Approaches to the provision of educational support for children and young people with additional health and developmental needs
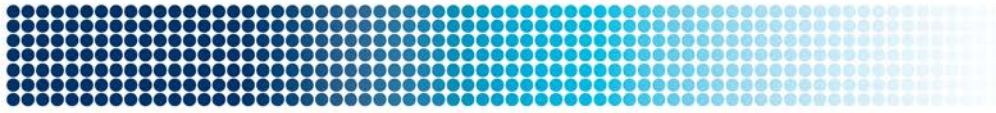
Autism Spectrum Disorders

Centre for Community Child Health

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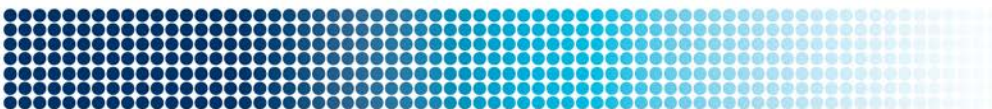
August, 2015

Acknowledgements

TABLE OF CONTENTS

List of Tables

List of Figures

List of Acronyms

AAC	Augmentative and Alternative Communication
ABA	Applied Behaviour Analysis
ABLES	Abilities Based Learning and Education Support
AEDC	Australian Early Development Census
AHDN	Additional Health and Development Needs
APST	Australian Professional Standards for Teachers
ARACY	Australian Research Alliance for Children and Youth
ASD	Autism Spectrum Disorder
DDA	Disability Discrimination Act
DET	Department of Education and Training (VIC)
DSE	Disability Standards for Education
DSM-V	Diagnostic and Statistical Manual of Mental Disorders – V(5)
EIBI	Early Intensive Behavioural Intervention
ENQ	Educational Needs Questionnaire
ICF	International Classification of Functioning, Disability and Health
ICSEA	Index of Community Socio-Educational Advantage
IP	Individual Planning
IQ	Intelligence Quotient
LSA	Learning Support Aides
NAPLAN	National Assessment Program - Literacy and Numeracy
NCCD	Nationally Consistent Collection of Data
NDIS	National Disability Insurance Scheme
PDD	Pervasive Developmental Disorders
PECS	Picture Exchange Communication System
PRT	Pivotal Response Treatment
PSD	Program for Students with Disabilities

PSNP	Primary School Nursing Program
RCT	Randomised Controlled Trial
RTI	Response to Intervention
SEHQ	School Entry Health Questionnaire
SEIFA	Socio-economic Indexes for Areas
SFO	Student Family Occupation
SGD	Speech Generating Device
SHCN	Special Healthcare Needs
SSG	Student Support Group
SSNP	Secondary School Nursing Program
SSS	Student Support Services
TEMAG	Teacher Education Ministerial Advisory Group
UDL	Universal Design for Learning
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHO	World Health Organisation

Glossary

Term	Definition
Additional health and developmental needs (AHDN)	Children and young people with additional health and developmental needs (AHDN), often referred to as special health care needs in the academic literature, are those who have or are at increased risk for a chronic physical, developmental, behavioural, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally.[1]
Autism Spectrum Disorder (ASD)	An individual can be diagnosed as having an ASD if they present with abnormal behaviours in social interaction and communication, as well as exhibit restricted and repetitive patterns of interest and activities.[2-5]
Inclusive education	A process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education.[6]
Categorical approach	Assign children and young people according to a list of health conditions that are chronic in nature and assume that children who carry these diagnoses are in need of additional support.
Non-categorical or functional approach	Focus primarily on the child or young person and their individual needs within their daily environments, rather than on the diagnosis.

Preface

This report was funded by the Victorian Department of Education and Training to inform the Review of the Program for Students with Disabilities. The aim was to provide recommendations for funding reform that would maximise learning outcomes for children and young people with a disability in Government schools, and in particular, meet the specific needs of students with Autism Spectrum Disorders.

The review was undertaken over a very short period (6 weeks) and therefore broad consultation with key government and non-government stakeholders was not possible. While we have sought strategic expert views to inform the report, we recognise that broader expert input would also be needed to ensure that views from the field are well considered. Throughout the report we have also signalled where further policy discussions might be required to determine the details of how the proposed funding models might best be implemented within the current funding and schooling systems.

Key messages

Children and young people with additional health and developmental needs (AHDN) often require extra support at school to reach their full potential. One condition among children with AHDN is Autism Spectrum Disorder (ASD), which affects about 6 in every 1000 Australian children and young people.

Key principles of an effective approach

Funding supports for students with AHDN, including ASD, can be a contentious and complex issue. Any approach needs to ensure existing resources are used efficiently and effectively. An ideal funding model:

- emphasises student functioning rather than diagnosis
- supports early intervention (early years of school)
- responds to changing needs over the schooling life
- involves families
- respects parental choice
- takes account of disadvantage
- supports multi-disciplinary approaches
- utilises existing education and support resources, and
- reduces incentives for undesirable behaviour (e.g. inflation of diagnoses for funding eligibility).

Suggested alternative funding model

Students with severe AHDN needs (~1-2% of children) could benefit from individually allocated funding. Basing this funding on their eligibility for the National Disability Insurance Scheme (NDIS) would eliminate the need for expensive assessment procedures to determine eligibility. To support students with mild or moderate needs (16-18% of students), providing funding to the school would enable flexible and localised responses. The amount of funds would need to be adjusted for the level of special learning needs and disadvantage within a school's population.

Recommendations for implementation

For maximum benefit and effect, changes to the provision of funding in Victorian schools need to be reinforced by:

- building the capacity of teachers to use evidence-based approaches
- a more rigorous and in-depth approach to accountability that is practical, yet still focussed on improving the educational outcomes of children
- ongoing research and evaluation to facilitate development of the evidence base needed for supporting children and young people with AHDN in schools.

Executive summary

Up to 20% of school students have additional health and developmental needs (AHDN), and require extra support at school in order to reach their full potential.

Autism Spectrum Disorders (ASD) are one example of an AHDN. ASD is a lifelong condition that involves behavioural, social and communication challenges. ASD affects around 6 in every 1000 Australian children and young people.

This report outlines potential approaches to the provision of funding support at school for children and young people with AHDN, including those with ASD.

Challenges of the current approach

How best to achieve optimal learning outcomes for students with AHDN, including children and young people with ASD, is contentious. Inclusive education is a widely accepted theory, but implementing effective inclusive practices is not always straightforward.

The Victorian Program for Students with Disabilities (PSD, 'the Program') aims to support the learning and wellbeing needs of students with AHDN by providing specific additional funding to Victorian schools. Despite aiming to promote inclusive education, there is concern that traditional funding models – such as the Program – can be deficit focused and drive individually focused interventions with limited impact.

As a result, many education systems internationally are reviewing their funding systems, taking efficiency, equity and return on investment into account; and the degree to which the system promotes inclusive education.

Alternative funding approaches

There are four primary types of funding models across Australian jurisdictions and comparable international education systems. These include: funding tied to individual students (input); distributed to schools (throughput); distributed according to student achievement (output); or dedicated to a particular purpose (often based on a category of disability).

Each has strengths and weaknesses. Often a combination is needed because the support needs of students with AHDN are diverse, range from mild to severe, and impact different developmental domains.

While there are international trends for particular models, there remains a lack of empirical evidence about the impact of each approach for student learning.

Guiding principles of an optimal funding approach

While empirical evidence is limited, research on approaches that best support children and young people with AHDN have highlighted a number of key principles that should be considered to develop an effective funding approach:

- Focus support on the individual learning needs of students rather than just their diagnosis.

- Load supports in the early years of primary and high school to reduce the likelihood of lasting learning disparities.

- Ensure funding approaches are flexible to respond to children and young people's changing needs over time.

- Establish effective partnerships between schools and families to achieve the best outcomes.

- Provide more intensive supports to students from disadvantaged backgrounds who have AHDN.

- Provide multidisciplinary supports to align with evidence-based approaches to intervention.

- Use existing resources to complement and enhance funding approaches (e.g. Student Support Services (SSS), school nurses and visiting teachers).

- Distribute funds according to the number/proportion of children with AHDN enrolled in particular schools.

- Wherever possible, reduce incentives for undesirable behaviour (e.g. inflation of diagnoses for funding eligibility).

Proposed alternative funding approach

In this report we suggest an alternative approach to funding, commensurate with the principles described in Figure 1. For children and young people with severe AHDN, we suggest input funding, with eligibility aligned to the National Disability Insurance Scheme (NDIS) to eliminate costly assessment and application procedures.

For children and young people with mild-moderate AHDN, we recommend throughput funding, adjusted for the level of special learning needs (learning-adjusted weighting) and disadvantage (equity-adjusted weighting) within a school population.

The Department could set benchmarks for the proportion of funding to allocate to the early primary and secondary years, or to whole-school interventions. Greater use of resources during the early years of primary (front loading) and secondary school (transition loading) will enable schools to provide support at cricial developmental periods.

To ensure transparency and accountability, schools should report on how Program funds are used, and demonstrate that the use of these funds resulted in improved student outcomes. Schools or clusters of schools achieving high levels of value add for their students with AHDN could receive additional funding to support their positive school practices.

Finally, discretionary funding should be provided to encourage schools to engage in research and practice-based evaluation that facilitates continued development of the evidence base around what works to support children with AHDN, and effective implementation.
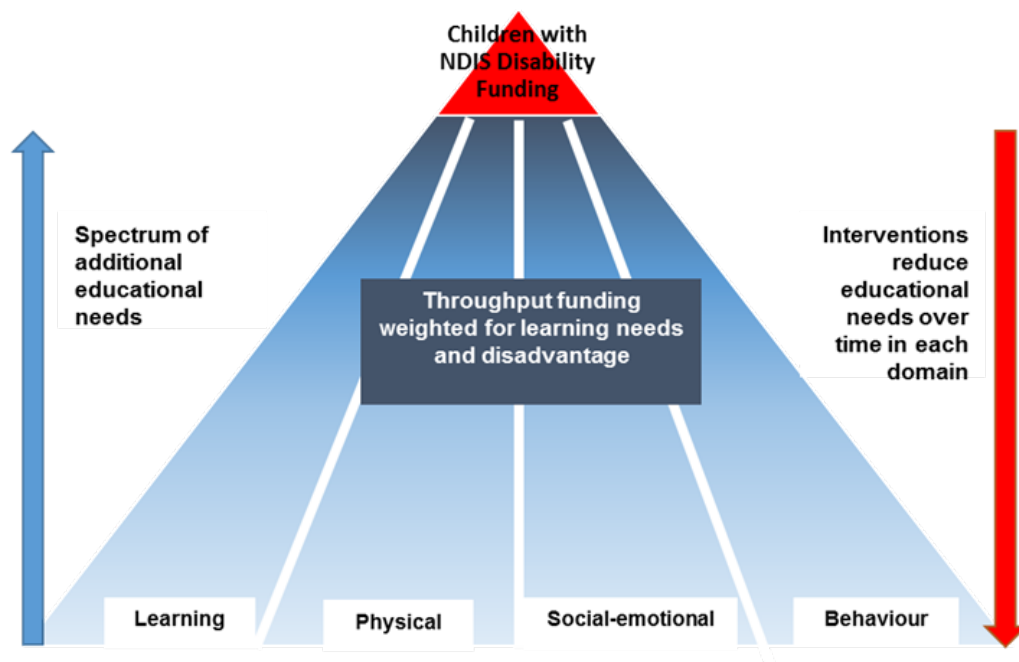
Figure 1: Approach to supporting the spectrum of learning needs for students with AHDN

Recommendations for implementation and impact

Implementation of this approach is only likely to be effective if reinforced by other key changes to the education system:

- The provision of high quality inclusive education for children with AHDN is dependent on building the capacity of the teaching workforce to use and implement evidence-based practices.

- A greater and more rigorous focus on accountability is required to ensure that funds to support children with AHDN are being utilised in ways that improve student learning.

- Ongoing research and evaluation is needed to grow the evidence base around what works to support children with AHDN, particularly in relation to educational interventions.

Conclusions

To ensure all children reach their educational potential, a different approach to the way existing funds are used is required; one with greater efficiency and effectiveness to optimise use of current resources.

We have suggested an alternative approach to meeting the needs of children with AHDN, including those with both mild and severe difficulties. Economic modelling
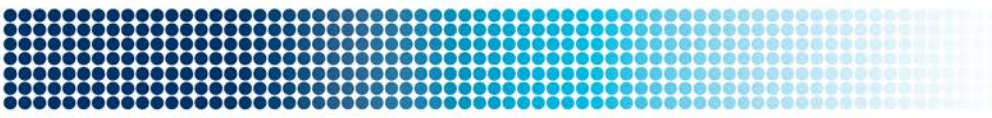
and community consultation will be a critical next step to refining this funding approach and identifying any potential unintended consequences.

Reforms to the funding system should occur in tandem with efforts to further develop the evidence base around the most effective approaches to supporting children in schools, and to upskill the teaching workforce in inclusive practices.

Because the proportion of Victorian students with AHDN is substantial, improving students' learning outcomes through the provision of effective support is expected to generate significant long-term savings across health, education and welfare sectors.

1.0   Background

Research from Australia and the United States suggests that up to 20% of school-aged children and young people experience developmental and/or health problems that necessitate additional supports to allow them to reach their full potential at school.[7,9] It is essential to give thoughtful consideration to ways to best meet the needs of these children and young people as they enter and move through the schooling system.

In recent years there has been increasing concern in Australia and internationally about the appropriateness of traditional methods of support allocation for children and young people at school with additional health and development needs (AHDN).[10,11] Approaches that rely on diagnostic categories have been criticised on a number of grounds. These include poor performance in predicting appropriate interventions, inconsistency in the categories used and the assessments by which children and young people are assigned to them, and failure to capture complexity.[12] These approaches may also incentivise medical practitioners to err on the side of a positive diagnosis, to ensure children and young people receive access to services.[13]

An alternative framework is required to address how educational systems might best (effectively and efficiently) impact on the developmental trajectories of children and young people with additional needs. This report aims to draw on available expertise and relevant literature to determine potential funding models to meet the learning and wellbeing needs of children and young people with AHDN, particularly those with Autism Spectrum Disorders (ASD).

1.1   Supporting children and young people with additional health and developmental needs at school

Children and young people with AHDN, often referred to as 'special health care needs' in the academic literature, are those who have or are at increased risk for a chronic physical, developmental, behavioural, or emotional condition; and who also require health and related services of a type or amount beyond that required by children and young people generally.[1] This definition incorporates a wide variety of conditions, including physical health (e.g. diabetes, epilepsy) as well as mental health (e.g. Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorders). Thus, there is a broad range of possible presentations, levels of severity, and associated needs.[14] The most recent prevalence estimates of AHDN in the United States range between 13-19% for 0-17 year olds.[9,15] Similarly, Australian data suggest that around a fifth of children in their first year of schooling experience AHDN.[7]

From the time they begin school, children and young people with AHDN are at risk for academic difficulties and poorer adjustment. Goldfeld et al.[7] drew on data from over 260,000 Australian students in their first year of full-time school in 2009, and

found that children and young people with AHDN were more likely to be rated by their teachers in the bottom 10th percentile in pre-literacy and numeracy skills. Similar findings have emerged in other Australian samples[16], in the United States[17] and in Canada.[18,19] As children and young people with AHDN move through the education system these differences persist across a variety of academic skill domains[15,18,20,21], and manifest in higher rates of grade repetition.[22] Unsurprisingly, children and young people with AHDN also show higher levels of disengagement with the school setting, including lower levels of motivation and willingness to achieve academically.[15,23] Given the high prevalence of AHDN, these problematic school experiences are likely to incur significant costs to society over the life course.[24]

These data suggests that it is critical to effectively support children and young people with AHDN to achieve their full educational potential at school. Allowing children and young people to reach their optimal school outcomes is likely to benefit both individual children, young people and their families, as well as the wider society by generating savings in health, education, and welfare budgets, and improving productivity.[25,26]

1.2   Why is this issue important now?

The provision of equitable, quality education that is accessible to students with disabilities is not a new policy area. In fact, Australia joined other countries in 2008 in ratifying the United Nations Convention on the Rights of People with Disabilities,[27] recognising that the provision of quality education for all people – including those with disabilities – is a basic right.

