Murdoch Childrens Research Institute
Healthier Kids. Healthier Future.

2013 Let's Read Literature Review

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Executive Summary

Background

Let's Read is an early literacy initiative that promotes reading with children from birth to five years. Let's Read was developed by the Centre for Community Child Health at the Murdoch Childrens Research Institute (MCRI) and the Royal Children's Hospital. The Murdoch Childrens Research Institute and The Smith Family have partnered to implement Let's Read with communities across Australia.

In 2012-13 the Australian Government funded MCRI to implement a 12-month Let's Read National Early Literacy Campaign. Building on existing evidence-based programs the Let's Read campaign engaged families, professionals and communities to promote high quality early literacy environments for children from birth to 5 years. This literature review was conducted during the 2012-13 Let's Read campaign by the CCCH to ensure that Let's Read is based on the current research evidence.

This literature review highlights the need to focus on the years prior to school entry (birth to 5 years) as a critical stage in a child's journey toward literacy. It describes the evidence base linking poor literacy to lower education, employment, income and wellbeing outcomes and examines the current state of literacy in Australia. The review also provides a focus on identifying factors, activities, programs and interventions that provide the conditions and experiences necessary for all children to develop sound literacy foundations prior to school entry.

Language literacy and child development

This literature review highlights the enormous impact of early experiences on brain development and the complex interaction of biological and environmental factors on both language and literacy development. It examines the research that demonstrates the early years (from birth to age five years) are critical for developing the skills that form the foundation of literacy in school years and throughout adulthood. The foundations of literacy start very early in life and a child's early literacy skills can predict later literacy and academic achievement.

Why is literacy important?

Literacy is one of the most important foundations for success in school and life. However, in Australia almost half of the adult population still does not have the minimum standards of literacy to meet the demands of everyday life and work (ABS, 2013). As a result, the issue of literacy development is a major source of focus and concern. Research shows that in Australia:

- not all children arrive at school ready to take advantage of the learning opportunities provided at school 1 in 5 children start school behind – poorly equipped to benefit from the social and learning opportunities (ABS, 2013)
- those who do not arrive at school with early literacy skills sometimes never catch up (Duncan et al., 2007; Chatterji, 2006; Roberts et al., 2005; Lonigan and Shanahan, 2010)
- currently our primary school children are some of the worst performing internationally in literacy (PIRLS, 2012).

This literature review gives a clear indication that the connections between a child's early language experience and later literacy development are fundamental for later literacy development. A predictable cycle is also evident: children raised in low SES and remote communities are at increased risk of inadequate literacy development in early childhood.

The research indicates that the signs of vulnerability in literacy development are already evident from school entry. Children who experience early difficulties learning to read are unlikely to catch up to their peers and it is more likely that the gap in ability will widen as schooling progresses. A poor foundation in literacy development in the early years increases vulnerability in literacy development and acquisition and decreases formal educational achievement. This has implications for general wellbeing because it is a predictor of a life characterised by a lack of formal education, limited employment opportunities, lower income and reduced access to healthcare.

Literacy-promoting activities

Reading with children from birth to five years is probably the single most important activity families can undertake to enhance their child's future ability to read and write. This literature review outlines the research that examines the benefits of reading and other literacy-promoting activities (such as such as singing, nursery rhymes, observing and talking about the world, oral storytelling, environmental print and use of digital media) in early childhood. It also highlights the important role of families, early childhood professionals, services and communities in establishing high quality literacy environments that support all children to develop sound literacy foundations prior to school entry.

Early literacy programs and interventions

This literature review looks at a number of early literacy interventions, programs and initiatives to examine trends in current early literacy programs and interventions, both within the home and in the out-of-home environment. All interventions, programs and initiatives reviewed specifically target children prior to school entry. The interventions reviewed include curriculum-based and service-based early literacy interventions, book dissemination programs and current Australian literacy-promoting campaigns.

Recommendations

Overall, the recent research evidence suggests that we can improve future literacy outcomes for children by promoting specific emergent literacy-promoting activities during the years prior to school entry. Based on these findings, future early literacy interventions and programs aimed to prepare children to succeed in learning to read should consider the following:

- Broaden the audience focus of early literacy intervention, particularly the important role of early childhood education and care professionals, educators and environments. Develop systematic, multi-tiered and integrated approaches to the design of early literacy interventions and programs that consider the broader audience role of literacy development skills and success.
- Design and develop early literacy interventions that support emergent literacy development throughout a child's early years, rather than at one specific point in time.
- Support disadvantaged and vulnerable communities with a multi-tiered and ecological model of early literacy support, targeting home literacy resources and capacity building of both families and early childhood and education professionals.
- Consider strategies that also engage families not traditionally viewed as 'vulnerable' or 'disadvantaged' and broaden understanding of the needs of families in modern society and the influences on children's emergent literacy development.
- Consider the potential influence of modern technology on families (e.g. tablet computers) for children's literacy development.
- Develop a systematic, rigorous and collective evaluation framework for the measurement and evaluation of early literacy interventions and programs at both a national and early literacy sector level. Establish common goals and measurement systems to accurately and rigorously measure early literacy outcomes and program effectiveness.
- Develop an integrated, ecological and collective impact approach to national literacy campaigns, promoting the importance of early literacy development.
- Implement a strategic social marketing national campaign through collaborative and collective impact, working with social marketing strategists to support emergent literacy development.
- An agreed definition and standard of literacy and emergent literacy prerequisite framework is needed. Use the agreed definitions of literacy and emergent-literacy prerequisite development skills in the design, delivery and measurement of early literacy interventions and programs.
- An agreed empirical rationale and evidence base for emergent-literacy-promoting activities and messages to support the acquisition and development of formal literacy success is also needed. Using the empirical rationale and evidence, develop subsequent design and delivery standards and strategies for early literacy interventions and programs that promote the explicit development of emergent literacy skills.

1. Introduction

This literature review was conducted during the 2012-13 Let's Read National Early Literacy Campaign by the Murdoch Childrens Research Institute (MCRI) Centre for Community Child Health (CCCH). Let's Read is an early years literacy initiative that promotes reading with children from birth to 5 years. Let's Read was developed by the Centre for Community Child Health at the Royal Children's Hospital, Melbourne. MCRI and The Smith Family (TSF) have partnered to implement Let's Read with communities across Australia. The Australian Government funded MCRI to implement a Let's Read National Early Literacy Campaign from 2012-13.

Building on the 2004 Let's Read literature review (CCCH, 2004), this literature review highlights the need to focus on the years prior to school entry (birth to 5 years) as a critical stage in a child's journey toward literacy. It describes the evidence base linking poor literacy to lower education, employment, income and wellbeing outcomes and examines the current state of literacy in Australia. The literature review also outlines the research that has examined the impact of reading and other literacy-promoting activities in very early childhood in preparation for developing and acquiring language and literacy skills.

It highlights the important role of families, early childhood professionals, services and communities in establishing high quality literacy environments that provide the conditions and experiences necessary for all children to develop sound literacy prior to school entry. Finally, it synthesises the evidence base to inform the content and structure of an early literacy program and interventions to promote reading and language-based activities with children from birth to 5 years necessary in order to promote the development of the building blocks that facilitate later literacy success.

2. Language, literacy and child development

2.1 Early child development

A large and growing body of research indicates that what happens in early childhood matters for a lifetime. It is during this stage of development that the foundation for children's future wellbeing and learning is built (Oberklaid, Goldfeld, Moore 2012, Lonigan and Shanahan, 2010). Child development consists of several interdependent domains—physical, social, emotional, language development, and cognitive skills—and is affected by psychosocial and biological factors as well as genetics. The domains of development are interdependent and work together to promote a child's overall health and wellbeing (National Scientific Council on the Developing Child 2007). The first few years of life are particularly important because vital development occurs in all of these domains (Shonkoff and Phillips, 2000).

Language is a crucial component of early childhood development. Because of the interdependent nature of early child development, any problems that hinder the acquisition of language during these critical years can affect other areas. While literacy acquisition (the ability to read and write)[1] differs from language, literacy is strongly influenced by language development. These links are well documented, with evidence identifying a clear link between speech and language difficulties and subsequent literacy difficulties (Lonigan and Shanahan, 2010; Whitehurst et al. 1999; Duncan et al. 2007). This relationship between language development in the early years and the resulting transition to literacy is viewed as crucial in ensuring self-esteem, academic success and improved life chances (Snow and Powell, 2004).

From the moment of conception, a child's development progresses along a biologically predetermined pathway that is influenced by their environment (Keating and Hertzman 1998; Tierney and Nelson, 2009). Biology, genetics and environmental factors continue to interact as the developing child is exposed to crucial experiences, making vital connections and acquiring new skills and abilities (Halfon, Schulman & Hochstein, 2001; National Scientific Council on the Developing Child 2007 and 2010).

[1] The term literacy, as defined for the purpose of this literature review, refers to the ability to *read* and *write* printed text. This definition is consistent with that used in other studies which report deficits in *literacy* as referring to the specific skills of *reading* and *writing* (Baker, 1999; Weiss et al., 1992; Hardy et al., 1997; Rowe & Rowe, 2002; High et al., 1999)

2.2 Brain development in early childhood

When a baby is born their brain is their most immature organ. During the first three years the brain undergoes its most dramatic development (Kupcha-Szrom, 2011). In fact, it is in these early years that the architecture of the brain is laid down and will form the basis for all of the child's learning, health and behaviour (Gable & Hunting 2011). For this reason, what happens during these early years of life can have a profound impact on the developing brain, and subsequently affect cognitive, social and emotional growth (National Scientific Council on the Developing Child 2007; Shonkoff and Phillips 2000). These neural brain connections are what will form the pathways that influence how the child will respond to experiences in the future. During the first few years of life a child's brain makes millions of connections from its reactions to every experiences: positive and negative; physical and emotional.

A child's sensitivity and reaction to experiences and those experiences' impact on the rapid and complex brain development in the first few years of life, provide an indication of how sensitive and dependent the developing brain is on the quality and responsiveness of the caretaking environments (National Scientific Council on the Developing Child 2007, 2010;). Environments, such as the home or early childhood education and care environment, will have an important impact on determining how the brain and central nervous system develop. Therefore, these environments impact on a child's learning, health and behaviour (McCain & Mustard, 1999; Newberger, 1997). In fact, it has been noted that the interactive nature of the relationships between families, caregivers and children in during these formative years is essential to the formation of the developing brain.

For instance, research shows that the quality of a child's relationships with their primary caregivers has a decisive impact on the architecture of the brain (Oberklaid, Goldfeld, Moore 2012). Furthermore, adult-child bonding provides a solid foundation for good learning, behaviour and health. All aspects of a child's social, emotional and physical development are dependent on the quality of relationship the child has with the key adults in their life (Bornstein, 2004). Positive early relationships, experiences and environments provide a foundation for sturdy brain 'architecture' and for a broad range of skills and learning capacities (National Scientific Council on the Developing Child 2007).

The more stimulating the early environment, the more related neural connections created and the more a child develops and learns (Halfon et al 2001). When children spend their early years in a less stimulating, or less emotionally and physically supportive environments, brain development can be affected, which can lead to cognitive, social and behavioural delays (National Scientific Council on the Developing Child 2007, 2010; Halfon et al. 2001). For instance, Rutter (1998) and O'Connor et al. (2000) examined institutionalised Romanian children who had been deprived of appropriate social interaction early in life and found that all children exhibited signs of severe developmental impairment prior to adoption. Interestingly, those who were adopted prior to six months of age achieved nearly complete physical and cognitive catch up to children of a similar age. Those adopted after six months of age continued to show lasting cognitive and developmental impairment, though there was significant catch up (Rutter, 1998; O'Conner et al., 2000).

Considering the role and impact of environments and relationships on early brain development, it has also been widely acknowledged while these connections continue to be made throughout life, the rapid pace of brain development during these early years is never repeated and the brain's capacity for change decreases with age (National Scientific Council on the Developing Child, 2007). Although there are inherited traits that may also influence brain development in the early years, the brain is most flexible early in life in order to accommodate a wide range of environments and interactions that a newborn may experience. Research has demonstrated that as the brain matures it becomes less capable of reorganising and adapting to new or unexpected challenges later in life (National Scientific Council on the Developing Child 2007, 2010). Scientific evidence suggests that if the brain does not receive the appropriate environmental stimulation during these critical periods of brain development in the formative or early years, in particular during the noted first few years of life, it is more difficult for the brain to rewire itself at a later time (Perry 1997; Halfon et al. 2001; National Scientific Council on the Developing Child 2007, 2010).

Overall, research has shown that brain development is cumulative and environmentally sensitive, so early experiences, environments and relationships lay the foundations on which later development is built (Gottlieb, Wahlsten and Lickliter 1998; National Scientific Council on the Developing Child 2007). Learning is the process by which the brain adapts to the environment in which a child is reared. Learning and development cannot be considered in isolation from the individual's social environment because the physical and psychological environments play vital roles in learning. The child's environments, coupled with early experiences, mediate opportunities for literacy engagement and practice (Shonkoff & Phillips 2000).

