beyond the child, however, frameworks such as the Ecological Systems Theory (Bronfenbrenner, 1992) and the Ecological and Dynamic Model of Transition (Rimm-Kaufman & Pianta, 2000), recognize the connectedness and influence of external contexts (such as the school and early learning environment) and relationships (e.g., peers, teachers, and parents) on child development. For children with autism who may require additional support during this period of change, it is important that attempts to improve the transition into primary school settings consider these complex contextual and relationship factors when designing approaches (Britto, 2012; Bronfenbrenner, 1992; Marsh & Eapen, 2017; Welchons & McIntyre, 2015). Three factors, (a) establishing connections between education settings, (b) accessing quality resources, and (c) peer to peer knowledge sharing (see Hess, Morrier, Heflin, & Ivey, 2008; Jackson & Bruegmann, 2009; Pianta & Kraft-Sayre, 2003), established in the research literature, have the potential to impact aspects of the transition to school and will be discussed.

Connections between Settings

Across the literature for both typically developing children and children with disabilities, it is recommended that transition to school preparations begin in the child’s pre-school setting and continue into the early months of formal schooling (i.e., kindergarten or prep), with several key activities recommended (Pianta & Kraft-Sayre, 2003). Among these activities is the
promotion of collaboration between, and involvement of, multiple key stakeholders (e.g., parents, previous service teachers, and prospective teachers) in order to establish relationships and provide opportunities for information exchange to occur (Denkyirah & Agbeke, 2010; Marsh & Eapen, 2017; Pianta & Kraft-Sayre, 2003; Quintero & McIntyre, 2011; Welchons & McIntyre, 2015). Despite agreement regarding the importance of establishing connections between settings, this is not always achieved in practice (Forest, 2004). To illustrate, Quintero and McIntyre (2011) highlighted that 10% of preschool and kindergarten teachers of students with autism and developmental disabilities surveyed reported difficulties in establishing collaboration between settings.

Welchons and McIntyre (2015), in their study comparing perspectives of caregivers, preschool teachers, and kindergarten teachers during the transition to school for typically developing and children with developmental delays, further found that approximately 80% of early education teachers surveyed reported that no contact (e.g., phone calls, curriculum planning) was made with the child’s future teacher. The current authors (citation withheld for review) also found that teachers of students with autism, who had recently transitioned into primary school, reported that a lack of communication with the child’s previous service, including inadequate information sharing procedures, impacted the extent to which they felt prepared to support these students in the classroom. As children with autism may require additional support as they start primary schooling, providing opportunities for collaboration and information sharing during the transition process can reduce potential challenges faced by students and teachers.

Access to Intervention Resources
Ensuring teachers have access to relevant, high-quality resources which support the implementation of empirically supported treatments (ESTs), in addition to establishing connections between settings, might also assist in improving transitions to primary school for children with autism. With an emphasis on clinicians and educators engaging in evidence-based decision making when working with individuals with autism (Australian Government Department of Education and Training, 2018; "Individuals with Disabilities Education Act of 2004," 2004), the utilization of ESTs, established through rigorous research, is recommended. Fortunately, two large systematic reviews have identified autism specific ESTs (National Autism Center, 2015; Wong et al., 2015), with further work by Fleury, Thompson, and Wong (2015) highlighting a subset of these most relevant to supporting school readiness skills in school-aged children with autism.

The use of ESTs (e.g., visual supports, reinforcement, antecedent interventions) hinges on teachers’ knowledge of these treatments, with research into the uptake of ESTs in mainstream classrooms (Hess, Morrier, Heflin, & Ivey, 2008), special education settings (Carter, Stephenson, & Strnadova, 2011), and early intervention services (Paynter et al., 2017; Stahmer, Collings, & Palinkas, 2005), suggesting that educators continue to use a combination of both ESTs and unsupported strategies. Limitations in skills and knowledge of teaching staff, time available for teachers to access resources, and the culture of the school towards providing support and resources to both teachers and students, are suggested as factors likely to influence the use of ESTs (Kucharczyk et al., 2015). Supporting the selection and implementation of ESTs alone is unlikely to be sufficient for supporting successful transitions. For ESTs to be effective for students with autism, it is important that teachers select, implement, and assess the success of ESTs with reference to the available knowledge about the child, highlighting the importance of
fostering connections between settings, as per the EBP framework (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000). Additionally, the use of professional judgment can greatly assist in understanding which ESTs will work in teachers’ current context and can be facilitated through discussions with other professionals.

**Peer to Peer Knowledge Sharing**

Educators frequently engage in knowledge sharing amongst their professional peers, with peer learning a preferred method for improving practice (Jackson & Bruegmann, 2009). Sharing within peer networks, whether in formally established learning groups or informal spaces (e.g., staff break rooms) also serves the purpose of meeting teachers’ immediate needs and fosters feelings of trust and safety with colleagues (Cook & Cook, 2013; Hew & Hara, 2007; Mawhinney, 2010). Engaging in peer networks has also been found to increase problem solving and confidence when working with students with disabilities (see Mortier, Hunt, Leroy, Van de Putte, & Van Hove, 2010), and increased motivation of teachers to share their own experiences in order to improve their own practice, and the practice of others (Hew & Hara, 2007; Tseng & Kuo, 2014). Informal knowledge sharing is, however, not without limitations. Where the quality and content of information shared is not monitored, the potential for misinformation to be spread is increased. The spread of misinformation is often accidental in nature, and more likely to be accepted where high levels of trust are placed in the source of that information, for example, when this information is shared among colleagues (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012). Further, in the absence of established processes to reach the broader professional network, informal knowledge sharing with the goal of improving practice relies on the quality (e.g., knowledge and experience) of teachers’ peers themselves (Jackson & Bruegmann, 2009).

While peer to peer sharing provides opportunities for teachers working with students with autism
to feel supported and share their experiences, it is not clear to what extent peer to peer connections alone contribute to improving transitions to school. When coupled with improved connections between settings and access to quality resources however, opportunities to develop a holistic approach to the transition to school for children with autism are recognized.

**Existing Transition Supports**

The connection between settings, access to resources, and peer to peer knowledge sharing, have been identified as having the potential to impact the transition to school for children with autism. To date, however, there have been few attempts to apply these factors in supporting the transition to school for children with autism. Marsh and Eapen (2017) in their report on the transition to school for students with autism provide a comprehensive review of activities likely to assist transitions, including collaboration between stakeholders and the active preparation of the child for school. While these activities provide a general context for assisting transition, there are no clear guidelines on achieving these in practice. In the local context in which this study was conducted, an online transition resource package was developed in conjunction with early intervention service providers (Queensland Government Department of Education, 2016). While the package provides information and advice for families and educators around transition planning, individual use of the resource varies, which ultimately fails to overcome issues with connecting stakeholders. A further example is the PrEPIC program (Trembath & Starr, 2017), a pre-school program for children with social communication and other learning disabilities which focused on active preparation of children for transition and the establishment of a positive relationship between families and educators (as suggested in Marsh & Eapen, 2017). Children involved in PrEPIC attended a class, four days per week, in the year prior to their commencement of school in which they engaged in a range of modified activities of a
Similar nature to those children experience in their first year of school (e.g., group story time, drawing, free play). While PrEPIC (Trembath & Starr, 2017) is an example of how multiple elements of transition can be drawn together in a single approach, highlighting the importance of connectivity across stakeholders and preparing children, this program may lack sustainability, requiring an extensive time commitment of teachers and families involved.

**The Potential of Information Communications Technology**

The barriers that inhibit achieving connection between settings, teacher access to resources, and peer to peer knowledge sharing, persist despite advances in information and communications technology (ICT). For example, digital alternatives to face to face communication, such as Blackboard Learn (Blackboard Inc., 2018) and Moodle (Moodle Pty Ltd., 2018), are frequently adopted in tertiary education settings. These platforms provide an alternative means to connect teaching staff with students enrolled in courses and have the potential to be relevant in primary education settings. Online resources, including the Autism Focused Intervention Resources and Modules (AFIRM) (National Professional Development Center, 2018), Autism Internet Modules (OCALI, 2018), and easy to understand websites (Raising Children Network, 2017), have also been developed to provide accessible and zero cost information and/or training relevant to teachers of students with autism. Finally, the increasing use of online social networking (e.g., discussion boards and online mailing lists) highlights opportunities to not only extend peer networks but provides the capacity to monitor, and prevent, the potential spread of misinformation.

A shift towards digital records management, curriculum planning, and reporting is occurring in some settings, for example, the use of OneSchool (Queensland Government Department of Education, 2018) across public schools in Queensland, Australia. OneSchool is
currently used in all public schools in Queensland by approximately 90% of school staff, with an evaluation undertaken in 2013 highlighting the convenience and ease for users of entering and accessing information through the program (State of Queensland Department of Education Training and Employment, 2013). Further, digital learning communities or mailing lists for teachers have been established, with higher rates of engagement linked with improvements in teacher skill and knowledge (see Matzat, 2013). With increasing capabilities of ICT for easier and more immediate access to information and a wider scope for connecting individuals, future attempts may do well to capitalize on these features when considering their potential for contributing to successful transitions to primary school for children with autism.

**Study Purpose**

This study was part of a broader project to help understand and address the need to support the transition to primary school for children with autism. The overall project was guided by the Knowledge to Action (KTA) framework developed by Graham et al. (2006), which highlights two distinct but interactive processes: knowledge creation, and application of knowledge (action cycle). The first phase of this research sought to adapt current knowledge to local contexts, investigating general education teacher knowledge, use, and perceived social validity of a set of autism-specific ESTs (citation withheld for blind review), with the second phase investigating barriers and facilitators to use of ESTs, and existing support arrangements for general education teachers (citation withheld for blind review). Drawing on these findings the current study sought to address the next step in the action cycle, selecting and tailoring interventions for implementation. Specifically, this study sought to explore stakeholders’ views regarding the social validity, or potential importance and acceptability in real-world settings.
(Foster & Mash, 1999; Kazdin, 1977; Wolf, 1978), of combining the three factors identified above in a prototype online tool to support transitions to primary school for children with autism.

**Method**

**Design**

A qualitative design was used, involving a series of participant interviews and the Framework Method of analysis, to explore participants’ views on the identified factors (i.e., the connection between settings, access to resources, and peer to peer connection) and the perceived social validity of presenting these within an online based tool. The Framework Method, which sits within the broader family of thematic analysis (Gale, Heath, Cameron, Rashid, & Redwood, 2013), is designed to support researchers to systematically reduce data while comparing across codes and participants. This is achieved through the use of a matrix format that is ideally suited to examining different stakeholder views regarding the same broad construct.

**Participants**

Ethics approval was obtained from the authors’ research institute [blinded for review] and the state education department. The authors utilized purposive sampling to recruit participants, identifying individuals who were in a strong position to provide insight into the transition to school for children with autism. This included targeting parents, teachers, Heads of Special Education Services (HOSES), and other classroom support staff, to ensure diverse views from all relevant stakeholders. For school-based staff to be eligible for participation, they were required to have experience working with children with autism in a school setting (including in a support-based capacity). As we were seeking a diverse range of views, no other eligibility criteria were set. Of the 26 individuals approached, 21 agreed to be involved in the research. Potential participants were first contacted via email in terms one and two of the 2018 school year and
provided with the information and consent forms for the study. Those who consented were then contacted to arrange a time for face to face interviews, with one participant opting for an online interview using video conferencing software. Participants were not offered incentives from the research team, or their schools (where applicable), for their involvement in the research.

Participants were five parents, seven foundation year (also known as prep or kindergarten) teachers, five Heads of Special Education Services (HOSES), and four inclusion support staff who are largely involved in the transition to school for children with autism. The participants were all Caucasian females, aged between 27 and 56 years ($M = 43.30$, $SD = 8.87$), with the majority (57.8%) indicating their highest academic qualification was a Bachelor’s degree. Parents indicated that their child had a confirmed diagnosis of autism and had transitioned to school in the previous two years. All children had received early intervention, the majority receiving group center-based early intervention. All school-based participants currently, or had previously, supported students with autism, and ranged in their years’ experience in the industry. For more details, please see Table 1.

**Prototype Online Tool**

Each factor (i.e., the connection between settings, access to resources, peer networks) was operationalized for inclusion in a prototype online tool (see Appendix A). The prototype online tool was developed using the Blackboard Learn software due to its availability and capacity to incorporate the desired features. It was proposed that for children with autism transitioning to school, the tool would be made accessible to their parents, teachers from their previous setting (e.g., early intervention service or childcare) and their current teacher, including support staff as needed.
Table 1.

Participant demographics split by group.