How best to meet this aim and achieve a quality education for students with disabilities continues to be highly contentious. Internationally, there have been concerns regarding the ways in which resources for special education have been allocated and utilised, and in particular the perverse incentives that certain funding models can generate.[28] These concerns have been echoed in the Australian context, with evidence that inflation of positive diagnoses of conditions such as ASD, is occurring in order to gain access to school and community supports.[13] International education systems are responding to issues of efficiency, equity and return on investment through reviews of existing funding systems that specifically employ a philosophy of inclusive education, an approach endorsed by the OECD.[29] Australia, and more specifically Victoria, is following a similar path.

International momentum has been reinforced through a number of more local reviews of ways to support students with disabilities in schools. For example, the Teacher Education Ministerial Advisory Group (TEMAG) has released a new directive for education reform associated with strengthening initial teacher education programs to support teacher quality. Similarly, implementation of the National Curriculum and Australian Professional Standards for Teachers is focussed on

improving systems that support teacher quality, to ensure that teachers can provide quality education for all.

Policy approaches to improving teacher quality are complemented by concurrent interest in ensuring that systems to collect and collate quality data are enhanced. To address the inconsistency in data collection in accurately establishing the prevalence of disability across Australia, the Nationally Consistent Collection of Data (NCCD) is currently being implemented, together with the National Disability Insurance Scheme (NDIS) (currently being trialled). Both are significant national policies aiming to better support the needs of people with disabilities.

In Victoria, national effort is being reinforced through local advocacy, with organised not-for-profit organisations fulfilling a complex role of navigating research, practice, and lived experience. Organisations such as Disability Advocacy Australia and Autism Victoria, among many others, have provided thoughtful input into how students with disabilities can be supported.

Thus, there are multiple national and international policy drivers informing the review of existing funding models and systems to understand efficiency, equity and impact in the provision of inclusive education for all students, including those with AHDN.

2.0   Autism Spectrum Disorders

Autism Spectrum Disorders (ASD) are a group of developmental conditions. The provision of school-based support for children and young people with ASD has gained increasing attention as an area of education requiring improvement. This report considers the challenges of addressing the needs of children and young people with ASD to illustrate the difficulties of the current funding system, and suggest an alternative approach.

2.1   What is ASD?

According to the Diagnostic and Statistical Manual for Mental Disorders-V (DSM-V) definition, an individual can be diagnosed as having ASD if they have abnormal social interaction and communication behaviours, as well as restricted interests, and engage in repetitive activities.[2-5] ASD is a lifelong condition that impacts on the family and all those who are close to diagnosed individuals.[5,30-32] Closely related to ASD is a group of conditions called Pervasive Developmental Disorders (PDDs) the symptoms of which do not necessarily meet all of the criteria for ASD, but are characterised by social, communication and behavioural difficulties.

It is important to note that ASD occurs across a spectrum of severity, and children and young people who are assessed as having ASD can have a wide variety of needs, despite having the same diagnosis. In DSM-V there are three levels of severity (level 3 – requiring intensive support, level 2 – requiring substantial support, and level 1 – requiring support).[3]

Determining an ASD diagnosis is not a simple process. It requires assessing the child or young person using psychological tests for functioning and the DSM-V criteria.[3] Children are usually assessed as having ASD between 0-2 years of age, but this can vary substantially, as diagnosis often occurs when the child or young person's development is observed as atypical; for example, they may have problems associated with their speech, or have difficulty coping in social situations.[2,3,33] The age when children and young people are assessed and diagnosed with ASD depends on the type and severity of symptoms they have, and on parents' or carers' understanding of their child's health and development.[3] When children are diagnosed with ASD at a young age (≤18 months) they often will be assessed again to confirm the diagnosis when they are older.[3,5] The process of assessment and diagnosis is not always clear cut. While the criteria and functioning tests help, children and young people with milder difficulties can lie in a diagnostic grey area.

2.2   How common is ASD?

The proportion of children and young people affected by an ASD at any one point in time (prevalence) has increased exponentially in the last two decades.[34,35] It is thought that this increase can be explained by differences in diagnostic criteria with new editions of the DSM being released, as well as a greater degree of early intervention and screening, and the increasing sensitivity of diagnostic tools.[3,33]

Recent data from the Centres for Disease Control (CDC) estimated the prevalence of autism during childhood (0-8 years) as 1.5% in North America, with similar prevalence estimates noted in Europe and Asia.[36] A study in South Korea noted that the prevalence of ASD in children and young people aged 7-12 years was 2.64%.[37] The CDC also noted differences in prevalence between genders, with boys being much more likely to be diagnosed with ASD than girls.[36]

In Australia, there are three main sources of prevalence data; Centrelink, National Disability Data and the ABS. There is some variance in figures across these data sources, however a review of the data conducted by researchers and health professionals concluded that, as at 2005, the estimated prevalence of ASD among children and young people aged ≤18 years was 0.63%.[35]

Self-report data collected by the ABS through the Survey of Disability, Ageing and Carers (SDAC) in 2012 indicated that an estimated 0.5% of the total Australian population identified themselves as having autism.[31] As shown by the CDC, males were also much more likely to identify as having autism. This overall population estimate is a large increase of 79% since the last prevalence estimate in 2009.[31]

Figure 2 illustrates the prevalence of ASD in 2009 and 2012 over age groups, from childhood and into adulthood. It is evident that prevalence is highest during the early years (0-5 years). However, it is important to note that the trend reflected in the figure may also reflect the nature of the survey, as the SDAC asks individuals to self-identify with a disability according to a variety of areas of difficulty within their daily

life.[31] Over time, people may learn to better cope with their disability, reducing its impact on their daily life. This could mean that older respondents may not identify themselves as having ASD as they do not see it as being a difficulty within their daily life. Thus, the figure below most likely reflects the ages where diagnosis and assessment are more common as opposed to actual prevalence.
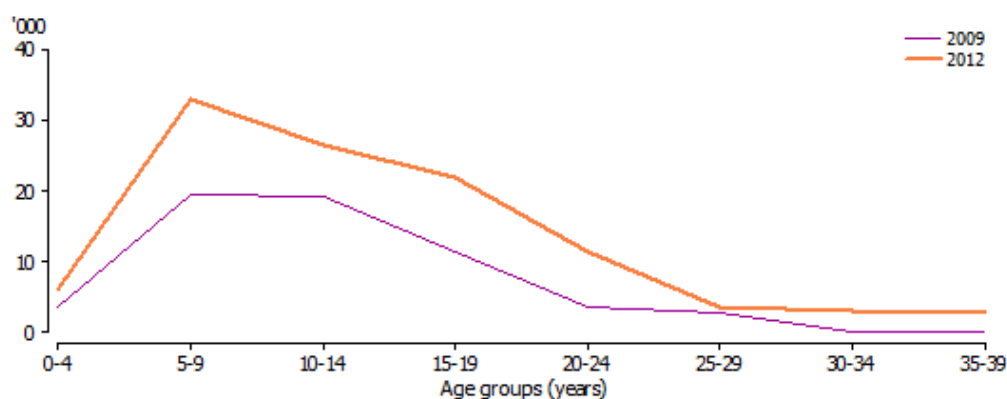
Figure 2: Proportion of persons with Autism aged 0-39 years, by age 2009-2012 [31]

Children and young people with an ASD also often have additional conditions (termed comorbidities),[38,39] such as Attention Deficit Hyperactivity Disorder (ADHD), Epilepsy, and Obsessive Compulsive Disorder (OCD). International estimates suggest that as many as 70-90% of children and young people with ASD may have different combinations of comorbid conditions.[38,39] In adolescence, social and emotional comorbidities, such as depression and social anxiety, are particularly common.[39,40]

2.3   Outcomes for children and young people with ASD over time

As noted, ASD is a neurodevelopmental condition that affects people throughout their lives.[33] While the age of diagnosis can vary considerably, diagnosis tends to be in the early years (0-2 years) when children fail to meet developmental milestones.[34]

The needs of children, young people and adults with ASD are different. For instance, improving social skills, communication and behaviour in childhood is a key area of need; in adolescence, needs become more focussed on social and emotional wellbeing.[41]

Encouragingly, research into the trajectories of development for children and young people with ASD indicates that it is possible for interventions that support and address their needs to have a cumulative benefit over time, thereby reducing the impact of the disability on the individual's daily life.[31,42]

In the US, researchers modelled the trajectories of development across social, communication and repetitive behaviour domains for children and young people with ASD, from age of diagnosis to the age of 14. This research utilised annual data collected from mental health services in California and included 6,975 children and young people in the sample.[42] The trajectories are outlined in Figure 3.

A **Communication trajectories**

Legend:
- High (12.7%)
- Bloomers (7.5%)
- Medium–high (25.8%)
- Medium (24.5%)
- Low–medium (18.4%)
- Low (11.1%)

B **Social trajectories**

Legend:
- High (7.0%)
- Bloomers (10.7%)
- Medium–high (19.6%)
- Medium (29.7%)
- Low–medium (24.5%)
- Low (8.4%)

C **Repetitive behavior trajectories**

Legend:
- Never (21.4%)
- Improving (8.1%)
- Declining (7.1%)
- When stressed (28.0%)
- Daily (27.6%)
- Usually (7.8%)
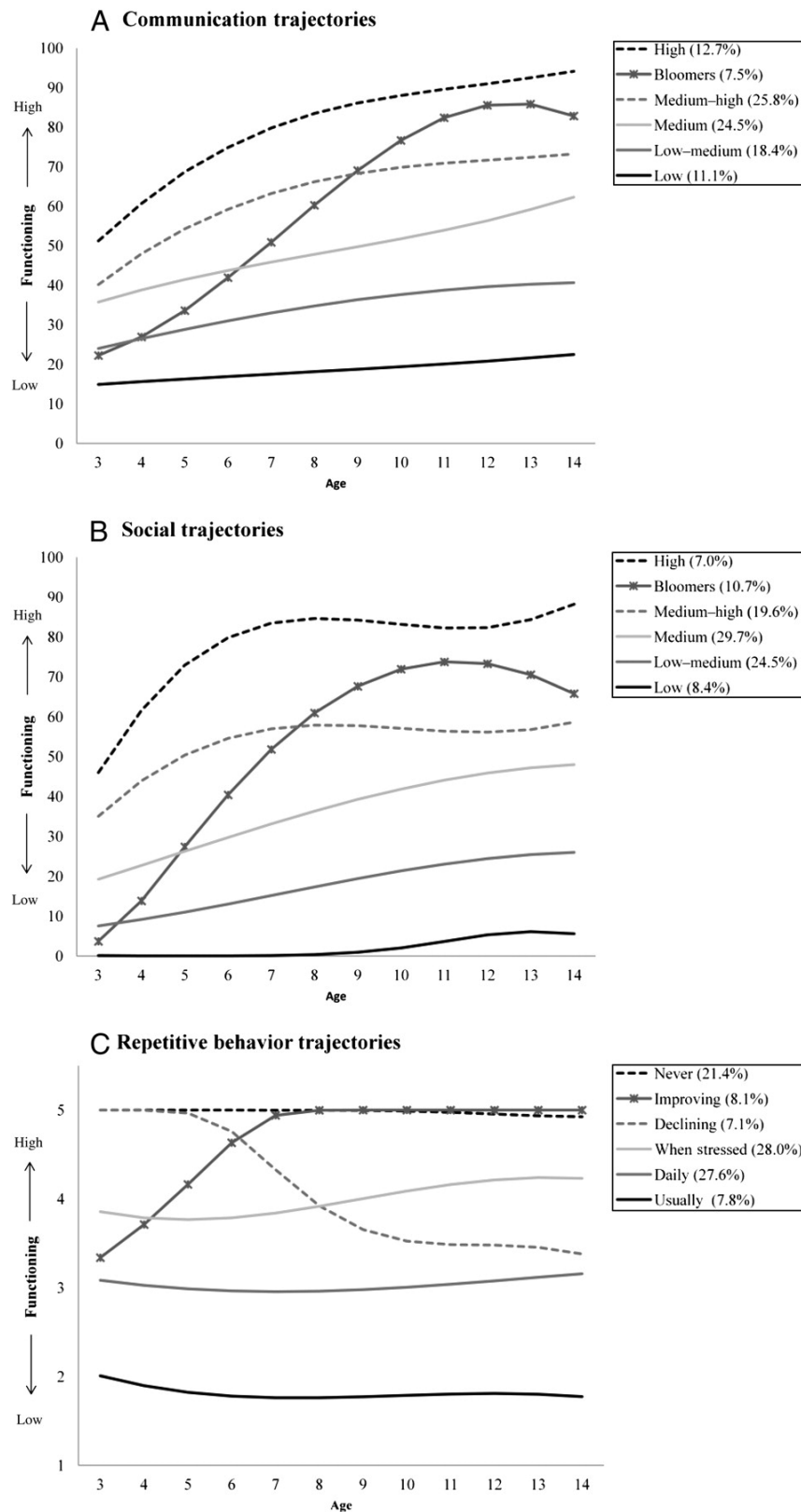
Figure 3: Communication, social, repetitive behaviour symptom trajectories[1] by age [42]

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[1] Scores based on the Client Development Evaluation Report

The trajectories illustrate variation in developmental pathways. Some trajectories indicated an improvement over time, the most marked improvement was evident in the communication domain, with some modest improvement in social functioning, and little to no improvement in repetitive behaviour.[42]

Children that were high-functioning in the early years of their lives improved more rapidly. This improvement tended to occur before age 6, thereafter several of the trajectories remained quite stable.[42] In the communication and social trajectories there was one small group (referred to as 'bloomers') who improved very quickly considering their low functioning status in the early years of development.[42] However, in the repetitive behaviour domain, trajectories were relatively stable apart from for the two groups who improved and declined overtime.[42] Only approximately 15% of children and young people changed significantly over time (improved or declined) in repetitive behaviour.[42]

Among those children and young people who improved rapidly in each of the domains (bloomers) there were several defining characteristics distinguishing them from the other groups. Specifically, these children and young people differed with respect to intellectual disability and socioeconomic status. Of the children and young people presenting with severe symptoms of ASD, those most likely to improve rapidly did not have an intellectual disability, had more highly educated parents, and did not identify with an ethnic minority group.[42]

Thus, socioeconomic status acts as a protective factor for the development of children and young people with an ASD, and existing health inequalities between those with low and high socioeconomic status are likely to widen. This indicates that greater early intervention and support for children and young people with low socioeconomic status is warranted.