2.3 Language and literacy development

The most intensive period for speech and language development is also during the first three years of life, when the brain is developing and maturing (NICD, 2010). In fact, the acquisition of speech sounds begins around birth and babies begin to differentiate between sounds of language as early as their fourth month of life (Kalb 2013; Hart & Risley 2003).

Literacy, the ability to read and write, is a skill that evolved in humans much later than spoken language. Human brains are naturally wired to speak; they are not naturally wired to read and write (Kuhl, Williams, Lacerda, Stevens, & Lindblom, 1992). Formal literacy is artificial in that its components (e.g. letters, words, punctuation symbols) were developed as a means of facilitating the use of language by capturing or symbolically representing language (CCCH, 2004). Despite its dependence on language, the acquisition of literacy is markedly different. The ability to read and write does not develop as a matter of course (AMA 1999; Baker, 1999, Rowe & Rowe 1999). The act of becoming literate is considered to be one of the most important goals of early education in industrialised, technological societies (Adams 1990; Finegan, Besnier, Blair & Collins 1992).

Language development provides an excellent example of the interactive work of biological and environmental factors. Most children naturally learn to talk without being formally taught to do so because the brain is biologically primed to acquire language skills (Jensen, 1998). According to Wake et al. (2003), children will naturally develop oral language in an environment where they are exposed to spoken language (Wake, Westerveld, Morton-Allen, Gallagher & Caldwell 2003 p. 1). For instance, talking with children from birth and engaging them in conversations about everyday activities supports their oral language development. This suggests that a child's early language skills develop through being exposed to spoken language rather than being reliant on explicit instruction.

There are strong connections between a child's early language experience and later literacy development (Snow & Powell, 2004). Children deprived of early language experiences may well have insufficient structures on which to build their literacy later in life (Hart & Risely 2003; Snow & Powell, 2004; OECD 2007). The link between early language ability and later literacy is highlighted by research which demonstrates that up to 90 per cent of children with persistent language problems at age five years have poor literacy outcomes when tested 10 years later (Stothard, Snowling, Bishop, Chipchase & Kaplan 1998). Research shows that children who fall behind in oral language and literacy development in the years before formal schooling are less likely to be successful beginning readers (Juel 1988). Evidence also suggests that children who fall behind in their first years of reading are less likely to catch up to their peers, even with appropriate intervention (Duncan et al., 2007; Chatterji, 2006; Roberts et al., 2005; Lonigan and Shanahan, 2010).

Similar to the notion that stimulating environments and relationships can impact early brain development, while children's early language skills are acquired in the context of caring relationships with adults, children's early literacy skill development is also affected by what they experience pre-school (Dickinson & Beals 1994). Accordingly, literacy is therefore thought to be experience dependent as it can be encouraged and influenced by an individual's experiences (Whitehurst & Lonigan, 1998). Based on this evidence, it has also been noted that unlike the biologically based skills of talking and walking, reading and writing depend on the way societies or cultures pass on knowledge and information from one generation to the next (Rayner & Pollatsek 1989).

In fact, the multiple interacting factors that operate between the child and their environment are what can shape the trajectory of early literacy development. For instance, research has consistently demonstrated the impact of socio-economic and educational disadvantage on developmental outcomes for children (Maggi et al., 2005). Considerable evidence also exists to link such disadvantage with an increased risk of low levels of literacy attainment. In turn, this has been shown to affect children's opportunities later in life for education, employment, income and wellbeing Halfon et al. 2001; Oberklaid et. al, 2010).

Given such multiple interacting factors between a child's environmental influences on brain development, there is an increasing recognition that the skills that form the foundation of literacy should therefore also be developed from birth in these critical periods of brain development. For instance, according to Farrar, Goldfield & Moore (2007) in order for children to be able to become literate through formal education at school, prior to school they need to have developed the cognitive, non-cognitive and social skills on which formal learning depends. As previously outlined, these skills are acquired during the pre-school years through exposure to experiences, relationships and social interactions that encourage the development of any underlying experience-dependent skills, such as literacy (Halfon et al. 2001). Research indicates that the relationships young children form with their caregivers are fundamental to this process and to the development of such skills (Shonkoff & Meisels 2000). Furthermore, research has also indicated that these relationships can include families and caregivers in the home, and caregivers and educators in formal and informal early childhood settings (Farrar, Goldfield & Moore, 2007).

In addition to the importance of relationships in the development of experience-dependent skills, such as literacy, the various pathways that lead to fluent reading also have their roots in children's everyday early learning experiences. For instance, Sènèchal et al. (2002) found that specifically teaching children about reading and identifying words in the early years is related to the development and prediction of reading comprehension and literacy (Senechal et al. 2002). Literacy therefore develops in stimulating learning environments where there are resources and opportunities for children to become involved with the various elements of literacy (Sènèchal et al. 2002). It is now well recognised that it is these early and experience-dependent learning opportunities in literacy-related activities that lay the foundation for later literacy development in school (Strickland & Riley-Ayers 2006).

2.4 Emergent literacy

Emergent literacy is a phrase that was introduced by Clay (1972) and refers to the skills, knowledge and attitudes that are presumed to be developmental precursors to reading and writing and the environments that support these attitudes and knowledge. Emergent literacy skills are early skills developed before a child enters formal schooling, which are precursors to the development of conventional literacy skills (Brown et al., 2012; Lonigan and Shanahan, 2010). Conventional literacy is a formal term used to describe reading and writing skills such as decoding, reading comprehension, spelling and writing (Lonigan and Shanahan, 2010). Children pass through the stages of emergent literacy in different ways and at different ages. Emergent literacy is a gradual process that takes place over time from birth until a child can read and write (Brown, Byrnes, Raban & Watson 2012; Lonigan and Shanahan, 2010; Whitehurst & Lonigan 1998)..

Independent and identifiable components or skill sets that predict later reading success, within an emergent literacy framework, include:

- ***oral language and vocabulary*:** both expressive and receptive (Snow, Burns & Griffin, 1998) understanding narrative and story (Wells, 1987), being capable of explanatory talk (Crain-Thoreson & Dale, 1992; Dickenson & Beals, 1994)
- ***alphabet knowledge*:** knowing the names and corresponding sounds of letters (Tizard, Blatchford, Burke, Farquhar, Plewis, 1988; Byrne Fielding-Barnsley, 1990; Scanlon & Vellutino, 1996; Lonigan, Burgess & Anthony, 2000)
- ***phonological awareness*:** the ability to identify and manipulate sounds in spoken language (Goswami & Bryant, 1990; Lonigan, Burgess & Anthony, 2000), knowing nursery rhymes and songs (MacLean, Bryant & Bradley, 1987; Bus & van IJzendoorn, 1999)

- ***conventions of print:*** understanding writing functions (Teale & Sulzby, 1986; Hall, 1987), understanding "left-to-right, top-to-bottom direction of print on each page with print progressing from front to back across pages" for English-language writing (Whitehurst & Lonigan, 1998; e.g. Clay, 1979b; Tunmer Herriman & Nesdale, 1988)
- ***literacy environments:*** having favourite books (Weinberger, 1996), library visits (Sénéchal et al., 1996), number of books in the home (Sénéchal et al., 1996), other home literacy activities; shared book reading (Elley, 1989; Sénéchal et al., 1996).

Research has demonstrated a strong relationship between the development of the emergent literacy skills and later success in reading (Whitehurst et al. 1999; Duncan et al. 2007; Lonigan and Shanahan, 2010). When emergent literacy skills have been fostered in the home learning environment before formal schooling, a child is more prepared to 'crack' the alphabetic code, and successfully learn how to read with appropriate support (Lonigan, Allan, & Lerner 2011; Puranik & Lonigan 2011).

Building on the importance of emergent literacy skills, research also suggests that it is important for children to establish emergent literacy skills, such as alphabet knowledge and phonological awareness, prior to school entry, in order to reduce the risk of later literacy difficulties. When children do not have these foundational skills, it is difficult for them to acquire formal literacy skills without additional support, and there is evidence for the gap in reading ability widening as schooling progresses (Lonigan et al. 2011;Chatterji, 2006; Roberts et al., 2005; Lonigan and Shanahan, 2010). In addition, children who have difficulty with reading in the first year of schooling are more likely to have difficulty in other school learning domains and, potentially, are less likely to complete high school or pursue their education beyond high school (Alexander, Entwisle, & Horsey, 1997).

In terms of emergent literacy skills and later success in reading, phonological awareness in early childhood is often widely regarded as the most important predictor of later reading success (Chatterji, 2006; Roberts et al., 2005; Lonigan and Shanahan, 2010). Phonological awareness refers to "children's knowledge of the internal sound structure of spoken words" (Reynolds, 1991) found that phonological awareness and alphabet knowledge are reciprocally related in young children and have shown to predict literacy scores in Grade 1 and 2 in an average demographic sample (Evans et al 2000).

These findings are consistent with recent research conducted by the National Early Literacy Panel (NELP) to review the evidence on the relationship between emergent literacy skills and conventional literacy skills in children aged between birth and five years (Lonigan and Shanahan, 2010). Consistent with previous findings, the authors found that the strongest and most consistent predictors of later literacy development were alphabet knowledge, phonological awareness and memory; such as rapid and automatised naming of letters and objects; and writing letters (Lonigan and Shanahan, 2010).

In addition to the importance of emergent skills in developing later literacy ability, research further reminds us that the positive early relationships, experiences and environments also provide a foundation for sturdy brain 'architecture' in addition to a broad range of skills and learning capacities, such as conventional reading and writing (National Scientific Council on the Developing Child 2007). Promoting positive opportunities for children to explore, be exposed to and participate in literacy-promoting activities in the early years is an important part of literacy development and later literacy success and ability.

3. Why is literacy important?

For Nobel Prize-winning economist James Heckman, the investment in young children's learning is crucial. Heckman further asserts that it is literacy competence that is a particularly essential part of the learning investment in young children. Literacy is essential to our ability to increase our capacity in many other learning areas and skills (Heckman, 2003).

Literacy is a vital skill in our society. An individual's literacy levels affect their opportunities in life for education, employment, income and wellbeing (Neuman & Dickinson 2002, 2010; Goldfeld et al. 2011; Goldfeld et al. 2012; Whitehurst & Lonigan, 2002). According to Heckman (2003) human capital is tightly linked with literacy, since reading proficiency is a strong

determinant of an individual's ability to learn and adapt to changes in the socio-economic environment. For the individual, higher levels of literacy skill are associated with more stable employment, higher wages, better health, increased educational achievement, and higher levels of social engagement. In relation to society, the profile of literacy skills in a population influences the performance of schools, workplaces and communities. The proportion of adults with low literacy levels also constrains long-term economic growth rates at the national level. Some effects appear to stem from the increased prevalence of illness and accident suffered by lower-skilled adults (McCracken & Murray, 2010).

The direct and indirect association between poor literacy levels and poor health has received significant research attention and interest. For instance, Silverstein, Iverson and Lozano (2002) claim that illiteracy among children is a serious public health problem, claiming that poor school performance can lead to school failure. It is well documented that dropping out of school is, in turn, a risk factor for substance abuse, involvement in violent activity, teen pregnancy and other poor health practices (Silverstein et al., 2002). A recent study implicates a more direct effect of illiteracy on health, highlighting the need to read and understand prescription bottles, appointment information, and other essential health-related materials (American Medical Association, 1999). Dietary behaviours as a function of health have long been established as risk factors for a number of chronic diseases such as cardiovascular disease and cancer (Giske, Turrell, Patterson & Newman, 2002). An inability to read and understand dietary-related information on labels and decipher information presented in tables and graphs is yet another example of the impact that literacy has on consumer behaviour, which ultimately impacts health.

Building on our understanding of child development, language and literacy development, and emergent literacy frameworks, in the following section we will explore why literacy is important in current society. We will consider the current context and level of literacy in Australia and the nationally and internationally recognised implications thereof. We will explore how current literacy levels are associated with poor outcomes and how these poor outcomes are interconnected or related to literacy levels and other related outcomes. We will also discuss the various factors that mediate success and failure in literacy development and outcomes throughout this section.

3.1 Adult literacy levels in Australia

The most recent data on literacy in Australia was gathered via the 2011-2012 Programme for International Assessment of Adult Competencies (PIAAC) survey conducted in 24 countries. PIAAC 2011-12 is the third survey of international comparisons of adult literacy skills conducted in Australia. The others were the Adult Literacy and Life Skills Survey (ALLS) 2006 and Survey of Aspects of Literacy (SAL) 1996 (internationally known as the International Adult Literacy Survey (IALS)).

The PIAAC builds upon earlier conceptions of literacy from IALS and ALLS to facilitate an appropriate assessment of the broad range of literacy skills required for the 21st century. The PIAAC survey measured adult skills and competencies including literacy, numeracy and problem-solving skills in technology-rich environments. The PIAAC has broadened the definition of literacy to make it relevant to the information age, in particular, by including the skills of reading in digital environments. According to the PIAAC survey:

> *"literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society" (OECD, 2009).*

The ALLS 2006[2] found that approximately 46% of Australians aged 15 to 74 years had very poor to poor prose literacy[3] (level 1 and 2) and 47% had very poor to poor document literacy[4] (level 1 and 2). These results suggest that around half of the Australian adult population (approximately 7 million people) had literacy skills below the minimum standard. Preliminary

2 The results were ranked on a scale from level 1 (lowest) to level 5 (highest) with level 3 considered as the minimum required for individuals to meet the complex demands of everyday life and work in an emerging knowledge-based economy (ABS, 2006).

