Level 2 / 11-19 Bank Place
Melbourne Victoria 3000
T 61 3 9642 4899
F 61 3 9642 4922
office@speechpathologyaustralia.org.au
www.speechpathologyaustralia.org.au

Speech Pathology Australia

Speech Pathology Australia's Submission to the

Productivity Commission

Issues Paper: National Education Evidence Base

25 May 2016

The Speech Pathology Association of Australia Limited
ABN 17 008 393 440

Productivity Commission
Locked Bag 2
Collins St East PO
Melbourne VIC 8003
25 May 2016

Dear Productivity Commission,

Speech Pathology Australia welcomes the opportunity to provide comment to the Productivity Commission (the Commission) for the Inquiry into the National Education Evidence Base (the Inquiry). We have structured our feedback in response to relevant key questions asked in the Issues Paper and we conclude with recommendations that we hope the Commission will consider useful for the next stage of the Inquiry. We preface our remarks with information on speech, language and communication impairments, the impact of these problems on educational outcomes and the role of speech pathologists in providing intervention to improve outcomes for these students. This information is critical to understanding why we recommend increased specificity and sensitivity to existing educational data sets and the introduction of future data collections – in order to understand, monitor and ultimately improve outcomes for students with speech, language and communication problems.

Approximately 20 per cent of children starting school in Australia have a speech, language or communication impairment. Communication impairments impact on a range of educational outcomes, with evidence from both Australia and comparative international nations showing that it results in poor literacy and numeracy outcomes (including underperformance on all NAPLAN measures at every year level of testing), early school leaving, reduced employment opportunities and an increased likelihood of social, emotional and mental health issues. For many children, communication problems are evident prior to school entry and impact on their experiences in early childhood education. Communication impairment is not adequately identified, recorded or monitored in existing data sets that might be used to form a National Education Evidence Base.

Speech Pathology Australia is the national peak body for speech pathologists in Australia, representing more than 6900 members. Speech pathologists are university trained allied health professionals with expertise in the assessment and treatment of communication and swallowing difficulties. Speech pathologists working within schools and with school aged children provide interventions aimed to address speech, language and communication problems and to improve educational outcomes for these students through a mix of individual intervention and targeted support to teachers. Speech pathology involvement in the educational teams in Australian schools is inadequately recorded in all existing data sets that might be used to form a National Educational Evidence Base.

If a National Education Evidence Base is to achieve its promise of providing comprehensive and consistent data to inform policy and to help improve educational outcomes for *all* children – then consideration must be given to adequately identifying, reporting and monitoring a fundamental determinant of educational outcomes – communication ability. Only then can targeted strategies be used to improve and evaluate the outcomes for the 20 per cent of Australian students with impaired communication. As an evidenced based allied health profession, we have a strong research and clinical evidence base from which we approach the measuring and evaluation of outcomes – we have drawn on this expertise and the expertise of our members who are dual trained speech pathologists/teachers in considering the terms of reference for the Inquiry and what data is needed to enhance evidence-informed policy and planning for students in Australia.

On behalf of our profession, and in support of students with speech, language and communication difficulties we hope that you find our comments and suggestions for the development of a National Education Evidence Base of value.

Yours faithfully

Gaenor Dixon
National President

Contents

National Education Evidence Base 4
About speech pathologists and Speech Pathology Australia 4
About communication impairment 4
The impact of communication impairment on educational outcomes 6
The role of speech pathologists in supporting educational outcomes for students with communication impairment 10
The use of an education evidence base 12
Educational outcomes 12
Data to support a National Education Evidence Base 13
Unique student identifiers 14
Data linkage 15
Increased sensitivity and specificity in existing data collections 15
New or extended data collections needed to inform policy, planning and service delivery 17
Recommendations 18
Evidence Cited in this Submission 20

Speech Pathology Australia's Submission to the

National Education Evidence Base

About speech pathologists and Speech Pathology Australia

Speech Pathology Australia is the national professional organisation representing over 6900 speech pathologists. Speech pathologists are the university trained allied health professionals with expertise in diagnosing and treating speech, language, communication and swallowing problems (dysphagia). Speech pathologists work with infants, children, adolescents, adults and the elderly with communication and swallowing problems. Speech pathologists undertake a four year undergraduate degree or a two-year graduate entry Master's degree to be qualified as speech pathologists. Bachelor and Master level entry programs in Australia need to be accredited by Speech Pathology Australia to demonstrate their graduates have attained entry level competencies as described by Competency-Based Occupational Standards for speech pathologists[i]. Individuals who graduate from an accredited university program qualify for practising membership of Speech Pathology Australia. Speech pathology is a self-regulated health profession through Certified Practicing Speech Pathologist (CPSP) membership of Speech Pathology Australia.

In recognition of the prevalence of communication and swallowing problems and in accessing speech pathology services in Australia, in 2014 the federal Senate Community Affairs References Committee held an inquiry into the prevalence of speech, language and communication disorders and speech pathology services in Australia. Key recommendations from the Senate Inquiry focused on the Australian Government leading work in the development of a position paper on the most appropriate models of service provision for speech pathologists working in the education system and a cost-benefit analysis of the current levels of public funding for speech pathology services in (amongst other areas), education[ii]. A response to the Senate Inquiry's recommendations has not been received from the Australian Government at the time of writing.

About communication impairment

Typically developing children follow a profile of development of their speech and language, conceptual and cognitive skills that takes them from babbling to first words through to combinations of words, simple and complex sentences, culminating in being confident communicators who can use both verbal and nonverbal means to express and understand abstract information. Language and speech is both a developmental destination towards the adult language system and a developmental means for children to achieve other educational, health, development and wellbeing outcomes. Language competence is both a risk and protective factor for late educational outcomes.

For some children, communication fails to develop along typical lines. Broadly, the problems children experience can be considered as issues affecting their speech (pronouncing sounds and saying words), understanding and using language, social communication, fluency (stuttering), voice (pitch, loudness and quality of speech), or a combination of these problems. The cause of these communication problems may be an underlying disorder or impairment such as Autism, cleft palate, intellectual impairment, developmental delay or sensory impairment. For these children, their underlying disorder/disability is likely to make them eligible for early intervention funding (such as Better Start for Children with Disability or the Helping Children with Autism Package) and assistance under the National Disability Insurance Scheme (NDIS) (as it rolls out). Some of these children may already be accessing disability or additional needs funding assistance for child care or preschool participation. Some of these children may also be eligible for individualised targeted funding through public educational systems.

For some children however, their disordered communication development occurs in the absence of a known underlying issue or diagnosis. These may be children who for all purposes 'look' like they do not have additional needs but suffer significantly developmentally impaired communication skills which impact on their lives including their ability to access and participate in early child care and learning environments and within school based settings. In time some of these children may be diagnosed with specific conditions or language disorders such as childhood apraxia of speech, primary language disorder, foetal alcohol syndrome or social (pragmatic) communication disorder. These children are unlikely to have

been given a 'diagnosed' disability during their early years but show developmental delay at an early age in at least the developmental domain of language and communication. Depending on functional impairment and severity of developmental delay, many of these children would meet the (current) eligibility criteria for early intervention (prior to age seven) for the NDIS that requires a demonstrated delay in one or more developmental areas. However, these children are unlikely to be currently supported by the restrictive additional needs eligibility criteria in the current early childhood education and care system or for individualised targeted disability funding through state or territory educational systems.