<table>
<thead>
<tr>
<th></th>
<th>Parent</th>
<th>Classroom Teacher</th>
<th>Head of Special Education</th>
<th>Inclusion Support Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 5</td>
<td>n = 7</td>
<td>n = 5</td>
<td>n = 4</td>
</tr>
<tr>
<td>Highest Academic Qualification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cert 3 or 4 (Tafe)</td>
<td>2 (40%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>1 (20%)</td>
<td>6 (85.7%)</td>
<td>2 (40%)</td>
<td>3 (75%)</td>
</tr>
<tr>
<td>Postgraduate Degree</td>
<td>2 (40%)</td>
<td>1 (14.3%)</td>
<td>3 (60%)</td>
<td>1 (25%)</td>
</tr>
<tr>
<td>Education Setting*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public School</td>
<td>4 (80%)</td>
<td>7 (100%)</td>
<td>5 (100%)</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>Catholic School</td>
<td>1 (20%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>39.00 (5.05)</td>
<td>46.71 (9.12)</td>
<td>42.60 (12.91)</td>
<td>41.75 (5.62)</td>
</tr>
<tr>
<td>Min-Max</td>
<td>35 - 45</td>
<td>33 - 55</td>
<td>27 - 56</td>
<td>36 - 49</td>
</tr>
<tr>
<td>Time in role (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>17.00 (8.79)</td>
<td>12.80 (4.86)</td>
<td>19.25 (7.14)</td>
<td></td>
</tr>
<tr>
<td>Min-Max</td>
<td>3 - 30</td>
<td>7 - 20</td>
<td>13 - 29</td>
<td></td>
</tr>
</tbody>
</table>

Note: * For parents, education setting indicates setting at which child was enrolled.

**Feature: the connection between settings.** To facilitate connections between settings, one feature of the prototype online tool was a closed group available to the child’s current and previous teacher. The closed group provided functionality for group members to ‘chat’ via a discussion board, with the capacity for child-specific reports (e.g., transition reports, therapy reports) to be uploaded for access by current teachers.

**Feature: access to intervention resources.** To facilitate access to relevant, quality resources which support the use of autism specific ESTs, an open access page would be available for all members enrolled in the prototype online tool. This page would host resources, including details of ESTs, where to access training (e.g., AFIRM), and links to suggested websites.

Resources, where copyright/permissions permit, would be downloadable.
**Feature: peer to peer sharing.** To facilitate professional learning through peer networks, the final feature involved the establishment of a discussion board. The discussion board would be available to primary school teachers only. To ensure posts met community guidelines (e.g., no identifying information of children/school shared, posts in line with emphasis on EST, no discriminatory or inappropriate language), and to reduce the spread of misinformation, the discussion board would be moderated by a member of the research team with experience in providing intervention and support to teachers of students with autism.

It is important to note that the online tool was not ‘active’ and was created to assist in presenting the identified factors as a comprehensive package, aimed at targeting the transition to primary school for children with autism, to participants for feedback.

**Procedure**

Interviews were conducted between terms two and three of 2018 by the first author. Prior to the interview, participants were provided with a copy of the semi-structured interview guide, developed by the authors (see Appendix B) to allow them time to reflect on the questions. At the start of the interviews, participants were reminded of the information contained in the Participant Information Sheet, specifically that all information provided would remain confidential and that they were free to withdraw from the research at any time. The interview guide covered (a) an explanation of each factor and its potential to contribute to successful transitions; (b) a description of how the factor was integrated into the prototype online tool; (c) questions around the usefulness of the factor in transitions to school; (d) barriers that might impede engagement with an online tool; and (e) any further feedback participants had regarding the tool or factors described. Participants were then guided through the prototype online tool, hosted on Blackboard Learning, by the first author. Throughout interviews, participants were able to ask questions.
about the prototype tool and were invited to suggest any changes, or improvements that might contribute to more successful uptake should the tool be implemented. Interviews took between 30 minutes and one hour to complete, including the ‘tour’ of the tool, and were audio recorded. Recordings were transcribed by an external transcription service, with transcriptions provided in a word.doc format. Transcriptions were sent to participants, who were invited to comment on the accuracy of statements made during the interview. One participant made changes to her transcript to remove discontinuities in speech. Following data analysis, participants and schools involved in the research were sent a summary of the preliminary findings and were invited to comment on theme development. No feedback was received from the participants.

Data Analysis

Participant interviews were analyzed using the seven stages of the Framework Method of analysis as described by Gale et al. (2013). Following transcription of participant interviews (Stage One), all transcripts were read, and re-read, in full by the first author (Stage Two). Any journal notes made following interviews were also reviewed during this stage. Line by line, open coding was then conducted independently by the first and second author on three transcripts, one each from a parent, HOSES, and teacher (Stage Three). Following independent coding, the first and second author met to discuss the coding schemes used. Any differences in coding, differences in interpretations of the data, or overlap between codes, were discussed until the authors reached a consensus. Similar codes were then grouped into categories, with the first and second author creating brief descriptions of each code, which formed the analytical framework (Stage Four). A total of 29 codes, across six categories, formed the final analytical framework. The first author then applied the analytical framework to the remaining transcripts, creating new codes where necessary (Stage Five). The computer-assisted qualitative data analysis software
NVivo was used to code all transcripts. Using NVivo, participant data was charted into a series of matrices, with each participant its own row, and each code its own column (Stage Six). A copy of these matrices can be made available upon request to the corresponding author. After reviewing the matrices, the first and second author met again to generate themes, making connections across participants and categories (Stage Seven). This process was guided by the research questions, with themes and associated subthemes reflective of the components of social validity. Rather than providing descriptions of participants responses, or indicating the percentage of agreement across participants, the development of themes aimed to provide more abstract explanations of the data collected. This resulted in the development of two themes, with associated subthemes as indicated in the results, as seen in Table 2. Note that pseudonyms are used throughout the reporting of results.

**Credibility**

Four approaches were used to ensure credibility and trustworthiness of interpretation and reporting of the data (Patton, 2015). First, as noted above, participants were invited to complete member checks following transcriptions of interviews. This was completed in addition to requests for further information to clarify any statements during the interview itself. Second, the first author utilized triangulation when analyzing the data, considering data gathered during interviews, journal notes made following interviews, and the wider research literature. Third, the first and second authors met to review interview transcripts, and the first author’s analysis, identifying and addressing errors or disagreements in the coding framework. Finally, an audit trail was created through the use of written meeting notes and NVivo memos, enabling review of the analysis process by the third and fourth authors. As the researcher is closely involved with the production of research and its outputs, the credibility of findings and accuracy of the research
can be enhanced by sharing the experiences, perspectives, and any potentials for bias they might bring to the analysis (Patton, 2015). The first author is a PhD candidate, with experience in early intervention, who completed this project in partial fulfilment of her candidature requirements. The first author was supervised by the remaining authors who have experiences and expertise in education, psychology, and speech pathology. The authors advocate that all children with autism have the right to participate in inclusive education, which starts with a positive transition into formal schooling.

Results

Theme 1: Potential Value

Usefulness. Across participants, there were consistent reports that the prototype online tool could provide a valuable contribution to existing systems, processes, and knowledge building for individuals involved. The feature proposing alternatives methods for establishing connections between education settings was supported across participants, with teachers and parents alike noting the power of information when working with children with autism: “Rather than taking steps backwards you can just continue through with what’s worked, and what’s appropriate for those individual students” (Becky, teacher), “Even if it’s just two basic recommendations to make their [the teacher’s] life better and make that child be more relaxed so they have a better experience and learn more” (Gloria, parent).

Across participants it became apparent that the prototype tool could potentially offer opportunities for building capacity in teachers and teams supporting children with autism, simultaneously reducing pressures on support staff within the school. By knowing where to access resources, support and information on children in their classroom, the prototype online tool could not only assist teachers in being “more prepared” (Amelia, teacher), it could also
“allay some fears” for teachers who were unfamiliar working with students with autism (Melissa, HOSES). Anita (support teacher) also noted that:
### Table 2.

**Themes, sub-themes, and associated quotes.**

<table>
<thead>
<tr>
<th>Themes and Sub-Themes</th>
<th>Associated Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme 1: Potential Value</strong></td>
<td>&quot;I think, if you provided them with lots of good resources and strategies and then they can then think about that in relation to specific children, that would be very useful&quot; (Paula, HOSES)</td>
</tr>
<tr>
<td>Usefulness</td>
<td>“I would see the real benefit is being I’ve got a problem, this is impacting me now, this is making my life difficult now, how can I easily get the information I need to make my life easier? That’s how I would see they would use it” (Gloria, parent)</td>
</tr>
<tr>
<td>Motivation to engage</td>
<td>“If they know there’s a resource there they might just go on a Thursday night on the lounge and tap into their laptop and have a little look around and go, “I didn’t know that, I didn’t know that,” and that might fuel their fire to keep looking” (Karina, support teacher)</td>
</tr>
<tr>
<td></td>
<td>“You know teachers are time poor and they want to know, is this worth me investing my time in? Am I going to get the outcome I need? And if you can say to them, yeah you will, that could be helpful” (Isabelle, parent)</td>
</tr>
<tr>
<td><strong>Theme 2: Acceptable and Appropriate</strong></td>
<td>“It has to be very easy, or they will just walk away” (Anita, support teacher)</td>
</tr>
<tr>
<td>Online approach</td>
<td>“If someone was monitoring it [discussion boards], that’s fine. Sometimes the Facebook sites I know get a little bit unprofessional but if it is monitored … then that would be a bit different” (Jennifer, teacher)</td>
</tr>
<tr>
<td>Where it fits</td>
<td>“Emails are so often misinterpreted because it’s the written language. Whereas when you’re face to face you pick up on those hand gestures” (Julie, support teacher)</td>
</tr>
<tr>
<td></td>
<td>“Maybe where you do have a bit of inexperience at least you can access something else and then come together as a group” (Heather, teacher)</td>
</tr>
</tbody>
</table>
A lot of teachers are overwhelmed when they come in and to have students with disabilities in their class and they don’t really know where to go, so this is a place that they can [go], so I think it's really beneficial.

Karina (head support teacher) expressed that providing teachers with access to an online tool, as suggested, could “give them [teachers] a bit more initiative to go and help themselves rather than go ‘that’s your job,’” however, was conscious that an online tool should not “take away from that human resource [accessing support within school].” Parents also agreed that providing teachers with centralized access to information about their child could reduce their need to “reiterate everything. Every single thing…every week,” (Hannah, parent) relieving some of the pressures felt by parents to relive their, sometimes, challenging experiences of being a parent of a child with autism.

With a lack of time reported to be a barrier to the use of “best practice interventions” (Gloria, parent), the capacity for the online tool to provide relevant, easy to access, and high-quality information was therefore highlighted, as Amelia (teacher) notes: “having something that I can go and go, ‘oh I know that this source is recommended, that’s come from somewhere [reputable]’”. While Isabelle (parent) expressed that training and access to support for teachers should be facilitated within school settings, she reported that this was not always achieved in practice, “In an ideal world you shouldn’t have to go to a platform [prototype online tool] for that, but it doesn’t happen,” acknowledging the value of providing teachers alternative sources of communication, connection, and access to resources.

**Motivation to engage.** Despite generally supportive views of the potential for the prototype online tool to contribute value to transitions, participants highlighted a number of factors which might contribute to the use of the tool. Parents noted that the culture within schools
towards supporting best practice and preparing teachers to work with students with autism could impact the uptake of the proposed tool. As Gloria (parent) stated, the “culture of expectation of adherence to best practice is really set by the principal,” highlighting that schools which lack this culture might not display interest in using the online tool. Danica (Parent) further expressed that even where teachers strived to provide quality support for children with autism, “if the rest of the school is not supportive… and there is that not whole school approach,” this could come undone, ultimately undermine potential engagement with the online tool. Participants also suggested that the ‘rewards’ for engaging in an online tool be clearly communicated, as Danica (parent) stated, “what incentive apart from having harmony in the classroom, and having it be successful, is there for [using the online tool]?” The need to clearly communicate the value of engaging in an online tool was also expressed by Peta (HOSES) “it’s got to be enticing enough for them [teachers] to want to go, I am actually going to get something out of this. It is not just something extra that I have to do.”

Participants also reported that the capacity of the tool to meet the “real life need[s]” (Ariana, HOSES) of teachers, identified during transitions would impact engagement, as Kristy (teacher) notes, “if there was a concern there, I’d definitely be looking for something to help with the management of the children with autism, for sure.” With the comment that teachers were frequently under immense pressures and “struggling to keep on top of everything that’s part of their role” (Lesley, HOSES), increasing demands on teachers time, such as to engage in the online tool, might result in teachers who are “willing but not always able to engage.” (Paula, HOSES). Tanya (teacher) also expressed that while “it would be good to have access [to the online tool] … I don't know if I'd use it all the time,” with Becky (teacher) suggesting that motivation to improve practice and engage with an online tool would be “an individual thing.”
Theme 2: Acceptable and Appropriate?