The way in which socioeconomic status influences the developmental pathways of children and young people with an ASD is unknown. It is possible that environments, access to quality health and education services, and parental confidence and literacy could play a role.[33,42]

3.0   What works to support children and young people with ASD at school?

3.1   Inclusive education as an overarching philosophy

Inclusive education is central to meeting the needs of children with health and developmental difficulties, such as ASD, at school. While there is no universal agreement on what constitutes inclusive education, UNESCO define inclusive education as "a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education."[6] In this sense, inclusive education is often considered in terms of changing the education system to fit the needs of the student, rather than attempting to change the student to fit the school. Exclusion can

be considered not only in terms of disability, but in terms of diversity, taking account of factors such as socioeconomic disadvantage, language, and culture.

In Australia, both Commonwealth and Victorian governments have implemented policies and programs that address the educational needs of students with disabilities as part of their commitment to inclusive education. Schools have been moving steadily towards a more inclusive system of educating children and young people since the early 1990s.[43] A major part of this move towards inclusive education is the preference to include students with disabilities in mainstream schools – 'mainstreaming'.[44]

Strategies to achieve inclusion have also involved changes to curriculum, teaching approaches, grouping strategies, and service development models to enable all children and young people to participate successfully and equally in the mainstream curriculum.[44] Whole-of-school practices that facilitate inclusion involve adjustments to the school culture, organisational practices and teacher behaviour.[45,46] In turn, teachers require support to engage with the curriculum in a way that facilitates inclusion, and student engagement. Quality classroom teaching requires leadership through school-wide and school-endorsed inclusive policies, and provision of teacher support. Providing IT-assistive teaching technology and specialist staff are examples of such support.

While there is a lack of data addressing the extent to which good inclusive practices are implemented across the Australian jurisdictions, a number of approaches to the provision of best practice inclusive education in Australia have been identified. These approaches have been outlined by the Australian Research Alliance for Children and Youth (ARACY), a brief overview of each approach from their report is provided below.[47]

- Quality teaching: This involves coordinating resources in line with goals and opportunities, providing feedback, jointly formulating goal setting and assessment, and creating cohesive learning communities.

- Inclusive pedagogy: This relates to the craft of the teacher: 'the what, why and how they do what they do'.[48] Teachers' craft knowledge is in turn dependent on the extent to which they are encouraged and supported to learn, reflect and develop.[49]

- Adapting and differentiating the curriculum: This requires teacher skill and teaching resources.

- Alternative curricula: An example of alternative curricula is the Abilities Based Learning and Education Support (ABLES) resources, which are used in Victoria to support students with disability.

- Assistive and adaptive technologies: These technologies allow teachers to support students to access physical environments, communicate, and participate.

- Universal Design for Learning (UDL): UDL is a pedagogical development that involves designing and delivering lessons in such a way that they allow all students to access and participate in the same curricula.

- Individual planning (IP): IP may involve negotiating a modified curriculum with the parents/carer of a student who is considered to have a need. Although considered the cornerstone of good practice in Australia,[44] IPs are currently not consistently used, and their application is often undertaken more as an administrative requirement rather than as an assistive strategy for inclusion.[50]

3.2   Interventions

It is important to understand which interventions are most likely to make a substantive contribution to achieving the goal of inclusive education. Thus, a rapid review of the literature was conducted that focussed on understanding the effectiveness of school-based interventions for students with an ASD. We found eight review articles that included meta-analyses, or syntheses of meta-analyses. Three relevant narrative reviews were also sourced; a full description of the search strategy and results can be found in Appendix A.

The interventions sourced through this review are congruent with the philosophy of inclusive education: they enable children with ASD to participate in education in a way that supports them to reach their learning potential. The interventions outlined here provide a vehicle with which to achieve inclusive education for children with ASD.

Among the interventions reviewed, many fall under the umbrella of applied behavioural analysis (ABA). ABA is a therapeutic intervention for individuals with ASD that employs psychological and educational behaviour modification techniques covering social, communication, and behaviour support therapies.

Interventions targeting the school environment and the development of teachers were also discussed. However, the literature on the effectiveness of these interventions is very limited.[51] Similarly, the meta-analyses and narrative reviews examined had little information about the costs of interventions for children and young people with ASD. Indeed, resource requirements were articulated for only one of the intervention types (Early Intensive Behavioural Intervention). The use of integration aides was not investigated in any of the reviewed studies and hence will not be discussed here.

Table 1 summarises the ASD interventions evaluated in the identified meta-analyses and narrative reviews. For further detail regarding the studies reviewed, and effect size statistics, refer to Appendix A.

Table 1: Summary of meta-analyses and reviews of interventions

Intervention type	Intervention(s)	Target behaviour(s)	Mean effect (weak – moderate – strong)[2]
School-based social skills	School-based social skills interventions from preschool to secondary school (peer-mediated, individual). Social stories interviews (Short stories that explain difficult social situations in simple terms for children and young people with ASD).	Social behaviours (e.g. initiation, responses, duration of interaction). Transition support, reducing anxiety, functional skills, improving social behaviours.	Peer-mediated and adult social interventions have a *moderate* impact on engagement in the school environment.[52,53] Social stories interventions tend to have a *weak* impact on improving social skills.[54]
Early Intensive Behavioural Intervention (EIBI)	Early intensive behavioural intervention (EIBI) for young children (<7 years) with parental inclusion. Cost of EIBI is estimated as: $49,092 per child or young person per year (average duration of EIBI is three years).	Adaptive behaviours, language and cognitive skills. Adaptive behaviours, language and cognitive skills.	*Moderate-strong* effect on adaptive behaviour and IQ.[24,55] Cost savings to society for improved functioning among children receiving EIBI more than offset the costs of the intervention itself with savings to society estimated at over $1.5m across the lifetime of the child.[24]

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[2] For all meta-analyses and meta-syntheses this is based on effect sizes, for narrative reviews author's conclusions have been summarised in this column. Appendix A provides more detail about the extraction and coding of study information.

Intervention type	Intervention(s)	Target behaviour(s)	Mean effect (weak – moderate – strong)[2]
Eclectic Behavioural	Variety of components used across the reviewed studies. Included combinations of a discrete trial, ABA, behavioural treatments or approaches, naturalistic intervention and generalisation opportunities.	Cognitive skills, behavioural skills and language. Improving overall functioning was also an aim of the interventions.	Can be beneficial if they are conceptually sound, based on evidence and implemented well.[56]
Communication Support	Interventions to support communication among children and young people with an ASD. Includes alternative and augmentative communication (AAC) such as Picture Exchange Communication System (PECS) and Speech Generating Devices (SGDs).[57]	Language and communication skills.	SGDs demonstrate *strong* effects on improving challenging behaviour and moderate effects on academic outcomes.[57] PECS demonstrate *moderate – strong* effects on social skills.[57] Stronger effects of these interventions are in educational settings, particularly in mainstream settings.[57]
Teacher training	Investigating the use of evidence-based practices (EBP) among teachers with students with autism (self-instruction, group-instruction and individual instruction).[58] Use of instructional practices in the classroom for students with an ASD.[59]	Change in teacher practice following professional development. The communication, functioning, play and social skills of children	Predictor of use of EBP was observed improvement in student outcomes.[58] There was an interaction between instructional practices and improvements in communication, functioning, play and social skills among children and young people with an ASD.[59]

Intervention type	Intervention(s)	Target behaviour(s)	Mean effect (weak – moderate – strong)[2]
		and young people with an ASD.	
School organisational strategies	Organisational strategies to promote inclusion of students with an ASD in schools.[60]	Social and communication skills, participation and engagement.	Response to intervention and system-wide behaviour support can reduce the number of students requiring intensive support.[60]

3.3 Effective interventions across the severity spectrum

The meta-analyses and systematic reviews draw attention to the importance of ensuring intervention type, delivery, and dosage are individualised for each student. There were some indications that particular interventions have been designed for children and young people with severe communication, social skills or behavioural difficulties.

With respect to communication difficulties, severely low functioning children and young people are considered an appropriate target population for the Picture Exchange Communication System (PECS), Speech Generating Devices (SGDs) and Pivotal Response Treatment (PRT) interventions.[51] Communication interventions characterised by the provision of a specific teaching and learning strategy delivered by the teacher were considered more appropriate for children and young people with less severe ASD symptoms.[51]

In other key areas of difficulty (behaviour and social skills), it is unclear whether different types of intervention are considered more or less appropriate on the basis of symptom severity. However, the available evidence does suggest EIBI based on ABA is generally appropriate for young children with severe symptoms, and that there is a tendency to employ more eclectic approaches for children and young people with less severe ASD symptoms.[56,61]

Overall, it is difficult to draw definitive conclusions, based on ASD symptom severity, as to the appropriateness of intervention type, duration and setting. However, the need to treat each child or young person as an individual, monitor their progress, and adapt the intervention strategy accordingly was highlighted in the majority of reviewed studies.

3.4 Limitations of the evidence to date

It is important to recognise that the research evaluating ASD intervention effectiveness, like all research, has limitations. These limitations have implications for three main areas:

- Confidence that specific interventions account for better outcomes

Because few studies included in the meta-analyses and reviews were Randomised Controlled Trials (RCTs) the evidence that improved outcomes are entirely due to the interventions (and not other factors like socio-economic status) could be stronger.

It is possible the magnitude of effects observed in the published research is inflated. This is because there is a tendency to publish research only where differences are observed ('publication bias'), and several of the meta-analyses relied heavily on published studies.

- Generalisability of findings

This concerns the extent to which effects observed in research are likely to occur in practice. A limitation of the studies referred to is that many included single-subject designs – that is, there was only one participant in many of the primary studies in the meta-analyses. In these instances, the relatively small number of participants makes it difficult to determine whether other children and young people would respond to the intervention in a similar way.

It is worth noting that there is little research on the efficacy of ASD interventions for children and young people in the middle and high school years. Even among those studies with group-level designs, it is unknown whether interventions that are effective for young children are likewise effective when implemented with older children and young people.

Finally, the majority of reviewed studies were not conducted in Australia. This means contextual factors associated with the nature of interventions, and particularly the implementation of them, need to be considered carefully when planning implementation in the Australian context.

- Outcome maintenance

No longitudinal studies following up RCTs of interventions were identified in this review. This is unfortunate, as longitudinal studies provide important information about how and whether the effects of interventions are maintained over time.

Overall, the limitations raise important questions about the magnitude of effects, generalisability, and outcome maintenance. These are clearly important areas where future research is needed. Nevertheless, the available research does provide converging evidence that a range of interventions for children and young people with ASD are likely to support better learning outcomes.

Given the number of studies included in the meta-analyses, and the breadth of interventions examined, this evidence will still prove useful for making decisions around school-based interventions and supports for children and young people with ASD in Victoria.

4.0   How are supports for children and young people with AHDN currently provided?

In Victoria, the Department of Education and Training ('he Department) has committed to the principles of inclusive education, stating "[the Department] is committed to delivering an inclusive education system that ensures all students have access to a quality education that meets their diverse needs". One of the key means through which the Department implements this commitment is the Program for Students with Disabilities (the Program).

4.1   Program for Students with Disabilities

The Program is intended to top-up existing funding allocated to students in government schools in order to increase the school's capacity to support the child or young person's needs, facilitate their learning[62], and facilitate an inclusive education environment.

Through the Program, there are short, medium and long-term outcomes that the Department aims to achieve, these include both learning outcomes and broader health and social outcomes such as wellbeing.[62] The three main objectives of the Program funding are to improve:[62]

1.   student learning

2.   student engagement and wellbeing

3.   student pathways and transition into future education or employment.

Currently, the Program is targeted towards better supporting the education of those children and young people with moderate to severe needs (about 4% of children and young people). Thus, eligibility, assessment and selection processes are structured towards identifying, and supporting those children and young people.[62] To articulate the logic of the Program, a logic model is provided in Figure 4, based on Program documentation.

For each of the Program categories (physical disability, visual or hearing impairment, severe behaviour disorder, intellectual disability, ASD and severe language disorder) applications can be lodged in order to be considered for the top-up funding and the suite of available programs.[63-68] Funding is reviewed during the transition between years 6-7, reappraisals can also be conducted if a child or young person's needs change.

The logic of the Program is founded upon a series of assumptions. The overarching assumption is that an inclusive approach to education will lead to improved student learning, engagement and wellbeing, and better support for transitioning.[47] In addition, at the Program level the key assumption is that the additional resources will be efficiently and effectively used for the benefit of students with disabilities in government schools. The final key assumption is that a multi-disciplinary, integrated approach is appropriate to support and manage students with disabilities in government schools.
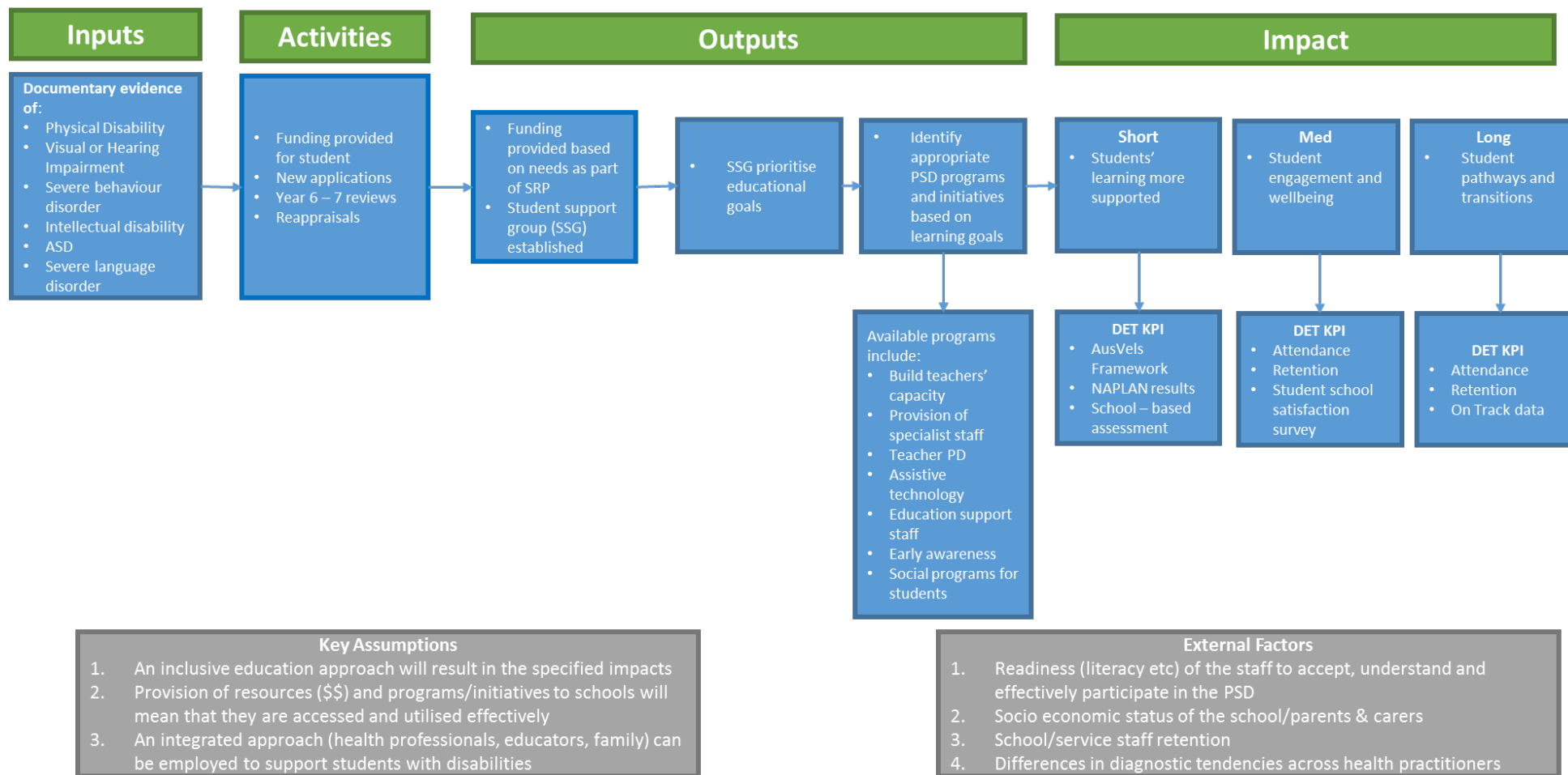
Figure 4: Program for Students with Disabilities overall logic