Currently there is limited available data about the prevalence of communication impairment within the Australian population. However, we have data regarding language development in children from a number of sources. The Australian Bureau of Statistics (ABS) data suggest that 36,400 Australian children aged four years or younger have a *severe* or *profound* core activity limitation, with 24,800 (68.1 per cent) of these having a need for assistance with communication[iii]. This alone represents around two per cent of all children aged four years or younger in Australia[1] who have additional needs in communication that are not age-related problems. This estimate is likely to be a significant under-reporting of the prevalence of additional communication needs in young children in Australia.

The Australian Early Development Census (AEDC) is a national measurement used to monitor Australian children's development. It is a teacher completed questionnaire focuses on each child in the child's first year of full-time school. It covers five domains of development; physical health and wellbeing; social competence; emotional maturity; language and cognitive skills; and communication skills and general knowledge. Community level information is reported for the three census points in 2009, 2012, 2015 tracking the proportion of children who are 'developmentally on track', 'developmentally at risk' (children falling between the 10th and 25th percentile) or 'developmentally vulnerable' (children falling below the 10th percentile).

The Language and Cognitive Skills domain of the AEDC is focused on assessing children's basic literacy, interest in literacy, numeracy and memory, advanced literacy and basic numeracy. The 2015 Census indicates that 6.5 per cent of Australian children are developmentally 'vulnerable' on this domain – these children will experience a number of challenges in reading/writing and with numbers; will be unable to read and write simple words, will be uninterested in trying, and often unable to attach sounds to letters. Children will have difficulty remembering things, counting to 20, and recognising and comparing numbers; and are usually not interested in numbers.

The Communication Skills and General Knowledge domain of the AEDC is focused on children's communication skills and general knowledge based on broad developmental competencies and skills. The 2015 Census indicates that 8.5 per cent of Australian children are developmentally 'vulnerable' on this domain – these children will have poor communication skills and articulation; have limited command of English (or the language of instruction), have difficulties talking to others, understanding, and being understood; and have poor general knowledge. These incidence statistics include only those in the lowest 10th percentile – the children who are deemed most vulnerable on these domains – but will not include all children with less severe speech, language and communication problems that will impact on their educational outcomes.

Language and early literacy problems affect approximately 17 per cent of four year old Australian children[iv]. In Australian schools, teachers report 22.3 per cent of children at school entry have poorer expressive language (producing and using speech) and 16.9 per cent have poorer receptive language (understanding) skills than their peers[v] [vi].

The bulk of research into the prevalence of communication disorders has been with younger children, with few studies specifically examining prevalence in adolescents. One study that accessed all Catholic schools within one diocese in NSW (>14,000 children in total) showed that an average of 11 per cent of students across the secondary school years were identified with communication disorder; this was the second most common learning need, after specific learning difficulty[vii]. In an average secondary school of 538 students this means around 59 students would have a communication disorder. Prevalence figures that take into account the whole of secondary schooling are skewed by the very sharp drop in prevalence evident in students in years 11 and 12 where only 4.6 per cent and five per cent of students respectively

[1] This figure may capture the majority of children diagnosed with congenital and developmental disabilities or impairments which may impact on communication, including Down Syndrome, Autism and Cerebral Palsy, sensory impairment (including hearing loss) and developmental delay. It may also capture children with acquired disability - for example as a result of a traumatic brain injury.

are identified with communication disorders[viii]. This likely reflects the very high drop-out rates of students who have communication disorders after year 10 which has been demonstrated to occur internationally[ix] [x].

There is evidence of a social gradient in the prevalence of language and communication impairment in children. Prevalence rates of language and communication impairment in young children are known to be much higher in socially disadvantaged populations. For example, language delay affects up to 50 per cent of preschool children reared in poverty[xi].

Information regarding the prevalence of communication disorders in Aboriginal and Torres Strait Islander children in Australia is scant. Identification of communication disorders in these children is made difficult by the use of traditional languages and Aboriginal English in homes. However, there is a clear risk during the infant and preschool years to communication development due to the higher rates of otitis media (OM) and concomitant fluctuating hearing loss that are well reported in this population[xii]. Otitis media is a medical issue, however, for some children, it impacts negatively on speech, language and cognitive development. This is more likely for Indigenous children given the early onset, frequent episodes of the condition and continued incidence through the primary school years. Addressing the issue of OM and consequent language delay in indigenous children requires systematic interventions that cross health and education and needs to begin in the early years.

The impact of communication impairment on educational outcomes

Oral language abilities are intrinsically related to the development of literacy. Language-rich environments in the early years of life provide opportunities for children to understand the aspects of language, how to make sounds, combine them into words and ultimately into sentences. Children 'tune in' to the sounds, rhythm and patterns of their language (phonological awareness) from birth. Children's awareness of the separate sounds in words (phonemic awareness) then forms the basis for learning the written symbols (graphemes) that match those sounds (phoneme-grapheme awareness). This awareness forms the basis of phonics-based instruction in the early years of school.

Being able to blend and segment sounds are the most critical phonemic skills for reading and spelling. If children are unable to distinguish the separate sounds in words (and some English sounds do not exist in some other languages), then they will be unable to relate these sounds to the written letters of the alphabet and will be unable to decode unknown words.

Children who begin school with under-developed oral language skills (such as knowledge about sounds in words, grammatical competency and expansive vocabulary) will not be ready for the intensive focus on learning how to read, particularly if this is at the expense of further opportunities to strengthen their oral language skills that form the basis of the transition to literacy[xiii]. It is impossible to understand the written form of language without a wide vocabulary and familiarity with language structures. As the language demands of school increase in the middle and later years, students who have not mastered these early skills will find it increasingly difficult to move from 'learning to read' to 'reading to learn'. It is important to understand that oral language development is continuous throughout childhood and adolescence – it is not developed and static at school entry, but needs to continue to develop to support academic and social competence in later years of schooling. For some students, as the curriculum becomes more abstract, their oral language competence may not support this – and it is at these points in the education where they may begin to demonstrate academic difficulties.

The ability to use oral language effectively impacts on a student's ability to learn in the classroom, interact with teachers and peers and to develop literacy and numeracy skills. All academic skills are language based and rely on language competence. For example, even in numerical tasks, the instructions on how to understand and solve the problem are verbal or written.

There is a wealth of research evidence linking early speech and language (particularly phonological skills) to learning to read. Reviews of the psychological and speech pathology evidence have identified the impact on learning to read, write and spell of oral language weakness- specifically problems in phonological, semantic and syntactic knowledge[xiv], and psycholinguistic skills which include cognitive skills which allow for language processing, comprehension and production[xv]. The evidence shows that some children struggle during the initial stages of learning to read, whereas other children who experienced initial success encounter difficulties later on as the reading demands increase[xvi].