Online approach. Overwhelmingly participants agreed that packaging the identified factors as an online tool to support transitions was appropriate, as reflected in the statement “it's the way that everything is going to go anyway, everything is online” (Tanya, teacher). The online approach also offered some advantages over traditional approaches to providing support during transitions, with teachers highlighting the benefit of being able to access the tool in “their own time” (Julie, support teacher), and reducing difficulties in establishing connections with a child’s previous teacher, “it’d probably be easier [communicating] through online because we don’t always see them” (Cristy, teacher). Teachers and HOSES were also careful to highlight the logistical considerations that would need to be made when considering the uptake of a new tool. The need for the tool “to be very easy” (Anita, support teacher) to access, was a common theme across the participants working within schools, highlighting that “some time and energy” (Becky, teacher) should be devoted to ensuring that logging in to an online tool, and navigating the various components, was easily achieved. This was thought to be particularly salient for teachers who might not be “as competent around the online world,” (Jennifer, teacher) a factor which might inhibit their desire to use the prototype online tool.

Across participants, however, concerns were raised regarding data security of the online tool, particularly as child reports could be uploaded for access by authorized users, “I mean you have to be careful about the constraints that you put around it, and it would be obviously a locked, you’d have to have a password to get in, type thing” (Karina, head support teacher). Participants further suggested the need for moderation of discussions held within the online tool, with Sally (support teacher) emphasizing the need for any online discussion forum to “be a professional space”, a sentiment reflected in Isabelle’s (parent) comment surrounding the need
for “some sensitivity” by teachers when discussing experiences with children with autism within the proposed tool.

**Where it fits.** Participants expressed that while the online tool could provide an acceptable and appropriate means for teachers to access information and make connections overall, there was a need to consider how the tool would co-exist with existing transition processes. This was particularly salient for HOSES interviewed, who are largely responsible for overseeing transitions into primary school for children with autism. Concerns around doubling up of information between the suggested tool and the existing OneSchool system in place were raised by Peta, “if the documents [transition reports] were given to us we could just upload them straight to OneSchool, otherwise it’s having two databases.” HOSES were also cognizant that teachers do not rely solely on resources and discussions provided within the online tool, as Melissa noted, “They’ve [teachers] got access to staff, and we have, we have meetings set up in the school to give teachers a weekly opportunity to discuss students. So, it would be an add-on to what’s already happening” (Melissa, HOSES). Instead, the online tool, when “paired with the face to face processes that already go on” (Peta, HOSES), could provide added value to these processes. Other participants, however, recognized that additional support provided through the online tool would be an acceptable means of complementing the processes that occur within schools, “we've got our school support, which is amazing. But to be able to feed off other schools as well and have some ideas ready there, [that’s] definitely the way to go” (Sally, support teacher).

**Discussion**

The transition to school has been highlighted as a potentially challenging period of change for children with autism, their families, and their future classroom teachers. However,
few attempts to provide a comprehensive approach to supporting teachers and students during this period have been developed. After identifying factors which have potential to offer positive contributions to supporting the transition into primary school, the purpose of the current study was to determine whether combining these factors in an online based tool would be perceived as a socially valid method for providing support.

The first theme captured the perceived value of the prototype online tool in supporting the transition to school for students with autism. Participants highlighted the potential for the prototype online tool to act as an alternate means for teachers to access both information about the child, and relevant resources that might assist the child during transition. With research indicating that communication breakdowns can occur during the transition to school (Quintero & McIntyre, 2011; Welchons & McIntyre, 2015), a sentiment reflected in the current study, providing access to child-specific information, particularly where children have a diagnosis that might impact transition is imperative. Participants further noted that providing an avenue for teachers to access support, including both relevant resources and other education professionals, had the potential to increase the capacity of teachers working with students with autism, reducing reliance and pressures on other support staff. This finding is consistent with previous research which suggests that improving knowledge and skills is both a motivating factor to engage in (Hew & Hara, 2007), and positive outcome of (Matzat, 2013), teacher engagement in online professional communities. These findings highlight that providing connections between settings, access to quality resources, and sharing with other professionals are important factors during the transition to school. Further, the integration of these factors into an online tool has the potential to contribute value to this period of change, emphasizing the need for comprehensive approaches to transition.
Ensuring engagement in the prototype online tool was also highlighted as being critical to its success, with participants suggesting that the culture of schools towards supporting best practice could influence uptake. This finding echoes the results of Kucharczyk et al. (2015), who found that the school environment impacted the uptake of empirically supported treatments for adolescents with autism. Additionally, with limited spare time and increasing demands in the classroom, a finding often cited as a barrier to teacher engagement in transition activities (Quintero & McIntyre, 2011) and reflected in the current study, participants noted the importance of clearly communicating the potential rewards to be gained by engaging in the online tool. Such factors include flexibility in how teachers access resources and connect with peers, in addition to the knowledge building described above, findings consistent Smith’s (2016) investigation of the perceived benefits of ICT use in learning and teaching. Being clear to communicate the expected benefits of engagement in any future attempts to support transition is, therefore, a critical step in ensuring uptake and engagement in these approaches.

The second theme concerned the appropriateness and acceptability of providing transition support through the suggested online tool. The various stakeholders agreed that providing transition support for children with autism in a digital context was not only appropriate but consistent with shifts towards digital storage and access to information within the school context, including the use of OneSchool (Queensland Government Department of Education, 2018) in the local context. However, stakeholders reported that all information stored within the suggested tool should be secure, with access being granted to relevant users only. The need for any discussions contained within the online tool to be monitored and moderated, ideally by a third party with knowledge of both the education context and autism literature, ensuring adherence to best or evidence supported practice was also thought to impact acceptability. This finding is
consistent with that of Smith (2016) who found that concerns around the credibility of information shared through social media were a potential hindrance to use of online learning tools. Moving forward, these results provide valuable insight into the acceptability of utilizing ICT in providing transition support and highlight the need to consider these technologies when developing new approaches.

An important finding when considering how an online tool of this nature would be implemented in schools, was the need to consider existing systems and transition supports, ensuring its promotion within schools as a tool to be used in conjunction with, and not superseding, these. While continuing to rely on existing support pathways could be seen as impeding engagement in the online tool, research by Matzat (2013) instead proposes that embedding the use of online communities of professional learning with existing offline professional networks (i.e., one’s within school colleagues) can be to the benefit of teachers, leading to increased discussion and knowledge sharing. Although a universal approach to providing transition support to teachers of students with autism is appealing, these findings suggest that adapting to the local school context is likely to increase acceptance of, and engagement in the prototype online tool.

Limitations

Several limitations must be considered when interpreting the results of the present study. The authors employed purposive sampling when selecting participants. While the methodological strength of this approach lay in the ability to ensure that key stakeholder perspectives were gathered when seeking feedback on the proposed approach to supporting transitions, it may nonetheless reduce the generalizability of findings. It is also important to note that all parents interviewed had children who had transitioned from early intervention services
into the first year of primary school, and it may be the case that the transition experience for these families is not representative of children who transition from early childhood settings (without specific autism intervention), or who are not diagnosed until school entry. Despite the nature of the sampling method, we were able to capture feedback from a diverse group of individuals, each with varying roles in supporting children with autism as they transition to school, providing a comprehensive evaluation of the prototype online tool.

**Future Research Directions**

Feedback from key stakeholders supported the need for connections between settings, access to high-quality relevant resources, and peer to peer knowledge sharing, during the transition to school for children with autism. Taking into consideration feedback received, further refinement of the online tool is needed and should be guided by the KTA framework. As Graham et al. (2006) suggest, working through both the knowledge creation and action cycles is a dynamic process. It is suggested that moving forward, the information gathered in the current study move through the action cycle, looking at how this can be adapted to the local context (see Graham et al., 2006). This will include calculated decisions regarding the application, or software, used to host this tool. Blackboard was used in the current study, as it was both available to the research team, and had the capacity to achieve desired functions. However, future research will need to consider the accessibility of this software within schools. Additionally, considerations should be made regarding strategies to incentivize the use of the tool, which may take the form of contributing to the professional learning requirements of teachers. Following refinement of the online tool through the early action cycle phases, piloting the implementation of the online tool, with a cohort of children transitioning into primary school is then suggested, with engagement and experiences of users monitored and evaluated. Despite
the appeal of providing a comprehensive approach to supporting transitions, considering the varying needs of teachers, students, and the contexts in which they operate was flagged as having the potential to impact the success of the prototype online tool. Therefore, future research might alternatively utilize these findings to inform future development of more localized solutions, including selection and integration of the factor/s most relevant to the needs of the school into existing systems, such as OneSchool (Queensland Government Department of Education, 2018).

Conclusions

In this study, we investigated the social validity of a prototype online tool which seeks to provide a comprehensive approach to supporting the transition to school for children with autism. Through our interviews with parents of children with autism, teachers, and other support staff in schools (e.g., HOSES) it was highlighted that the prototype online tool to support transition had to the potential to contribute value to users and was an acceptable and appropriate means of accessing information and other professionals. Incorporation of the identified factors will provide a strong foundation for the success of future attempts to support transitions. Further, the feedback gathered in the current study provides clear guidance around the need to consider the context in which any future attempts will be implemented, identifying the need for integration with existing systems if successful engagement of users is to be achieved.

Acknowledgements

Miss Sulek is supported by an Australian Postgraduate Award scholarship.

Conflict of Interest

The authors have no conflicts of interest to declare.
References


**Appendix**

To avoid repetition within the thesis, Appendix A (labelled Appendix L: Prototype Online Platform) can be found on page 217, and Appendix B (labelled Appendix M: Semi-Structured Interview Guide) can be found on page 221.
Chapter 7: General Discussion

The transition to school for all children can be a difficult period of change, with these challenges made more complex for children with autism due to the inherent characteristics of the disorder combined with external environmental and contextual factors at play. It has been suggested that children with autism may be delayed in their development of skills that are thought to be critical for this next learning environment. Research in Australia, consistent with findings internationally (e.g., U.S. Department of Education, 2017), indicates that a large proportion of children with autism require some form of additional support in the classroom (Australian Bureau of Statistics, 2016). Accordingly, more focused efforts are required to assist children with autism as they enter formal schooling for them to experience positive outcomes.

Ensuring that schools and teachers are adequately prepared to support these students as they transition, and in the development of these critical skills, has been suggested (UNICEF, 2012). With some reports highlighting that school teachers are not equipped to provide support for this population in both Australia (e.g., Australian Education Union, 2015; Productivity Commission, 2012), and internationally (e.g., Morrier, Hess, & Heflin, 2011) there is an identified need for research which will increase the capacity of these teachers to support students with autism. While relevant, high-quality treatments (also referred to as interventions or practices) (see National Autism Center, 2015; Wong et al., 2015) available for use with these students exist, there is a need to understand the extent to which Australian general education teachers both know and use these in the classroom and determine the factors influencing implementation.

In response to the need to understand the current practice of teachers working in mainstream school settings, and develop methods to support these students and their transition to
school, the aims of this research were to (a) develop an understanding of current practice of
general education teachers with specific focus on knowledge, use, and perceived social validity
of identified ESTs, (b) determine factors which influence use of these ESTs, and broader
decision making when working with students with autism, and (c) use the information gathered
to inform development of a solution aimed at supporting general education teachers. The three
phases of the research were modelled on the KTA framework (Graham et al., 2006), with each
phase targeting a specific aspect of this process, as specified in Chapter 3.

Outcomes

The three phases of research were successful in extending previous work in special
education and early intervention by determining the treatments employed by, and experiences of,
general education teachers working with students with autism. As Australian statistics estimate
that the majority (53.6%) of school-aged children with autism are educated in mainstream
schools (Australian Bureau of Statistics, 2016), it was important to determine the current practice
of teachers who have the most interaction with these students throughout their school day.
Further, the current program of research is the first, to the author's knowledge, to specifically
investigate knowledge and use of a group of ESTs (see Fleury et al., 2015 for details) thought to
be most relevant to targeting school readiness type skills in this population during the early years
of schooling. In considering the findings of all three studies, presented in the preceding chapters,
the following key outcomes of the research are noted.

The role of social validity. Phase one of the research highlighted that general education
teachers reported using a combination of both EST and non-ESTs when working with students
with autism, consistent with findings in early intervention (e.g., Paynter et al., 2017; Paynter &
Keen, 2015) and special education (e.g., Carter et al., 2011; Hess et al., 2008). The persistent use
of non-ESTs highlights previously recognised challenges in translating knowledge into practice and emphasises the need for further work to communicate information about both ESTs and non-ESTs to teachers working with this population. The results of phase one also extended previous research and may help direct future efforts to examine teachers’ perceived social validity of ESTs supporting school readiness in children with autism. These findings have two key implications, given that the social validity of ESTs has been identified as deserving consideration in attempts to bridge the research to practice gap observed in efforts to translate these treatments into real-world settings (Dingfelder & Mandell, 2011).