3 prose literacy (ability to read documents)

4 document literacy (ability to understand and use information from a variety of text sources)

findings from the 2011-2012 Programme for the International Assessment of Adult Competencies (PIAAC), have shown that approximately 7.3 million (44%) Australians aged 15 to 74 years had literacy skills at Levels 1 or 2, indicating that around half of the population had literacy levels below the minimum standard. The preliminary results also indicated that only 17% of the adult population (approximately 2.7 million) had literacy skills at levels 4/5.

Furthermore, the majority of respondents who had completed 10 years or less of formal education were assessed at the lowest skill levels across all ALLS domains. This survey confirmed the strong association between educational attainment and adult literacy levels (ABS 2006). The association between employment and socio-economic status has also been confirmed in the preliminary 2011-2012 PIAAC results. The results indicated that there was a statistically significant difference in the proportions of those employed and those out of the labour force at Levels 3 and 4/5 for literacy. Of the total survey population, 42% of employed people achieved Level 3 literacy levels compared with 31% of people out of the labour force, whereas 20% of employed people and 9% of out-of-labour people achieved Level 4/5 literacy levels.

3.2 Primary school literacy levels in Australia

As the primary objective in early education and the means of ongoing education, literacy acquisition is the most obvious predictor of success at school. Unfortunately, not all children arrive at school ready to take advantage of the learning opportunities provided at school (Landry, 2005). Research shows that some children come to school better off than their peers when it comes to early literacy skills. In addition to this, the evidence also suggests that of those children who are already vulnerable on entering school, they are more likely to fall behind in the first few years of schooling and often find it very difficult to catch up to their peers, even with appropriate intervention (Baydar, Brooks-Gunn & Furstenberg, 1993; Stevenson & Newman, 1986; Tramontana, Hooper & Selzer, 1988 Heckmann, 2007). A poor foundation in literacy prior to school entry not only reduces the likelihood of later success in literacy, but also increases the risk of children dropping out of formal education (Rowe and Rowe (1999).

The National Assessment Program for Literacy and Numeracy (NAPLAN), the Australian Early Development Index (AEDI), and the Progress in International Reading Literacy Study (PIRLS) provide an insight into the current literacy levels of Australian children.

NAPLAN

NAPLAN assesses all years 3, 5, 7 and 9 students Australia-wide (over one million students) and the results provide a summary of current literacy levels among school-age children. NAPLAN test results provide information on how students are performing in the areas of literacy and numeracy and support improvements in teaching and learning. The data from NAPLAN test results gives schools and systems the ability to measure their students' achievements against National Minimum Standards and student performance in other states and territories.

NAPLAN is made up of tests in the four domains of:

- reading (measures literacy proficiency across the English learning area)
- writing (narrative writing, informative writing and persuasive writing)
- language conventions (spelling, grammar and punctuation)
- numeracy (number; algebra, function & pattern; measurement).

According to NAPLAN, students who are below the National Minimum Standard have not achieved the learning outcomes expected for their year level[5]. They are at risk of being unable to progress satisfactorily at school without targeted intervention. For Year 3 students, minimum reading standards are demonstrated by students being able to make some meaning from short texts, such as stories and simple reports, which have some visual support. For year 5 students, minimum reading standards are demonstrated by students being able to generally interpret ideas in simple texts and make connections between ideas that are not stated.

[5] The NAPLAN assessment scale is divided into ten 'bands' to record student results in the tests. Band 1 is the lowest band and Band 10 is the highest band

The 2012 NAPLAN results indicate that while most children meet or exceed the national minimum standards for reading[6] (ACARA 2012) a proportion of children in each primary school year group do not have the necessary literacy skills to progress well in school. According to the 2012 NAPLAN results, there were approximately 13.8% of students across Australia in Grade 3, who did not score above the national minimum standard across Australia for reading and 7.7% of Grade 3 students across Australia that did not score above the national minimum standard for writing. In the same 2012 NAPLAN results, it was found that a higher percentage of Grade 5 students across Australia did not score above the national minimum standard for reading (17.8%) and writing (18.5%).

Preliminary findings from the 2013 NAPLAN summary report[7] demonstrate a similar trend, with 11.5% and 8.3% of Grade 3 students across Australia scoring below the national minimum standard for reading and writing respectively. For Year 5 students across Australia, the NAPLAN 2013 preliminary results indicated that 11.8% and 18.2% of students did not score the national minimum standard for reading and writing respectively. The preliminary 2013 NAPLAN results indicate a marginal improvement in percentages of students exceeding the national minimum reading and writing standard in Year 5 students, and a similar marginal improvement in Grade 3 students, but with a marginal increase in the percentage of Grade 3 students not exceeding the national minimum standard for writing.

Significantly, the NAPLAN results found relationships between children's reading and writing scores and other socio-economic and environmental factors, such as gender, Indigenous status, language background other than English (LBOTE) status, geo-location, parental education and profession. Although these related factors are not yet available in the 2013 NAPLAN results, the 2012 NAPLAN results provide some significant findings. Table 1 below provides a summary of the reading and writing standards for Year 3 and 5 across the above confounding factors.

Table 1. *Percentage of students not exceeding the reading and writing national minimum standards for Years 3 and 5.*

	% not exceeding the national minimum reading standard	
	Year 3	Year 5
Overall Australia wide %	13.8	17.8
Gender		
Male	16.4	20.7
Female	11.1	14.6
Indigenous status		
Indigenous	45.5	53.4
Non-Indigenous	12.1	15.9
LBOTE status[8]		
LBOTE	14.1	20.7
Non-LBOTE	13.5	16.7
Geographic location[9]		
Metropolitan	14.6	18.2
Remote	46.3	52.8
Parental education[10]		

[6] Types of skills and understandings that students are generally expected to demonstrate at their particular year of schooling are described in the minimum standards for reading. The NAPLAN Reading tests measure literacy proficiency across the English learning area in line with the Statements of Learning for English. These tests focus on the reading of written English.
[7] The full NAPLAN 2013 National Report that includes final results by gender, Indigenous status, language background other than English status, parental occupation, parental education, and location (metropolitan, provincial, remote and very remote) at each year level and for each domain of the test. The 2013 NAPLAN National Report, which relies on more detailed analysis, is due to be published in December 2013.
8 Language Background Other Than English
9 "Metropolitan" includes results from both Metropolitan and Provisional NAPLAN results. "Remote" includes results from both Remote and Very Remote NAPLAN results.
10 "up to Diploma level" includes Diploma and Certificate level. "Up to Year 12" includes Year 12 and Year 11

Bachelor level	2.2	6.4
Up to Diploma level	14.8	16.9
Up to Year 12	23.2	27.5
Parent occupation[11]		
Professionals	6.7	11.0
Service staff	17.2	23.2
Not in paid work	13.3	32.3

	% not exceeding the national minimum writing standard	
	Year 3	Year 5
Overall Australia wide %	7.7	18.5
Gender		
Male	10.6	24.5
Female	4.5	12.1
Indigenous status		
Indigenous	34.5	53.3
Non-Indigenous	6.1	16.6
LBOTE status		
LBOTE	6.7	15
Non-LBOTE	7.7	19.2
Geographic location[12]		
Metropolitan	8.1	19.8
Remote	37.5	53.3
Parental education[13]		
Bachelor level	2.4	8
Up to Diploma level	6.8	18
Up to Year 12	13.0	26.5
Parent occupation[14]		
Professionals	4.0	10.8
Service staff	9.8	21.7
Not in paid work	17.6	31.0

As illustrated above, the 2012 NAPLAN report found that there was a clear relationship between the amount of parental education and child reading ability for both Grade 3 and 5 students. There were, respectively, 23.2% and 27.5% of children in Grades 3 and 5 who did not exceed the national minimum standard for reading, as compared to 2.2% and 6.4% of children in Grades 3 and 5 respectively whose parents completed a bachelor degree who did not exceed the national minimum standard (ACARA 2012). This was also evident in children's writing ability, with only 2.4% and 8% of Grades 3 and 5 students respectively whose parents had completed a bachelor degree below the national minimum standard, as opposed to 13% and 26.5% of Grades 3 and 5 students respectively whose parents had completed up Year 12 exceeding the national minimum standard for writing.

The trend was similar by parental occupation, with 13.3% and 32.3% of Grades 3 and 5 students respectively whose parents were unemployed achieving above the national minimum standard, as compared to 6.7% and 11.0% of Grades 3

11 "Professionals" includes senior manager and qualified professionals, other business managers and associate professionals. "Service staff" includes tradespeople, clerks, skilled office, sales and service staff, machine operators, hospitality staff, assistants and laborers.
12 "Metropolitan" includes results from both Metropolitan and Provisional NAPLAN results. "Remote" includes results from both Remote and Very Remote NAPLAN results.
13 "up to Diploma level" includes Diploma and Certificate level. "Up to Year 12" includes Year 12 and Year 11
14 "Professionals" includes senior manager and qualified professionals, other business managers and associate professionals. "Service staff" includes tradespeople, clerks, skilled office, sales and service staff, machine operators, hospitality staff, assistants and laborers.

and 5 students respectively whose parents worked as qualified professionals (ACARA 2012). The same was found in children's writing skills, where 17.6% and 31% of Grades 3 and 5 children respectively whose parents were not in paid work or unemployed were below the national minimum standard, as opposed to only 4.0% and 10.8% of Grade 3 and 5 respectively who were below the national minimum standard in writing and whose parents worked as qualified professionals.

As shown in the 2012 NAPLAN report, there were also more than three times the number of Grade 3 Indigenous students (45.5%) who did not meet the national minimum standards for reading when compared to non-Indigenous students (12.1%). Similarly, there were also more than three times the number of Indigenous students in Grade 5 (53.4%) that did not exceed the minimum standard for reading, when compared to non-Indigenous students (15.9%) (ACARA, 2012).

A child's geographical location was also strongly related to reading and writing levels, with students in very remote and remote locations being more likely to not meet the minimum standard, than students from metropolitan areas. The 2012 NAPLAN results indicate that for reading and writing skills Grade 3 and 5 students from remote communities were almost three times more likely than students from metropolitan communities to not exceed the national minimum standard. The results demonstrate that while 14.6% and 18.2% of Grade 3 and 5 students respectively did not exceed the national minimum standard for reading, in remote communities 46.3% and 52.8% of Grades 3 and 5 students respectively did not meet this same standard. A similar trend was found in students' writing ability, with over half of Grade 5 students from remote communities (53.3%) not exceeding the national minimum standard, while 19.8% of Grade 5 students did not meet the same standard.

As also shown in Table 1 there are some differences, although marginal, between the reading abilities of LBOTE and non-LBOTE students. According to the 2012 NAPLAN results, a higher percentage of students of LBOTE status did not exceed the national minimum standards than students of a non-LBOTE status, with 14.1% and 20.7% of Grades 3 and 5 LBOTE students not exceeding the national minimum standard, as opposed to 13.5% and 16.7% of Grades 3 and 5 students respectively of non-LBOTE status. Interestingly, the same trend is not found in writing skills, with a higher percentage of non-LBOTE students not scoring above the minimum writing standards, as opposed to LBOTE-status students. Although, the results were similar for both LBOTE and non-LBOTE Grade 3 students, 19.2% of non-LBOTE status students did not score above the minimum national standard, as opposed to 15% of LBOTE students. This corresponds with evidence which suggests that children from bi-lingual or multi-lingual backgrounds tend to outperform their monolingual peers on some cognitive tests as they progress in school (Oberklaid et al., 2012).

Based on the NAPLAN results collected from 2008-2012, it is also evident that the percentage of Grades 3 and 5 students either at or above the national minimum standard for reading, although minimal, was significantly higher in 2012 than in 2008, with 92.1% and 91% of Grades 3 and 5 students respectively scoring at or above the national minimum standard for reading in 2008. In 2012, it was 93.6% and 91.6%. This increase in the percentage of students who scored at or above the national minimum standard for reading was also significant for Indigenous students between 2008 and 2012, with 68.3% of Grade 3 students scoring at or above the national minimum standard for reading in 2008 and 74.2% in 2012. The same significant increase was not seen for Grade 5 Indigenous students.

Australian Early Development Index (AEDI)

The AEDI is a population measure of children's development as they enter school. It measures five developmental domains: physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, and communication skills and general knowledge. The results from the AEDI help communities, governments and policy makers to pinpoint services, resources and support that young children and their families need to give children the best start in life (Australian Government, 2013).

The AEDI measures five areas of early childhood development from information collected through a teacher-completed checklist[15]:

[15] The AEDI results are presented as the number and proportion of children who are: on track, developmentally at risk and developmentally vulnerable.

- physical health and wellbeing
- social competence
- emotional maturity
- language and cognitive skills (school-based)
- communication skills and general knowledge.