Recent Australian research using data from the Longitudinal Study of Australian Children (LSAC) has demonstrated that children who had speech and language problems in early childhood did not perform as well in literacy and numeracy measures as students without these problems (see [xvii] [xviii]).

Work has recently been completed by Charles Sturt University researchers to analyse NAPLAN results for children with language problems identified through the LSAC. The key research findings are provided on the following pages – the research found that students with speech and language problems were more likely to be excluded from NAPLAN testing than children without these problems, and when they did sit NAPLAN, children with speech and language problems achieved significantly lower scores on every NAPLAN test at every year level of testing (3, 5 and 7). Students with both expressive (using) and receptive (understanding) language problems had the poorest NAPLAN outcomes.

There will always be a proportion of students who have an identifiable severe communication disability. However, from a speech pathology diagnostic perspective – many students have underlying speech and language problems that are not obvious to the untrained listener – but which do significantly impact on their ability to learn to read and develop age-appropriate literacy and numeracy skills. These are children who may not even be referred to a speech pathologist in the first instance, but who would benefit from targeted, evidence informed teaching strategies to improve their phonological awareness.

It is important to recognise that children with speech, language and communication problems are at risk of other poor outcomes than just literacy and numeracy. International evidence indicates that communication disorders lead to early school leaving, underemployment and unemployment[xix] and increased likelihood of involvement with the juvenile justice system. In the UK and in Australia, at least 60 per cent of young juvenile justice offenders have difficulties with speech, language and communication[xx].

NAPLAN Outcomes for Students with Speech and Language Problems

Research conducted by Charles Sturt University researchers, Professors Sharynne McLeod and Linda Harrison and Dr Cen Wang, from the Research Institute for Professional Practice, Learning and Education at Charles Sturt University, with funding support from Speech Pathology Australia has for the first time, demonstrated the poorer educational outcomes of students with speech and language problems in Australia. These findings were detailed in a Speech Pathology Australia submission to the Senate Education and Employment References Committee's inquiry into the '*current levels of access and attainment for students with disability in the school system, and the impact on students and their families associated with inadequate levels of support'*. The research has been submitted for publication in international peer reviewed journals.

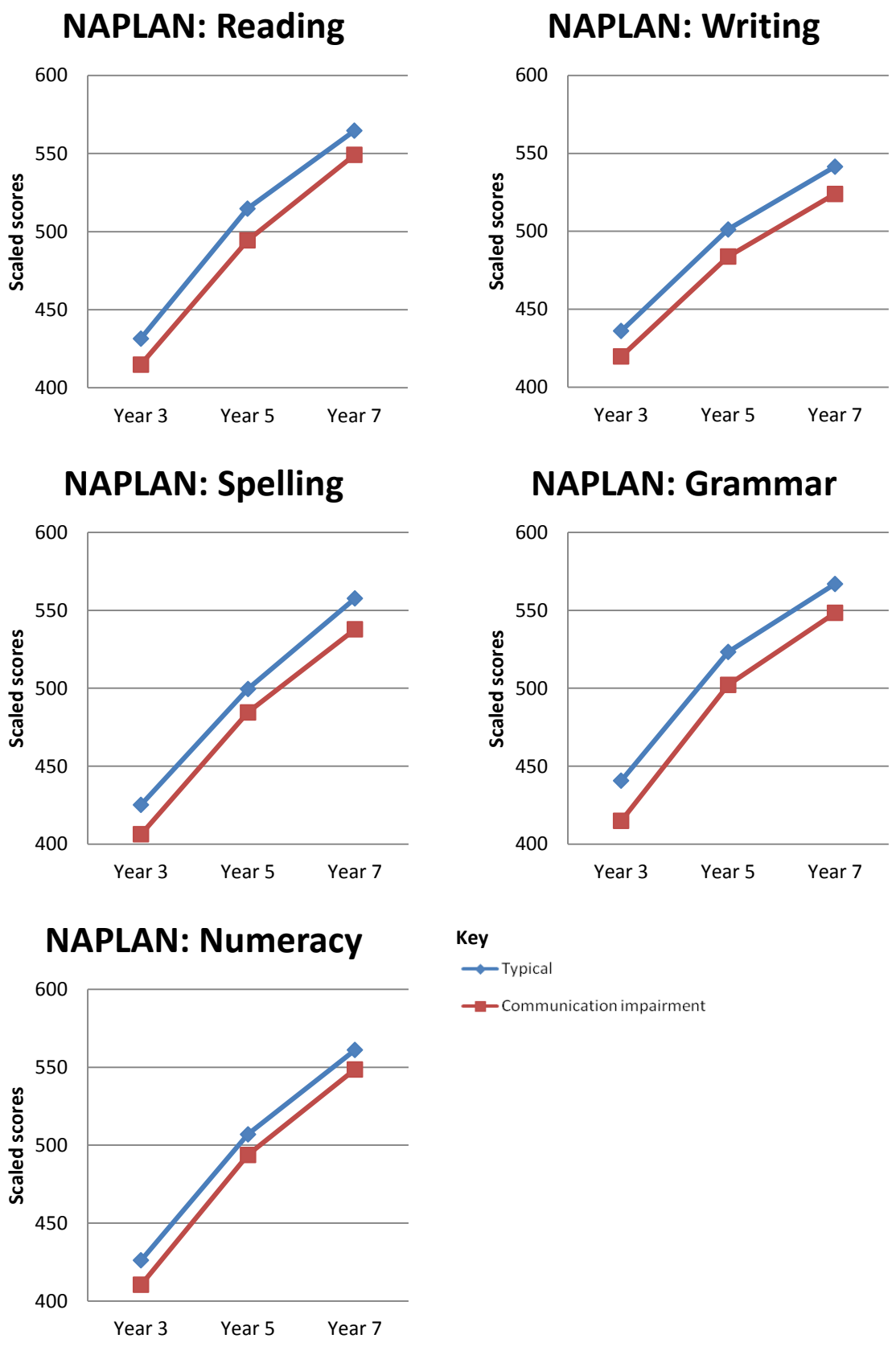
In summary, the research examined NAPLAN results at years 3, 5, and 7 for 4,332 children who had speech and language problems when they began school. Children were drawn for the study from the Longitudinal Study of Australian Children (LSAC) – a representative sample of 10,000 children commissioned by the Australian Government to examine the lives of Australian children every two years.

The research factored in any influence of gender, socioeconomic position (SEP) of the family, language background other than English (LBOTE), Indigenous status, if the child had hearing problems and if the child was identified as having a disability (disability expected to last more than six months such as Autism, Cerebral Palsy etc).

The research found:

1. Students with speech and language problems were more likely to be excluded from NAPLAN testing than students without these problems.
2. Children with speech and language problems achieved significantly lower scores on every NAPLAN test (reading, writing, spelling, grammar and numeracy) at years 3, 5 and 7 compared to students without these problems.
3. Students who had both expressive (using) *and* receptive (understanding) language problems had the poorest NAPLAN outcomes.
4. Poorer outcomes for children with speech and language problems were observed in each of the states and territories - with little evidence that the 'gap' in outcomes was reduced over time.
5. Most students with speech and language problems had not seen a speech pathologist.