Inputs

Documentary evidence of:
- Physical Disability
- Visual or Hearing Impairment
- Severe behaviour disorder
- Intellectual disability
- ASD
- Severe language disorder

Activities

- Funding provided for student
- New applications
- Year 6 – 7 reviews
- Reappraisals

Outputs

- Funding provided based on needs as part of SRP
- Student support group (SSG) established

- SSG prioritise educational goals

- Identify appropriate PSD programs and initiatives based on learning goals

Available programs include:
- Build teachers' capacity
- Provision of specialist staff
- Teacher PD
- Assistive technology
- Education support staff
- Early awareness
- Social programs for students

Impact

Short
- Students' learning more supported

Med
- Student engagement and wellbeing

Long
- Student pathways and transitions

DET KPI
- AusVels Framework
- NAPLAN results
- School – based assessment

DET KPI
- Attendance
- Retention
- Student school satisfaction survey

DET KPI
- Attendance
- Retention
- On Track data

Key Assumptions
1. An inclusive education approach will result in the specified impacts
2. Provision of resources ($$) and programs/initiatives to schools will mean that they are accessed and utilised effectively
3. An integrated approach (health professionals, educators, family) can be employed to support students with disabilities

External Factors
1. Readiness (literacy etc) of the staff to accept, understand and effectively participate in the PSD
2. Socio economic status of the school/parents & carers
3. School/service staff retention
4. Differences in diagnostic tendencies across health practitioners

4.1.1 Eligibility and assessment

Seven categories of disability are provided to define Program eligibility. These categories include criteria informed by World Health Organisation guidelines and define the types of disabilities and the degree of need that will be accepted.[62] These categories include: physical disability; visual impairment; hearing impairment; severe behaviour disorders; intellectual disability; autism spectrum disorder; and severe language disorder with critical educational needs.[62] Intellectual disability accounts for the largest portion of Program funding, followed by ASD.[69]

Disability category	2008	2009	2010	2011	Per cent of 2011 total	Per cent increase since 2008
Autism spectrum disorder	3 028	3 604	4 103	4 396	21.0	45.2
Hearing impairment	600	603	601	608	2.9	1.3
Intellectual disability	12 003	12 583	13 066	13 393	64.1	11.6
Physical disability	1 081	1 072	1 049	976	4.7	−9.7
Severe behaviour disorder	824	891	1 070	1 141	5.5	38.5
Severe language disorder	234	262	284	263	1.3	12.4
Visual impairment	101	101	97	107	0.5	5.9
Total	17 871	19 116	20 270	20 883	100	

Figure 5: Numbers of students funded by the PSD by funding category, 2008-2011[3]

For each criteria described within the categories, there is a description of what kind of evidence would be accepted in the application. The accepted evidence largely consists of eligibility criteria gained from specialised health professionals.[62] The child or young person must meet the specified disability criteria within at least one category to receive the diagnostically based funding (if a child or young person has needs across categories, they must meet the criteria in at least one category).

Children and young people with milder concerns that do not meet the eligibility criteria are not captured within the Program.[69] The Department expects schools to support these students from within the school budget. The figure below from the Victorian Auditor-General's Office[69] shows an approximate breakdown of students in government schools, where it is expected that 4% of students will qualify for the Program, while an additional 16% with ADHN will not.

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[3] Totals may vary due to rounding.
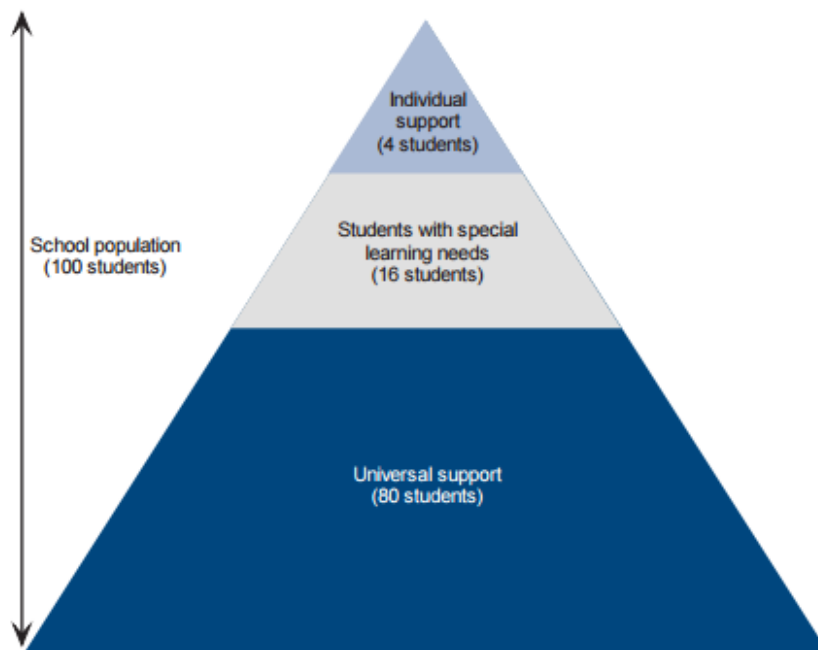
Figure 6: Distribution of needs in an average school of 100 students [69]

If a child or young person is determined eligible for the Program funding, the application process commences with the establishment of the student support group (the Group). This is a collaborative partnership between parents and carers, school staff, and health professionals who work together to determine and support the needs of the child. Overall, the role of the Group is to facilitate the process and develop and regularly review the individual education plan (the Plan) for the student.[62] The figure below articulates the steps involved in the application process for the Program.

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
Student enrols and printed information about school and the Program for Students with Disabilities is provided to parents.	**The Group established** and existing documentation examined.	**Further assessment occurs if necessary.** Assessments Australia undertakes eligibility assessment for ID and SLD categories.	**The Group meets** to check eligibility criteria and complete ENQ. Documentation supporting eligibility and ENQ indicators collated.	**Application submitted** online and in hard copy following completion of the Application checklist for Principals.	**Resources Coordination Group** ensures eligibility criteria met. Level of funding determined. School receives notification.	**The Group meets** to make recommend-ations to the Principal regarding implementation of the Plan for student. Funding begins at start of new school year, if eligible.	**Student Review** occurs at Year 6-7 transition.
Student Support Group (the Group) meets regularly to develop and oversee educational plan for student							

Figure 7: Summary of the PSD application process[62]

There is an annual round in which applications are accepted for additional funding (closed 17 July 2015).[62] For students with a worsening condition, applications are accepted at any time. Similarly, applications for students transferring into the

government school system are accepted outside the annual round. However, it is important to note that the Group is primarily concerned with assessment and application, rather than intervention to improve outcomes.

If an application is accepted, the student will be allocated a top up for their existing base student resource package (the Package), based on their assessed level of need. There are six levels of need that correspond to the assessed degree of disability and are based on responses provided to the Educational Needs Questionnaire (ENQ).[62,70] For each level of need, a certain rate of funding is applied to the Package (see Figure 8 below for 2015 rates).

Level	Credit ($)
1	6,641
2	15,358
3	24,242
4	33,086
5	41,863
6	50,686

Figure 8: 2015 Students with disabilities rates [70]

4.1.2   Types of supports provided

The intended purpose of the additional funding providing through the Program is to facilitate students' learning.[62] From the provision of this additional funding, there are two structures that schools are required to establish to support the student.[69]

Student Support Group (the Group): comprises a range of clinical and allied health professionals, parents and guardians, and school teachers and staff members. A key task for the Group is to develop a learning program for the student and regularly monitor and review the student's progress.[62]

Individual education plan (the Plan): developed by the Group, the Plan is used to identify the learning needs of the student, and record and outline appropriate education strategies to meet these needs. The Plan should also outline the learning goals of the student.[62]

The funds that remain after establishing these two structures are intended for the school to utilise as they see appropriate. The Department provides a range of suggested support initiatives and programs for educators to access in order to support the needs of students with disabilities in their schools. Resources and professional development programs are provided to improve early awareness of signs of needs or developmental delay, and some scholarships are also available as additional support for educators.[71,72] The provision of access to specialist experts in particular areas of disability is also available through the Department.[73] Specific

projects and resources run by the Department to support educators working with students with ASD, such as the Amaze classroom, have also been developed.[63]

4.1.3 Cost

In 2011, the Department contributed $533 million to schools in order to support 20,883 eligible students.[69] The overall Program funding has increased considerably from 2006-07 when $359 million was allocated to schools. Similarly, the number of students accessing Program support has doubled.[69]

There were 4,396 students with ASD funded through the Program in 2011. However, the specific amount of funding allocated for these students is unknown; we do not know the proportion of eligible students with ASD in each level of need.

As noted above, schools are afforded flexibility to use the funding in ways that best meet the challenges of their particular school environment. The Victorian Auditor-General identified that, of the schools audited, those providing effective support had updated Plans for all students that were readily available to all teachers.[69] Similarly, a coordinator was also appointed to oversee the collation of information and profile updates.[69]

Overall, due to a lack of data, information is not currently available to determine whether Program funding is being used efficiently and effectively to support student outcomes.[69] This highlights the need for a review of funding models for supporting children and young people with AHDN, with particular regard to addressing issues associated with a need for greater transparency, accountability and, related to this, the need for data on student outcomes.

4.2   Examples of other DET resources

4.2.1 Primary and secondary school nursing program

The Primary School Nursing Program (PSNP) aims to promote the health and wellbeing of children and young people, and to assist in early identification of health-related learning difficulties. There are currently 84 primary school nurses (nurses), whose client base is students attending all Victorian Primary Schools and English Language Centres. Nurses are provided through a universal program that is run throughout Victoria targeting children at school entry. The program is built upon the parent-completed School Entrant Health Questionnaire (SEHQ) (the SEHQ is used by nurses working in the PSNP to identify children with health problems that may impact upon learning and wellbeing). The nurses then utilise the information collected in the SEHQ and subsequently provide early referral for children identified as having health-related learning difficulties to interventions that are likely to positively impact upon the children's schooling life. In addition, when the nurses identify health-related learning difficulties, they provide assessment, advice, information and referral on to other services as needed.

The Secondary School Nursing Program (SSNP) aims to reduce risks to young people and promote better health in the school community. Approximately two thirds of Victorian government secondary schools have a school nurse. The primary role of the SSNP is in health promotion in areas such as tobacco and drug use, eating disorders, obesity, depression, suicide and injuries. They are also involved in ensuring coordination between the school and community-based health and support services. Importantly, the SSNP is responsible for having a collaborative relationship with the PSNP to support children and young people to experience a successful transition from primary to secondary school.

4.2.2 Student Support Services

Student Support Services (SSS) aim to promote students' educational success and wellbeing through providing support from professionals such as psychologists, speech pathologists, visiting teachers and social workers (Department of Education and Training, 2012).[74] In 2011, the cost of the SSS program was $66 million.[69] SSS Officers (SSSOs) operate as interdisciplinary teams that focus on building workforce capacity, assessment, individual and group-based intervention, and responding to critical incidents.

SSS are organised according to networks of schools. A network of principals, led by an Executive Chair and Executive Group, manage the SSS budget and workforce, and set the policies and priorities for service delivery. The SSSOs provide services to the network of schools, with professional leadership and support provided by Stream Leaders at a regional level. Priorities are set within the local network, and networks have the flexibility to operate in a manner that they consider will best meet these priorities, documented within an Annual Work Plan. The SSS program is expected to span the service delivery continuum, from primary prevention (e.g. offering professional development to teaching staff) to complex intervention.

Concerns have been raised about the capacity of the SSS program to meet the needs of students, particularly due to increasing numbers of students with AHDN. Similarly, there is a strain on these services to support those students to prepare more Program funding applications, and support those students who may not be eligible for Program funding. Issues associated with understaffing, lengthy referral processes, and the subsequent availability of services have been identified.[75]

4.2.3 Teachers

The role of teachers in supporting children and young people with AHDN is pivotal.[60] The current expectations of teachers with respect to supporting those with AHDN are articulated in the Australian Professional Standards for Teachers (APST).[76] Particularly relevant is the first standard, which states teachers must 'know students and how they learn'. Within this standard, teachers are also expected to be able to 'differentiate teaching to meet the specific learning needs of students across the full range of abilities' and employ 'strategies that support the full participation of students with disability'.[76]

The teacher development program for working with students with disabilities, as offered by the Department, notes that teachers need to be able to 'effectively assess, monitor and respond to student's abilities'.[64] In practice, the onus is on the teacher to work with the Group to implement the Plan, while the SSS, PSNP and SSNP support the non-learning needs of the students. Paraprofessionals such as learning support aides (LSA) or assistants also play a role, and funding for students with disabilities is often utilised to gain access to these paraprofessionals.

Within the SSS described above, there are visiting teacher services that are targeted towards supporting children and young people who have AHDN that may prevent them from physically attending school, or who attend school with a physical disability.[77] Visiting teachers work directly with students, and have a role as an advisor to classroom teachers on supporting inclusive engagement, altering the curriculum and teaching practices to appropriately support students with disabilities, and guiding appropriate use of assistive technologies. Importantly they also have a critical coordination role to communicate with other health and education services the student is accessing, and work with the families to ensure that they are also supported.[72]

Literature on school-based interventions for students with ASD highlights the importance of the education environment in general, but also the teacher. It has been argued that positive effects are achieved when teachers have the awareness and ability to implement interventions and evidence-based practices with the necessary degree and fidelity.[58,60]

5.0 Potential funding models for Victoria

5.1 Models of funding

There are many potential models of funding to support students with disabilities in schools. Sharma et al.,[78] identified four primary types of funding models that are applicable within the current Australian context, as summarised in Table 2. Combinations of these funding models are also possible.

While there are international trends evident in the provision of support for students with AHDN, there is currently little empirical evidence to identify which funding approach is most effective in promoting student learning or reducing educational inequities.[78,79] What does seem clear, is that high quality, inclusive education is more likely to be achieved through the strategic allocation and use of funds, rather than simply increasing the amount of funding.