With two sets of AEDI national data collected in 2009 and 2012 we now have an indication of the national progress towards improving the development of Australian children.[16] The change in the levels of developmental vulnerability, as captured by the two iterations of the AEDI, indicates that there have been some improvements to the level of developmental vulnerability of Australian children at a national level (AEDI, 2013).

AEDI results from 2009 indicated that almost one quarter (23.6%) of all children surveyed[17] were developmentally vulnerable on one domain, with 11.8% developmentally vulnerable on two or more domains. The AEDI results from 2012 indicate that 22.0% of children were developmentally vulnerable on one or more domains and 10.8% of children were developmentally vulnerable on two or more domains. The decrease in vulnerability across one or more domains across all Australian children was a significant decrease and indicates that, comparatively to 2009, children surveyed in 2012 were doing better (AEDI, 2013). This improvement was also found in Indigenous children, where developmental vulnerability on one or more domains was significantly decreased from 2009 (47.4%) to 2012 (43.2%). The results indicated that a little more than four in 10 (43.2%) Indigenous children are developmentally vulnerable on one or more domains in 2012, compared with close to five in 10 (47.4) in 2009. Similarly, children of LBOTE status also showed a significant decrease in vulnerability on one or more domains from 2009 (32.2%) to 2012 (29.5).

Overall, the 2012 AEDI results highlighted the following key findings:

- The majority of Indigenous children were developmentally on track on each of the five AEDI developmental domains. However, Indigenous children were more than twice as likely to be developmentally vulnerable than non-Indigenous children.
- There are children in Australia who only speak English, but are reported as not proficient in English. These children were more likely to be developmentally vulnerable on all the AEDI domains.
- Proportions of vulnerability were still greater among those from lower socio-economic backgrounds than those from high socio-economic backgrounds
- Of children who are not proficient in English and have LBOTE status, 93.7% were developmentally vulnerable on one or more of the AEDI domains.

In regards to literacy, the 2012 AEDI results indicated that the school-based language and cognitive skills domain[18] had the largest proportional change across each of the five developmental domains between 2012 and 2009, with 8.9% of children developmentally vulnerable in language and cognitive skills in 2009 and 6.8% in 2012. Specific to 2012, the results indicated that although 6.8% of children were developmentally vulnerable[19] in language and cognitive skills, a further 10.6% were developmentally at risk.

Further to the above, consistent with the NAPLAN results, the 2012 AEDI results indicated that in the language and cognitive skills domain, Indigenous children were more than three times more developmentally vulnerable (22.4%) and almost twice as likely to be developmentally at risk (19.5%) compared to non-Indigenous children (5.9% and 10.1% respectively).

[16] The AEDI was conducted in 2009 with 261,147 children and again in 2012 with 289,973 children across Australia in their first year of full-time school.
17 representing more than 97% of Australian children in their first year of formal full-time schooling
[18] Language and Cognitive Skills Domain - measures basic literacy, interest in literacy/numeracy and memory, advanced literacy and basic numeracy
[19] Developmentally vulnerable indicates the child does not have most of the basic literacy skills; they have problems with identifying letters or attaching sounds to them, rhyming, may not know the writing directions and even how to write own name.

In respect to LBOTE status children, the 2012 AEDI results also indicated higher vulnerability for LBOTE children not proficient in English, with 36.7% developmentally vulnerable and 26.8% developmentally at risk in the language and cognitive skills domain, compared with 5.7% and 10.4% respectively of LBOTE-status children who were proficient in English. Interestingly, of those children who were not of LBOTE status and were not proficient in English, 47.7% were developmentally vulnerable in language and cognitive skills, compared to 36.7% of LBOTE children who were also not proficient in English. This could support the evidence which suggests that children who speak a language other than English at home and begin school with well-developed English language skills (i.e. are bi or multi-lingual) appear to have a range of developmental advantages (Goldfeld et al., 2012).

According to the 2012 AEDI results, although around a fifth of Australian children (17.8%, n=44,018) speak a language other than English at home, most of these children from a non-English speaking background are actually proficient in English when they begin school (n=37,657), while only a small number (n=6,361) were rated as not yet proficient in English. The absolute number of children with poor English skills was similar for children from both English language (n=6,361) and linguistically diverse backgrounds (n=6,361). The results also showed that children with poor English proficiency tended to come from more disadvantaged areas and where a smaller proportion had attended pre-school (Goldfeld et al., 2013).

Finally, although research is limited on the impact of AEDI vulnerability of children entering school on later school achievement, research from Western Australia has demonstrated the progressive impact of AEDI vulnerability at school entry to NAPLAN results at Year 7. Using a prospective linked data design, Brinkman et al (2013) explored the association between results in the Early Development Index[20] at age 5 to children's reading and numeracy skills at age 8, 10 and 12 years of age. Using a sample of 1,823, the results indicated that the EDI results predicted literacy outcomes throughout children's primary school years. The association was equally as strong in predicting NAPLAN scores at years 3, 5 and 7 (ages 8, 10 and 12), which suggested that a child's developmental vulnerability on school entry (as measured by the EDI) can predict their later literacy skills (as measured by NAPLAN) throughout their primary education years (Brinkman et al., 2013). Brinkman et al acknowledge the limitations in the applicability of this study in the current Australian study, given the use of the original EDI rather than the current AEDI, but state that this significant association has also been found in similar studies conducted in Canada (Brinkman et al., 2013).

Progress in International Reading Literacy Study (PIRLS)

Across the world, Year 4 students in 59 countries and 10 benchmarking participants[21] took part in PIRLS 2011. In Australia, over 6000 students in 280 schools participated in the Year 4 sample of PIRLS 2011, which incorporates student performance tests, teacher reports and parent surveys. The PIRLS also used two organising dimensions for the assessment, referred to as the *purposes for reading* and the *reading processes*[22].

In Australia, 280 primary schools were selected from a stratified random sample representing each state, a total of 300,000 students. Overall, the findings indicate that more than one-quarter, and in some cases more than one-half, of Australian students failed to achieve the Intermediate international benchmark, the minimum proficient standard set by the Ministerial Council for Education, Early Childhood Development and Youth Affairs (now known as the Standing Council on School Education and Early Childhood) in mathematics and science, and extrapolated to reading in PIRLS (Thomson et al., 2012).

The 2011 PIRLS results indicated that 24% of Year 4 Australian children performed at either a 'low' or 'below low' benchmark[23] for reading[24], indicating that almost one quarter of students (75,000) did not exceed 'low' levels for reading

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20 EDI is the measure of Early Development Index from Canada, used here before the national introduction and implementation of the Australian Early Development Index (AEDI). The difference between the AEDI and the EDI includes dropping nine items from the original 104, and changes from the 5 point Likert scale to 3 and 2 in some instances.

[21] A benchmarking participant is a province or region that participated in TIMSS and/or PIRLS for their own internal benchmarking. Data from these provinces are not included in international means and are not included in the report.

[22] Each of the reading processes is assessed within each purpose for reading (reading for literacy experience and reading to gain information). The PIRLS 2011 assessment was based on 10 different texts: five for the literary purpose and five for the informational purpose.

[23] International benchmarks for achievement were developed in an attempt to provide a concrete interpretation of what the scores on the PIRLS reading achievement scale mean. To describe student performance at various points along the PIRLS reading scale, PIRLS uses scale anchoring to summarize and describe student achievement at four points on the reading scale—*Advanced* (625), *High* (550), *Intermediate* (475), and *Low* (400) international

literacy. In reading, 10% of Australian Year 4 students reached the advanced international benchmark[25]; 42% the high benchmark[26]; and 34 per cent the intermediate benchmark[27]. Almost one quarter of students did not reach the intermediate benchmark. The findings demonstrated that Australian year 4 students were significantly outperformed in reading by students in 21 countries. The difference between males and females (with females outperforming males) was statistically significant in Western Australia, Queensland and Victoria, In all other states, there were no statistically significant differences between the average reading scores of male and female students.

Consistent with the NAPLAN and AEDI results, 11% of non-Indigenous students achieved the advanced benchmark compared to 3% of Indigenous students, however, 48% of Indigenous students (compared to 22% of non-Indigenous students) did not achieve the intermediate international benchmark, with 21% of Indigenous students not reaching the low benchmark[28]. In addition to this, fewer Indigenous students liked or felt confident in reading, compared to their non-Indigenous peers. Also consistent with NAPLAN and the AEDI, the proportion of students from English-speaking backgrounds achieving the advanced international benchmark was higher than that of LBOTE students: 11% of English background students and 7% of students from a language background other than English. At the lower levels of achievement the differences were greater, with 30% of students from a non-English speaking background compared to 22% from an English speaking background not achieving the intermediate benchmark.

In regards to geographic location, the results are also consistent with the NAPLAN and AEDI results. PIRLS results found that 11% of students in metropolitan schools achieved the advanced international benchmark, with 78% achieving at least the intermediate benchmark. In contrast to this, just 1% of students attending schools in remote areas achieved the advanced international benchmark, and 48% achieved the intermediate benchmark.

Overall, the PIRLS has highlighted that many Australian Grade 4 students have substantial literacy problems. Australian Grade 4 children are ranked 27th out of 45 countries in reading, making Australia one of the lowest ranked English-speaking countries in the world.

These results are not an improvement on the Programme for International Student Assessment (PISA) 2009 results that indicated that one in seven Australian Grade 4 students performed below the literacy-proficient baseline, compared to one in eight students in 2000. In fact, with the exception of an improvement in Grade 4 mathematics between 1994 and 2010, Australian performances stagnated over these 16 years. The same period saw dramatic improvements in mathematics and science performances in Singapore, Hong Kong and Chinese Taipei and steady improvements in the US, Korea and several other countries[29].

3.3 Socio-economic status and literacy

Socio-economic status (SES) is most commonly assessed by education, income and occupation of individuals (Phillips et al., 2013). There is a wide range of national and international research and assessment which identifies that growing up in disadvantaged socio-economic status (SES) circumstances can have adverse effects on child health and development (Kelly, Sacker, Del Bono, Francesconi, & Marmot, 2011; Nicholson, Lucas, Berthelsen, & Wake, 2012). As indicated by the NAPLAN results, low literacy levels disproportionately affect children from socially disadvantaged or lower socio-economic backgrounds and homes. Moreover low socioeconomic status has been identified as a significant risk factor in terms of children's development of language and social proficiency and research shows that children's oral language competency is a

benchmarks.

24 Reading refers to reading literary texts as well as information texts

25 This refers to students who are able to integrate ideas, complex information and evidence across a text to appreciate overall themes, as well as integrate information across a text to provide explanations, interpret significance and sequence activities

26 Refers to students who are able to locate and distinguish details across the text, make inferences, interpret and integrate story events, and locate and distinguish relevant information within a dense text or complex table

27 Refers to students who are able to retrieve and produce stated actions, recognize language feature and locate and reproduce two or three piece s of information from with a text

28 Refers to students who are able to locate and retrieve explicitly stated detail and locate and reproduce explicitly stated information at the beginning of a text

29 http://www.smh.com.au/federal-politics/political-opinion/pms-education-goals-mired-in-underachievement-20121211-2b6xu.html#ixzz2g9MHtsOZ

key influence on the transition into literacy in early childhood (Boetsch, Green & Pennington, 1996; Snow & Powell, 2004; Hay et al. 2009).

Research shows that a number of variables affect early child health and development, including parenting style and the parent-child relationship in low socio-economic homes (Kelly et al., 2011; Goodall and Vorhaus 2011.). Kelly et al (2011) conducted a study using data from the UK Millennium Cohort Study data (3 year olds n = 15,382; 5 year olds n = 15,042) to examine the influence of socio-economic status (measured by household income) on variables including the home learning environment, family routine, developmental outcomes, and cognitive and verbal ability. At ages 3 and 5, the children from advantaged socio-economic backgrounds performed at a much higher level than the children from disadvantaged socio-economic backgrounds (Kelly et al., 2011). Specifically, for verbal ability, the gap between those children from high versus low-SES backgrounds started to widen as children increased in age (Kelly et al., 2011).

In addition, the most advantaged children were less likely to have experienced socio-emotional difficulties as compared to those children from disadvantaged backgrounds (Kelly et al., 2011). Children from higher income families also had higher school readiness scores when compared to children from low-income families (Kelly et al., 2011). These findings show a similar trend in Australian data from the 2012 AEDI data, which shows that children from lower socio-economic backgrounds were more likely to be developmental vulnerable on one or more AEDI domains (AEDI, 2013).

3.4 Socio-economic status and literacy promoting environments

The early home literacy environment makes a difference for children's later academic and literacy success, particularly for children in disadvantaged circumstances (McCoy, 2011). Other home literacy environment factors such as maternal education, maternal reading habits, parental attitudes to and beliefs about literacy, family dynamics, socio-economic status and child temperament have all also been found to predict a child's literacy skills (Stephen R. Burgess, 2011; Edwards, 2012; Johnson et al., 2008; Veldhuijzen van Zanten, Coates, Hervas-Malo, & McGrath, 2012; Weigel et al., 2006). Together, these factors make up the home literacy environment (Stephen R. Burgess, 2011; Johnson et al., 2008; Weigel et al., 2006).