Figure 1 Differences in NAPLAN scores (estimated marginal means) over time for typically developing children (n = 2,890) and children with speech/language problems (communication impairment) (n = 1,442) (McLeod et al, 2015 awaiting publication).



The role of speech pathologists in supporting educational outcomes for students with communication impairment

After entry level training through an undergraduate or Masters degree program, speech pathologists typically specialise in a particular area of practice. Those who specialise in working with children and young people are termed 'paediatric speech pathologists'.

Speech pathologists have detailed knowledge of linguistics (i.e. the components of language and speech), how these relate to print literacy and the type of evidence based interventions and strategies needed for individual children to maximise their learning in a classroom context. Speech pathologists have in-depth knowledge of phonological skills (including rhythm, rhyme, onset and rime), phonemic awareness (including isolation, blending, segmentation and manipulation), vocabulary development, sentence structures, the structure of texts and listening comprehension. We have detailed knowledge of how, when and in what order phonological skills should be taught to a student that is experiencing difficulty or lagging behind their peers. We are trained to identify different aspects of speech and language and how they influence reading skills at different times and ages.

The clinical nature of our training includes coverage of neurodevelopmental disorders (such as intellectual disability, autism spectrum disorder, brain injury etc) which can all negatively impact on educational outcomes. The nature of our training focuses on identifying and rectifying problems in speech, language and communication. This detailed knowledge is particularly important when collaborating with teachers working with any child who has deficits in oral language that are impacting on literacy. It is also important for children from culturally and linguistically diverse backgrounds (CALD) including Aboriginal and Torres Strait Islander children who may need specific, explicit instruction if the sound-symbol relationship of their home language differs markedly from English. This knowledge is also important for older students (middle and secondary school) who may not have mastered language skills in their early years, and the language and literacy demands of later school assume these skills have been established.

Speech pathologists and teachers have different but complementary roles in education. Teachers are responsible for and lead the teaching and learning outcomes in curriculum areas. Speech pathologists focus on how students with language support needs can access and participate in the curriculum. Speech pathologists' expertise in typical and disordered phonology puts them in a unique position within an educational team to assist in addressing student's phonological awareness.

In some Australian states and territories, speech pathologists are employed in schools to work with individual students who have diagnosable or complex communication disorders and particular needs in the areas of literacy development. Access to speech pathology services in schools is extremely variable across Australia, a challenge that was identified in the recent federal Senate Inquiry into the prevalence of different types of speech, language and communication disorders and speech pathology services in Australia[xxi]. Access to speech pathologists for school aged children occurs through a variety of mechanisms depending on the state/territory, educational system and individual school circumstances of the student. Access pathways include:

- Access to speech pathologist as part of a state based Early Childhood Intervention Services (which may or may not integrate service within the early childhood education and care setting of the child)
- Access to a state government Department of Education employed speech pathologist in primary school (only occasionally in secondary school) – in Victoria, Queensland, South Australia and Tasmania.
- Access to speech pathologists directly employed by the individual school
- Access to speech pathologists within specialist schools
- Access to private sector speech pathologists (usually not connected directly with the school)
- Access to a BetterStart, Helping Children with Autism Package (HCWAP) or NDIS funded service provided by an eligible speech pathologist provider (which may or may not integrate with the educational setting of the child).

The variety of options for students to access educational based speech pathology services belies the reality that access is generally inadequate across the country, varies depending on the state/territory, varies according to the educational level of the student, varies according to the disability funding eligibility in that state or territory and is considerably worse for students in rural or remote parts of Australia.

Across Australia, the availability of school based speech pathology services for children and young people with speech, language, communication problems is:

- Inadequate in number (not enough publicly funded speech pathologists to meet demand)
- Inadequate in service provision (a focus on assessment and report writing for funding applications, with limited opportunity for therapy)
- Long waiting times, or prioritisation processes that mean that some students never receive services
- Focused in the early childhood and primary school years – with almost no speech pathology access for secondary aged students
- In some geographic areas – absolutely no access to speech pathology expertise. This is particularly problematic in rural and remote areas and for small schools.

Access to speech pathology services for rural students is particularly problematic for rural and remote based schools. For example, in the Northern Territory, access to services for school aged children is possible through Department of Health employed speech pathologists. However, these are usually based in urban areas (Darwin or Alice Springs) and 'access' for remote students is at best a consultative service from a visiting speech pathologist. This means that indigenous students in remote communities often have the most limited access to speech pathology services – when they are often the students who need it most due to the high rates of communication impairment resulting from the epidemic of otitis media in the Aboriginal and Torres Strait Islander child population.

Speech Pathology Australia has a Clinical Guideline to support speech pathologists working in schools[xxii], a position statement on literacy[xxiii], and is in the process of finalising a clinical guideline on literacy (through a national working group).

Speech pathologists are trained to work as part of the educational team – working with teachers to develop or adapt curricula to support literacy development (for whole classes) or to work with teachers to plan and implement evidence based group (and/or individual) interventions for students with similar language and literacy needs.

Speech pathologists rely on a sound 'evidence base' of efficacy and effectiveness of interventions aimed to address oral language competence and its impact on literacy. For example, see the systematic review of evidence of language intervention practices for school-aged children with spoken language disorders completed by Cirrin and Gillam (2008)[xxiv]. Similarly, examples of randomised controlled trials of interventions include work by Wolter and Dilworth (2014) examining the effect of multilinguistic morphological awareness for improving language and literacy[xxv], RCT study by Snow et al (2014) examining the effect of speech pathology professional development training of teachers in oral language and its effects in improving literacy outcomes for at risk children[xxvi], and RCT by Wake et al (2013) examining early literacy intervention at four years of age on outcomes of literacy at five years of age for children with speech and language problems[xxvii]. Whilst these studies were conducted in Australia, the speech pathology profession can also draw on RCT evidence internationally such as that by Girolametto et al (2012) showing positive effects of educator training by speech pathologists on both educators and children[xxviii], or RCT evidence demonstrated by Kirk and Gillon (2009) showing improved performance on reading and spelling after an intervention that focused on linguistic awareness[xxix].

Of significance, the speech pathology profession in Australia is able to source the most current, up to date and highest quality evidence of speech pathology interventions (in educational context or other areas of practice) through access to SpeechBITE (Speech Pathology Database for Best Interventions and Treatment Efficacy) at the University of Sydney. SpeechBITE draws together the results of intervention studies across the scope of speech pathology practice and allows individual speech pathologists to search the database and provides guidance on how to evaluate the quality of evidence. It aims to assist practitioners to implement evidence based practices by providing quick access to pre-appraised intervention research about what 'works'.

The use of an education evidence base

The prospect of a National Education Evidence Base is supported by Speech Pathology Australia. The focus of this work should be extended beyond the mere drawing together of relevant data items/sets (as is the heavy focus of the issues paper). It needs to embed processes to use this data to demonstrate effectiveness of education interventions (this is largely absent from the issues paper) and then how these learnings can be distributed in way that will improve educational outcomes. The drawing together of relevant data items on its own will not lead directly to improved policy and planning an outcomes for students – it is merely pre-requisite for this to occur.