First, these findings can be used to inform future targeted training of education professionals working with students with autism. With a myriad of ESTs to choose from (18 of these targeting school readiness skills as per Fleury et al., 2015), selecting ESTs with the highest teacher reported ratings of social validity may serve as a useful starting point. This may include training in the targeted use of visual supports, levels of prompting, and the use of reinforcement schedules when working with students with autism. Where training is provided to teachers in treatments that are considered acceptable and appropriate for use in the classroom setting, and relevant to meeting the needs of students, their implementation in the classroom is more likely to be observed.

Second, it is important to reiterate the finding that higher perceived social validity of treatments was associated with higher reported use of treatments. As the direction of the association was not established in this project, there are at least two possible explanations. It might be that teachers viewed treatments as socially valid as they were frequently used in routine practice. Alternatively, the perceived social validity of treatments might increase the appeal of certain treatments when selecting them for use with students with ASD. Further research into the
direction of this effect is recommended, as it is likely to impact the uptake of ESTs in classroom settings. An increased commitment of research to the assessment and reporting of data relating to the social validity of ESTs is also suggested. However, as identified in Chapter 4, treatments with poor evidence to support their effectiveness may still receive high ratings of social validity. A key recommendation for schools, therefore, is to pair information around the effectiveness of treatments with related information regarding their social validity. This might include providing additional details on the settings in which research was conducted, clear identification of targets of treatments, and any feedback following implementation. Working with teachers to select treatments for future training or research and development of interventions in real-world settings may further improve social validity and uptake of ESTs. Further, where discouraging the use of one treatment, information should be provided around effective alternatives. While there have been recent attempts in the broader allied health field to pair information around non-ESTs with their EST alternatives (e.g., Paynter et al., 2019) a lack of consideration has been given to highlighting the social validity of these.

**Identifying support needs.** Phase two of the research assessed barriers and identified facilitators or enablers to the translation of knowledge to action, in line with the KTA framework. The results provided key insights into teachers’ views and experiences regarding supporting students with autism in the mainstream setting, represented in two main themes. The first theme centred around the efforts of teachers to support students with autism in the classroom, despite various challenges they faced, which included sometimes lacking experience, needing to be flexible in addressing the needs of the child, and altering expectations of what inclusion will look like for each child. The second theme focused on the processes that occur behind the scenes when preparing teachers to support students with autism, often in the form of
contact with within-school professionals, and additional training or professional development, which did not always meet their needs. Taken together these results provide suggestions regarding models of providing support to teachers of students with autism. One example of how this might look moving forward is through the establishment of a means for self-directed learning, with teachers selecting topics or areas most relevant to their needs, as opposed to one-off professional learning delivered to a group.

As outlined in Chapter 3, a critical element of this project was ensuring that the voices of the end-users of ESTs were heard. Prioritising the experiences and feedback of teachers, who play a significant role in the education and support of students with autism, may assist in overcoming issues of mistrust towards researchers and research conducted in non-school settings evident in previous research (see Boardman, Argüelles, Vaughn, Hughes, & Klingner, 2005). Further, as demonstrated in phase two, giving end-users a voice can provide valuable insight into a research phenomenon that might be otherwise overlooked, contributing to greater understanding. This approach was, therefore, applied to the challenge of developing solutions addressing the transition to school for children with autism, ensuring that an identified solution would be informed and guided by the perspectives of key individuals who will ultimately be involved in its uptake and implementation. While previous approaches (e.g., Trembath & Starr, 2017) are grounded in research, a lack of end-user engagement to determine what works in the classroom is noted (e.g., teachers tasked with implementing strategies). Consequently, a defining aspect of the approach taken in this project was the focus on eliciting ideas and wisdom for what might work from the key individuals/stakeholders involved in the transition to school for children with autism.
**Co-development of a solution.** Phase three of the research project used the information gathered from teachers in phase two, in the development of a prototype online tool aimed at supporting teachers of students with autism during transitions to school. Coupled with insights gathered from the broader research literature, the online tool sought to bring together three key factors for which there is evidence of having influence on the transition to school for children with autism. These were, (a) the connection between settings, (b) the need for access to high quality, relevant resources, and (c) the role of peer to peer networks. While the online tool was developed as a result of information gathered through previous research, prior to the implementation and evaluation of such a tool, it was important to first assess the social validity of such an approach. This represents a novel difference from many previous attempts to develop supports for children with autism documented in the literature. Specifically, a concerted effort was made to understand the potential benefits, limitations, and need for adaptations through consultation with key stakeholders prior to implementation, as opposed to trialling an online tool and then hoping it would be deemed socially valid. This approach invited collaboration in the design of a possible solution and avoided exposing teachers, students, and parents to an intervention for which no evidence of potential feasibility and acceptability had been established.

Therefore, utilising the approach described above, the social validity of the combination of these factors presented as an online tool was investigated through the lens of a diverse group of individuals with experience supporting children with autism as they enter formal schooling. The advantage of the approach undertaken in phase three lay in its ability to capture additional information likely to influence the uptake of the proposed online tool, allowing opportunities for additional refinement prior to piloting and evaluating its implementation. Three key recommendations, based on an analysis of these results, are discussed. Among these was the
importance of considering local contexts and identifying existing transition or support processes in place and how these might impact uptake or engagement in a third-party solution. For example, the move towards the use of programs such as OneSchool (Queensland Government Department of Education, 2018) to capture important student data which tracks across their education might influence the extent to which various teachers engage in various aspects of the proposed online tool. Consideration of these existing systems is crucial not only to avoid ‘doubling-up’ of data relevant to students with autism but to also ensure that teachers are not required to engage with multiple platforms, particularly where the prototype online tool developed through this research project aims to reduce the workload of teachers.

A further recommendation concerns the utility of the proposed online tool, and how it might be integrated with other aspects of teachers’ day to day requirements. With questions raised regarding the motivation of teachers to engage in the online tool, future development might consider the addition of further elements. For example, coupling engagement in the tool with alerts for students, including meetings scheduled and reminders for evaluation and updating of student goals, could provide further incentives for teacher engagement. Finally, it is worth noting that phase three applied ICT to the challenge of providing support during transitions for students with autism, further differentiating it from previous approaches. While the online tool was not implemented in this instance, it became clear through discussions with all stakeholders interviewed that the concept proposed in adopting an online based approach was not only acceptable but also provided a degree of flexibility for engagement, a benefit that has been noted in previous research into ICT use in learning and teaching (E. E. Smith, 2016).
Overarching Findings

As outlined in Chapter 3, this project was underpinned by three core theoretical perspectives or frameworks.

**Teacher commitment.** Foundational to this project was the right to education for all students with disabilities (see Australian Government, 1992; Australian Government, 2005; The United Nations, 2006). While exploring teachers’ commitment to the right to education was not an intended outcome of the research, it became apparent across phases two and three that teachers and other school staff (e.g., Heads of Special Education Services and inclusive support teachers) interviewed were committed to ensuring that students with autism had a positive experience of school. Results of phase two highlighted that teachers were not only aware of the additional needs of students with autism, they also understood the need for flexibility in their approach when working with these students in the classroom. It became apparent, however, that teachers were striving to provide this support in the face of several barriers. These included a lack of targeted training provided to teachers to support these students and a lack of time to access information and research on appropriate treatments for this population within the school day. Indeed, some teachers accessed information and training in their own time in order to meet the needs of students with autism in their classroom. Through highlighting barriers that can impact teachers’ support (Chapter 5), and further identifying elements that can contribute improving their capacity to provide support (Chapter’s 5 and 6), possible avenues through which teachers’ desire to support students with autism can be met were identified.

**A comprehensive view of school readiness.** Second, the Ecological Systems Theory (Bronfenbrenner, 1992) informed the need to look at the combination of factors which influence child development and outcomes. The findings demonstrate the importance of looking beyond
targeting child factors only, in this case, school readiness of children with autism, by highlighting the extent to which external influences and relationships, such as the preparedness of teachers, impact transitions for children with autism. Giving inadequate attention to the role of teacher preparedness on the outcomes of transitions to school for children with autism is likely to lead to an incomplete picture which places undue onus on the need for children to be prepared for school. Through drawing attention to the factors impacting teacher use of relevant ESTs, researchers can minimise the potential for these external influences to exert a negative effect on the development of the child and could optimise the likelihood of a positive transition into formal schooling.

**Knowledge translation in practice.** Finally, perspectives regarding the translation of research into practice, specifically the KTA framework (Graham et al., 2006) were guiding principles in the development of this research project. The current project demonstrated how multiple methods can be applied when working through the KTA cycle, in an attempt to bridge the recognised research to practice gap. Failure to translate research on relevant ESTs which support school readiness skills, and avenues for providing support to teachers, results in these children being denied access to quality treatments that have to potential to contribute to positive outcomes. Further, consistent with the KTA framework, the results emphasised the link between the social validity of available treatments and their subsequent use by general education teachers, underscoring the need for research focused on the translation of knowledge into real-world practice.

**Limitations**

Limitations specific to each phase of the project are discussed in the preceding chapters. However, taken together, there are several observations of the overall limitations of this project
that might inform future research in this area. First, it is important to acknowledge that this research was largely conducted in one education system and predominantly in one Australian state. In this context, all schools are required to follow the Australian Curriculum (Australian Curriculum Assessment and Reporting Authority, 2018), which strives to ensure equity and transparency across Australia’s education system. Further, all teacher education programs in Australia are accredited by the Australian Institute for Teaching and School Leadership (2018) to ensure uniform pre-service training of teachers. However, the extent and type of in-service training provided to teachers varies widely across schools, as highlighted in this research. The challenges faced by teachers interviewed as part of this project are arguably reflective of the experiences of teachers across a number of settings. This project, therefore, provides a framework, through the identification of elements that might assist teachers in supporting students with autism as they enter schooling, that can be applied across systems and states.

Second, in employing a mixed methodology approach, the qualitative phases (phases two and three) of this project employed a relatively small sample of participants. Smaller sample sizes are characteristic of qualitative methodologies, where the goal is not to achieve results that are generalisable across populations, but instead provide in-depth explorations of issues in a specific context (Creswell & Creswell, 2018). The context at the core of the current research was mainstream schools in Queensland, Australia. Despite recruiting a small sample, when compared to quantitative approaches, the research highlighted common themes expressed amongst the wide range of views of participants. These included the overall motivation to provide support for children with autism as they enter formal schooling, and a willingness to engage with research dedicated to achieving this.
Finally, it is important to highlight that no observational data were collected regarding teacher practice when working with students with autism as they transition to school. Results of this project are therefore based on the self-report data provided by participants, however, this is consistent with previous research in related areas (e.g., Hess et al., 2008). As such, it is possible that participants may have inflated the extent to which they implemented ESTs (i.e., in phase one) when working with students with autism, or conversely, not conceptualised their existing practices (e.g., use of positive reinforcement) as a particular EST. To combat this, in phase two participants were asked to provide details of treatments, framed as teaching strategies, without prompting or the provision of examples.

**Future Research Directions**

It is recommended that future research into teacher knowledge and use of ESTs couples self-report data with the additional observation of teacher practice, enabling a more accurate description of the current practice of teachers. Additionally, avoiding the survey or investigation of pre-determined lists of ESTs might provide greater insight into the current knowledge of teachers. By not prompting answers to teachers knowledge and use of specific ESTs, researchers may gather a more accurate reflection of (a) whether teachers know of, or are implementing, as many ESTs as self-report survey data would suggest, and (b) any differences in terminology that exist between the education and health disciplines which may contribute to the research to practice gap in translating these treatments into education settings.

The results of phase three (Chapter 6) highlighted that while the combination of factors presented in the online tool was considered valuable, there is a need to further adapt the prototype online tool to better integrate with existing systems and processes occurring within schools. Being guided by the KTA framework (Graham et al., 2006), and acknowledging the
dynamic nature of this process, it is recommended that further tailoring of the knowledge acquired occurs, as per the knowledge creation cycle, prior to implementing and evaluating the online tool. Suggestions include; (a) a comprehensive review of available online tools to support teachers and their uptake within education settings, (b) consultation with state education bodies (e.g., Department of Education, Queensland) to determine existing transition processes and how elements suggested can be integrated or complement these, (c) further consultation, or conduct of a needs analysis, with general education teachers to determine gaps in knowledge to inform selection of resources to be hosted within the online tool, and (d) translating information gathered into the existing online tool framework. Following this refinement, future research attempts can then progress through the action cycle, trialling the modified online tool with a small group of users, before attempting to implement and evaluate its effectiveness in providing support for teachers of students with autism as they transition on a larger scale.