For instance, a study carried out by a research team from Harvard Graduate School of Education (Dickinson & Tabors, 2002) focusing on the home environment concluded that the activities in the home, such as everyday activities of all sorts, accompanied by interesting talk with lots of new vocabulary words, made a considerable contribution to a child's ultimate literacy success. Another finding from this research was the support for the importance of vocabulary-rich talk within the contexts of everyday home experiences and play. These elements made a significant contribution to and impact on a child's literacy development.

A study conducted by Edwards (2012) examined interactions between 15 mothers and their children under three years of age in middle to high socio-economic backgrounds, and the relationship that these interactions had with the children's emergent literacy skills (Edwards, 2012)[30]. The emergent literacy behaviours shown by toddlers and parents were analysed, as was the quality of the home literacy environment (Edwards, 2012). The findings showed these mother-child dyads from middle to upper socio-economic backgrounds had rich home literacy environments that included, but were not limited to, books, magazines, children's books, writing materials, literacy toys and environmental print (Edwards, 2012). All mothers reported positive attitudes towards and beliefs about literacy, and included literacy-rich activities as part of their everyday routine (Edwards, 2012). Mothers also reported having begun reading to their child either while pregnant, or in the first 12 months (Edwards, 2012). In addition, most mothers reported reading to their child every day, and encouraging their children to read independently (Edwards, 2012). When examining the literacy behaviours exhibited by mothers and children during videotaped shared reading sessions, mothers displayed behaviours such as talking about the characters, pointing to the text and turning the pages (Edwards, 2012). Toddlers subsequently displayed a number of emergent literacy skills, including those associated with book conventions (e.g. turning the page), print conventions (e.g. pointing to the text), letter knowledge (e.g. knows letter names), and story grammar (e.g. talking about the characters) (Edwards, 2012). Despite the small sample

[30] The mothers had an average age of 35 years, and all were well educated, with a mean level of 19 years education (Edwards, 2012).

size and the non-average population, this study suggests that rich early home literacy environments can contribute to the positive development of a young child's emergent literacy skills.

A study by Johnson et al (2008) investigated the effects of two facets of household chaos—quiet and order—on early reading skills in a total of 456 children (twins) and 228 mothers (Johnson et al., 2008). Results indicated that the level of household order was significantly related to the three measures of early reading skills (expressive vocabulary, phonological awareness and scores on the Woodcock Reading Mastery Test). Results also indicated that if a child had more than 30 books in the home, this was significantly related to expressive vocabulary. The ability of a child to read independently was significantly correlated to all three measures of reading (Johnson et al., 2008). The authors further analysed the data to test for any moderating effects of maternal reading ability (Johnson et al., 2008).

Of the children whose mothers had average reading ability, aspects of the home literacy environment (e.g. the number of books a child has, number of books the child brings home, and how frequently the child occupies themselves with books) was significantly associated with expressive vocabulary, phonological awareness and reading (Johnson et al., 2008). After maternal reading ability was accounted for, household order only remained significantly associated with expressive vocabulary, phonological awareness and reading mastery for the children whose mothers were above-average readers (Johnson et al., 2008). Johnson et al (2008) suggest that household order may only influence early literacy outcomes if the home environment meets a certain standard, and that household order may not be relevant if more basic features of the home literacy environment are lacking. Johnson et al (2008) further state that having an above-average maternal reading ability may fulfil a basic home literacy environment condition, and as a consequence, a child would have the opportunity to benefit from household order (Johnson et al, 2008).

The relationship between parents' home literacy environment and children's literacy skills was also evident in the recent 2011 PIRLS results. Although the PIRLS data did not include parents' occupation or education, as per the NAPLAN, students were instead asked about the number of books in their home[31]. Generally, there is a strong correlation between books in the home and parental education and income and a moderate to strong positive correlation between books in the home and achievement, particularly in reading (Thomson et al., 2012). Research suggests that the number of books in the home can be an indicator of a home environment that values literacy, the acquisition of knowledge and general academic support (Bus et al., 1995; Thomson et al., 2012; Weigel et al., 2006).

Consistent with the above conclusions, the 2011 PIRLS results indicated that in general students whose parents often engaged their child in early literacy before beginning primary school had higher reading achievement than students whose parents only sometimes engaged them in such activities. Furthermore, supporting the relationship between parents' reading ability and children's literacy development, the 2011 PIRLS results also found that students whose parents like reading had higher reading achievement than those students whose parents somewhat like reading or do not like reading.

In regards to the number of books in the home, as an insinuated indication of the socio-economic status of the home environment, the 2011 PIRLS results indicate that in general, students who have the most books in the home also have the highest levels of achievement, scoring 19 points, on average, higher than students with an average number of books in the home and 64 score points higher than those with a few books in the home[32]. However, it must also be noted that the data also make it evident that while having a home with many books (or by implication a home environment that values literacy, the acquisition of knowledge, and general academic support), the relationship is not conclusive, with approximately 16% of students who reported having many books in the home still not achieving the Intermediate benchmark.

Further exploring the relationship between home literacy environments and children's literacy development, the Longitudinal Study of Australian Children (LSAC) (a nationally representative study of child development) documented shared book

[31] Books in the home has traditionally acted as a proxy in large scale international studies for a family's educational and social background
[32] This variable has been grouped to represent a few books – 25 or fewer books (22% of students), average number of books – between 26 and 200 books (59% of students) and many books – more than 200 books (19% of students).

reading with parents, recording the amount of time the child was read to (The Australian Institute of Family Studies, 2012). Almost half (41-47%) of those children from the lowest socio-economic background were not read to at all on a given weekday or weekend compared to only 15-22% of children from the most advantaged families not being read to at all on a weekday or weekend (The Australian Institute of Family Studies, 2012). Over half (53-55%) of children from the most advantaged backgrounds were read to for more than one hour on a given day, compared to 37-41% of children from the lowest socio-economic backgrounds being read to for this amount of time (The Australian Institute of Family Studies, 2012). Those children in the middle of the socio-economic spectrum recorded time spent reading almost precisely at the midpoint between the least, and most disadvantaged groups (The Australian Institute of Family Studies, 2012). The graph below is from the LSAC report (Commonwealth of Australia, 2012), and shows the number of hours three year old children were read to, divided by socio-economic status. However, as noted above in the 2011 PIRLS data, while there is a higher prevalence of low socio-economic home environments not participating in shared reading with their children, consideration must also be given to those of high and middle SES that are also not participating in shared reading with their children, albeit at a lesser prevalence.

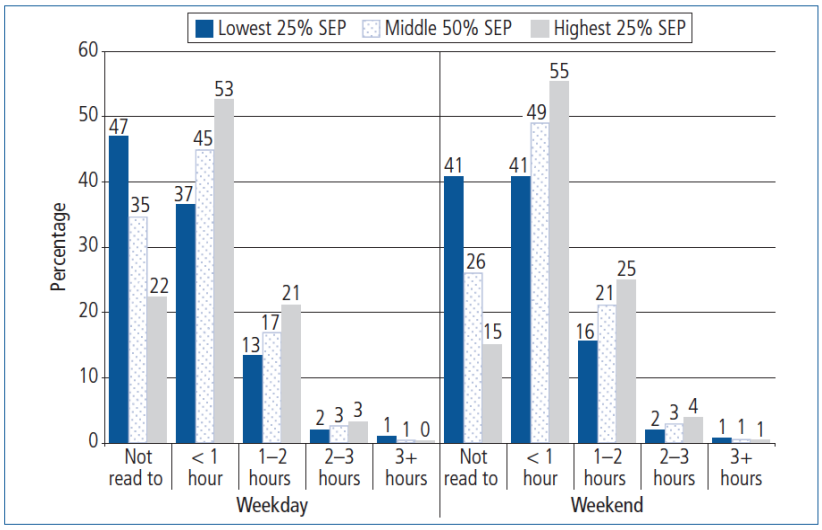

Figure 5.4 Study child's hours of being read to, weekdays and weekends, by family socio-economic position, B cohort Wave 2

This finding aligns well to the UK Effective Provision of Preschool Education (EPPE) research study, which concluded that for all children, the quality of the home learning environment is more importance for intellectual and social development than parental occupation, education or income (as often defined by SES status). The report also noted that often what parents do is more significant and influential than who parents are (Sammons et al., 2002). For instance, although Australia has been identified as one of the countries with the highest proportions of students with many resources for learning in the home (Thomson et al., 2012), many children are still vulnerable in literacy development at school entry[33]. Although what parents do, have capacity to do, or have access to (e.g. number of books in the home) in the home environment has been associated with SES status, it is also evident that children with parents who do have access to literacy-promoting environments (e.g. high SES and higher number of books in the home) could still also have poor literacy outcomes. From such research, it can be assumed that building the capacity of disadvantaged and non-disadvantaged parents to participate in and conduct literacy-promoting activities, using and building on the resources available, could better predict positive literacy outcomes for all children.

In reference to the non-home environment, the 2011 PIRLS also found that when students attended a pre-primary education program it was associated with higher reading achievement (Thomson et al., 2012).The influence and importance of the

[33] This is further supported by the findings from the 2011 PIRLS data that found that although Australia has been identified as one of the countries with the highest proportions of students with many resources for learning in the home, we are still achieving some of the poorest reading outcomes internationally.

early education and care environment for children's literacy development and success has been significantly researched through the EPPE longitudinal project[34]. The EPPE project explored the impact of pre-school centre provision on young children's cognitive progress and social development.

The EPPE project demonstrated that although the home literacy environment is one of the key predictors for positive outcomes on the literacy domain, the impact of the effectiveness (or quality) of two years of preschool education matches the impact of the effectiveness of six years of primary school in predicting academic outcomes at age 11. Furthermore, supporting the need for building parents' capacity, the EPPE also found that policies and programmes for parents in disadvantaged communities that encourage active parent strategies can help to promote young children's cognitive progress. Furthermore, the EPPE results indicate that programmes that directly promote activities for parents and children to engage in together are likely to be most beneficial for young children (Sammons et al, 2002).

The EPPE project also found that the quality of centres' staff-child ratios and staff qualifications were related to children's cognitive development. In respect to literacy, a significant positive relationship was found between the percentage of Level 5 staff[35] (trained teacher qualification level staff) and young children's progress in pre-reading. This result suggests a link between more highly qualified (e.g. qualified teacher) staff and better child outcomes in pre-reading (Sammons et al., 2002). It was noted, however, that this significant relationship could have been mediated though an impact on centre quality. The interrelationship between adult to child ratios, staff qualifications, quality and type of early education provision is important to consider in interpreting these significant findings, however the direct significant relationship between qualification and children's literacy development must be considered as an important factor in considering the positive impact of early childhood education and care (ECEC) environments on children's early literacy development. The project concluded that preschool can play an important part in addressing social exclusion and promoting social inclusion by offering disadvantaged children, in particular, a better start to primary school. The project also supports the notion that preschool can have a significant positive impact on children's developmental progress, over and above the negatively associated influences of SES home environments (Sammons et al., 2002). Finally, the project also concludes that the separate and significant influence of such home environments remains important, and further research should explore whether the positive impact of preschool on young children's development, including literacy, remains significant as children progress through primary school and their home environments remain disadvantaged or vulnerable.

Building on such research, recent research from the E4Kids project in Australia has shown a clear need for early childhood educators to be able to engage in attuned and extended discussions with children and provide high quality instructional support (Cloney et al., 2013). E4Kids is an Australian research project that considered children's abilities and families' backgrounds alongside the quality of ECEC programs, including staff training and resources and the experiences of children in these ECEC settings (Tayler et al., 2013). The study used quality measurement tools that aligned with core elements of the National Quality Standard, reporting across three outcome domains; emotional support, organisational support and instructional support[36]. Generally, results were positive across the domains of emotional support and organisational support, but were consistently poor for instructional support, with fewer than 2% of observations showing a high level of instructional support. The ratings were lowest in 'concept development', which are activities that promote and extend children's thinking skills and understanding, and 'productivity', which refers to the adults' management of instructional time and routines and provision of activities to engage children (Cloney et al., 2013). Interestingly, based on the often identified higher need for early literacy intervention in low SES areas, the results also indicated that higher quality classroom interactions were more commonly found in more advantaged areas (Cloney et al., 2013).

[34] The EPPE study follows children from pre-school up to age 7, the end of Key stage 1 of primary education in the UK

[35] Level 5 qualification in the UK National Quality Framework indicates Diplomas of higher education and further education, foundation degrees and higher national diplomas. Qualifications at this level are appropriate for people working as higher grade technicians, professionals or managers. Level 5 qualifications are at a level equivalent to intermediate Higher Education qualifications such as Diplomas of Higher Education

36 Emotional support (the positive or negative climate, teachers sensitivity and regard for children's perspectives); organizational support (managing children's behavior, productivity, teaching routines); instructional support (concept development, quality of feedback, language modeling)

The results provide a clear indication that, despite the acknowledged important role of ECEC services in the development of children's early literacy skills, and although the ECEC workforce is positively fostering relationships with children, the ECEC workforce is underperforming in educational programs and practices (Cloney et al., 2013). The research suggests a significant need for improvement of quality services in ECEC in the recognised significant promotion and implementation of early literacy-promoting environments within the out-of-home environment. This is further supported by the Abecedarian curriculum approach[37] to early development, which defines 'enriched caregiving' environments as a responsibility of all researchers, parents, caregivers, teachers and program administrators (Sparling, 2010). According to Sparling (2010, pg. 2) it is "in the first five years of life that education and caregiving cannot and should not be thought of as distinctly different activities." Further supporting this notion are research findings that indicate that the significant connection between children's home literacy experiences and centre-based learning should suggest that early childhood curriculum should view children's established knowledge as the base for later conceptual learning (Gonzales, Moll and Amanti, 2005). Overall, the role of the early childhood education, in addition to and not in isolation from the home literacy environment, is clearly evidenced in various research reports and consistently indicates that when children experience early childhood education focusing on important concepts those children do better at school, particularly in literacy and numeracy (Espinosa, 2002, McCain & Mustard, 1999; Raban et al., 2007).