As a clinical trained profession, our understanding of the term 'evidence base' is not congruent with the way it is used by the Commission in the proposed document. The common understanding in the health sector of the term 'evidence base' relates to information used to inform 'evidence based practice'. This is commonly defined as:

"Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research." [xxx]

As such, our professions' understanding of 'evidence base' refers to data of efficacy and effectiveness of interventions and how they relate to everyday practice. It requires an evaluation of research data and its application to a given clinical situation in order to inform everyday practice.

It is the investigation, evaluation and use of the data that turns existing data into a valuable 'evidence base'. The health sector (and different clinical professions) have invested heavily internationally and in Australia to develop data warehouses/systematic collections of relevant clinical data and how to distribute and encourage the uptake of these learnings in clinical practice.

For data to be an 'evidence base' it requires both drawing together of relevant data *AND* the use/promotion of this data in everyday practice by end users. The concepts of education evidence base and outcomes proposed in the issues paper are more akin to a data warehouse – the systematic drawing together of relevant data items. It is recommended that the Commission also consider how such data will be used to demonstrate effectiveness and efficacy of different educational interventions and then following from that, how such learnings can inform policy and planning and be translated into teaching practices in schools.

Educational outcomes

If the aim of the National Education Evidence Base is to improve outcomes for Australian students, then data needs to be collected and stored in such a way that it allows for the investigation of educational outcomes for different cohorts of students. It is only by investigating which cohorts of children are doing well and those that are not doing as well, can educational policy and planning be targeted towards the needs of these students – and ultimately be used to improve their educational outcomes and 'close the gap' between their achievement and their peers. It is only by knowing which students have oral language weaknesses will we be able to target appropriate interventions to improve their outcomes.

In terms of students with speech, language and communication problems, there are a number of outcomes and determinants that are critical to include in the National Education Evidence Base. Some of these data items are currently collected through routine administrative sets in some states and territories. Other data items are those where the speech pathology research evidence indicates these are important outcomes or determinants for children and young people with communication impairments. It is only if these items are recorded with sufficient granularity that they can be used to inform what is needed to improve these students' outcomes. Further comment will be made on these in the next section of this submission.

Of particular importance to include in the National Education Evidence Base are consistent measures of:

- Attendance at 15 hours of kindergarten in the year prior to starting school
- Literacy and numeracy outcomes and/or other student performance data

- Speech, language and communication competence (at least at preschool and school entry)
- Student social and emotional wellbeing
- School retention
- School disciplinary absences
- If a child receives targeted individual funding through their State/Territory Education Department
- Existence of Individual Learning Plans
- Existence of reasonable adjustments being made by teachers within a classroom for an individual student
- If a student has NDIS targeted funding
- If a student uses an Augmentative and Alternative Communication (AAC) device[2]
- Post-school outcomes (particularly for students who leave school prior to completion of Year 12) – including employment, further training options and involvement in juvenile justice)
- Any existence of speech pathologist assessment (particularly prior to starting school or in the early school years).
- Cultural and linguistic background of student family
- Aboriginal or Torres Strait Islander status
- Rurality of school
- Size of school
- Speech pathology expertise within the student's school environment
- Speech pathology services accessed by the student outside of the student's school environment

Data to support a National Education Evidence Base

If the aim of the National Education Evidence Base is to improve outcomes for Australian students, then data needs to be collected with enough sensitivity to differentiate students who are doing better or poorer than the average. This would then allow targeted strategies to raise the educational outcomes of those students who are performing below their peers. It is also critical that data be collected, and monitored longitudinally and in a nationally consistent manner.

There is also a legal imperative for schools to ensure they provide access to education for students with disability on the same basis as students without disability. This legal requirement is outlined in the Disability Standards for Education (2005). The collection of, and investigation of, relevant educational outcome data for students with disability (specifically as comparable to their peers without disability) is one way we can monitor if schools are meeting their obligations under the Disability Standards for Education.

We have made comment below on aspects of the proposed National Education Evidence Base that we believe are critical if the cohort of students with speech, language and communication problems are going to be appropriately identified and monitored – to help inform what educational interventions are needed to improve their educational outcomes. Recommendations made are not a 'wish list' of everything that Speech Pathology Australia would wish to be collected, they represent what we believe is a balanced view of the most critical information (based on the research evidence from our profession) and what is feasible to be collected/improved through existing data sets that require 'tweaking' to offer greater sensitivity or granularity of information at minimal (if any) cost in time or direct funding to schools, teachers, principals. As specialist staff working in schools, speech pathologists are keen not to have additional burden in terms of data collection and reporting (which would occur at the expense of direct therapy time with students or with teachers).

[2] Some students with disability have complex communication needs (CCN). CCN are defined as difficulties with understanding or the expression of communication. CCN often occur as a result of, or in association with, other sensory, cognitive or physical impairments. Students with CCN may have little or no speech or have unintelligible speech and may benefit from the provision of alternative methods of communication - termed Augmentative and Alternative Communication (AAC) methods. Individuals can be prescribed AAC aids and devices – some of which are of minimal cost and 'low tech' including communication books and boards. Other AAC devices are 'high tech' and include electronic communication aids such as dedicated AAC devices, electronic tablets as well as Apps and access supports such as mounting and switches – and come at a higher cost.. All AAC methods need to be tailored to the specific needs of the individual. The tailoring to the needs of individuals is often completed by a speech pathologist in collaboration with the individual and their family/carers. Tailoring to an individual's needs may require the collaboration of multiple allied health workers (speech pathologists, occupational therapists etc.) depending on the physical capacity of the individual and in an educational setting, should also involve teachers. Most students requiring AAC will be eligible for funding support from the NDIS when it is fully rolled out.

Speech Pathology Australia supports the introduction of an Australian Longitudinal Learning database – a data warehouse to house all relevant, linked data on educational outcomes. Having one point of entry into the National Education Evidence Base for researchers, schools, stakeholders and policy makers is likely to reduce administrative burden associated with accessing diverse data collections and facilitate easier access to relevant data to investigate how to improve outcomes. Having the database in an online platform is likely to further minimise the administrative and cost burden associated with the collection, distribution and use of the data. However, the Australian Longitudinal Learning Database will only be of value in improving outcomes for students if it does more than merely draw together disparate data collections- it needs to provide an overarching framework to link and integrate datasets so that they might usefully be used to understand outcomes for cohorts of students, and to determine what outcomes might be amendable to policy or educational program changes.

Unique student identifiers

The Commission's Inquiry offers a once in a generation opportunity to develop a 'system' of interconnected data about Australian children and young people that will allow us to understand the educational and employment trajectory of children being born now and beginning their education. We encourage the Commission to boldly consider the opportunities and recommend changes that set our nation on a path towards 'usable' data. This opportunity might be best realised through the implementation of national Unique Student Identifiers, assigned in early childhood education (pre-school/kindergarten) and then following that child through their primary, secondary and even tertiary education.

Given the importance of the early years on child developmental, education, health and wellbeing outcomes, it is critical that a way to 'track' children's outcomes is initiated as early in their lives as possible. In an educational environment, this might best be achieved at the universal preschool/kindergarten year as the first 'entry point' into formalised education. If a Unique Student Identifier is to be implemented, this is the time at which it would be of most value to be assigned to all children.