With a growing commitment in the field to the production of inclusive research, the current project sought the feedback of parents of children with autism on the social validity of the prototype online tool proposed in phase three (see Chapter 6). However, the focus of the current project was largely concerned with providing support to general education teachers during this period. With establishing strong connections and communication practices with families of children during transitions highlighted in the literature as important, but not always achieved, in practice (e.g., Denkyirah & Agbeke, 2010; Volkmar, Jackson, & Hart, 2017), the role of parents in the transition to school deserves further consideration. Additionally, as the factors suggested as being influential to transitions into the first year of formal schooling are likely to continue to be relevant during later transitions (e.g., across the years, or into secondary
Conclusion

The research presented here addressed the widely acknowledged need for better supports for students with autism, and their teachers, as they transition into formalised school settings. These students may experience delays in their acquisition of important school readiness skills, with general education teachers potentially lacking the knowledge and skills to support their development. At the outset of this project, and as presented in the review of the literature in Chapter 2, a set of ESTs have been identified as being relevant to supporting the development of these skills, however, the extent to which general education teachers are aware of, and using, these treatments were not known. Furthermore, it was not clear what factors might impact the preparedness of general education teachers to support students with autism, representing a substantial barrier to addressing their needs. The research presented in this thesis contributes to answering these questions, extending research conducted in early intervention and special education settings.

The survey study described in Chapter 4 indicated that similar to research in other settings, general education teachers were using a combination of both empirically supported, and non-empirically supported treatments, found to be relevant to supporting school readiness skills in children with autism. The subsequent qualitative study presented in Chapter 5 identified that teachers were met with a number of challenges when providing support to these students and that while support was provided to teachers, needs were not currently being met. Finally, the social validity of combining key factors, identified in Chapter 5, as an online tool supporting transitions to school was established in Chapter 6.
Overall, this research has made an important contribution to the field through the identification of elements which can be targeted when looking to improve the transition to school for children with autism. This project has extended previous work conducted in special education and early intervention by examining the current practice of general education teachers when working with students with autism in mainstream school settings, including the identification of barriers and facilitators to providing support. While the online tool was not implemented and evaluated in the current research, the methodological framework and approach described here may be informative for other researchers looking to provide support during transitions, both within and beyond school. This research contributes to achieving a long-term goal of participation and optimal achievement by students with autism in mainstream schools.
References


doi:10.1177/1088357616632446

doi:https://doi.org/10.1016/j.tate.2017.07.014


doi:10.3102/0013189X033007014

doi:10.1177/1558689806298224


children, their families and carers. Retrieved from
%20research%20report.pdf


Churchill Livingstone.

mainstreaming and integration 10 years later. *Topics in Early Childhood Special
Education, 10*(2), 78-80. doi:10.1177/027112149001000207

practices for the inclusion of students with autism spectrum disorders. *Research in
Autism Spectrum Disorders, 6*, 1156-1167.
doi:http://dx.doi.org/10.1016/j.rasd.2012.02.007

Senate Standing Committee on Education and Employment. (2016). *Access to real learning: The
impact of policy, funding and culture on students with disability*. Canberra, Australia:
Author.

Shattuck, P. T., Narendorf, S. C., Cooper, B., Sterzing, P. R., Wagner, M., & Taylor, J. L.
(2012). Postsecondary education and employment among youth with an autism spectrum

http://www.usautism.org/who_are_you_autism.html


Appendix A: Participant Flyer Phase One

Participants Required

Supporting Children with ASD in Inclusive Classroom Settings

We are seeking individuals to participate in a research study investigating teacher knowledge and use of a number of practices aimed at supporting school readiness skills in children with Autism Spectrum Disorder (ASD).

Eligibility to Participate

• Must currently be teaching children in their first year of formal schooling (e.g. a prep class) in a mainstream school
• Must be teaching or have previously taught a child with ASD
• Must be teaching within Australia

If you are interested in participating in this study, please follow this link:
https://www.surveymonkey.com/r/TBNPP6X

Contact Information

Rhylee Sulek, PhD Candidate
School of Allied Health Sciences
Student Investigator
rhylee.sulek@griffithuni.edu.au

Dr David Trembath
School of Allied Health Sciences
Principal Investigator
d.trembath@griffith.edu.au

Prof. Deb Keen
Autism Centre of Excellence
Supervisor
d.keen@griffith.edu.au

Dr Jessica Paynter
School of Applied Psychology
Supervisor
j.paynter@griffith.edu.au

This project is being conducted by Rhylee Sulek (Student Principal Investigator), Dr David Trembath, Prof. Deb Keen and Dr Jessica Paynter at Griffith University. This project has Griffith University ethics clearance, ref no. 2016/296.
Appendix B: Participant Information Sheet, Phase One

PARTICIPANT INFORMATION SHEET
Supporting Children with ASD in Inclusive Classroom Settings

This project has been approved by the Griffith University Ethics Committee, see Griffith University Research Ethical Clearance Ref No. 2016/296.

Dear Teachers,

I am writing to invite you to participate in a research study. We hope this research will shed new light on how to best support children with Autism Spectrum Disorder (ASD) as they transition into their first year of formal schooling. We are seeking to involve teachers across Australia who are currently teaching children in their first year of formal schooling at mainstream schools. To be eligible for this study you may currently be teaching a child with ASD, or have previously taught a child with ASD.

What are the aims of the study?
Our aim is to gather information about teacher’s knowledge and use of a range of practices when working with children with ASD in a mainstream schooling environment.

Who is conducting this study?
This study is being conducted by Rhylee Sulek, a PhD candidate at Griffith University, as part of her candidature in the School of Allied Health Sciences. This project is under the supervision of Dr David Trembath, Professor Deb Keen and Dr Jessica Paynter (of Griffith University). Contact details are listed at the end of this letter.

What does the study involve?
Participants will complete an online survey that will take approximately 20 minutes. The survey will collect demographic information and participant’s knowledge and use of a number of practices when working with children with ASD in their first year of formal schooling.

How will the information be used?
Results from this research will form the basis of one or more journal articles and/or research presentations. In addition, the findings will be presented as part of Miss Sulek’s research thesis. A summary of findings will also be published on Griffith University’s Autism Centre of Excellence (ACE) website, for those interested.

How will my identity be protected?
To protect the identity of participants, at no stage during the analysis or reporting of results (e.g. journal articles, theses) will any identifying information be revealed. Only the researchers involved in this study will have access to data, which will be de-identified. Electronic data will be stored on password protected computers and research servers belonging to the research team. Data will be retained on these servers for a period of up to 10 years, and will be destroyed using the University confidential waste service, in accordance with Griffith University policy when it is no longer required.

We also ask that participants do not post information about the study on social media webpages (e.g. Facebook) to ensure anonymity of participants.

**Will I receive any benefits for participating in the study?**
While there is no direct benefit to you, your participation is most valuable to help us better understand how teachers work with children with ASD in a formal schooling environment. We hope that the results of this study will in lead to improvements in educational practice that will result in better outcomes for children with ASD and provide assistance to teachers working with these children.

**Are there any risks associated with participating in the study?**
There are no risks expected to arise from participation in this study.

**What are your rights?**
Participation in this study is completely voluntary. You are under no obligation to participate and you may withdraw at any time, prior to submitting the online survey, without question or penalty.

**How do you ask a question about this study or express interest in participating?**
If you have any questions please contact Rhylee Sulek via email at rhylee.sulek@griffithuni.edu.au. Alternatively you can contact Dr David Trembath (d.trembath@griffith.edu.au), Professor Deb Keen (d.keen@griffith.edu.au) or Dr Jessica Paynter (j.paynter@griffith.edu.au).

**How do you make a complaint about this study?**
If you have any complaints or queries that the investigator has not been able to answer to your satisfaction, please contact the Manager, Research Ethics on 07 3735 4375 or research-ethics@griffith.edu.au.
Appendix C: Survey Instrument, Phase One

*Supporting Children with ASD in Inclusive Classroom Settings*

This questionnaire includes a range of questions about your experiences, beliefs and practices. The questionnaire is focused on the work you undertake as part of an inclusive classroom environment when working with children with Autism Spectrum Disorders (ASD) in their first year of formal schooling (e.g. Prep).

**About Me**

1. Age bracket:
   - [ ] Under 25
   - [ ] 26-35
   - [ ] Over 36-50
   - [ ] Over 50

2. Gender
   - [ ] Male
   - [ ] Female

3. Please indicate if you identify as either of the following:
   - [ ] Aboriginal
   - [ ] Torres Strait Islander

4. State/ Territory currently employed in:
   - [ ] Queensland
   - [ ] Western Australia
   - [ ] New South Wales
   - [ ] Victoria
   - [ ] South Australia
   - [ ] Australian Capital Territory
   - [ ] Northern Territory
   - [ ] Tasmania

5. Which of the options below best describes the area in which you teach?
   - [ ] Regional
   - [ ] Metropolitan

6. Please indicate the education system in which you teach:
   - [ ] Independent
   - [ ] Government
   - [ ] Catholic
   - [ ] Other, please specify:

7. Highest Academic Qualification in any field:
   - [ ] Certificate or equivalent (e.g., TAFE)
☐ Diploma or equivalent (e.g., TAFE)
☐ Bachelor Degree
☐ Postgraduate (e.g., Grad certificate, Masters, Research degree)
☐ Other, please specify: ________________________________

8. Number of years working in profession (teaching):
☐ Less than one year
☐ 1-2 years
☐ 3-5 years
☐ 6-10 years
☐ 11-20 years
☐ Over 20 years

9. Please indicate if you have undertaken any training specific to teaching children with ASD (you may select more than one if applicable)
☐ None
☐ On-line training module(s)
☐ School-based professional development
☐ University course/subject
☐ Postgraduate qualification
☐ Half or part day workshop
☐ 1-3 day workshop
☐ Multiple workshops
☐ Other, please specify

10. Please indicate your current class size:
☐ Less than 10 children
☐ 10 – 15 children
☐ 16 – 20 children
☐ 21 – 25 children
☐ 26 – 30 children

11. What type of class do you currently teach?
☐ Prep only
☐ Composite of prep and year one
☐ Other, please specify:

12. Do you currently teach a child with ASD?
☐ Yes
☐ No

13. Have you previously taught a child with ASD?
☐ Yes
☐ No

14. How many children with ASD have you taught throughout your career?
☐ Less than 5
Between 5 and 10
 □ Over 10

15. How would you describe your current knowledge of Autism Spectrum Disorders?

<table>
<thead>
<tr>
<th>No current Knowledge</th>
<th>Sound Knowledge</th>
<th>Excellent Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
</tr>
<tr>
<td>(7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**My intervention practices**

The following section outlines a number of practices that are commonly used in early intervention with children with ASD. We are interested to see whether you are aware of these practices and if you currently use them in the classroom. There may be practices you are unfamiliar with, and for these items please score your knowledge and use as ‘0’.

For the following questions, please read the description of each of the practices/interventions and rate your knowledge and use of each practice using the following scale. Please rate *both* knowledge and use of each practice.

**Knowledge**

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Little: Know nothing about this practice.</td>
<td>To a Slight Extent: Heard of this practice.</td>
<td>To a Moderate Extent: Know a little about this practice.</td>
<td>To a Great Extent: Have a good amount of knowledge of this practice.</td>
<td>To a Very Great Extent: Know a great deal and could instruct others on this.</td>
</tr>
</tbody>
</table>

**Use**

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never: I do not use this practice</td>
<td>On rare occasions: Less than once per week</td>
<td>Sometimes: One or more times a week but not everyday</td>
<td>Often: About once per day</td>
<td>Frequently: More than once per day</td>
</tr>
</tbody>
</table>

**Practice**

1. **Antecedent-based intervention (ABI)** This intervention involves the arrangement of events or circumstances that precede the occurrence of an interfering behaviour and designed to lead to the reduction of the behaviour.

   - **Knowledge**
     - Very Little: 0
     - To a very great extent: 4
   - **Use**
     - Never: 0
     - Frequently: 4

2. **Differential reinforcement (DRA/I/O)** These behavioural bases strategies focus reinforcement or positive consequences for behaviours that are incompatible with, alternative to, or lower rates of interfering behaviours in order to reduce its

   - **Knowledge**
     - Very Little: 0
     - To a very great extent: 4
   - **Use**
     - Never: 0
     - Frequently: 4
occurrence and replace with more functional behaviours.

3. **Discrete Trial Teaching (DTT)** One on one instruction over massed trials aimed at teaching skills/behaviours systematically.

4. **Exercise (ECE)** Promotion of physical activity in order to reduce challenging behaviours and increase appropriate behaviours.

5. **Functional behaviour assessment (FBA)** Collection of information about a challenging behaviour in order to learn the underlying function or purpose.

6. **Functional communication training (FCT)** Replacement of challenging behaviour that is driven by communication needs, with more appropriate communication which accomplishes same target.

7. **Modelling (MD)** Demonstration of desired target behaviour that results in imitation of the behaviour by the learner and that leads to the acquisition of the imitated behaviour. Modelling is often combined with other strategies such as prompting and reinforcement.

8. **Music Therapy** Songs and music used as a medium through which student’s goals may be addressed.