Table 2: Summary of types of funding models

Model	Description	Strengths	Weaknesses	Examples
Input funding (demand-driven, categorical)	Allocating individual funding based on child or young person's diagnosis and/or severity of need.	Good for students with high needs who require ongoing intensive support. Need may already be established by other funding supports (e.g. NDIS) which would reduce costs for re-assessment.	Deficit focused. Can incentivise positive diagnosis so that children and young people receive appropriate supports. Drive individual interventions such as integration aides where there is limited evidence of educational impact.	UK (personalised budget), Holland, NZ, AUS (NT, SA, ACT)
Throughput funding (base funding)	Allocating grants to schools/districts. Amount of funding can be made proportionate to need, e.g. by using census data. Appropriate for children and young people with mild-moderate needs (estimated 16-18% of the population).	More focused on functioning, less-focused on individual child or young person's deficit. Reduces stigma and labelling. Promotes inclusive education. Reduces tendency for inflation of needs/diagnoses. Encourages local responses. Allows for change in student needs over time.	Significant responsibility for school leaders/district authorities to allocate, utilise and manage funds appropriately.	Belgium

Model	Description	Strengths	Weaknesses	Examples
Output funding	Allocating funds based on achievement scores. For instance, schools with achievement scores in the lowest 10% may receive additional funding. Additional funding based on improved student learning outcomes.	More support for all students. Greater degree of accountability for funds and the use of them to result in positive outcomes.	Larger possibility for perverse incentives as there are high stakes (particularly if national testing is used as a means to determine funding allocation).	
Discretionary funding	Usually this is additional funding allocated based on a category of disability. Can also be based on level of disadvantage, or presence of comorbidity.	Provision of additional support possible for children and young people with added disadvantage as well as a disability. Can support the attainment of more equitable outcomes given the focus on disadvantage.	Relies on quality data, and appropriate weightings for disadvantage.	
Combined model 1: input & throughput	Throughput funding for the majority of children and young people, with some input funding for those with severe needs.	Can be utilised for children and young people with mild to severe needs. Affords a balance of flexibility and autonomy to schools,	Assessment could be complex and expensive, as there would need to be a combination of functional	Sweden, AUS (QLD, TAS, VIC)

Model	Description	Strengths	Weaknesses	Examples
		while still ensuring that children and young people with severe needs have access to intensive, ongoing support.	and needs-based assessment. Depending on the way in which funds are controlled, educators may need support to be able to manage and distribute funds for children and young people with mild-moderate and severe needs.	
Combined model 2: throughput and output	Throughput funding with an output model for accountability.	Can be utilised for children and young people with mild-moderate needs. Ensures that schools are focussed on utilising funds in ways that generate an impact on student learning.	Relies on educators implementing and knowing how to implement evidence-based interventions to support students with disabilities.	Ireland
Combined model 3: input, throughput and output	Combination of throughput, input and output funding. For instance, a base amount of funding is allocated to schools, with an additional amount of funding for	Three forms of funding streams address students with severe and mild-moderate	Complex funding formula, would still require parents/schools to apply for categorical funding.	AUS (WA, NSW)

Model	Description	Strengths	Weaknesses	Examples
	students with AHDN and, finally, further funding provided via an adjustment that could be for equity purposes.	needs, while also considering equity.	Accountability for the three forms of funding would also be complex.	

Overall, across these models there is a focus on tailoring the provision of support according to a child or young person's severity of need. 'Need' is not exclusively considered as the severity of the condition; it also encompasses disadvantage and comorbidity. A conceptual framework for considering the needs of children and young people with AHDN at school is presented next.

5.2   Conceptual framework

O'Connor et al. have developed a framework that provides an approach for considering the needs of children and young people with AHDN at school, and purposefully considers functional abilities over diagnostic categories.[80] This framework was informed by the International Classification of Functioning, Disability and Health (ICF). The ICF[81,82] was adopted by the World Health Organisation as a means of assessing health and health-related states, and was considered a landmark in acknowledging that disability is multidimensional and manifests in different levels of human functioning, including impairments, performance limitations, and the experience of disadvantage.[83] The framework also distinguishes between the nature of the conditions and the impacts of the presence of the condition for an individual and family. In doing so, it acknowledges the role of the environment in defining human functioning.[83,84]

This conceptual framework is illustrated in Figure 9 and highlights the complexity of the relationship between AHDN and school functioning, suggesting that there may be multiple opportunities for positive interventions to support these students. AHDN can impact on four interrelated domains of a child or young person's functioning at school (see Figure 9): body functions and structures (e.g. intellectual capacities), activities of daily living (e.g. ability to manage self-care skills such as toileting independently), social participation (e.g. interactions between the child or young person and their peers), and educational participation (e.g. school attendance). These domains are overlapping and interrelated. For example, factors that arise in relation to bodily function, such as neurological changes impacting cognitive functioning, will be closely related to a child or young person's educational participation, including their capacity to access the mainstream curriculum.

Risk and protective factors   Child's functional status   School progress

Individual Level
• Nature and severity of condition
• Socio-emotional and behavioural competencies
• Learning competencies
• Attitudes to schooling

Family Level
• Socioeconomic status
• Interaction with education and health service providers
• Family resiliency
• Levels of support for and within the family

Service-systems Level
• Information exchange and communication
• Assessment procedures
• Coordinated planning and case management
• Policies and inclusiveness

Body Function & Structures
e.g. movement, mental functioning

Activities of Daily Living
e.g. self-care, mobility

SHCN

Social Participation
e.g. child-teacher interactions

Educational Participation
e.g. attendance, integration into programs

• Academic achievement
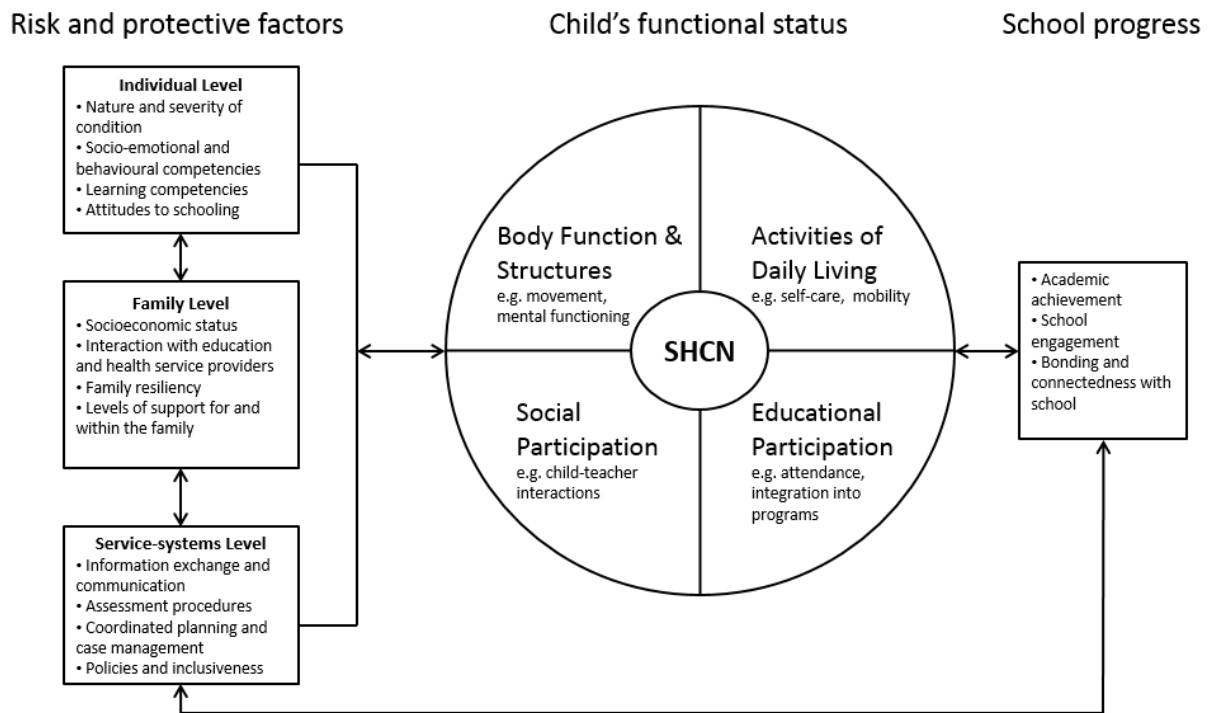• School engagement
• Bonding and connectedness with school

Figure 9: Conceptual framework for understanding the impact of AHDN on children and young people's school outcomes. SHCN=Special Health Care Needs. Reproduced from O'Connor et al [80]

The framework further proposes that these dimensions of children and young people's functioning are influenced by risk and protective factors at the personal and environmental level, aligning with current understandings of disability and supported by the empirical literature. This includes factors at the individual level (e.g. perceptions of self as a poor learner may operate as a risk factor, whereas positive attitudes towards school can be protective), at the family level (e.g. socioeconomic disadvantage is a significant risk, whereas a strong family-school relationship operates as a buffer), and service systems level (e.g. lack of communication between the school and relevant health professionals operates as a risk, whereas education policies promoting inclusiveness are protective). These risk and protective factors can operate both concurrently and over time; for example, the provision of early intervention services before beginning school could act as a protective factor. In addition, the relationship between risk and protective factors and the child or young person's functional status is likely to be interactive and bidirectional; for example, a child or young person's difficulties in managing activities of daily living may prevent a parent from entering the workforce, furthering socioeconomic disadvantage.

Together, these individual and environmental risk factors and the child or young person's functional status are proposed to contribute to shaping either positive or negative trajectories of school functioning for children and young people with AHDN. Positive trajectories are characterised by academic skill development, engagement with the school environment and motivation to learn.[85] In contrast, negative pathways are characterised by academic underachievement, disengagement,

disruptive classroom behaviour, bullying, truancy, absenteeism, and school dropout.[86,87] These school pathways are consequently critical in shaping life course outcomes, and carry significant societal costs.[26]

5.3 Core guiding principles of an optimal approach to funding

This conceptual framework highlights the complexity of ways in which AHDN can impact children and young people's functioning at school, and responses to the provision of services to meet these needs is similarly complex. An optimal approach would meet the needs of children and young people across a range of developmental diagnoses, including ASD, by focusing on their functional requirements rather than their diagnosis. There are a number of principles of an effective approach that enhance protective factors and support children and young people's positive school functioning. These guiding principles are also consistent with the Disability Discrimination Act (DDA) and the Disability Standards for Education (DSE), and are informed by best practices for inclusive education (as discussed in section 3.1).

5.3.1 Emphasis on student functioning rather than diagnosis

Funding to support children and young people with AHDN in Australia is currently distributed along diagnostic lines.[11] Yet the complexity and heterogeneity of ways in which student's school experiences can be impacted by AHDN suggests that a broader classificatory framework centred on children and young people's functioning is likely to be more effective in shifting developmental trajectories over their schooling.[10] An approach that considers the child or young person's needs in relation to their body function, daily living skills, social participation, and educational participation, as well as surrounding risk and protective factors, would allow appropriate matching of services to needs. In taking such an approach, it is important not only to describe and respond to children and young people's limitations, but also to acknowledge the child or young person's capabilities and surrounding protective factors so that these can be leveraged to help the child or young person succeed.[88]

Children and young people's needs and functioning occur across a wide range. Around 4% of children and young people are recognised as having moderate to severe needs, and these children and young people are the target population for Program funding. However, a much larger proportion of children and young people experience emerging AHDN (estimated between 16%-18%[7,69] of the student population), or additional needs that are milder, are not yet formally diagnosed, or lie in diagnostic "grey areas". Even though their concerns are less complex, children and young people with emerging AHDN also begin school with poorer academic and social-emotional skills[7], and early differences persist over the primary school years.[89] Yet poor outcomes are not inevitable, and interventions have the potential to promote stronger educational outcomes for these students.[89] Hence, children and

young people with both established and emerging needs require additional supports to reach their full potential at school.

5.3.2   Importance of early intervention

An additional important consideration is the timing of these supports. Children and young people who, due to AHDN, lack foundational skills when they begin school may be less able to take advantage of learning opportunities, meaning that early disparities are likely to persist or even increase over time.[15,18,20,21] Coordinated and effective interventions to promote better school outcomes for children and young people with AHDN should therefore ideally begin well before children enter the formal educational system, and be sustained throughout the early years of school to have the most benefit. Countries such as Finland provide additional classroom and school assistance for up to 30% of the young school-aged population (aged 6-9 years), in recognition of the benefits of intervening early.[90] The importance of early intervention also aligns with current NDIS early intervention funding, where children who qualify for early intervention funding receive services up to age 7 years.

5.3.3   Responding to changing needs over time

The needs of children and young people with AHDN change over time according to a range of factors, such as developmental period, response to interventions, and environmental resources. The implication for funding provision is that the impact of AHDN across the course of the child or young person's full educational career needs to be considered, and funding supports must be flexible enough to account for changing needs over time.

The child or young person's needs may be particularly likely to change during transition periods, where there is often a requirement for additional scaffolding and bridging to ensure positive transitions to the new educational environment and its concomitant shifts in demands across academic, behavioural, and social domains. There are two particularly important transition periods to consider: the transition from preschool to formal education (primary school transition) and the transition from primary school to secondary school. Both of these periods are critical for children and young people's later academic and psychosocial outcomes.[91,92] The provision of effective support services during these periods can lead not only to improved outcomes, but potentially the prevention of additional conditions developing in later schooling.

5.3.4   Family-school partnerships

An ideal model of support will involve families working in partnership with schools to support their child. Families play a significant role in supporting their child's progress at school. For example, the quality of interactions between the family and school systems are highly relevant to children and young people's outcomes. Factors that can act as barriers to effective family-school interactions include failure to involve the family in transition planning, lack of recognition of parents' expertise in their child's

condition, and poor communication and information exchange between the school and family.[17,93-98]

Care should be taken to ensure that excessive demands and expectations aren't placed on families to advocate for their child or young person at school; disadvantage affects how well families are willing and/or able to advocate for their child or young person, and partner with schools. Similarly, the way in which eligibility for funding is determined, and the allocation and distribution of funding, can have an impact on the partnership between families and schools. For instance, if a dollar value is placed upon a child or young person and determines the provision of their supports, the stakes for families rise significantly – particularly for disadvantaged families. This can affect the partnership between families and schools. Where barriers are present to effective engagement with families this will require commitment and resources at the school and system level to establish effective partnerships.

5.3.5   Respecting parent choice of school

In Australia, parents are able to choose the school their children attend. This means that an appropriate funding model needs to take into account the possibility of increases or decreases in the number of students with AHDN enrolling at particular schools as the school's reputation for provision of inclusive education practices grows or diminishes. The overall implications for funding are that funding provision would need to account for characteristics of the school population, and address the potential for change in this population over time.