Unique Student Identifiers may offer considerable value for the most vulnerable of students (including those who are 'transient' and move schools multiple times) and for students with disability (specifically during key transition points that are known to influence their educational experiences such as kindergarten to school and primary to secondary school. Unique Student Identifiers may assist in ensuring continuity of important information about the student between schools and educators to assist the incoming school to best meet the needs of that student. It may also offer efficiencies in reducing duplication of testing (for example, repeated speech pathology assessments) if this information 'follows' the student from one school to another. Whilst it is acknowledged that for some students, the 'following' of information about their education from one school to another might raise concerns (for example, information about suspensions and expulsions) and restrict their capacity to 'start afresh', the value in continuity and integrity of educational information may be of significant value to help improve the educational experiences of the student. A balance would need to be struck with appropriate privacy and confidentiality safeguards in place.

Whilst data linkage processes (to be discussed next) provide an avenue for longitudinal data analysis and linkage with other non-educational datasets, this is currently complicated by state/jurisdictional comparability problems. The use of educational data to track outcomes for students longitudinally, and particularly for cohorts of children through a Unique Student Identifier is likely to both facilitate improved research and analysis and provide cost savings through the streamlining of administrative and research processes. Of course, appropriate private and confidentiality arrangements will need to be put in place.

It is probable that data linkage processes with non-health data sets (e.g. NDIS, maternal and child health) could also be streamlined if educational unit data was identified through a Unique Student Identifier. The existence of Unique Student Identifies would allow for RCT or other high quality evidence studies to be undertaken to examine the effect of speech pathology or literacy interventions on student outcomes that factor in any confounding effects of non-education based supports also being provided to these students through non-education sector supports.

Data linkage

The possibilities of improved data linkage between educational data sets and between these data sets and non-education sector data offers unparalleled possibilities to understand the trajectory of educational (and other) outcomes for children and investigate how cohorts of students are faring on particular educational outcomes.

The NAPLAN/LSAC data linkage research described earlier in this submission offers an example of how existing data sets, when linked, can offer researchers (and the broader community) with evidence of how particular cohorts of students are faring, or where there are differences in performance between students. To illustrate the point made earlier, just having the data in existance and linked together is insufficient as an 'evidence base' – it requires investigation (either by researchers, policy makers etc) and then action in response to the findings where the outcomes might usefully be effected through policy change or targeted educational strategies.

In terms of students with speech, language and communication problems, the linkage of school data sets and early childhood educational data sets is of critical importance. This importance of this developmental period cannot be understated, and it is the time of development of the precursors of oral language problems that will go on to effect educational outcomes. There is very strong research evidence that early intervention (prior to school commencement) offers the most significant value in terms of improving communication outcomes for children. A linked, longitudinal data set offers an opportunity to monitor these children, determine their trajectory for educational outcomes and provide interventions (teaching or speech pathology for example) at an appropriate time point in their education whereby intervention is going to offer the most cost-effective improvements.

As discussed previously, the Australian Early Development Census (AEDC) is a national measurement used to monitor Australian childrens' development. It is a teacher completed questionnaire focuses on each child in the child's first year of full-time school. It covers five domains of development; physical health and wellbeing; social competence; emotional maturity; language and cognitive skills; and communication skills and general knowledge. Community level information is reported for the three census points in 2009, 2012, 2015 tracking the proportion of children who are 'developmentally on track', 'developmentally at risk' (children falling between the 10th and 25th percentile) or 'developmentally vulnerable' (children falling below the 10th percentile). However, the data is collected at an individual level but it is not currently permitted to be 'linked' with other data sets at an individual unit record level. Given that the AEDC offers a census of all Australian children at school entry, the value of linking individual AEDI level data with maternal and child health records, preschool attendance and literacy and numeracy outcomes for students cannot be underestimated.

Many students with speech, language and communication problems will have interacted with early childhood intervention (through the health system) or will interact with the NDIS. If we are to improve educational outcomes for this cohorts of students, then we need to consider the confounding effects of non-education based supports being provided to them. This is information already in existence that could be used in a 'smarter' way if linked appropriately with education sector data. Linkage might usefully occur with state based maternal and child health systems, the NDIS, current early childhood intervention systems, the AEDC and Medicare.

There are risks associated with the linkage of data at individual (and cohort) level of data – particularly if proposals are to link educational data with health, employment, social services or justice data). Of course, appropriate privacy safeguards need to be put in place to ensure that linked data is used in an appropriate way. However barriers to privacy concerns have been overcome within the health sector (where arguably, the stakes are considerably high and there are very strict health privacy legislative requirements). We encourage the Commission to explore what is necessary to achieve such linkages with educational data.

Increased sensitivity and specificity in existing data collections

The data items previously identified in this submission as critical for inclusion in the National Education Evidence Base are a mix of existing data items and new data items requiring systematic collection. Comment is now made on existing data collections and the need to amend some of the information in order for it to be meaningfully included in a National Education Evidence Base. This in essence, relates to

the sensitivity and specificity in existing data collections as it relates to supporting outcomes for students with speech, language and communication problems.

Information about the communication competence of children is routinely collected through some mechanisms in Australia. However, existing data collections either do not ask or record information about communication competence with sufficient detail as to provide 'meaningful' information to inform policy and planning. Where existing data collections do collect sufficient detail – these are jurisdictional specific data collections and are not currently comparable across states/territories.

The Nationally Consistent Collection of Data on School Students with Disability (NCDD) is a national program to collect data on students with disability in a consistent, reliable and systematic way. Teachers use their professional judgement to report the level of reasonable adjustments they provide to a student to facilitate that student's access and participation in education. Teachers are asked to report on each student's broad category of disability. These categories include physical, cognitive, social-emotional and sensory. For the purposes of data collection, these categories are mutually exclusive and the school team uses their professional judgement to select the broad functional category of disability that has the greatest impact on the student's education and for which reasonable adjustments are made. For example, a student with cerebral palsy may have intellectual disability, physical impairments, cortical vision impairment, hearing impairment and complex communication needs – however, may be classified under 'physical' as the school determines the most reasonable adjustments are made to address physical access issues. As such, a student may have significant speech, language and communication needs for which adjustments need to be made – but these are not defined as their primary category. Similarly problematic is the data collection for a student who has a receptive and/or expressive language disorder (this is a significant and diagnosable problem with speech and language that does not relate to any other underlying disability condition). These students with language disorders would be classified under the NCDD in the category of 'cognitive' as the nature of the adjustments made by the teacher would be around curriculum and instructional adjustments. There is no way to determine how many students recorded in the NCDD cognitive category in fact have specific speech, language and communication needs. Thus, the NCDD does not offer sufficient specificity of information to be useful to understand outcomes for students with speech, language and communication needs (regardless of the cause of their disability).

The aforementioned senate inquiry into communication disorders and speech pathology services recommended that the Department of Health '…carefully consider Speech Pathology Australia's proposals to gather more specific data on communication disabilities through the National Census, the Disability Services National Minimum Data Set; and the Nationally Consistent Data Collection on School Students with Disability tool." (Recommendation 3.14 Senate Community Affairs References Committee).