9. **Parent-implemented intervention (PII)** Parents provide individualised intervention to their child to improve/increase a wide variety of skills and/or to reduce interfering behaviours. Parents learn to deliver instructions in their home and/or community through a structured parent training program.

10. **Peer-mediated instruction and intervention (PMII)** Typically developing peers interact with and/or help children and youth with ASD to acquire new behaviour, communication and social skills by increasing social and learning opportunities within natural environments. Teachers/service providers systematically teach peers strategies for engaging children and youth with ASD in positive and extended social interactions in both teacher-directed and learner-initiated activities.

11. **Prompting (PP)** Verbal, gestural, or physical assistance given to learners to assist them in acquiring or engaging in a targeted behaviour or skill. Prompts are generally given by an adult or peer before or as a learner attempts to use a skill.

12. **Reinforcement (R+)** An event, activity, or other circumstance occurring after a learner engages in a desired behaviour that leads to the increased occurrence of the behaviour in the future.

13. **Response interruption/redirection (RIR)** Introduction of a prompt, comment, or other distracters when an interfering behaviour is occurring that is designed to divert the learner’s
attention away from the interfering behaviour and results in its reduction.

<table>
<thead>
<tr>
<th>14. Scripting (SC)</th>
<th>A verbal and/or written description about a specific skill or situation that serves as a model for the learner. Scripts are usually practiced repeatedly before the skill is used in the actual situation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Self-management (SM)</td>
<td>Instruction focusing on learners discriminating between appropriate and inappropriate behaviours, accurately monitoring and recording their own behaviours, and rewarding themselves for behaving appropriately.</td>
</tr>
<tr>
<td>16. Technology-aided instruction and intervention (TAII)</td>
<td>Instruction or interventions in which technology is the central feature supporting the acquisition of a goal for the learner. Technology is defined as “any electronic item/ equipment/ application/or virtual network that is used intentionally to increase/maintain, and/or improve daily living, work/productivity, and recreation/leisure capabilities of adolescents with autism spectrum disorders” (Odom, Thompson, et al., 2013).</td>
</tr>
<tr>
<td>17. Time delay (TD)</td>
<td>In a setting or activity in which a learner should engage in a behaviour or skill, a brief delay occurs between the opportunity to use the skill and any additional instructions or prompts. The purpose of the time delay is to allow the learner to respond without having to receive a prompt and thus focuses on fading the use of prompts during instructional activities.</td>
</tr>
<tr>
<td>18. Touch Therapy</td>
<td>Systematic touch or massage</td>
</tr>
<tr>
<td>19. Video Modelling (VM)</td>
<td>A visual model of the targeted behaviour or skill (typically in the behaviour, communication, play, or social domains), provided via video recording and display equipment to assist learning in or engaging in a desired behaviour or skill.</td>
</tr>
<tr>
<td>20. Visual Supports (VS)</td>
<td>Any visual display that supports the learner engaging in a desired behaviour or skills independent of prompts. Examples of visual supports include pictures, written words, objects within the environment, arrangement of the environment or visual boundaries, schedules, maps, labels, organization systems, and timelines.</td>
</tr>
</tbody>
</table>


197
**Sources of Information**

For the following questions, please indicate which sources of information you currently use/ have previously used to gather information about intervention practices for children with ASD and the degree to which you rate these sources as trustworthy.

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all trustworthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat untrustworthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neither untrustworthy or trustworthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat trustworthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very trustworthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tick if you have received information from this source.

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents of children with ASD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialist advisor within your school system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workshops or other professional development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Therapists (Speech therapist, Occupational therapist, Psychologists etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research literature (e.g. academic books, academic journals)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autism associations and websites (e.g. Positive Partnerships, Aspect)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print media (e.g. books and newspapers)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Media (e.g. Facebook, Twitter)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends/Relatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information from general internet searches (e.g. google)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Doctors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complementary and alternative medicines (e.g. naturopath, chiropractor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newsletters etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others, please specify</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How trustworthy do you rate this information?*

* Note rating of trustworthiness is only made if participants tick they received information from this source.
Appendix D: Participant Information Sheet, Parent Version, Phase Two

Children with Autism Spectrum Disorders (ASD): What works in the classroom?
Information Sheet for Parents

This project has been approved by the Griffith University Ethics Committee, see Griffith University Research Ethical Clearance Ref No. 2016/471.

Who is conducting this research?
The study is being conducted by Miss Rhylee Sulek, a PhD Candidate, under the supervision of Dr David Trembath, Professor Deb Keen and Dr Jessica Paynter from Griffith University. Contact details can be found on the last page.

Why is this research being conducted?
The aim of this research is to better understand the current practices that exist to support children with ASD in mainstream classrooms. We are contacting you as your child has previously been involved in research at AEIOU and we would like to follow them as they enter their first year of school. The research will involve your child’s teacher participating in an interview where they will be asked questions about: (a) their experience teaching a child with ASD, (b) the types of strategies they use in the classroom to assist the integration of children with ASD, (c) the types of systems they feel would work to better support staff and students when working with children with ASD, and (d) any other issues they feel relate to issues around their knowledge, use and proposed solutions to improving outcomes for children.

What you will be asked to do.
If you consent to participate in the study, we will be asking you to provide information regarding the school your child will be attending in their prep year. Schools will then be contacted so that we can arrange to conduct the structured interview with your child’s teacher. Please note that principals and teachers will have the opportunity to decline the invitation to participate.

Expected benefits of the research.
Although you may not benefit directly from participating in this research, this research will more generally contribute to understanding the types of strategies that are considered appropriate for use in mainstream classrooms. It is expected that this research will help us gain a broader understanding of how children transition from early intervention settings, to the school environment. Therefore, this information might be used in the future to assist teachers and schools, as well as the wider research community, to understand and better develop strategies or supports to facilitate learning for children with ASD.

Risk management.
There are no foreseeable risks associated with participation in this research. Participation in this research is
voluntary and you can withdraw at any time without comment or question. Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Research Involving Humans. Please feel free to contact the researchers if you have any questions. If you have any additional questions or concerns about ethical issues, please contact research-ethics@griffith.edu.au.

Interviews with your child’s teacher will be digitally-taped, but recordings will be erased following transcription. Any identifying elements (e.g., names of individuals, students being discussed, school details) will be removed from reflective and interview data prior to analysis. Interview content will not be disclosed to third parties without both parents, teachers and the school’s principal consent, except to meet government, legal, or other regulatory authority requirements. Anonymity in reporting will at all times be safeguarded. As required by Griffith University, all audio recordings will be erased after transcription. However, other research data (interview transcripts and analysis) will be retained in a locked cabinet and/or a password protected electronic file at Griffith University for a period of five years before being destroyed.

Feedback to you
As we will be asking your child’s teacher questions about the knowledge, skills and practices, we will not be providing direct feedback to each family. Plain language summaries of results can be forwarded to families, at their request, after analysis. The results will also be presented at professional events (e.g., conferences) and will form part of Miss Sulek’s research thesis.

The ethical conduct of this research
If you have any concerns or complaints about the ethical conduct of the research project you should contact the Manager, Research Ethics on (07) 3735 4375 or research-ethics@griffith.edu.au.

Legal privacy statement
The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/privacy-plan or telephone (07) 3735 4375.

Questions / further information
You are welcome to ask questions about the research and raise any concerns you have before agreeing to participate. These questions can be directed to Dr David Trembath at Griffith University (email: D.Trembath@griffith.edu.au ph: (07) 5678 0103) or to Miss Rhylee Sulek (email: r.sulek@griffith.edu.au).

It is recommended that you retain this information sheet for your own records.

Thank you for your time and effort in participating in this study.
Without your help this type of research would not be possible.
Appendix E: Participant Information Sheet, Principal Version, Phase Two

Children with Autism Spectrum Disorders (ASD): What works in the classroom?
Information Sheet for Principals

This project has been approved by the Griffith University Ethics Committee, see Griffith University Research Ethical Clearance Ref No. 2016/471.

Who is conducting this research?
The study is being conducted by Miss Rhylee Sulek, Dr David Trembath, Professor Deb Keen and Dr Jessica Paynter from Griffith University. David’s contact details are at the end of this information sheet.

Why is this research being conducted?
We are writing to ask your permission to contact the teacher/s of one or more of your students who participated in a research project last year, prior to starting school. Specifically, the child/ren received early intervention at [insert name of service for children with ASD] and we are interested to better understand how teaching practices and supports are similar and/or different between the early intervention setting and his/her new school setting. To do this, we ask for your permission to contact the relevant teacher/s in order to invite them to participate in the project. Teachers will be asked to consent to one 30 minute phone interviews. During the interview, which will occur during first term we would ask them questions about: (a) their experience teaching a child with ASD, (b) the types of strategies they use in the classroom to assist the integration of children with ASD, (c) the types of strategies they feel would work to better support staff and students when working with children with ASD, and (d) any other issues they feel relate to issues around their knowledge, use and proposed solutions to improving outcomes for children. We have already received consent from parents at your school (please see attached) to be included in this study.

What you will be asked to do
If you give consent for teachers in your school to participate in the study, we would then ask your permission to contact teachers. The study would be explained to them, and consent received before taking time to organise the 30 minute interviews. Interviews will be conducted via phone, at a time that suits teachers. The interviews will be digitally-recorded and transcribed, prior to qualitative data analysis.

Expected benefits of the research
Although you may not benefit directly from participating in this research, this research will more generally contribute to understanding the types of strategies that are considered appropriate for use in mainstream classrooms. It is expected that this research will help us gain a broader understanding of how children transition from early intervention settings, to the school environment. Therefore, this information might be
Risk management
Participation in this research is voluntary and you can withdraw at any time without comment or question. Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Research Involving Humans. Please feel free to contact the researchers if you have any questions. If you have any additional questions or concerns about ethical issues, please contact research-ethics@griffith.edu.au.

Interviews will be digitally-taped, but recordings will be erased following transcription. Any identifying elements (e.g., names of individuals, schools, names of students) will be removed from reflective and interview data prior to analysis. Interview content will not be disclosed to third parties without the without consent from both parents, teachers and the school’s principal, except to meet government, legal, or other regulatory authority requirements. Anonymity in reporting will at all times be safeguarded. On completion of the study, any data that may identify any participant will be destroyed.

Feedback to you
The results will be published in relevant peer-reviewed journals and presented at professional events (e.g., conferences). Further, they will form part of Miss Sulek’s research thesis.

The ethical conduct of this research
If you have any concerns or complaints about the ethical conduct of the research project you should contact the Manager, Research Ethics on 3735 54375 or research-ethics@griffith.edu.au.

Legal privacy statement
The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/privacy-plan or telephone (07) 3735 4375.

Questions / further information
You are welcome to ask questions about the research and raise any concerns you have before agreeing to participate. These questions can be directed to Dr David Trembath at Griffith University (email: D.Trembath@griffith.edu.au ph: 5678 0103) or to Miss Rhylee Sulek (email: rhylee.sulek@griffithuni.edu.au).

It is recommended that you retain this information sheet for your own records.
Thank you for your time and effort in participating in this study.
Without your help this type of research would not be possible.
Appendix F: Participant Information Sheet, Teacher Version, Phase Two

Children with Autism Spectrum Disorders (ASD): What works in the classroom?
Information Sheet for Participants

This project has been approved by the Griffith University Ethics Committee, see Griffith University Research Ethical Clearance Ref No. 2016/471.

Who is conducting this research?
The study is being conducted by Miss Rhylee Sulek, Dr David Trembath, Professor Deb Keen and Dr Jessica Paynter from Griffith University. David’s contact details are at the end of this information sheet.

Why is this research being conducted?
The aim of this research is to better understand the current practices that exist to support children with Autism Spectrum Disorder (ASD) in mainstream classrooms. We are writing to ask you to participate in this project as one of your students was involved in a research project last year at an early intervention setting, prior to starting school. Your participation will involve a semi-structured phone interviews during Term One. At time one, we will be asking you questions about: (a) your experience teaching a child with ASD, (b) the types of strategies you use in the classroom to assist the integration of children with ASD, (c) the types of systems that would work to better support staff and students when working with children with ASD, and (d) any other issues you feel relate to issues around knowledge, use and proposed solutions to improving outcomes for children. We have already received consent from parents at your school (please see attached) to be included in this study.

What you will be asked to do
If you consent to participate in the study, we will arrange a time for you to complete the 30 minute interviews. Interviews will be conducted via phone, at a time that suits you. The interviews will be digitally-recorded and transcribed, and then emailed to you to for any changes/additions you wish to make, prior to qualitative data analysis.

Expected benefits of the research
Although you may not benefit directly from participating in this research, this research will more generally contribute to understanding the types of strategies that are considered appropriate for use in mainstream classrooms. It is hoped in the future that this information will assist teachers and schools, as well as the wider research community, to understand and better develop strategies or supports to facilitate learning for children with ASD.