5.3.6   Taking account of disadvantage

Disadvantaged children and young people with AHDN may have less access to, and lower uptake of services to support their needs – this is known as the 'inverse care law'.[99] Educational outcomes are particularly poor for this population.[100] For example, children and young people with emerging AHDN who are also disadvantaged are more likely to be in a low academic trajectory (Figure 10 below).[89] Indeed, in this study no children and young people with emerging needs in the lowest SES group were functioning in the high academic trajectory, whereas 20% of those with emerging needs from high SES backgrounds were. This suggests that the combination of both AHDN and disadvantage can create a potential "double jeopardy" for these children and young people.
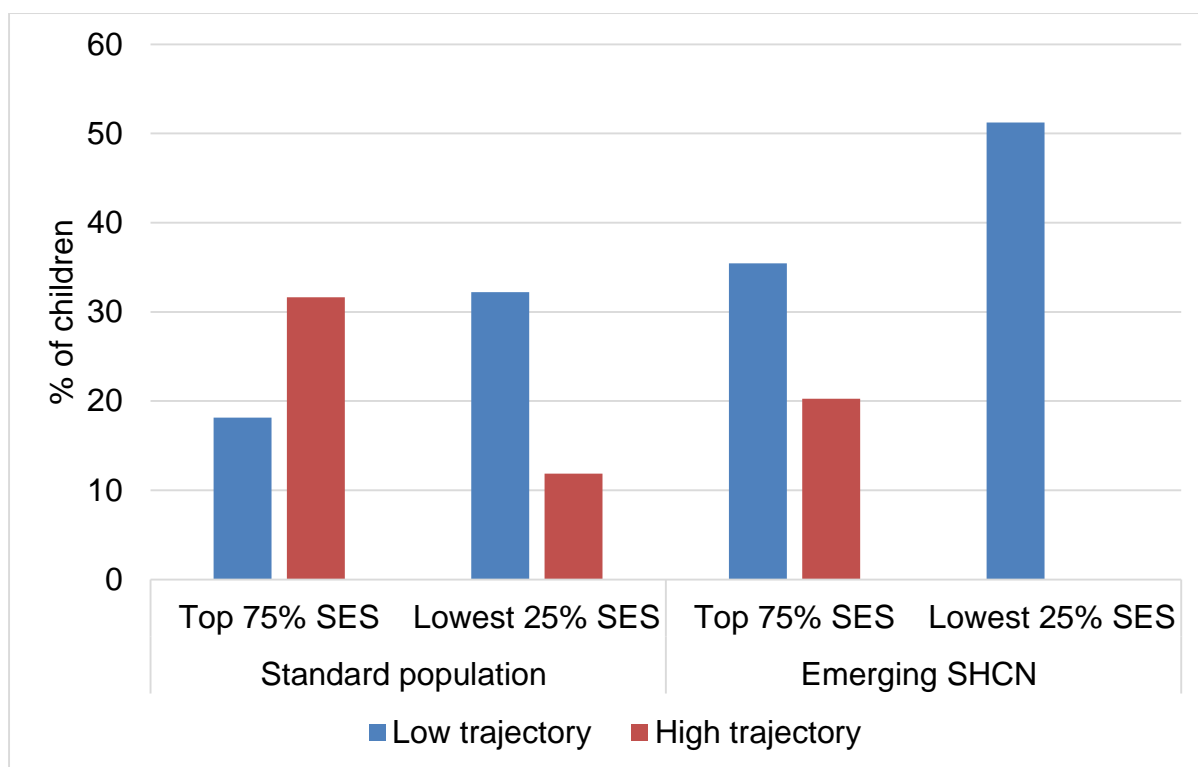
Figure 10: Academic pathways of children and young people with AHDN according to disadvantage[89]

To meet the needs of these children requires not just access to high quality supports for all children with AHDN, but also more intensive supports for those children with AHDN living in disadvantaged circumstances. The concept of proportionate universalism suggests that support should take the form of universal efforts to promote the wellbeing and learning outcomes of children with AHDN, but with an intensity that is proportionate to the level of socioeconomic disadvantage.

5.3.7   Need for multidisciplinary supports

Figure 9, earlier, shows the many ways AHDN can impact children and young people's wellbeing and functioning at school. Children and young people with AHDN are likely to benefit from a multi-disciplinary approach to evidence-based intervention that can flexibly respond to their difficulties.[10,94] Within this approach, a common understanding needs to be developed between all stakeholders, with coordinated supports over the health, education, and home contexts.[101] For example, the Healthy Learner Model of school-based intervention is an approach that places the school nurse as the coordinator of care bridging between the school, the child or young person and their family, and other service providers. This model has been trialled with promising results in relation to asthma.[102]

5.3.8   Use of existing education and support resources

A number of major resources are provided by the Department to support children and young people with AHDN, in addition to the Program (see section 4.2), including Student Support Services, school nurses, and visiting teachers. An effective funding approach for children and young people with AHDN should account for these

resources, and ensure that they are being used as effectively as possible. For example, SSS would most effectively meet student needs by contributing to program and intervention development, and by conducting assessments that inform the interventions that would be most appropriate for a child or young person and allow for monitoring of outcomes according to goals. However, much of this resource is currently spent on assessment for eligibility with little relevance to intervention development.[69] In addition to each resource being used effectively, these resources need to work in a coordinated manner to meet the needs of students with AHDN.

5.3.9   Reducing perverse incentives

All funding models include incentives for strategic behaviours that may not be in line with the formal policy goals, and these should be reduced where possible. For example, systems attaching funding to individual students who are assessed against eligibility criteria may incentivise practitioners to err on the side of a positive diagnosis and emphasise a student's limitations, which can result in less inclusion, more labelling and rising costs.[103] An ideal funding model would recognise and reduce perverse incentives where possible, particularly those impacting inclusion.

5.4   Utilising funding models based on functional needs

The following section will describe and discuss a possible funding model based on the functional needs of students with disabilities, relevant to the Victorian context. The proposed model is consistent with the Disability Discrimination Act and Disability Standards for Education, the philosophy of inclusive education and, finally, the conceptual framework for children and young people with AHDN. It should be noted however that extensive consultation and economic modelling would be required to further test the appropriateness of this proposed approach. Assumed within the proposed approach is that better outcomes for children with AHDN can be achieved within current cost constraints, through improving efficiency and encouraging the implementation of effective interventions.

In summary, for children and young people who have severe diagnosed conditions, input funding can be attached to the individual student. Aligning eligibility for this funding to children and young people who qualify for NDIS package disability funding would minimise: the costs of assessing eligibility, lag time between children starting school and receiving Program funding, and incentives to emphasise children and young people's limitations at school. For children and young people with mild or moderate conditions, throughput funding allows flexible, localised responses to addressing needs, which can be weighted according to education needs and equity indices. To ensure accountability, schools should report on how the funds are spent according to intervention type, target population and student outcomes.

This approach is a modification on the Response to Intervention (RTI) framework, which promotes are three-tiered approach. The modified model accounts for the gradient in children and young people's educational needs which fluctuate over time, and avoids incentives to emphasise children and young people's limitations in order

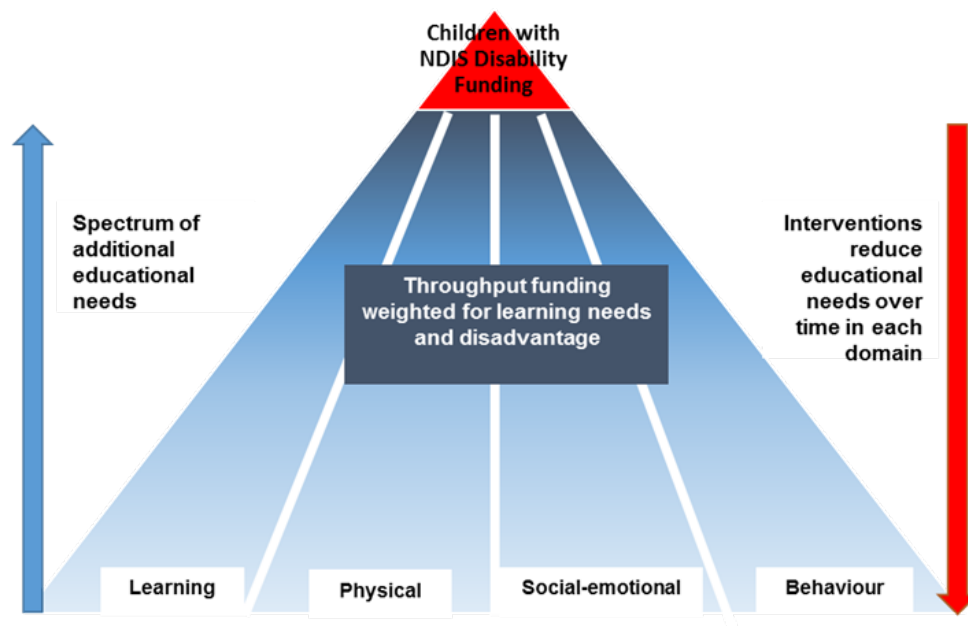to pursue eligibility to a higher tier. This alternative funding approach is illustrated in Figure 11 below.

Figure 11: Spectrum of learning needs for children and young people with AHDN

5.4.1 Children and young people with severe diagnosed conditions

Children and young people who have severe health and developmental conditions (high on the spectrum of additional education needs in Figure 11) are unlikely to have radically changing needs over time, or to lie in "grey" areas where it is unclear whether the child or young person has the condition or not. Hence, they may benefit most from input funding attached to the individual student. We suggest the following features for an input funding model for children and young people with severe needs:

- Align eligibility for support with NDIS disability funding

A disadvantage of input funding can be the significant resources spent on assessing children and young people for eligibility. This could be mitigated by aligning eligibility for this funding to children and young people who qualify for the NDIS disability funding package (hereafter referred to as NDIS disability), i.e. those with severe and permanent conditions that impact upon everyday life and for whom supports are likely to be needed over the lifetime. The NDIS also includes early intervention funding, but this is focussed specifically on young children (less than 7 years old) who would benefit from early intervention to reduce their needs in the future.

Current figures are not currently publicly available but it is estimated that approximately 1-2% of children and young people under the age of 18 will qualify for NDIS disability funding.[8] Aligning eligibility for the Program with NDIS disability funding would significantly reduce the costs of defining eligibility, as children and young people will be automatically considered eligible if they have already been deemed eligible under NDIS disability funding criteria. An additional advantage of

aligning eligibility to NDIS disability funding is that this could avoid the lag time between children starting school and then waiting for referral, assessment, and an approved Program funding application – all before supports can be provided.

This eligibility approach would also allow the NDIS and the Program to complement each other in the services they provide to children and young people who qualify. The NDIS disability funding support focuses on children and young people's health needs, which could potentially include their participation in the classroom (e.g. an aide). Input funding through the Program could concentrate on the child or young person's education needs within the school setting, with particular emphasis on supporting children and young people to meet their learning potential.

- Align eligibility for support with NDIS early intervention funding

Children and young people with NDIS early intervention funding could also be included in this input funding scheme. For children and young people who qualify for NDIS early intervention while at school, the child or young person is usually eligible to receive funding until they are 7 years old (trial data notes that this proportion of children and young people is higher than those who are eligible for disability funding). Input funding for educational supports could complement the early intervention services funded through NDIS early intervention, and last until age 7. Similar to disability funding, this approach also eliminates the cost of determining eligibility as children will commence school with an established eligibility within NDIS. However, because the needs of these children and young people are not as severe as those eligible for NDIS disability funding, and are expected to fluctuate over time, the flexibility of the throughput system could equally serve them well.

- Consider the child or young person's educational needs

While NDIS disability funding would indicate eligibility for input funding, it would still be important to ensure that the child or young person's specific educational needs were assessed. If such an approach were considered for implementation, further work would need to investigate the alignment and degree of overlap between supports provided through the NDIS, for instance learning support aides, and support that would be provided through the Program.

Teachers and school professionals will be best placed to lead the assessment of children and young people's educational needs. For example, an approach trialled in Belgium[104] characterises children and young people's special educational needs according to the level of curriculum adaptation required by the student, rather than according to their medical diagnoses (see Figure 12 below). The purpose of such an assessment in the proposed approach is for the school to determine which interventions are indicated and to monitor children and young people's progress in relation to intervention goals over time. Thus educational assessment is used to inform intervention development, rather than eligibility for funding.
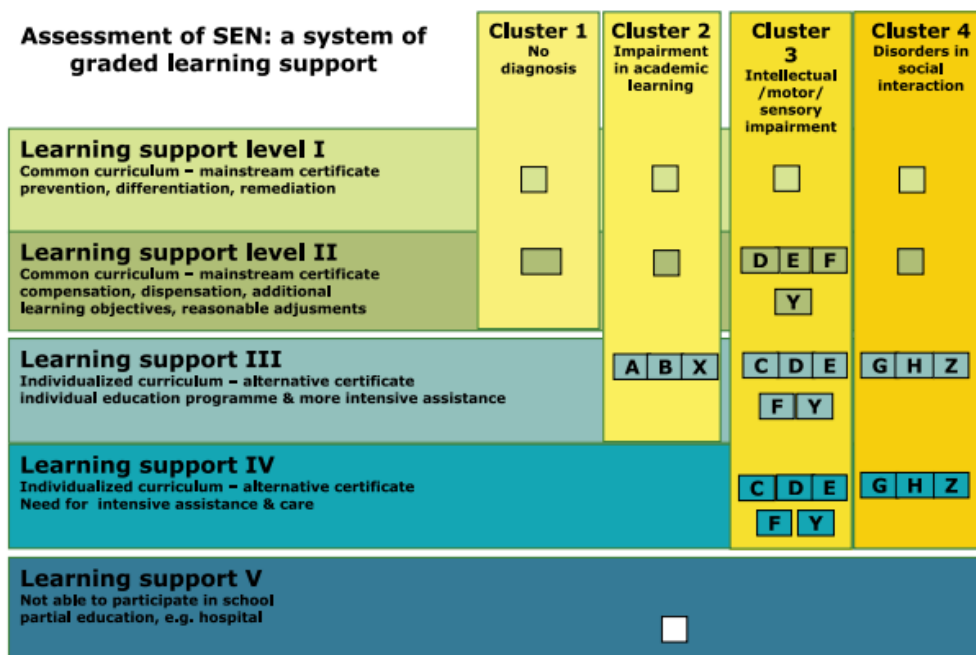
Figure 12: Adapted learning support framework reproduced from Lebeer et al. 2010[104]

- Ensure funding support provides effective education that meets the needs of the child or young person

It is critical to ensure that children and young people are not only provided with support, but that this support is effective in promoting their learning and participation at school. In particular, funding should not automatically defer to schools providing a learning support aide, as is often currently the case. Research suggests that although learning support aides are common, they have a relatively small impact on improving academic outcomes and classroom inclusion.[105,106] This is because responsibility for the child or young person's learning and classroom participation can transfer from the teacher to the aide, who is often not required to have formal training in education. Furthermore, the presence of the aide does not encourage the child or young person's classroom teacher to include the child or young person in classroom activities. More effective use of this funding would include, for example: upskilling and resourcing teachers to implement evidence-based classroom teaching practices through professional development (and coaching from lead teachers with specialised knowledge), and developing and regularly reviewing an Individual Learning Plan for each child.

Program funds should be provided directly to schools to enable them to provide adequate support for the child, in consultation with the child or young person's parents. However, the allocated funds should also be transferred to a child or young person's new school if they move schools. Of course, the transfer of funds would need to be carefully managed and a changeover period implemented to allow for staffing changes and successful transition.