3.5 Summary

Research shows that the building blocks for literacy start very early in life and a child's early literacy skills are a predictor of later literacy and academic achievement (Neuman & Dickinson, 2002). From this limited overview of the literature a predictable cycle is evident: children raised in low SES and remote communities are at increased risk of inadequate literacy development in early childhood. A poor foundation in literacy development in the early years, as indicated by emergent literacy, increases vulnerability in literacy development and acquisition and decreases achievement in formal educational outcomes. This in turn, has implications for general wellbeing and is more likely to lead to a lack of formal education, limited employment opportunities, lower income and reduced access to healthcare.

This summary also highlights that the vulnerability for children's literacy development commences in the early years and often becomes most evident at the time that formal education is commenced. As also highlighted, this literacy vulnerability seems to be most strongly correlated by SES-related factors. This again raises the significant issue of how we can best improve literacy development outcomes for children in areas of most disadvantage and lowest SES prior to school entry, not just at school entry. However, the research also highlights the significance of parents' activities in both low and high SES and builds on the rationale for supporting parents' capacity within the home environment to promote a high quality literacy environment that encourages children's literacy development. The positive impact of the ECEC sector also raises support for the positive influence this sector can have on not only children's early literacy development but in building the capacity of parents and enhancing the home literacy environment.

Overall, the research clearly states that Australia's current literacy standards are not only below minimum standards for children entering school and continuing in school, but also when compared to international standards. While there is a consistent theme of literacy vulnerability among Australian children and adults, it has also been noted that given the variation in literacy standards and definitions within these reports, there needs to be a review to clearly understand common vulnerabilities and standards for literacy (Tout & Mendelovits, 2013). A clearer and more consistent understanding of literacy standards and definitions, nationally and internationally, is of great significance in better understanding optimal literacy-promoting activities, environments and interventions.

The subsequent sections explore current research on literacy-promoting activities and quality literacy environments, as well as the national and international programs that aim to facilitate and promote evidence-based activities and environments for literacy promotion.

37 Refer to section 3.7: Quality literacy environments for further detail and definition of the Abecedarian curriculum approach

4. Literacy-promoting activities

The theory of emergent literacy shows that the foundations for literacy development begin in the very early stages of childhood. Despite the awareness that a child's emergent literacy skills develop well before school age, much of the research to date focuses on school-aged children (Edwards, 2012; Veldhuijzen van Zanten et al., 2012). However, it is increasingly recognised that the period before children reach school age (i.e. 0-5 years) is critical for developing the emergent literacy skills that are necessary for the development of later conventional literacy skills (Lonigan, Allan & Lerner 2011; Lonigan & Anthony et al 2009). Application of this growing knowledge base has supported the recognition and development of interventions, programs, activities and resources that are aimed at strengthening children's abilities.

The interactive nature of the relationships between children and their caregivers is essential to the formation of the developing brain and to literacy development. Positive adult-child bonding activities in the early years of a child's life help to build healthy brain architecture (National Scientific Council on the Developing Child, 2007). Sharing rhymes, songs, books and stories every day with children from birth are nurturing and responsive activities that can foster the development of a solid foundation for good learning, behaviour and health. In the pre-school years, support from families, caregivers, early childhood professionals and communities, as well as exposure to quality literacy-rich environments, can help children to gain the foundational skills for subsequent language, literacy and learning success.

4.1 Reading with children from birth

Families and caregivers can play an important role in the development of their children's reading and cognitive skills by reading with them from a young age. Reading with children from birth facilitates adult-child bonding, aids literacy acquisition, and acts as a protective factor against future learning difficulties (Schickedanz & McGee, 2010; Swanson et al., 2011).

Research shows that reading with children enhances the child's emotional attachment with the parent and strengthens parent-child interactions (Bus, 1995, 1999). When a parent and child read together, not only is language and cognitive development supported, but also the emotional development of the child, which is important to a child's readiness for school entry (Justice & Pullen, 2003). This activity also provides a social and interactive context in which literacy knowledge is transmitted from the adult to the preschool child (Watkins & Bunce, 1996). This dynamic engagement serves as the foundation for a life-long love of reading and facilitates the development of emergent literacy skills.

4.2 Reading styles

One of the key assumptions underlying the benefits of reading aloud with children is that the child is co-engaged in the activity with the person reading the text. However, the quality and reading style adopted by families when reading aloud with their children has been shown to be as important as the frequency of this literacy-promoting activity (Demir, Applebaum, Levine, Petty, & Goldin-Meadow, 2011; Mol, Bus, & de Jong, 2009; Roberts et al., 2005; Lonigan and Shanahan, 2010.

Shared reading

Shared reading (also referred to as shared book reading, reading aloud, story book reading) is recognised as an important activity that supports families to engage their children in the reading process and creates opportunities to develop foundational literacy skills in the preschool years (Bus, van IJzendoorn, & Pellegrini, 1995; Roberts, Jurgens, & Burchinal, 2005; Saracho & Spodek, 2010; Sénéchal & LeFevre, 2001, 2002). The act of reading a storybook aloud to a child has been referred to "as the single-most important thing adults can do to promote the emergent literacy skills of young children" (Lonigan et al., 2009, p. 153).

The rationale that credits shared reading with such potency in anticipating literacy success is outlined by Sulzby (1985) who suggests that children learn to recognise words (read) through repeated exposure, which in turn is achieved through repeated interactions around shared reading of storybooks. Shared book reading, and the conversations that accompany it, promote the development of early literacy skills and the skills of reading and writing that are predictors of later literacy

success (Evans & Shaw, 2008; Elley, 1989; Sénéchal & Cornell, 1993; Sénéchal, LeFevre, Hudson & Lawson, 1996). Kalb & van Ours (2013) similarly investigated the importance of parents reading to their young children. Using Australian data, they found that parents reading to children at age 4 to 5 had positive effects on reading skills and cognitive skills (that is, language and literacy, numeracy and cognition) of these children at least up to age 10 or 11 (Kalb & van Ours 2013). These findings are robust to a wide range of sensitivity analyses.

Shared reading can enhance young children's oral language, vocabulary (expressive and receptive), understanding of the conventions of print, phonological awareness and alphabet knowledge (Lonigan, R., & Anthony, 2000; Sénéchal & LeFevre, 2002; Lonigan and Shanahan, 2010; Crain-Thoreson & Dale, 1999; Whitehurst & Lonigan, 1998; Lonigan and Shanahan, 2010). When children read with adults, they develop a familiarity with the correspondence between written and spoken language and the typical structure of stories (Bus, van IJzendoorn, & Pellingrini, 1995). Vocabulary is also developed through exposure to language in the context of shared book reading (Stanovich, 1986, 2000).

Attending in a left-to-right sequence when reading English is not something already programmed in children's brains; it must be learned (Clay 1979). Regular, shared reading experiences support children to gain knowledge of conventions of print that include book familiarity (location of print, where to start reading, and what direction to read and write), text features (punctuation, capitalisation, and special types like boldface), and text concepts (word boundaries, number of words/letters, and first/last part of word/sentence) (Clay, 1979).

Further, children develop their phonological awareness in terms of phonics skills that relate to knowledge of specific letter-sound correspondence. These skills help children to decode written language through shared explorations of print (Whitehurst & Lonigan, 1998). This research suggests that families should be encouraged to increase the frequency of shared book reading with their children from an early age.

Dialogic reading

Dialogic reading is a technique that involves the elaboration of a story by asking questions throughout the reading process (Whitehurst et al. 1998; Cohen, Kramer-Vida & Frye 2012). This technique emphasises the quality of a shared reading experience. Typically it involves an adult reading the same story to a child on a number of occasions and each time elaborating, asking questions and creating a conversation with the child about the story (Cohen, Kramer-Vida, & Frye, 2012; Whitehurst & Lonigan, 1998).

Evidence demonstrates a relationship between dialogic reading and the development of receptive and expressive vocabulary and subsequent literacy skills (Cohen et al., 2012; Demir et al., 2011; Lonigan et al., 2013). Techniques such as elaborating, asking questions, talking about the illustrations, and focusing on the meaning of the story, all impact specific literacy domains, such as oral language, and can have an impact above and beyond that offered by shared reading (Demir et al., 2011; Lonigan, Purpura, Wilson, Walker, & Clancy-Menchetti, 2013).

The impact of dialogic reading has been assessed in a number of studies (Huebner & Payne, 2010; Mol et al., 2008). Mol et al (2008) conducted a meta-analysis of 16 dialogic reading intervention studies, looking in particular at the effect of the intervention on vocabulary.[38] The results indicated that a child's active participation during shared reading contributes to the benefits of shared reading, in addition to book exposure (Mol et al., 2008). The authors concluded that the quality of shared reading is equally as critical to language development as the quantity, or frequency of shared reading (Mol et al., 2008).

Shared book reading interventions such as dialogic reading, have stronger effects on children's oral language skills than traditional shared reading in which the engagement of the child in the reading process is not as explicitly directed. However, research has shown that, typically, families do not read books to children according to the dialogical approach that

[38] The combined sample included 626 children (Mol et al., 2008). Results showed that dialogic reading was moderately correlated with literacy skills ($r = 0.20$), explaining approximately 4% of the variance across all 16 studies (Mol et al., 2008). When examining expressive vocabulary alone, dialogic reading was found to explain approximately 8% of the variance (Mol et al., 2008).

Whitehurst et al describe (Huebner & Meltzoff, 2005; Huebner & Payne, 2010; Mol, Bus, de Jong, & Smeets, 2008). Cohen, Kramer-Vida & Frye (2012) note that a "typical" shared reading session between families and their children does not involve detailed questioning about the story and instead usually involves reading verbatim and asking yes and no questions (Huebner & Meltzoff, 2005; Huebner & Payne, 2010; Mol et al., 2008).

Print referencing

Print referencing has been cited as a method of enhancing the quality of the shared reading experience and supporting the development of alphabet knowledge (Lonigan and Shanahan, 2010). Print referencing refers to an adult's use of nonverbal and verbal cues to direct a child's attention to the forms, features, and functions of written language (Justice & Pullen, 2003). These cues are embedded into the shared storybook reading interactions of adults and young children. An example of print referencing is to ask the child questions such as 'do you know this letter?' and non-verbal behaviour such as tracking the print with a finger.

Piasta et al (2012) conducted a longitudinal randomised controlled trial (RCT) investigating the effect of print referencing on early literacy skills during shared reading.[39] The results indicated that using print referencing techniques during shared reading increased the reading, spelling and comprehension test scores of children (Piasta et al., 2012). One strength of this study as highlighted by the authors was the implementation of the intervention in preschoolers (Piasta et al., 2012). The authors state that this is a critical time for literacy development, as from this period on, achievement gaps begin to widen between children as formal schooling progresses (Piasta et al., 2012).

4.3 Book selection

Evidence suggests that book selection can assist children along the developmental pathway toward literacy success (Kaderavek and Justice 2002). Appropriate book selection is an important consideration in a shared reading context, to increase the appeal and interactive nature of this literacy-promoting activity.

A practical technique for encouraging active involvement for all children is by selecting books featuring interactive components such as:

- *lift the flap books* where the child lifts flaps on each page to reveal print or pictures hidden beneath, for example *Dear Zoo* by Rod Campbell has children anticipating which animals might be under the flap of each type of container sent to the zoo.
- *predictable text* with repetitive patterns in language and narrative sequencing that facilitates children to produce some of the narrative text on their own (e.g. *Ten Little Fingers and Ten Little Toes* by Mem Fox and Helen Oxenbury)
- *playful features* such as holes, cut out shapes (e.g. *The Very Hungry Caterpillar* by Eric Carle) and different textures that provide an experiential reading experience for the child.

An important feature to consider is the size and amount of print in the book. Recent studies have suggested that books featuring large, bold narrative can encourage children to attend to and interact with print during book reading interactions (Kaderavek and Justice, 2002). Illustrations in storybooks also help children to make sense of the storyline and can motivate children's participation in the book reading interaction (Andrews et al., 2002).

By their very nature, storybooks provide a rich context for encouraging children's awareness of print and conventions of print. Sharing storybooks may be considered as a springboard for many kinds of literacy-related activities. There are a number of activities that can be implemented within a shared reading context that have been found to promote phonological awareness. These include the use of alphabet books, rhyming books (e.g. Dr Seuss books) and predictable books (Kaderavek and Justice, 2002).