Speech pathologists form an important (albeit small) component of the educational workforce in Australian schools. As discussed previously, our involvement in schools differs markedly across the country, as does funding of our services (through state/territory department of education, direct employment, contracting or purchasing of private services by schools themselves) or a mix of these initiatives. Despite the significant investment in speech pathology intervention and services within Australian schools, data about our employment, interventions or outcomes is not recorded and reported in any way.

This absence of appropriate data offers challenge for speech pathologists to demonstrate the value of their services to teachers and families and it also offers challenges to Principals and Departments of Education to evaluate the cost-benefits of their investment in speech pathologists specialist supports. The existing National School Statistic Collection currently measures the school workforce in both primary and secondary students. However, this collection does not currently record and report in sufficient detail the involvement of speech pathologists in educational teams at a school level. The inclusion of speech pathologists is collapsed into the category of 'specialist support staff' in this data collection (presumably alongside school based psychologists, occupational therapists, teachers aids etc). The National School Statistic Collection should be amended to identify and report the different categories of specialist support staff in schools – including the reporting of speech pathologists as a separate workforce component.

New or extended data collections needed to inform policy, planning and service delivery

In making recommendations for new data collections to inform policy, planning and service delivery, we have been cognisant of the costs of development and implementation of new data collections, and have attempted to balance this with what we consider to be critical information that would offer significant value to understanding (and improving) educational outcomes for the fifth of students starting school with speech, language and communication problems.

The current Early Years Learning Framework prescribes for early childhood educators the outcomes for which their early childhood education programs are to achieve. One of the five outcomes detailed in the Framework includes Outcome Five: Children are Effective Communicators. Under this outcome, there are a range of indicators to show that the outcome is achieved including:

- Children interact verbally and non-verbally with others for a range of purposes
- Children engage with a range of texts and gain meaning from these texts
- Children express ideas and make meaning using a range of media
- Children begin to understand how symbols and pattern systems work
- Children use information and communication technologies to access information, investigate ideas and represent their thinking.

Despite the Early Years Framework being a national educational policy, there does not exist any systematic, consistent collection of data at a national level to determine if these outcomes are being achieved by Australian children in the year prior to starting formal schooling. A new data collection aimed at measuring achievement by children against the National Early Years Framework needs to be prioritise and included in the National Education Evidence Base.

There are a number of examples of surveys currently rolled out in the states/territories that do examine communication competence in school students with sufficient specificity. For example, the School Entrant Health Questionnaire (SEHQ) administered to every child in Victoria in their first year of school records significant detail regarding speech, language and communication development. Similarly, in South Australia, the Preschool Health Check offers a data collection with adequate sensitivity in recording of speech, language and communication competence in pre-school aged children to be of value in ongoing monitoring of these children's outcomes. However, these are state-specific data collections that need to be consistently implemented nationally in order to provide meaningful data to the National Education Evidence Base.

Recently, the federal Minister for Health the Hon. Simon Birmingham announced the introduction of a standardised assessment in Year One of literacy, numeracy and phonics. This is supported by the evidence relating to precursors of 'problems' in literacy and numeracy that indicate that problems are evident prior to Year Three when NAPLAN testing would identify problems in literacy and numeracy. Ideally, this standardised assessment measure should include assessment of literacy, numeracy, phonics AND phonological awareness and vocabulary. Phonological awareness and vocabulary are strong predictors of later reading outcomes. Ideally the measure should be administered during the Foundation year or at the beginning of Year One.

Ideally, there should be a process of rolling monitoring of these children from early childhood at multiple points in time. There really needs to be a system of measuring speech, language and communication competence at least in the year prior to school (or earlier if possible).

Recommendations

Speech Pathology Australia recommends that the Productivity Commission consider the following:

1. A National Education Evidence Base has the potential to significantly improve outcomes for students – but only if it moves beyond the mere drawing together of administrative and performance data into a data warehouse. It needs to include systems and processes to facilitate the use of this data to demonstrate effectiveness of educational interventions for students.

2. Speech, language and communication problems are highly prevalent in school aged children (an estimated 20 per cent at school entry). There is strong research evidence that communication problems significantly impact on literacy and numeracy outcomes, school retention and social and emotional wellbeing. Communication competence needs to be identified, measured, monitored and included in the National Education Evidence Base.

3. Speech pathologists are a common part of the educational team tasked with supporting students with speech, language or communication impairments to participate in school and to ultimately achieve the best educational outcomes they are able to. Information about access to speech pathology expertise for students needs to be identified, measured, monitored and included in the National Education Evidence Base.

4. The National Education Evidence Base should include consistent measures of:
   - Attendance at 15 hours of kindergarten in the year prior to starting school
   - Literacy and numeracy outcomes and/or other student performance data
   - Speech, language and communication competence (at least at preschool and school entry)
   - Student social and emotional wellbeing
   - School retention
   - School disciplinary absences
   - If a child receives targeted individual funding through their State/Territory Education Department
   - Existence of Individual Learning Plans
   - Existence of reasonable adjustments being made by teachers within a classroom for an individual student
   - If a student has NDIS targeted funding
   - If a student uses an Augmentative and Alternative Communication (AAC) device
   - Post-school outcomes (particularly for students who leave school prior to completion of Year 12) – including employment, further training options and involvement in juvenile justice)
   - Any existence of speech pathologist assessment (particularly prior to starting school or in the early school years).
   - Cultural and linguistic background of student family
   - Aboriginal or Torres Strait Islander status
   - Rurality of school
   - Size of school
   - Speech pathology expertise within the student's school environment
   - Speech pathology services accessed by the student outside of the student's school environment

5. A Unique Student Identifier should be assigned in early childhood education (pre-school/kindergarten year) to allow longitudinal monitoring of student outcomes.

6. Existing data sets could be improved to ensure that both communication impairment and speech pathology intervention at school are consistently measured and monitored. In particular
   a. The Nationally Consistent Collection of Data on School Students with Disability needs to be amended to identify and record adjustments made specifically for for students with speech, language and communication needs (regardless of the cause of their disability).
   b. The National School Statistic Collection should be amended to identify and report the different categories of specialist support staff in schools – including the reporting of speech pathologists as a separate workforce component.

7. A new data collection needs to be developed to measure achievement by children against the National Early Years Framework outcomes. This needs to be prioritised for inclusion in the National Education Evidence Base.

8. The proposed standardised measure of literacy, numeracy and phonics for Year One (as proposed by the Minister for Education) should include an assessment of phonological awareness and vocabulary skills (as these are strong predictors of later reading outcomes). This assessment should be administered either during Foundation Year or at the beginning of Year One.

9. The Australian Longitudinal Learning database needs to extend beyond merely being a data warehouse to house the National Education Evidence Base. It needs to link and integrate datasets so that they might be usefully used to understand outcomes for cohorts of students, and to determine what outcomes might be amendable to policy or educational program changes.

If Speech Pathology Australia can assist in any other way or provide additional information please contact Dr Ronelle Hutchinson, Manager of Policy and Advocacy at the Speech Pathology Australia National Office on 03 9642 4899 or by emailing policy@speechpathologyaustralia.org.au.