Risk management
Participation in this interview is voluntary and you can withdraw from the study at any time, both before
and after interviews have been conducted, without comment or question. Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Research Involving Humans. Please feel free to contact the researchers if you have any questions. If you have any additional questions or concerns about ethical issues, please contact research-ethics@griffith.edu.au.

Interviews will be digitally-taped, but recordings will be erased following transcription. Any identifying elements (e.g., names of individuals) will be removed from reflective and interview data prior to analysis. Interview content will not be disclosed to third parties without consent from both parents, teachers and the school’s principal, except to meet government, legal, or other regulatory authority requirements. Anonymity in reporting will at all times be safeguarded. On completion of the study, any data that may identify any participant will be destroyed.

Feedback to you
The results will be published in relevant peer-reviewed journals and presented at professional events (e.g., conferences). Further, they will form part of Miss Sulek’s research thesis.

The ethical conduct of this research
If you have any concerns or complaints about the ethical conduct of the research project you should contact the Manager, Research Ethics on 3735 54375 or research-ethics@griffith.edu.au.

Legal privacy statement
The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/privacy-plan or telephone (07) 3735 4375.

Questions / further information
You are welcome to ask questions about the research and raise any concerns you have before agreeing to participate. These questions can be directed to Dr David Trembath at Griffith University (email: D.Trembath@griffith.edu.au ph: 5678 0103) or to Miss Rhylee Sulek (email: r.sulek@griffith.edu.au).

It is recommended that you retain this information sheet for your own records.

Thank you for your time and effort in participating in this study.
Without your help this type of research would not be possible.
Appendix G: Semi-Structured Interview Guide, Phase Two

Participant Interview Guide

Please note: These questions will serve as a guide only and may not represent all questions asked during the interviews. During the interview you might also be asked to comment on suggestions and points raised during other participants’ interviews. All responses will remain anonymous.

About the child

- We understand you have X in your classroom at the moment, can you take me through the type of handover you received prior to teaching them this year?
  - Prompt: What sort of communication or documentation did you receive from their previous service?

- Before teaching X, how would you describe your knowledge of ASD? Had you previously worked with a child with ASD?

- What is your understanding of the type of service X was receiving prior to coming to school?

- What does a typical day look like in the classroom?

- What sort of support do they receive throughout the day?

Teacher Specific

- What types of strategies do you use with X on a day to day basis?
  - Prompt: What sorts of behaviours and skills do these target? (e.g., managing challenging behaviours, increasing social interactions)

- How do you select the strategies you implement in the classroom?

- What support do you receive as a teacher of a child with ASD?
  - Prompt: additional training, workshops, within school supports (e.g., your HOSES, special education team, administration)

- As a teacher, what sort of system would you like to see in place that would support both you as a teacher and children with ASD who enter school?

- Do you as a teacher feel as though you have the appropriate training, skills, and access to resources to support a child with ASD in the classroom?
  - Prompt: Has your school provided training? Is this specific to your needs as a teacher of a child with ASD?
  - Prompt: Have you sought any training independently?
  - Prompt: Do you intend to seek additional training?
• What would you like to see done differently to improve the experience of both yourself as a teacher, and a child with ASD in this first year of school?

**Evidence Based Practice**

• Have you heard of the term EBP previously?
• Are you able to describe your understanding of EBP?

*If unable to provide definition, a definition is provided, and linked back to any previous comments made about strategies used

**General**

• Are there any other comments you would like to make?
Appendix H: Participant Information Sheet, Principal Version, Phase Three

Development of an Online Platform to Support Teachers During the Transition to School of Children with Autism Spectrum Disorder

Information Sheet: Principals

Research Team

<table>
<thead>
<tr>
<th>Ms Rhylee Sulek</th>
<th>Dr David Trembath</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Allied Health</td>
<td>School of Allied Health</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:r.sulek@griffith.edu.au">r.sulek@griffith.edu.au</a></td>
<td><a href="mailto:d.trembath@griffith.edu.au">d.trembath@griffith.edu.au</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professor Deb Keen</th>
<th>Dr Jessica Paynter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autism Centre of Excellence</td>
<td>School of Applied Psychology</td>
</tr>
<tr>
<td>School of Education and Professional Studies</td>
<td></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:d.keen@griffith.edu.au">d.keen@griffith.edu.au</a></td>
<td>E-mail: <a href="mailto:j.paynter@griffith.edu.au">j.paynter@griffith.edu.au</a></td>
</tr>
<tr>
<td>Phone: (07) 5678 7058</td>
<td></td>
</tr>
</tbody>
</table>

Information

This project has been approved by the Griffith University Ethics Committee, see Griffith University Research Ethical Clearance Ref No. 2018/180.

Reason for this research?
This research is being conducted as part of Miss Sulek’s PhD studies, under the supervision of Dr David Trembath, Professor Deb Keen and Dr Jessica Paynter. Through their previous work, the research team identified the need for more consistent and effective processes to assist teachers working with children with autism spectrum disorder in the classroom. The aim of the present study therefore is to develop a platform, in collaboration with key stakeholders, which seeks to improve the capacity of teachers to support students with ASD by better utilising existing resources and supports.

What you will be asked to do.
We are writing to ask your permission to contact a teacher at your school. The teacher will be asked to review and provide feedback and suggestions on an online platform run through the Blackboard Tool at Learning @ Griffith by participating in a semi-structured interview, approximately one hour in duration. These interviews will cover demographic questions, the social validity of the online platform, and will provide the opportunity to give feedback on the online platform.

Expected benefits.
We anticipate that the research will be a positive experience for teachers and will allow them to contribute to the development of the tool. Although you may not benefit directly from participating in this research, this research will more generally contribute to increasing teacher knowledge, skills, and ability to access
resources when working with students with autism spectrum disorder. This information might be used in the future to assist teachers and schools, during the transition to school.

**Risk management**
There are no foreseeable risks associated with participation in this research. Participation in this research is voluntary and you can withdraw your school from the project at any time without comment or question. In this case, the corresponding teacher will also be withdrawn from the study. Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Research Involving Humans. Please feel free to contact the researchers if you have any questions. If you have any additional questions or concerns about ethical issues, please contact research-ethics@griffith.edu.au. It is important that all participants involved in the research respect the privacy and confidentiality of other study participants. No identifying information relating to the teacher, children, or school will be made available.

Electronic copies of the data will be stored on password protected computers and research servers belonging to the research team. Data will be retained on these servers for a period of 5 years, and will be destroyed using the University confidential waste service, in accordance with Griffith University policy when it is no longer required. Please feel free to contact the researchers if you have any questions.

**Feedback to you**
The results will be published in relevant peer-reviewed journals and presented at professional events (e.g., conferences). Further, they will form part of Miss Sulek’s research thesis. Participants will also be able to request a summary of the research at the close of the study.

**Legal privacy statement**
The conduct of this research involves the collection, access and / or use of identified personal information of a teacher at your school. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/privacy-plan or telephone (07) 3735 4375.

**Questions / further information**
Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Human Research. Please feel free to contact the researchers if you have any questions. If you have any additional questions or concerns about ethical issues, please contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee (research-ethics@griffith.edu.au ; (07) 3735 4375).

*It is recommended that you retain this information sheet for your own records.*
*Thank you for your time and effort in participating in this study.*
*Without your help this type of research would not be possible.*
Appendix I: Participant Information Sheet, Teacher Version, Phase Three

Development of an Online Platform to Support Teachers During the Transition to School of Children with Autism Spectrum Disorder

Information Sheet: Teacher

Research Team

<table>
<thead>
<tr>
<th>Ms Rhylee Sulek</th>
<th>Dr David Trembath</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Allied Health</td>
<td>School of Allied Health</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:r.sulek@griffith.edu.au">r.sulek@griffith.edu.au</a></td>
<td><a href="mailto:d.trembath@griffith.edu.au">d.trembath@griffith.edu.au</a></td>
</tr>
<tr>
<td>Professor Deb Keen</td>
<td>Dr Jessica Paynter</td>
</tr>
<tr>
<td>Autism Centre of Excellence</td>
<td>School of Applied Psychology</td>
</tr>
<tr>
<td>School of Education and Professional Studies</td>
<td></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:d.keen@griffith.edu.au">d.keen@griffith.edu.au</a></td>
<td>E-mail: <a href="mailto:j.paynter@griffith.edu.au">j.paynter@griffith.edu.au</a></td>
</tr>
<tr>
<td>Phone: (07) 5678 7058</td>
<td>Phone: (07) 5678 7058</td>
</tr>
</tbody>
</table>

Information

This project has been approved by the Griffith University Ethics Committee, see Griffith University Research Ethical Clearance Ref No. 2018/180.

Reason for this research?
This research is being conducted as part of Miss Sulek’s PhD studies, under the supervision of Dr David Trembath, Professor Deb Keen and Dr Jessica Paynter. Through their previous work, the research team identified the need for more consistent and effective processes to assist teachers working with children with autism spectrum disorder in the classroom. The aim of the present study therefore is to develop a platform, in collaboration with key stakeholders, which seeks to improve the capacity of teachers to support students with ASD by better utilising existing resources and supports.

What you will be asked to do.
As part of this research, we are looking to gather feedback on the development of an online platform for teachers to access resources and engage with other professionals working with children with ASD.

As part of the research, you will be invited participant in a semi-structured interview. During this interview you will have an opportunity to provide feedback on an online platform that has been designed to assist teachers of children with ASD. Please note that your interview will be voice recorded for transcription. You will also be asked to complete a short demographic questionnaire. Your total commitment to this project should be no more than one hour.

Expected benefits.
We anticipate that the research will be a positive experience for you and will allow you to contribute to the development of the tool. Although you may not benefit directly from participating in this research, this research will more generally contribute to increasing teacher knowledge, skills, and ability to access resources when working with students with autism spectrum disorder. This information might be used in the future to assist teachers and schools, during the transition to school.

**Risk management**
There are no foreseeable risks associated with participation in this research. Participation in this research is voluntary and you can withdraw at any time without comment or question by contacting the research team via email. Your participation in the research will cease if support from the school is withdrawn at any time over the course of the project. In this case, you will be notified via email. It is important that all participants involved in the research respect the privacy and confidentiality of other study participants. No identifying information relating to yourself, or your school, will be made available.

Focus groups will be digitally-taped, but recordings will be erased following transcription. Any identifying elements (e.g., names of individuals) will be removed from reflective and interview data prior to analysis. Focus group content will not be disclosed to third parties without consent from teachers and the school’s principal, except to meet government, legal, or other regulatory authority requirements. Anonymity in reporting will at all times be safeguarded. On completion of the study, any data that may identify any participant will be destroyed.

Electronic copies of the data will be stored on password protected computers and research servers belonging to the research team. Data will be retained on these servers for a period of 5 years, and will be destroyed using the University confidential waste service, in accordance with Griffith University policy when it is no longer required. Please feel free to contact the researchers if you have any questions.

**Feedback to you**
Participants will be able to request a summary of the research at the close of the study. The results will also be published in relevant peer-reviewed journals and presented at professional events (e.g., conferences). Further, they will form part of Miss Sulek’s research thesis.

**How to get involved**
If you wish to participate in the study, please contact Miss Sulek at r.sulek@griffith.edu.au.

**Legal privacy statement**
The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University’s Privacy Plan at http://www.griffith.edu.au/privacy-plan or telephone (07) 3735 4375.

**Questions / further information**
Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Human Research. Please feel free to contact the researchers if you have any questions. If you have any additional questions or concerns about ethical issues, please contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee (research-ethics@griffith.edu.au; (07) 3735 4375).

*It is recommended that you retain this information sheet for your own records.*

Thank you for your time and effort in participating in this study.
Without your help this type of research would not be possible.
Appendix J: Participant Information Sheet, Head of Special Education Version, Phase Three

Development of an Online Platform to Support Teachers During the Transition to School of Children with Autism Spectrum Disorder

Information Sheet

Research Team

<table>
<thead>
<tr>
<th>Ms Rhylee Sulek</th>
<th>Dr David Trembath</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Allied Health</td>
<td>School of Allied Health</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:r.sulek@griffith.edu.au">r.sulek@griffith.edu.au</a></td>
<td><a href="mailto:d.trembath@griffith.edu.au">d.trembath@griffith.edu.au</a></td>
</tr>
<tr>
<td>Professor Deb Keen</td>
<td>Dr Jessica Paynter</td>
</tr>
<tr>
<td>Autism Centre of Excellence</td>
<td>School of Applied Psychology</td>
</tr>
<tr>
<td>School of Education and Professional Studies</td>
<td>E-mail: <a href="mailto:j.paynter@griffith.edu.au">j.paynter@griffith.edu.au</a></td>
</tr>
<tr>
<td>E-mail: <a href="mailto:d.keen@griffith.edu.au">d.keen@griffith.edu.au</a></td>
<td>Phone: (07) 5678 7058</td>
</tr>
</tbody>
</table>

Information

This project has been approved by the Griffith University Ethics Committee, see Griffith University Research Ethical Clearance Ref No. 2018/180.