[39] A total of 550 preschool-aged children participated, and were randomly assigned to one of three conditions: i. high-dose intervention; ii. low-dose intervention; and iii. reading as usual (Piasta et al., 2012). The intervention was a 30 week reading program in preschool, with those who were in the high-dose group receiving four sessions each week (120 total) and the low-dose group receiving two sessions each week (60 total) (Piasta et al., 2012). Follow-up was conducted once a year, for two years, following the intervention (Piasta et al., 2012).

A number of studies have examined the benefit of alphabet books as the genre of choice in a shared reading context for children prior to school entry. In an experimental study Murray, Stahl and Ivey (1996) found that reading alphabet books (emphasising the sounds of letters) to a group of at-risk 4 year olds, significantly improved their phonemic awareness (awareness of individual sounds within words) indicating "some causal link between alphabet book reading and phonemic awareness" (Stahl, 2003 p. 372). Individual differences in letter knowledge are also related to the rate of acquisition of reading skills (Jackson, Donaldson & Cleland, 1988; Lonigan, Burgess & Anthony, 2000).

It is thought that the rhythm, rhyme and repetition of predictable books also provides children with an opportunity to fine tune their phonological awareness. For instance, according to McCormick & Mason 1986 books that have rhyme, rhythm, or repetition such as those in nursery rhymes, are especially important to babies and infants who cannot yet focus on pictures very well. Predictable or patterned books "contain a repeated linguistic pattern that children can use to support their reading" (Stahl, 2003 p. 373). A number of studies have found that the use of predictable books in a shared reading context significantly improve sight word learning for first grade children (Jackson, Donaldson & Cleland, 1988; Lonigan, Burgess & Anthony, 2000).

Repetition is particularly important for learning new vocabulary from books (Horst et al 2011). Inviting children to say some of the words in books with repetitive and rhyming text—such as *Slinky Malinky* by Lynley Dodd—is an example where the children will start to remember the words and feel as if they are reading it themselves with you. For younger children, books such as *Spot Goes on a Holiday* by Eric Hill and picture board books help children to recognise symbols and pictures and provide them the opportunity to repeat words.

Research suggests it is not necessarily the number of different books that matter, but rather following requests to "read it again!" (Raikes et al., 2006, Horst et al., 2011). However, the value of books will depend largely upon the manner and style that children are engaged in the text and are supported in exploration of the text.

4.4 Activities that promote emergent literacy development

While the effects of shared reading on early literacy have received the majority of research attention, other activities such as singing, nursery rhymes, conversations, oral storytelling, environmental print (e.g. written printed materials in the general environment such as street signs, food labels, billboards) and use of digital media (e.g. mobile devices, smart phones, tablets etc) are also important and can aid the acquisition of emergent literacy skills (D. J. Harris, 2011; Kouri & Telander, 2008; Neumann, Hood, & Ford, 2012; Neumann, Hood, Ford, & Neumann, 2011; Neumann, Hood, & Neumann, 2008; Walton, Bowden, Kurtz, & Angus, 2001).

Belonging, Being Becoming: The Early Years Learning Framework (EYLF) uses a broad definition of literacy that includes children learning to express themselves and communicate through a range of forms and symbols:

> *'Literacy is the capacity, confidence and disposition to use language in all its forms. Literacy incorporates a range of modes of communication including music, movement, dance, storytelling, visual arts, media and drama, as well as talking, listening, viewing, reading and writing'* (Commonwealth Government of Australia , 2009, p. 38).

Although the effect of these activities has not been studied to the same extent as shared book reading, it is likely that they do contribute in some way to a child's developing literacy skills (Harris, 2011; Kouri & Telander, 2008).

Singing and nursery rhymes

There is some empirical evidence to support singing and emergent literacy skills (Kouri & Telander, 2008; Paquette & Rieg, 2008). Songs have a place in the early literacy environment, as they can be used to teach skills such as vocabulary, pronunciation, rhythm, sentence patterns and parts of speech (Paquette & Rieg, 2008). Research shows that incorporating songs into teaching can help to foster a positive and interesting learning environment for children (Kouri & Telander, 2008; Paquette & Rieg, 2008). Having a positive and interesting learning environment can help to promote a love of learning.

Singing nursery rhymes is thought to influence the development of phonological awareness (D. J. Harris, 2011). Nursery rhymes have simple, memorable and predictable structures with in-built repetition (D. J. Harris, 2011). Rhythm, rhyme and repetition are building blocks of early literacy. The rhythm, rhyme and repetition of singing encourage speech and listening skills and can help lay the foundations for later reading. Nursery rhymes are purpose-built around rhythm and rhyme because they are short and easily memorised forms. Nursery rhymes are considered especially appropriate for infants, given that an infant's attention can be drawn by melodic stimulation (D. J. Harris, 2011).

The relationships between nursery rhyme experiences, knowledge, and awareness and both phonological- and print-related skills, were examined in 12 studies of 5,299 pre-schoolers. (Dunst, et al. 2011**)** Results showed that the nursery rhyme measures were related to both phonological- and print-related literacy outcomes, and that nursery rhyme experiences and knowledge proved to be the best predictors of the study outcomes. The findings provide support for a relationship between young children's nursery rhyme abilities and their phonological and print-related skills

Oral language, conversation and play

It is well documented that young children are active participants and naturally engage in their acquisition of oral language (Justice & Pullen, 2003; Justice, 2004; Hansen, 2004). An aspect of this is when children can understand and follow simple oral instructions. This oral language development begins in infancy when adults respond to infant babbling. Research into the connection between oral language and early reading has shown that if children enter early childhood environments without the development of oral language, these children are then more likely to experience literacy problems (Speaker, Taylor, & Kamen, 2004; Justice & Pullen, 2003).

The home environment needs to promote opportunities for oral language development in the years before school. Laurie (2013) suggests that one of the most helpful things families can do to support expressive and receptive language development is through conversational interactions with the child from birth (Laurie 2013). Young children who are exposed to a wide variety of words in meaningful conversation learn new words each day. When adults use a wide variety of descriptive language, children pick up on the words and learn their meaning in appropriate contexts (Bardige & Sega, 2004). Engaging children in conversations about everyday activities expands vocabulary and supports children to acquire the language they need to make sense of print.

Emergent literacy can be encouraged through play. The Early Years Learning Framework (EYLF) for Australia (2009) has a specific emphasis on play-based learning and recognises the importance of communication and language, and social and emotional development. Play is a natural context for children's language development as it provides a developmentally appropriate context for children to try out new ways of combining thought and language (Council of Australia, 2009).

Talk about play is also an indicator of children's ability to think about language and has been associated with children's later reading and writing ability (Bodrova & Leong, 2007). For instance, adults can actually model particular words by talking with children about what they are doing when they are playing. For example, during block play words such as, "are you putting a block on the top, or underneath, or on the side?" Other play activities that encourage language development could include making sounds and babbling, playing games such as 'peek-a-boo', listening and joining in songs, playing finger games and rhymes, listening to stories, looking at picture books, enjoying pretend play, scribbling, drawing and painting (Milne, 1994).

Storytelling

The use of storytelling with young children has been shown to increase children's oral language, and assist to establish a bridge to emergent literacy, through improving listening skills and increasing the child's ability to organise thoughts (Speaker et al. 2004). Narrative skills, the ability to recount a story or event, are an important aspect of oral language development. Studies have shown that skill in narrative comprehension and production relate to academic performance in school, especially to learning to read and write (Pelletier & Astington 2004). Oral storytelling provides opportunities for children to develop vocabulary and oral comprehension of narratives, as well as begin to create narratives of their own.

Sharing stories from birth (whether fictional or real-life experiences), supports children to gain familiarity with decontextualised language (Bardige & Sega, 2004). Decontextualised language refers to the expression of ideas and concepts that are removed from the immediate situation or physical context (Morrow et al., 2009). Exposure to decontextualised language facilitates children's ability to recall events, make predictions, ask and answer questions, and problem solve (Bardige & Segal, 2004).

McKeough, et al. (2008) propose that engaging children in oral storytelling in the preschool years is a precursor to reading and writing across cultures. Storytelling fits with Aboriginal epistemology—the nature of their knowledge, its foundations, scope and validity (McKeough, et al. 2008). Among culturally and linguistically diverse families, oral storytelling may also be a way that family members share knowledge about past events specific to their culture, or stories handed down through generations.

Environmental print

Environmental print refers to items such as signs, billboards, food labels and toy packaging. It is typically large, bold and presented in all different shapes, colours and sizes; characteristics that can draw a child's attention (McMahon Giles & Wellhousen Tunks, 2010; Neumann et al. 2012; Neumann et al. 2011; Neumann et al. 2008; Prior, 2009). Environmental print is everywhere and can be a valuable source of early literacy activity.

Children's interactions with environmental print are instrumental in forming understandings about the purpose of print in daily life (Neumann et al. 2012). Reading environmental print is an activity children often engage in before reading print in books. When adults help children to attend to environmental print, children's attention gradually shifts from pictorial cues to letters embedded in the sign, logo or other form of print (National Early Literacy Panel, 2008). This may include families pointing out words to their children on signs at the park, at the zoo, when walking or driving and explaining what the words mean as they are named. The value of recognising environmental print is that children are beginning to understand that print means something and they are attempting to make sense of the world around them.

Neumann et al (2012) examined the value of environmental print as a literacy learning resource as well as the mechanisms by which it promotes literacy development. Their research showed that adult-initiated interactions with environmental print in the child's sociocultural context supported the development of letter identification, letter writing and standard print reading skills (Neumann et al. 2012).

In addition, there are advantages of considering environmental print as a means of promoting emergent literacy skills because children are naturally attracted to it and it is found almost everywhere in a child's environment (Clay, 1979; Hall, 1985; Neumann et. al, 2012;).

Digital media

Digital media plays a prominent and ever increasing role in our everyday lives. Many children now begin formal schooling as skilled users of electronic books, smart phones, tablets and computers (Levy, 2009). Although these technologies are seen as helpful, many researchers are now curious as to how digital media could be changing the way young children learn.

Children decode, decipher, interpret, transmit and create information visually, verbally and aurally in networked and interlinked ways, long before they are able or required to deal with blocks of print on a static page (Tayler, Ure, Brown, Deans & Cronin, 2008). Keeping up with this changing skill set requires a rethinking of the concept of literacy, and of the ways we engage with the new technologies of information and communication (Anstey & Bull, 2006; Baker, 2010).

Techno-literacy refers to "literacy practices and events which are mediated by new technologies" (Marsh, 2004, p.52) and include, for example, electronic books ('e-storybooks') (Moody, 2010).[40] The use of techno-literacies is increasing (Levy, 2009), however the majority of emergent literacy research is still focused on print-based materials (Moody, 2010). Nevertheless, the research conducted thus far suggests that e-storybooks may have a positive impact on emergent literacy skills by way of increasing engagement and establishing the foundations for emergent literacy skills. For example, e-storybook features may assist children with word recognition skills by enhancing print via highlighting words and sentences as the computer reads them aloud. With some books, children are also offered opportunities to obtain word pronunciations, which can also improve emergent literacy (Moody, 2010).

Blanchard & Moore's (2009) research looks at how digital media (including mobile phones, television, video games, smart devices and computers) is affecting the development of emergent literacy skills. It examines attention and information processing; attitudes toward learning and social collaboration; and levels of digital literacy (Blanchard & Moore 2009). According to their report, digital media has begun to transform the language and cultural practices that enable early literacy development, making possible a new kind of personal and global interconnectedness. The authors conclude that developmental milestones are changing as today's children approach learning and literacy in new ways not thought possible in the past. However, further empirical research is needed to understand the impact of digital media on children's brain development and emergent literacy skill development.

4.5 Frequency

Evans et al. (2008) suggest that the frequency of shared reading was correlated with vocabulary scores, age of first being read to, and age of regularly being read to (Evans et al. 2000). These findings are consistent with research conducted by Whitehurst et al. (1998) who found that frequency of book reading at home influenced children's vocabulary development. Similarly, in a study of children 18 months and older High et al. (2000) found significantly higher receptive and expressive vocabulary scores for children who were read to more frequently than children who were not. Mendelsohn et al. (2001) and Sharif et al. (2002) reported a clear link between frequent shared reading and vocabulary development.

With a growing acknowledgment that children learn new word meanings by listening to stories (Snow & Griffin, 1998) it is important to consider the place of other language- and literacy-related skills that have been found to aid word recognition and later literacy success. Available research suggests that early literacy-promoting programs are most effective if begun before a child enters school, and administered frequently over a long period of time (Brooks-Gunn, 2003; Liddell et al., 2011).