Evidence Cited in this Submission

[i] Speech Pathology Australia (2010) *Competency-Based Occupational Standards.* Speech Pathology Australia. Melbourne

[ii] Senate Community Affairs References Committee (2014) *Final Report. Inquiry into the Prevalence of Different Types of Speech, Language and Communication Disorders and Speech Pathology Services in Australia*. SCARC. Canberra.

[iii] Survey of Disability, Ageing and Carers, 2012

[iv] Reilly, S., Wake, M., Ukoumunne, O., Bavin, E., Prior, M., Cini, E. et al (2010) 'Predicting language outcomes at 4 years of age: findings from Early Language in Victoria Study', *Paediatrics* 126: 1530-1537.

[v] McLeod, S., and Harrison, L. (2009) 'Epidemiology of speech and language impairment in a nationally representative sample of 4-5 year old children'. *Journal of Speech, Language and Hearing Research*, 52: 1213-1229.

[vi] Anthony, J., Aghara, R., Dunkelberger, M., Anthony, T., Williams, J and Zhang, Z (2011) 'What factors place children with speech sound disorders at risk for reading problems'*. American Journal of Speech-Language* Pathology 146 (20): 146–160.

[vii] McLeod, S., & McKinnon, D. H. (2010). Support required for primary and secondary students with communication disorders and/or other learning needs. *Child Language Teaching and Therapy*, *26*(2), 123-143.

[viii] McLeod, S., & McKinnon, D. H. (2010). Support required for primary and secondary students with communication disorders and/or other learning needs. *Child Language Teaching and Therapy*, *26*(2), 123-143.

[ix] Snowling M.J., Adams J.W., Bishop D.V.M., Stothard S.E. (2001). Educational attainments of school leavers with a preschool history of speech-language impairments. *International Journal of Language & Communication Disorders, 36*, 173-183.

[x] Conti-Ramsden, G., Durkin, K., Simkin, Z., & Knox, E. (2009). Specific language impairment and school outcomes. I: Identifying and explaining variability at the end of compulsory education. *International Journal of Language & Communication Disorders*, *44*(1), 15-35.

[xi] Locke A., Ginsborg J., Peers I. (2002). Development and disadvantage: implications for the early years and beyond*. Int J Lang Comm Dis 37*, 3-15.

[xii] see for example, Couzos, S., Metcalf, S., & Murray, R. (2001). Systematic review of existing evidence and primary care guidelines on the management of Otitis Media in Aboriginal and Torres Strait Islander Populations. Canberra, ACT: Commonwealth of Australia; or Morris, P.S., Leach. A.J., Silberg, P., et al. (2005). Otitis media in young Aboriginal children from remote communities in Northern and Central Australia: a cross-sectional survey. *BMC Pediatr*, 5,27.

[xiii] Snow, P., Eadie, P., Connell, J., Dalheim, G., McCusker, H., and Munro, J. (2014) 'Oral language supports early literacy: A pilot cluster randomised trial in disadvantaged schools'. *International Journal of Speech-Language Pathology*, 16(5): 495-506.

[xiv]Vellutino, F., Fletcher, J., Snowling, M., & Scanlon, D., (2004) 'specific reading disability (dyslexia): what have we learned in the past four decades? *Journal of Child Psychology and Psychiatry*, 45: 2-40.

[xv] Catts, H., Fey, M., Zhang, X., & Tomblin, B., (1999) 'Language basis of reading and reading disabilities: Evidence from a longitudinal investigation'. *Scientific Studies of Reading*, 3: 331-361.

[xvi] Serry, T., Rose, M., Liamputtong, P. (2008) 'Oral language predictors for the at-risk reader: A review". *International Journal of Speech-Language Pathology*, 10(6): 392-402.

[xvii] Harrison, L., McLeod, S., Berthelsen, D & Walker, S. (2009) 'Literacy, numeracy and learning in school-aged children identified as having speech and language impairments in early childhood'. *International Journal of Speech-Language Pathology*, 11(5): 392-403.

[xviii] McCormack, J., Harrison, L., McLeod, S., & McAllister, L. (2011) 'A nationally representative study of the association between communication impairment at 4-5 years and children's life activities at 7-9 years'. *Journal of Speech, Language and Hearing Research*, 54: 1328-1348.

[xix] Ruben, R. J. (1997). A time frame of critical/sensitive periods of language development. *Acta oto-laryngologica*, *117*(2), 202-205.

[xx] Snow, P.C., & Powell, M. B. (2011b) Youth (in)justice: Oral language competence in early life and risk for engagement in antisocial behaviour in adolescence. *Trends and Issues in Crime and Criminal Justice no. 435.*

Snow, P., Powell, M. B., Sanger, D. D. (2012). Oral Language Competence, Young Speakers, and the Law. *Language, Speech and Hearing Services in Schools, 43*, 496-506

[xxi] Senate Community Affairs References Committee (2014) *Final Report. Inquiry into the Prevalence of Different Types of Speech, Language and Communication Disorders and Speech Pathology Services in Australia*. SCARC. Canberra.
[xxii] Speech Pathology Australia (2011) *Speech Pathology Services in Schools: Clinical Guideline*. Speech Pathology Australia. Melbourne.
[xxiii] Speech Pathology Australia (2011) *Literacy: Position Statement*. Speech Pathology Australia. Melbourne.
[xxiv] Cirrin FM, Gillam RB. Language intervention practices for school-age children with spoken language disorders: A systematic review. Language, Speech, and Hearing Services in Schools 2008 39(1): S110-S137
[xxv] Wolter JA, Dilworth V. The effects of a multilinguistic morphological awareness approach for improving language and literacy. Journal of Learning Disabilities 2014 47(1): 76-85
[xxvi] Snow PC, Eadie PA, Connell J, Dalheim B, McCusker HJ, Munro JK. Oral language supports early literacy: A pilot cluster randomized trial in disadvantaged schools. International Journal of Speech-Language Pathology 2014 16(5): 495-506
[xxvii] Melissa Wake, Sherryn Tobin, Penny Levickis, Lisa Gold, Obioha C. Ukoumunne, Naomi Zens, Sharon Goldfeld, Ha Le, James Law, Sheena Reilly. Randomized Trial of a Population-Based, Home-Delivered Intervention for Preschool Language Delay. Pediatrics. October 2013, VOLUME 132 / ISSUE 4
[xxviii] Luigi Girolametto, Elaine Weitzman, and Janice Greenberg. Facilitating Emergent Literacy: Efficacy of a Model That Partners Speech-Language Pathologists and Educators. American Journal of Speech-Language Pathology, February 2012, Vol. 21, 47-63.
[xxix] Kirk C, Gillon G. Integrated morphological awareness intervention as a tool for improving literacy. Language, Speech, and Hearing Services in Schools 2009 40(3): 341-35.
[xxx] Sackett, D., Rosenberg, W., Gray, J., Haynes., and Richardson, W. (1996) 'Evidence based medicine: What is it and what it isn't. BMJ. 1996 Jan 13; 312(7023): 71–72.