Reason for this research?
This research is being conducted as part of Miss Sulek’s PhD studies, under the supervision of Dr David Trembath, Professor Deb Keen and Dr Jessica Paynter. Through their previous work, the research team identified the need for more consistent and effective processes to assist teachers working with children with autism spectrum disorder in the classroom. The aim of the present study therefore is to develop a platform, in collaboration with key stakeholders, which seeks to improve the capacity of teachers to support students with ASD by better utilising existing resources and supports.

What you will be asked to do.
We are writing to invite you to participate as you have experience coordinating the transition to school. Specifically, we are looking to gather feedback and input on development of an online platform for teachers to access resources and engage with other professionals working with children with autism spectrum disorder.

As part of your participation in this project you will be asked to participate in a semi-structured interview, approximately one hour in duration. During this interview you will be asked to provide feedback on the online platform and will have an opportunity to make suggestions regarding any changes you would like to see made. You will also be asked about the potential...
value of the platform to teachers working with students with ASD. Some demographic information will also be collected. All interviews will be voice recorded and transcribed verbatim for analysis.

**Expected benefits.**
We anticipate that the research will be a positive experience for you and will allow you to contribute to the development of the tool. Although you may not benefit directly from participating in this research, this research will more generally contribute to increasing teacher knowledge, skills, and ability to access resources when working with students with autism spectrum disorder. This information might be used in the future to assist teachers and schools, during the transition to school.

**Risk management**
There are no foreseeable risks associated with participation in this research. Participation in this research is voluntary and you can withdraw at any time without comment or question by contacting the research team via email. Your participation in the research will cease if support from the school is withdrawn at any time over the course of the project. In this case, you will be notified via email. It is important that all participants involved in the research respect the privacy and confidentiality of other study participants. No identifying information relating to yourself, or your school, will be made available.

Interviews will be digitally-taped, but recordings will be erased following transcription. Any identifying elements (e.g., names of individuals) will be removed from reflective and interview data prior to analysis. Interview content will not be disclosed to third parties without consent from both parents, teachers and the school’s principal, except to meet government, legal, or other regulatory authority requirements. Anonymity in reporting will at all times be safeguarded. On completion of the study, any data that may identify any participant will be destroyed.

Electronic copies of the data will be stored on password protected computers and research servers belonging to the research team. Data will be retained on these servers for a period of 5 years, and will be destroyed using the University confidential waste service, in accordance with Griffith University policy when it is no longer required. Please feel free to contact the researchers if you have any questions

**Feedback to you**
Participants will be able to request a summary of the research at the close of the study. The results will also be published in relevant peer-reviewed journals and presented at professional events (e.g., conferences). Further, they will form part of Miss Sulek’s research thesis.

**How to get involved**
If you wish to participate in the study please contact Miss Sulek at r.sulek@griffith.edu.au.

**Legal privacy statement**
The conduct of this research involves the collection, access and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the
University’s Privacy Plan at http://www.griffith.edu.au/privacy-plan or telephone (07) 3735 4375.

Questions / further information
Griffith University conducts research in accordance with the National Statement on Ethical Conduct in Human Research. Please feel free to contact the researchers if you have any questions. If you have any additional questions or concerns about ethical issues, please contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee (research-ethics@griffith.edu.au ; (07) 3735 4375).

It is recommended that you retain this information sheet for your own records.

Thank you for your time and effort in participating in this study.
Without your help this type of research would not be possible.
Appendix K: User Stories, Phase Three

<table>
<thead>
<tr>
<th>User story</th>
<th>Current Approach</th>
<th>Current Approach Strength</th>
<th>Current Approach Weakness</th>
<th>Other Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would like Teachers, that will be teaching the child, to be able to access the transition information (i.e., exit summary) themselves.</td>
<td>Parents provided with exit summaries. HOSES provided with exit summary.</td>
<td>HOSES and SEP staff have critical information on child.</td>
<td>Information does not reach teacher who is teaching child.</td>
<td>Parent involvement in ensuring information is transmitted, e.g., checklist. Providing access to summaries in a secure online location.</td>
</tr>
<tr>
<td>I would like open dialogue that can continue for at least the first term, from when the child first transitions.</td>
<td>AEIOU offers 2 transition visits (before school starts and in term one). AEIOU provides an exit summary for child.</td>
<td>Opportunity to see child in new setting and provide support. Provide staff with information on child development.</td>
<td>Not always accessed. Information can be too general. Not always reaching teachers. No other contact outside of this – limited support for new teachers.</td>
<td>Providing forum for teachers to connect directly with AEIOU staff into the first term (email/discussion board?)</td>
</tr>
<tr>
<td>I would like schools to respect the wishes of the parent and have AEIOU visit the school for a transition visit.</td>
<td>AEIOU offers transition visit.</td>
<td>Provides staff opportunity to see child in both settings.</td>
<td>Parents not letting school know. Schools not allowing visits to their classroom. Relevant staff not always conducting the visit. Requires AEIOU staff to take time out of day to visit schools.</td>
<td>Parents needing to push for visit. (Not sure how much we can influence this) Use of videos?</td>
</tr>
<tr>
<td>Earlier contact with previous setting – being able to visit and observe child in previous setting</td>
<td>AEIOU offers transition visit.</td>
<td>New teacher able to see how the child functions in a classroom environment.</td>
<td>Teacher not always the one to visit. Information not being passed on.</td>
<td>Begin transmission of information prior to start of year (even if teachers unknown at time).</td>
</tr>
<tr>
<td>I want more support from other teachers and professionals</td>
<td>School provide access to SEP staff. Some contact from autism advisors, in house OT, SLP.</td>
<td>Teachers have access to other staff (they trust).</td>
<td>Not standardised. Sharing of information not always in line with what is good practice. Limited to local context (i.e., within own school).</td>
<td>Have process whereby reports can be access securely online? Extend this to wider audience utilising online networking platforms. Provide moderation of information shared.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Information being passed on is too general.</td>
<td>AEIOU provide exit summary. Provides teachers with some information on child functioning in previous setting.</td>
<td>Not specific enough. For teachers who are unfamiliar with service it might not be helpful. Does not provide any guidance.</td>
<td>Inclusion of data collection techniques. Suggestions for online modules which relate to key behaviours.</td>
<td></td>
</tr>
<tr>
<td>More information/online modules on autism generally and more specifics on strategies.</td>
<td>PD workshops can be requested/accessed by staff. SEP staff provide guidance. Teachers sometimes able to access relevant information.</td>
<td>Not always provided prior to working with child with ASD. Some staff have to seek out own training when needed. Not a formalised approach to training staff in ASD.</td>
<td>As above, provide some information on accessing both general and specific ASD information that teachers can access as part of required PD.</td>
<td></td>
</tr>
<tr>
<td>A discussion group, list of people you can contact.</td>
<td>Within school access to SEP and teachers. Teachers contacting previous colleagues. Teachers collaborating and sharing information.</td>
<td>Potential for misinformation to be shared.</td>
<td>Online forum which is monitored and can provide alternatives when non-EST are being promoted or questioned</td>
<td></td>
</tr>
</tbody>
</table>

Note: AEIOU – local early intervention service for children with autism, HOSES – head of special education services, OT – occupational therapist, SEP staff – special education staff, SLP – speech language pathologist.
Appendix L: Prototype Online Platform

Image 1. Platform home page
Image 2. Open access resources page example.
Image 3. Closed membership group for current and former teacher. Options for file exchange and direct contact highlighted.
Appendix M: Semi-Structured Interview Guide

Semi Structured Interview Guide

Why are we doing this research?

The transition to school for children with ASD is an important period in their development. The current research project is focused on identifying how we can best support teachers who are working with students with ASD, as they transition to school.

The research team has identified a number of key elements that are critical to the transition to school, and supporting teachers to use effective teaching practices. Utilising these elements, the research team has developed an online tool, and will be asking you to provide feedback on these elements.

The below table outlines the key elements identified.

You will be asked to comment on the following elements, and the perceived significance of each.

<table>
<thead>
<tr>
<th>Core Component</th>
<th>Our Solution</th>
<th>Feedback*</th>
<th>Solution*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong culture of collaboration and knowledge sharing</td>
<td>Providing discussion boards for teachers across settings to engage in content and share experiences in a format that is moderated to ensure information shared is the best quality (not sharing information on ineffective practices)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection between settings</td>
<td>Online access to reports and previous staff member through the portal (private discussion rooms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to resources</td>
<td>Weekly resources shared with group and access provided to existing resources in the one place. Simplifies process of having to search for this information and critique its quality</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Columns for interviewer use
Questions relating to above elements

1. Based on your experience as a [parent, HOSES, teacher] of a child with autism, how important is this element?
2. In what way do you see this being useful to teachers and the transition to school?
3. What suggestions do you have for better harnessing this element in the platform?

Additional Questions

What are your thoughts around providing support to teachers in an online format?

What elements critical to the transition to school, and support of teachers, do you believe are missing in our suggestion for an online tool?

How would this approach be useful to teachers at your school?

Are there any barriers to accessing the online tool? Can you describe these?

Please provide any other feedback on the online tool or its development.
### Appendix N: Framework Matrix Example

<table>
<thead>
<tr>
<th>Community</th>
<th>Flexibility</th>
<th>Increasing capacity</th>
</tr>
</thead>
</table>
| **HOSES1** | I think it’s very important. And you’re right, that’s predominantly how teachers like to learn, is from other teachers. And if they haven’t got the opportunity to go into other classrooms and observe or they don’t… and see some teachers can be quite isolated in their school too, say if they’re the only prep teacher, or they’re one of two or three prep teachers but the other prep teachers are experienced teachers and they aren’t forthcoming with sharing of information, which can happen, then they can be isolated.  

I think that’s quite good. Because they have the chance to ask the discussion list a question, and see what other people have in terms of strategies and responses for that. Then they can pick and choose what they want to try. And as long as its all moderated, then they’re not offering unreasonable ideas that are really never going to work, then that means that they know the suggestions they are getting are within the bounds of what we would consider reasonable practice. So that would be good.  

I think online is a good way to do it, because that enables a classroom teacher to do it in their own time or whenever it suits them, or in their non-contact time. Which is, I mean everyone’s life is slightly different, so the online access is very important.  

Term one is just crazy. Term two would be better, because by then they would know the children they have in their room and have had that chance to develop the relationship and know them more intimately. And I think term two you know, in terms of the classroom and everything, settles down a lot more and there’s a lot more time available to them to think about and engage with the material.  

I think, if you provided them with lots of good resources and strategies and then they can then think about that in relation to specific children, that would be very useful. Because what tends to happen is you tend to do PD and you learn all of this information, and then you get caught up in your everyday life and teaching. And you don’t necessarily apply that knowledge to specific children, but if they’re in some way part of that training involves them having to actively think about one or two specific children that they are working with then that would be certainly very useful, definitely. And would have more flow on effect and be more likely to benefit the child. |
**HOSES2**

And we will never avoid that, you will never avoid these situations when you are working with highly complex kids where something just erupts, and you’ve got to deal with it on the spot. And at those times teachers need that information there and then. And that’s where you draw on that expertise.

We have, we use discussion groups now within EQ which are just email based. So, the HOSES networks, the disability networks etc, and because its state-wide and obviously because the rural and remote schools can access this as well, its beneficial in that regard.

It gives them the information they need to get started. It probably allays some of their fears. Um, children often come in with a reputation, and we try to start with a clean slate. But if you have children coming in with complex needs, teachers can get very anxious, and they have the whole Christmas holidays to prepare for that. It can create barriers for the kids if the teachers are underprepared.

**HOSES3**

Yeah, and I think I mentioned as I said before, that it is still really important for that collaborative culture to be within the school including your leadership team, including your SEP staff and including the whole year level cohort so it’s not just well you’ve got the SEP kid that’s your classroom, it’s OK let’s band together as main stream teachers because we might have some strategies too and we are holders of knowledge not just you know, but I think you know that already, but yes that’s helpful I think.

Yeah, so if you email to this discussion list it goes to every member on that email and everyone can choose to or not to reply to that and that’s really effective because it just pops up in your email and people can choose to answer or not answer and that’s fine, but I like that because it keeps me up to date with stuff and things come up and I’ll say that even though it’s got no relevance to me at the moment but I will save it anyway and people share resources and do all that kind of stuff and I find that really effective because I am always on my email anyway so then I don’t have to log into a forum to chat and access it just pops right up or I can just flick something off quickly.

Or even just for teachers because teachers are accessing this not just SEP teachers, I mean it gives them a lot more part in it too rather that just going I don’t know what to do look to the SEP teacher or not look to the SEP teacher a lot of the time we are having to chase teachers and go what can I give you and they haven’t necessarily thought about that or they haven’t recognized that this is a problem.