24

- Accountability

While we have suggested that funds for this group of children and young people be allocated per capita, it is appropriate for schools to report on how the funding has been used.[69] This reporting would include both a transparent description of how the funds have been used, and information about the outcomes of children and young people receiving the funding.

It need not be cumbersome. For example, reporting on the use of funds could be across the broad categories of teacher capacity building, allied health support, classroom resources, learning support aides, and specialised programs. This information would ideally be reported in annual reports, as it is critical for the Department to understand how the needs of students are being supported, and how effective these supports are.[69]

To report on the effectiveness of supports, accountability is also needed in relation to monitoring outcomes of individual students. This could provide a lever for quality assurance (i.e. improvement, innovation and accountability), curriculum development, and the provision of evidence-based classroom interventions that are tailored to the requirements of the individual child. However, metrics for this will need to be developed over time, and aligned with each intervention's program logic and intended outcomes.

5.4.2 Children and young people with mild-moderately severe conditions

For children and young people with mild or moderate conditions (16-18% of children and young people) who do not qualify for NDIS, throughput funding would allow for localised responses that are flexible and can account for changes in children and young people's functional needs over time. This is particularly important given these children and young people's needs are relatively fluid and can fluctuate within each domain of academic, behaviour, socio-emotional and physical development, and that limitations in one domain do not necessary mean limitations in others. This approach places greater emphasis on schools' ability to be flexible in their approach to cater for children and young people with different need profiles and does not rely on specific diagnoses. It also places a greater accountability on schools for effective and efficient management of these funds. This process could be operationalised differently depending on which body is assuming primary responsibility for accountability (school, or cluster of schools).

Effective use of throughput funding could include provisions for: capacity building of teachers to meet the learning needs of a broad group of children and young people, and provision of specialised services within each school to complement teacher capacity in providing support for learning needs. We suggest the following features for a throughput funding model for children and young people with mild to moderate needs:

- Adjust throughput funding to reflect student needs

The amount of funding allocated needs to be adjusted based on the characteristics of the student population within a school or group of schools. Two levels of adjustment are recommended below, further analysis and modelling would be required to test these approaches:

Learning-adjusted weighting, which takes into account the proportion of children and young people with specific learning needs within a school or school cluster. For example, weighting on learning needs for primary school could be based on results from data sources such as the Australian Early Development Census (AEDC) and the School Entrant Health Questionnaire (SEHQ). These provide high quality data about the proportion of children and young people with AHDN. In secondary school, weightings could be according to the proportion of students performing low on NAPLAN, and a SEHQ style assessment at Year 7. Alternatively more frequent use of the Victorian Student Health and Wellbeing survey (VSHAWS) could be introduced to assess health and wellbeing beyond the academic domain.

Equity-adjusted weighting, which accounts for the proportion of students within a school or school cluster who come from disadvantaged backgrounds, and the socioeconomic position of the community in which the school is located. The weighting calculation could include three elements of disadvantage:

(a) area disadvantage, which could utilise Socio-economic Indexes for Areas (SEIFA)

(b) disadvantage of the school's population, which could utilise the Index of Community Socio-Educational Advantage (ICSEA) and the Student Family Occupation density (SFO) and

(c) community access to services such as psychologists or speech pathologists in the schools' area, which we know is an added layer of geographic disadvantage.[107]

We also suggest that Aboriginal and Torres Strait Islander and English Language Learner status could be included in the calculation of this weighting.

Used together, learning and equity-adjusted weightings will ensure that the amount of funding is proportionate to the needs and resources within the student body and school. Adjustment of weightings could occur every three years, to align with the AEDC cycle. This could balance changing school demographics over time with the need for schools to know funding provision in advance.

- Accountability

Accountability is a critical factor in effective throughput models. Transparency is needed in how the money has been used (transparency of funds, as discussed in

) and the benefits for student's outcomes. Careful consideration is needed in regards to how this requirement could be administered with minimal burden for schools. The Department could require schools to report on both the interventions provided, and the target population (whole school or specific year levels).

Another aspect of accountability is monitoring student outcomes to understand the impact of resource use. Effective funding models incentivise evidence-based practices that result in measurable benefits to student outcomes. This can be achieved by incorporating outcome funding within the model. An example of how such an approach could work is to examine the 'value add' a school provides to their student population with AHDN.[108] Once a school reaches a certain level of value add, they could be eligible for additional funding to support and encourage their positive practices. Appropriate metrics that could inform such an approach would require careful consideration within a program logic model, particularly as to the risk of introducing perverse incentives.

- Load funds during transition periods

The Department could set benchmarks as to the proportion of funding that must be allocated to either early years or whole-school interventions. The early years of both primary and secondary school are important developmental periods. Increased funding at these times could bring greater benefits and reduce the number of children and young people who require support in later years. Greater use of resources during the early years of primary (front loading) and secondary school (transition loading) would enable schools to provide support at a criticial time when positive pathways are easier to achieve.

- Distribute funds at either a school or school cluster level

There are several options with respect to the distribution of funds. They include (1) allocating funding at the school level, (2) allocating funding at the school-cluster level, or (3) allocating funding at the school level with accountability at the cluster level. The advantages and disadvantages of each of these options are considered below.

a) Model 1 – Funds allocated at school level: Adjustments at the school level depend on characteristics of the student body and school that can be averaged across three-year blocks. This model allows for localised decision making by schools and emphasises individual schools catering for the needs of their individual students. It allows schools to determine what support they provide, as well as the scope of capacity building their teaching team requires. This approach accounts for changing school demographics over time, which is particularly important given the principle of parental choice regarding the school their children and young people attend. One disadvantage of this approach is diseconomies of scale, in that schools may be limited in their ability to source specialised services given that each individual school may

not have sufficient children and young people enrolled who require the services.

a) Model 2 – Funds allocated at cluster level: At a school cluster level, schools in close geographic proximity are clustered together and weighting occurs at the cluster level; as for example in the organisation of SSS.[74] Through this approach, schools would have the advantage of localised decision making within each school, but would also have collective ability to share resources among the cluster. One important consideration in this approach is how funds are distributed to the cluster and/or schools, and the method of accountability. The first option is to allocate funds at a school level and require accountability at the cluster level (see Model 3 below). A second model is to distribute funds *and* require accountability at the cluster level. Both approaches could encourage close collaboration among schools within the cluster, although geographical clustering may combine schools with differing student populations, policies and preferences. Any advantage in economies of scale/scope would need to be weighed against a loss of individual school autonomy in decision-making over use of funds, and the risk of bias in the distribution of funds across cluster schools. Appropriate planning, use and management of funds requires a set of professional skills that are often assumed to be more available at a more aggregated level such as a school cluster, but this assumption would need to be tested.

b) Model 3 – Funds allocated at the school level, accountability at the cluster level: This model implements funding adjustments and distributes funding at the school level; while monitoring and accountability is at the cluster level. This approach would account for each school's change in demographics over time, but would also encourage school clusters to address the learning needs of all children and young people collectively. Thus this may be the most advantageous.

• Support ongoing research and evaluation

Funding should be allocated to ensure that research, practice-based evaluation and continuous process improvement occurs. As shown throughout this report, there is little evidence with respect to the efficiency, equity and impact of funding models for supporting children and young people with AHDN. It is imperative that funding is allocated to build this knowledge via regular and efficient evaluation of school activities, to allow for understanding how funding models are working in practice, and to inform ongoing policy development and practice.

6.0   Recommendations for implementation and impact

While we have suggested an alternative approach to allocating funding, it should be noted that unless appropriate structures are in place it is unlikely that the potential benefits of such an approach will be fully realised. Below, we outline key

considerations to inform change that will enable better student outcomes to be achieved.

6.1 Building workforce capacity

The effectiveness of the proposed approach is contingent on the existence of a sustained, qualified and highly motivated teacher workforce. A key message emerging from current research is that building teacher's readiness and ability for inclusive education starts in pre-service training.[109] Opportunities for inclusive school experience during teacher training can lay early foundations for knowledge about inclusive practices and philosophy, foster positive attitudes towards inclusive practice and allay any concerns.[110] Therefore the broader discussion around strengthening initial teacher education in Australia should include a focus on targeting teaching practices to promote inclusive education.[111]

Effective pre-service training needs to be coupled with ongoing provision of messages that endorse the value of inclusive education, and provides opportunities for ongoing skill development. There are a number of ways in which teachers can be provided with support to develop positive attitudes about inclusive classrooms, and increase their skill and comfort level in regards to meeting the needs of children and young people with AHDN. This includes ongoing access to resources such as learning support teams[112], co-teaching[113], and mentoring from teachers with expertise in inclusive education.[114] It is important that both pre-service teaching students and the existing workforce are exposed to the positive experiences of motivated, competent and inspiring mentors.[115]

A recent report from the Grattan Institute further notes the importance of collecting robust evidence to monitor the progress of students' learning in order to support targeted teaching practice and, more broadly, monitoring and accountability.[116] The report calls on governments and systems leaders to invest in building capacity around tracking progress and targeted teaching, and evaluating the impact and cost-effectiveness of the implementation of such policies. We echo these recommendations, noting that student-learning data should also incorporate health and wellbeing data to complement NAPLAN.

6.2 Monitoring and accountability

The proposed alternative funding model gives considerable autonomy to schools. This makes it imperative that schools monitor and report their activities, including details around how they identify children and young people with AHDN and assess children and young people's learning needs, use of resources and the student outcomes achieved. There should be a mechanism to capture gaps, overlaps and inconsistencies in the system. Targets could be established to monitor alignment of school and classroom practice with best practice and broader values and goals of the curriculum. Monitoring and accountability, along with a quality assurance framework and a research and evaluation agenda, represent the mechanism through

which lessons are learned, solutions are brokered and new knowledge and ideas are incorporated into the system.

6.3 Evidence-based approaches to intervention

To realise the potential of an alternative funding model to improve educational outcomes for students with AHDN, it is necessary to use evidence-based approaches to interventions in schools. Further research is required to build the evidence base, but there is also a need for the system to better support teachers to identify, implement and evaluate evidence-based interventions in schools. Building workforce capacity is a part of this, but so too is a greater recognition of the role of educational interventions (as opposed to clinical and therapeutic) for supporting children and young people with AHDN in the classroom.

6.4 Evaluation and research

While there is an international movement towards certain funding models, there is very little empirical data showing causal relationships between types of funding approach and student outcomes. It is imperative that reforms to the provision of support for students with AHDN embed a rigorous and comprehensive ongoing process and impact evaluation, and that this framework is developed in consultation with the teaching community, and with families and communities. Ideally, implementation of a new funding model should include phased roll out in trial sites, as has occurred with the NDIS. This could contribute to an improved approach, and has the advantage of allowing any unintended consequences of the model to be addressed before scaling up.

One of the major issues highlighted internationally is not the lack of resources to support children and young people with AHDN, rather the inefficient use of existing resources. Interventions provided within schools to support children and young people with AHDN – including efforts to upskill the teaching workforce – should be evidence based, but this evidence base also needs to be further developed. The Nationally Consistent Collection of Data may provide an opportunity to contribute to an evidence base about how students with disabilities are being, and can best be supported at the school, state/territory, and national level.

7.0   Conclusions

The Victorian Government's review of the Program for Students with a Disability offers the opportunity to better consider the provision of support for children and young people with a range of additional health and developmental needs (AHDN). This is particularly relevant to children and young people with ASD where needs can range across the severity spectrum and include the full breadth of developmental domains in their strengths and challenges.

This report has detailed an overview of inclusive education for children and young people with AHDN, provided a summary of effective approaches and school-based

interventions for children and young people, and presented an alternative funding approach and accompanying recommendations. The alternative model suggested is based on a reorganisation of the way funds are currently distributed and used to meet children and young people's learning needs, and does not necessarily involve additional cost despite benefiting many more children. The proposed model purposefully takes into account the feasibility of shifting to a strength-based functional needs approach, the need to support children and young people as they transition to new educational settings, and the capacity to promote excellence in inclusive education.

A funding model that includes best-practice principles of inclusive education, alongside guiding principles for effective implementation, offers an opportunity to better support the needs of Victorian children and young people with AHDN. Through this, Victoria's children and young people will be better able to realise their potential, both in terms of classroom participation, and in a manner that equips them for future education and employment opportunities.

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Appendix A: Search strategy and coding

This literature review utilised a rapid evidence assessment (REA) methodology. This methodology is similar to a systematic review but makes concessions to the breadth and depth of the process, in order to meet a short timeframe. The search strategy employed in REAs often limits the selection of studies to those that were (a) published in the last 10 years, (b) peer-reviewed, and (c) available in the English language. The process of identifying and evaluating relevant literature is therefore highly efficient, making the REA process particularly useful to policy and decision makers. This search strategy relates to both dyslexia and Autism Spectrum Disorders (ASD), which were both focus conditions of the review of the Program for Students with Disabilities.

Main search strategy

The following databases were used to identify literature relevant to education funding models for children with SHCN, ASD, or dyslexia: Ovid MEDLINE, PsycInfo, and Education Resource Information Centre (ERIC). In each database, three advanced searches were conducted; one each for SHCN, ASD and dyslexia.

Search terms were created for 'children', 'funding', 'education', 'SHCN','ASD', and 'Dyslexia'. Knowledge of the language in academic literature, along with MeSH terms, was utilised to create the search term lists. The specific terms used for each of the categories are listed below.

Search terms were entered under 'keywords' in MEDLINE and PsycInfo and limited to 'subject' in ERIC. 'Education' terms were included in MEDLINE and PsycInfo searches for SHCN and ASD, but not in ERIC. For example, in PsycInfo, the SHCN search combined terms for SHCN with terms for children, funding and education. In ERIC, the SHCN terms were combined with children and funding only.

Results from all searches were limited to literature published from 2005 to 2015 in English.

Search terms

The search terms for each of the categories are listed below:

Children terms: Children, Children with disabilities, Early childhood, Learning disabled children, Students, Teenagers

Funding Models terms: Economics, Financing, Costs, Funding, Monetary Support

Education terms: Education, School, Learning, Primary School, Elementary School, Secondary School, High School, Students, Teaching, Training Support

Special health care needs terms: Health conditions, Chronic illness, Special Health Problems, Disabilities, Multiple disabilities, Mild disabilities, Severe disabilities,

Special health care needs, Special needs, Additional needs, Special education needs

ASD terms: Autistic Disorder, Asperger Syndrome, Pervasive Developmental Disorder, PDD, ASD

Dyslexia terms: Dyslexia, Reading disorder, Alexia, Learning difficulties, Dyscalculia

Table 3: Number of records extracted for each search by database

Condition	Database	Number of Records Extracted
Special Health Care Needs	MEDLINE	120
	PSYCINFO	347
	ERIC	183
ASD	MEDLINE	25
	PSYCINFO	29
	ERIC	27
Dyslexia	MEDLINE	11
	PSYCINFO	26
	ERIC	3

Information management and review process

The total number of search records identified through the implementation of the search strategy outlined above yielded 649 results (excluding duplicates). Records were exported to EndNote bibliographic software and then imported into an Excel sheet.

A screening process was adopted to ensure that only high quality and relevant publications were included for data extraction. Qualified reviewers examined content from the title and abstract to determine which records were relevant according to the following eligibility criteria:

Included:

1. Preschool, Primary and Secondary School Children with SHCN (broadly defined), ASD or Dyslexia,

2. Peer-reviewed papers, published reports (English language)

3. Evaluations of intervention(s) delivered within an educational setting for children with SHCN, ASD, or dyslexia

4. Publications including a cost analysis for interventions noted above

Excluded:

1. Very early childhood (before preschool) or tertiary student or adult population

2. Publications focussing on health costs only

3. Publications focussing on individual, family, or societal burden of relevant conditions

4. Dissertations, Books, Book Reviews, Editorials and Reports that were difficult to obtain

5. Theoretical, legal and political commentaries

6. Purely qualitative studies

7. Clinical and community interventions

8. Interventions not targeting SHCN/ASD/Dyslexia

Each article was identified as falling into one of three categories:

1. Meets search criteria

2. Could meet criteria, further review of study is necessary to determine this

3. Does not meet search criteria

21 studies were put into the first category, with 49 and 579 in the latter two categories respectively.

The main reasons for exclusion are outlined in the table below.

Table 4: Reasons for study exclusion

Reason for Elimination	Justification
Qualitative studies	The REA was focussed upon understanding the effectiveness of interventions; qualitative and exploratory studies that did not include any information about outcomes were excluded.
Theoretical, legal commentaries	The REA was focussed upon collating information on the relative effectiveness of interventions, while these sources provide rich information about approaches to support the target population, they do not usually provide information on the effectiveness of interventions.
Dissertations	These documents are very long, and tend to focus on multiple areas within a topic.
Post-secondary interventions	The population of interest are those children and young people with SHCN/Autism/ASD/dyslexia in school.
Pre-natal interventions	The population of interest are those children and young people with SHCN/Autism/ASD/dyslexia in school.
Pre early-childhood interventions	The population of interest are those children and young people with SHCN/Autism/ASD/dyslexia in school.
Editorials	These are tertiary research sources and usually consist of a discussion from the editor of a publication on a particularly topic.
Book reviews	These are tertiary sources that depict the reviewers appraisal and review of a particularly book, they do not usually contain information about interventions and outcomes.
Non-English language	Feasibility reasons, the provision for translation of sources was not within the scope of this REA.
Clinical interventions (outside of the school)	The REA was focussed upon education interventions.
Community interventions- these were usually clinical (outside of the school)	The REA was focussed upon education interventions.
Interventions not targeting SHCN/Autism/ASD/Dyslexia	The REA was focussed upon education interventions targeted children and young people with SHCN/Autism/ASD/Dyslexia.
No full-text readily available	The time constraints of the REA meant that sourcing articles from interstate libraries was not feasible.

The process of identifying relevant records is summarised in the diagram below.

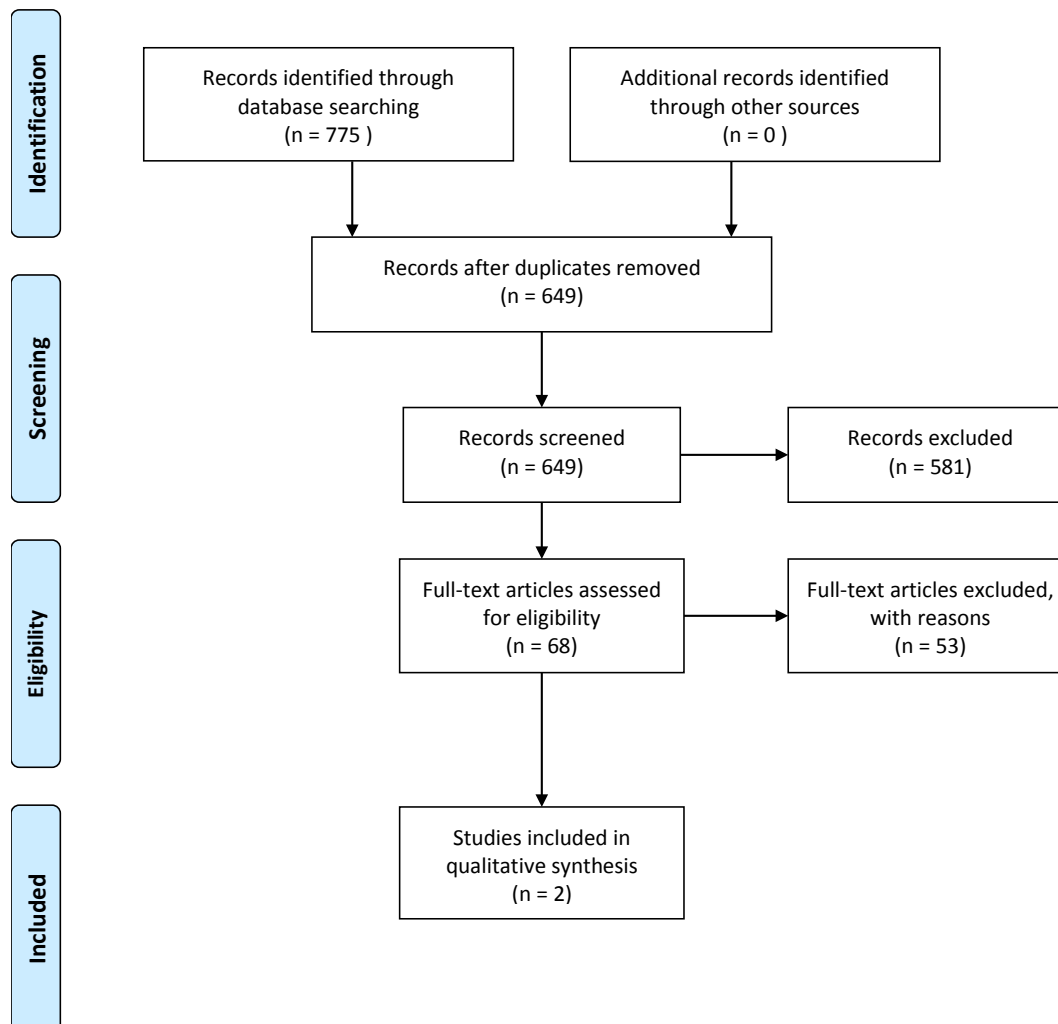

Figure 13: PRISMA statement

Supplementary search strategy

A supplementary search was then conducted, specifically targeting publications with a focus on evaluation of ASD and dyslexia interventions. This search utilised the MEDLINE, PsychInfo, and ERIC databases.

Search terms for 'intervention' included 'intervention', 'treatment', 'program', and 'therapy'. Search terms to capture review level publications included 'metaanlaysis', 'meta-analysis', 'review', and 'systematic review'. These terms were combined with those listed above for 'children', 'education' and 'ASD' or 'Dyslexia'.

The supplementary search initially yielded 508 records. After discarding duplicates and records identified in the main search, 434 records were eligible for screening. Of these, 120 records met inclusion criteria. Due to time constraints, not all records could be fully assessed. Meta-analyses published from 2010 to 2015 were

prioritised, followed by literature reviews with an education focus. Data was extracted from 11 meta-analyses and 5 reviews.

Coding process

Those studies that were included based on their alignment with the search criteria were reviewed, and information was extracted from these studies according to a coding sheet developed by the researchers. An overview of this sheet is provided in the diagram below.

Table 5: Coding sheet

Area	Information coded
Study characteristics	Year of publication
	Author
	Date
	Study design
	Country/state/international
Population	Target age group
	Condition type
	Status of Diagnosis/assessed need
	Diagnostic/assessment tool
	Diagnostic/assessment process
	Diagnostician/assessor
	Intervention/funding eligibility
	Transition to primary/secondary school
Intervention	Inputs/activities
	Multidisciplinary approach
	Coordination Mechanism
	Controller of funds
	Reach
	Universal/needs-based approach
	Cost/currency/year of investment
Outcome	Reported/not reported
	School absenteeism
	Academic achievement
	School participation/engagement (inclusion)
	School completion
	Physical health outcomes
	Psychosocial health outcomes
	Other outcomes reported

Information was extracted from the included studies and recorded into the coding sheet. The coding was completed by three personnel, and reliability checks were conducted on approximately 10% of reviewed studies, and the resultant rating was 100% agreement between coders.

Table 6: Summary of reviews and meta-analyses of ASD interventions sourced through the supplementary search

Reference	N	Age	Design	Intervention(s)	Target behaviour(s)	Effect size/outcome
Bellini et al., (2007)	157	3 – 18 years	Meta-analysis of 55 single-subject studies.	School-based social skills interventions (peer-mediated, individual, collateral and comprehensive).	Social behaviours (eg: initiation, responses, duration of interaction).	PND[4]= 70% (treatment effect)
Kokina & Kern (2010)			Meta-analysis of 41 single-subject studies.	School-based social skill intervention using social stories. (Short stories that explain difficult social situations in simple terms for children and young people with ASD).	Transition support, reducing anxiety, functional skills, improving social behaviours.	Overall PND (median) = 62% Assisting with transition/reducing anxiety/novel situations PND (median)= 44% Teaching academic/functional skills PND = 22%[5] Improving appropriate social behaviours PND = 22% Reducing inappropriate behaviours PND = 87%

[4] PND= Percentage of non-overlapping data points, method of estimating effect size for single-subject designs. Calculation of total number of data points that do not overlap between baseline and intervention phases.

[5] This PND is calculating from a sample of 1 subject.

The Royal Children's Hospital Melbourne

Reference	N	Age	Design	Intervention(s)	Target behaviour(s)	Effect size/outcome
Whalon et al., (2015)	105	3-12 years	Meta-analysis and review of 37 single-case studies.	School-based social interventions, peer-related to enhance social competence (child-specific, social narratives, video-based, peer-mediated).	Social behaviours (eg: initiation, responses, interactions and engagement).	Overall initiations NAP[6] = .90, Tau-U [7] = .79; responses NAP= .92, Tau-U = .83; interactions NAP = .87, Tau-U = .75; engagement NAP = .96, Tau-U = .91

[6] NAP = Non overlap of all pairs, method of estimating effect size for single-subject designs. Calculation of the percentage of non-overlapping data that compares each data point from baseline to intervention to obtain a percentage of non-overlapping data that indicators improvement.

[7] Tau-U= percent of data that indicates progress overtime, by conducting a comparison of all data points in each phase. Tau-U and NAP are similar, but Tau-U is the percentage of non-overlap that subtracts the overlap, hence controlling for trend. Therefore Tau-U is a more conservative estimate of effect.[60]

Reference	N	Age	Design	Intervention(s)	Target behaviour(s)	Effect size/outcome
Fava & Strauss, (2014)	894	2 - 10 years	Synthesis of six meta-analyses from 2009 – 2011.	Early intensive behavioural intervention (EIBI) for young children with parental inclusion.	Adaptive behaviours, language and cognitive skills.	IQ g^8 = .19 - 1.56 (n= 471) Language g = 1.08 (n= 199) Adaptive behaviour g=.64 (n=482)
Odom et al. (2012)	Unknown	Early childhood (3-5 years)	Review of 15 studies examining IBI approaches and eclectic approaches to behavioural intervention.	Variety of components used across the reviewed studies. Included combinations of a discrete trial, ABA, behavioural treatments or approaches, naturalistic intervention and generalisation opportunities.	Cognitive skills, behavioural skills and language. Improving overall functioning was also an aim of the interventions.	Seven of the 9 studies of IBI found significant improvements in cognition, development, behaviour, and language and/or autism condition/severity.

[8] g= Hedges g effect size statistic, does not assume equal variances so corrects for small sample sizes.

Reference	N	Age	Design	Intervention(s)	Target behaviour(s)	Effect size/outcome
Ganz et al. (2014)	33	3 – 12 years	Meta-analysis of 13 studies.	Interventions to support communication among children and young people with an ASD. Includes alternative and augmentative communication (AAC) such as PECS and SGDs.	Language and communication skills.	*PECS Intervention Effects*: Communication, IRD[9]= .71 <<.73>>.75; Challenging behaviour, IRD= .51 <<.59>>.66, Social skills IRD= .70<<.77>>.85 *SGD Intervention Effects*: Communication, IRD= .69<< .71>> .74, Challenging behaviour, IRD = .74<<.83>>.92, Academic IRD=.61<<.66>>.71 *Other AAC Intervention Effects*: IRD= .53<< .58>> 62[117]

[9] IRD= Improvement Rate Difference, it is the percentage change of high or 'improved' scores from baseline to intervention. IRD has a maximum of 1.00, and research according to Parker et al. (2009) has indicated that an IRD of about ≤.50 indicates small effects, ≥.50 - ≤.70 is considered moderate and ≤.75 is considered large.

Reference	N	Age	Design	Intervention(s)	Target behaviour(s)	Effect size/outcome
Peters-Scheffer et al. (2011)	344	3-5 years	Meta-analysis of 11 studies of ABA based EIBI.	Early behavioural intervention to improve ASD symptoms. Control groups were included in all studies, but received a mix of interventions (e.g. children receiving <10 hrs ABA, parent directed ABA, 'eclectic' treatment, school-based treatments).	IQ, expressive and receptive language, adaptive behaviour.	Effects size range from 4.96 -15 .21 points on standardised tests. Children receiving EIBI outperformed those not receiving it on tests of IQ, language, and adaptive behaviour. Effects were larger for language and IQ (11.09-15.21) than adaptive behaviour (4.96-10.44).
Reichow (2012)	1014 (total from all meta-analyses)	Average age was 3.4 years.	Overview of 5 meta-analyses investigating EIBI treatment for ASD.	Early behavioural intervention to improve ASD symptoms.	IQ, adaptive behaviour.	Reported the effect size for EIBI and IQ ranged from g=.38-1.19, and effect size for EIBI and adaptive behaviour was .30 to 1.09. 4 of the 5 recent meta-analyses provide evidence that EIBI is effective (with average effects considered strong and robust) for young children with ASD.

Reference	N	Age	Design	Intervention(s)	Target behaviour(s)	Effect size/outcome
Alexander et al. (2015)	322 teachers	22-55 years	Narrative review of 23 studies evaluating the use of evidence based practices.	Investigating the use of evidence based practices amongst teachers with students with autism (self-instruction, group-instruction and individual instruction).	Change in teacher practice following professional development.	93% of studies included that evaluated the effects of teacher training by behaviour change reported positive results.
Machalicek et al. (2008)	118	3 – 21 years	Narrative review of 45 studies evaluating instructional practice for students with an ASD.	Use of instructional practices in the classroom for students with an ASD.	For children and young people with an ASD communication, functioning, play and social skills.	Studies addressing communication (11), 33/34 participants experienced positive change, studies addressing functioning positive changes = 15/17, studies addressing play (11) 28/29 participants reported positive change, studies addressing social skills (12), 32/33 participants reported positive change.

Reference	N	Age	Design	Intervention(s)	Target behaviour(s)	Effect size/outcome
Crosland & Dunlap (2012)	Unknown	Unknown	Narrative review of research in the area of supporting the inclusion of students with ASD in mainstream education settings.	Individualised and organisational strategies to promote inclusion of students with an ASD in schools.	Social and communication skills, participation and engagement.	School climate and school organisational processes can support the inclusion of students with an ASD. Response to Intervention, and system wide positive behaviour support can ensure that universal screening is provided, and that students are less likely to need intensive support.

Individualised strategies work well to support the development of peer relationships and independent learning. |