Experimental research elucidating an ideal 'dosage' for intervention and the effective promotion of early literacy skills is lacking (Schmitt & Justice, 2012). In addition, intensity cannot be considered in isolation but is one of a number of factors on which interventions differ (Schmitt & Justice, 2012). Brooks-Gun (2003) lists a number of factors important for any early literacy interventions such as:

- location (e.g. at home vs. at a child care centre)
- timing (e.g. in pregnancy vs. between the ages of 0-2 years)
- intensity (e.g. weekly home visits vs. all day programs)
- curriculum (e.g. literacy skills, parental skills, or parent-child interactions)

Similarly, in their review of what makes an effective early childhood development program, Liddell et al (2011) state that the timing, how extensive, and the intensity of an intervention are critical factors in the success of an early literacy program (Brooks-Gunn, 2003; Liddell, Barnett, Diallo Roost, & McEachran, 2011). Specifically, Liddell et al (2011) state that a program is most effective for supporting the development of emergent literacy skills if it commences in the early years prior to school and then extends into the early school years. The researchers also note that that the programs need to be intensive in nature (i.e. weekly over a two-year period) to show positive impact on emergent literacy development (Liddell et

[40] E-storybooks have digital elements to help guide the reader, such as highlighting, speech, video, animations and sounds (Brown, Byrnes, Raban, & Watson, 2012; Moody, 2010).

al., 2011, p.11). These recommendations make sense in the context of developmental domains in early childhood (as discussed in Section 1 of this review).

4.6 Quality literacy environments

Becoming literate is not a natural process like speaking. By means of a complex neurobiological process that builds oral language skills combined with positive early experiences, relationships and environments, foundational literacy skills are developed before a child commences school. In these early years, a child's environment provides the initial experiences that stimulate these vital neural connections.

Home literacy environments

There is now general consensus that literacy learning begins from birth, with much learning taking place in the home (Sulzby, 1985); Kelly, Sacker, Del Bono, Francesconi, & Marmot, 2011; Nicholson, Lucas, Berthelsen, & Wake, 2012). As discussed in Section 2, significant correlations have been reported between the home literacy environment and preschool children's language abilities. Accordingly researchers are confidently stating that the home literacy environment does play an important role in language and literacy development (Evans, Shaw & Bell, 2000). This section will focus on the definition of the home literacy environment and the factors and activities that contribute to a quality home literacy environment.

Definitions of the home literacy environment (HLE) differ in the literature (Schmitt, Simpson, & Friend, 2011). Narrowly defined, the HLE can be described as those activities in the home specifically related to literacy (e.g. frequency of shared reading), while a broader definition encompasses literacy-focused activities in addition to parent-child interactions, demographic variables (e.g. family education, socio-economic status), child characteristics (e.g., temperament, interest), and the presence of early learning materials in the home (e.g. books) (Johnson et al., 2008; Rodriguez & Tamis-LeMonda, 2011; Rodriguez et al., 2009; Schmitt et al., 2011).

Sénéchal et al. (2002) reported that the number of books in the home, library visits and parents' own print exposure was related to children's vocabulary skills. The early home learning environment makes a difference for children's later academic and literacy success, particularly for children in disadvantaged circumstances. There are numerous pathways by which socioeconomic status might influence reading behaviours and availability of literacy material in the home.

The Longitudinal Study of Australian Children (LSAC) has shown that among three-year-old children from the lowest socio-economic background almost half (41-47%) are not read to regularly (The Australian Institute of Family Studies, 2012). In addition, the 2012 PIRLS report demonstrated that the number of books in the home and student achievement was correlated, with those students who had the most books in the home also attaining the highest reading achievement scores (Thomson et al., 2012). There are a number of programs designed to improve emergent literacy skills by increasing the frequency of shared reading (e.g. by providing free books and parental education), and by improving other aspects of the home learning environment (Brooks-Gunn, 2003).

The home is a child's first learning environment, and the parent a child's first teacher (Johnson, Martin, Brooks-Gunn, & Petrill, 2008). As language emerges during the first three years of life, aspects of the home literacy environment are particularly important during this early period (Rodriguez & Tamis-LeMonda, 2011). There has been much research investigating the specific contribution of home literacy environments to a child's early literacy skills (Bus et al., 1995; Roberts et al., 2005; Saracho & Spodek, 2010; Sénéchal & LeFevre, 2001, 2002). This research has shown that the home literacy environment is critical in the development of a child's emergent literacy skills (Johnson et al., 2008; Rodriguez & Tamis-LeMonda, 2011). For example, studies have found a relationship between the home literacy environment and: letter knowledge, phonological sensitivity, oral language and interest in reading (Burgess, Hecht, & Lonigan, 2002; Bus et al., 1995; Scarborough & Dobrich, 1994; Sénéchal & LeFevre, 2002; Weigel, Martin, & Bennett, 2006).

Rodriguez and Tamis-LeMonda (2011) conducted a longitudinal study investigating the effects of the home literacy environment on young children's vocabulary and emergent literacy skills. The study examined the home environments of

more than 1,850 children from households at or below the US federal poverty line and showed that factors such as levels of shared reading, exposure to frequent and varied adult speech, and access to children's books had an impact on school readiness skills (Rodriguez & Tamis-LeMonda, 2011). The findings showed that the degree to which parents read and talk to their infant; point and label objects in the environment; and provide engaging books and toys when their child is only 15 months old can have positive long-lasting effects on the child's language and subsequent literacy skills. This highlights the critical nature of the early pre-kindergarten years in developing a child's emergent literacy skills (Rodriguez & Tamis-LeMonda, 2011).

Early childhood education and care settings

Early childhood professionals play a critical role in influencing the positive development of very young children. Recent figures from the Department of Education, Employment and Workplace Relations (DEEWR) (2009) show that nearly 870,000 children are in some form of approved early childhood education and care. On average, those children are spending 17 hours each week in early childhood education and care. There are nearly 14,000 approved service providers offering formal early childhood education and care around Australia—a number that will continue to grow (Commonwealth of Australia, 2009). With so many children attending ECEC services it is important that these services are of good quality.

The quality of the child care setting and, perhaps more importantly, the relationships between children and early childhood professionals play crucial roles in language and literacy development. An environment where early childhood professionals are positive, supportive, and offer plentiful verbal stimulation is one where children are likely to show advanced cognitive and language development.

The Abecedarian Approach is a proven model of early learning and child care that promotes learning through literacy and language development (Campbell et al., 2012; Muennig et al., 2011). The Abecedarian Approach is a combination of teaching and learning enrichment strategies that facilitate positive child outcomes in areas such as cognitive, social-emotional, communication, and school readiness skills. This approach comprises four key elements:

- *learning games* that promote adult-child interaction
- *conversational reading* based on the idea that reading should be an interactive, two-way process between an adult and child; books should be appropriate; the 3S strategy of 'see, show, say'.
- *language priority* involves making language a focus throughout the day by responding to a child's attempts at language, prolonging conversations and using the 3N strategy of 'notice, nudge, narrate' to encourage talk and conversations with the child
- *enriched caregiving* that focuses on the pivotal role of care in the education of young children so all of the child's day is imbued with educational meaning (Sparling, 2010).

These elements were developed for and validated in a longitudinal research study known as the Abecedarian Project (F. A. Campbell et al., 2012; Muennig et al., 2011). This study showed that by using the Abecedarian Approach, early childhood professionals can enhance their ability to provide stimulating interactions on a daily basis with children that have been found to contribute to improving the later academic achievement of children (Sparling, 2010a).

First language learning

Children from Indigenous and culturally and linguistically diverse backgrounds are developing early literacy in languages other than English. Culture influences how a child approaches learning and how the child is socialised to becoming a reader and writer. It is essential to consider the diverse home backgrounds and lifestyles of children, including Indigenous children, children in rural and remote communities, and children living in low socio-economic circumstances.

Bilingual learning in early childhood is a complex topic. Researchers (Weigel et al., 2005) have come to a consensus about the importance of the home environment to promote young children's literacy development. However, there have been relatively few studies focusing on promoting home literacy for children from culturally and linguistically diverse backgrounds.

Lightbown and Spada (2006) have summarised research showing that: children can learn more than one language simultaneously as well as sequentially; children can differentiate contexts in which one or another language is more effective for communication; and there can be certain cognitive advantages to learning more than one language in childhood.

The Australian Numeracy and Literacy Foundation's (ANLF) experience of working in first languages with Indigenous communities is extensive. The ALNF embraces the concept of 'two-way' education in Indigenous communities and works from the basis that first language proficiency is a pathway to proficiency in Standard Australian English. ANLF's first language pre-literacy programs support the development of proficiency in first language that simultaneously acts as a springboard for developing proficiency in English [41].

In 2011, the Founder and Chairwoman of the Australian Literacy and Numeracy Foundation (ALNF), Mary-Ruth Mendel provided evidence at a public hearing in Canberra as part of the House of Representatives Standing Committee on Aboriginal and Torres Strait Islander Affairs inquiry into language learning in Indigenous communities. Mendel reported that for many Indigenous children, particularly those in remote communities, systematic exposure to first language pre-literacy programs stimulates the brain and enlivens the neurological connectors that then promote the transference of language skills to English literacy proficiency (Mendelsohn et. al, 2001).

ANLF places particular importance on the crucial role of families, elders and the wider community in creating a rich literacy environment. By providing families, elders and the wider community with appropriate skills and resources they can then confidently and effectively participate in tangibly improving the literacy environment of children in the preschool years. This results in the development of a literacy-rich environment. ANLF report that the incentive to develop a literacy-rich environment is greatly enhanced when there is an emphasis on developing first language skills (Mendelsohn et. al, 2001).

3.7 Summary

The effects of shared reading on early literacy have received significant research attention and interest. Research shows that that there is a strong relationship between children's early language skills and later reading ability. Levels of language and literacy skills that children have before school are strong predictors of achievement many years later.

A summary of results from research into shared reading indicates that it has a significant and positive impact on vocabulary development, listening comprehension and understanding of the conventions of print. With phonological awareness now widely regarded as the most salient predictor of reading success in normally developing children, research efforts have recognised and developed a number of innovative and important strategies and tools in aid of promoting phonological awareness.

Other activities such as singing, nursery rhymes, observing and talking about the world around them, oral storytelling, environmental print and use of digital media have also been found to support the development of emergent literacy skills. Literacy development during early childhood is as much about relationships as knowledge and understanding. Early literacy interactions combine social interaction and a growth in empathy with development in thinking and learning about the world. Understanding how early literacy activities help to develop reading and writing skills is highly important as it allows for more targeted intervention and programs designed to enhance literacy skills .

For this reason, early literacy programs are often aimed at enhancing the emergent literacy benefits of shared reading by supporting families and early childhood professionals to increase the frequency of and the style of reading. Programs supporting the selection of predictable or patterned books and alphabet books are similarly aimed at providing further opportunity for parents to engage their child in the activity of shared reading. Such programs are also aimed at supporting

[41] The ALNF has been at the forefront of teaching marginalised Australians to read and write since it was founded in 1999. The ALNF provides several first language programs, including the Early Language and Literacy – English and First Language in parallel program.

families to engage children in the very important process of word identification and raising their awareness of how letters map onto sounds.

5. Early literacy programs and Interventions

The act of becoming literate is considered to be one of the most important goals of early education in industrialised, technological societies (Adams, 1990; Finegan, Besnier, Blair & Collins, 1992). Given, recent results indicate that almost 50% of the Australian adult population still does not meet the minimum standards of literacy to meet the demands of everyday life and work in an emerging knowledge-based economy (ABS, 2006), the issue of literacy development is a major source of focus and concern.

There is a clear indication that the connections between a child's early language experience and later literacy development are very strong and fundamental for later literacy development (McCain & Mustard, 1999; Snow 2006; OECD 2009). The literature has also indicated that the signs of vulnerability in literacy development are already evident from school entry (ACARA, 2012). These Australian school results have influenced numerous national and international comparisons regarding school readiness and have led to an interest in the significant role of literacy development in the preschool and early years (0-5 years). The link between early language ability and later literacy is further highlighted by research that shows up to 90% of children with persistent language problems at age five years have poor literacy outcomes when tested 10 years later (Stothard, Snowling, Bishop, Chipchase & Kaplan, 1998).

As illustrated in the literature already presented, there is increasing recognition that the skills that form the foundation of literacy in school years and throughout adulthood should be developed from birth. The skills, knowledge and attitudes that are presumed to be developmental precursors to reading and writing, and the environments that support these, are known as emergent literacy (Clay, 1972). There is a large body of research that suggests the early years from birth to age five are critical for building the emergent literacy skills that help to build solid foundations for literacy learning (Neuman & Dickinson, 2002). It is when emergent literacy skills have been fostered before formal schooling, that a child is prepared to 'crack' the alphabetic code, and successfully learn how to read with the appropriate support (Lonigan, Allan, & Lerner 2011; Puranik & Lonigan 2011). All such evidence further implies that there is a critical period within the preschool and early years for acquiring literacy.

Research has also repeatedly found that children who experience early difficulties in learning to read are unlikely to catch up to their peers (Duncan et al., 2007; Chatterji, 2006; Roberts et al., 2005; Lonigan and Shanahan, 2010) and it is more likely that the gap in ability will widen as schooling progresses (Lonigan et al. 2011;Chatterji, 2006; Roberts et al., 2005; Lonigan and Shanahan, 2010). In addition to the research confirming the importance of emergent literacy and the significant role of literacy development in the preschool and early years, it is also evident that the impacts of problematic early literacy or emergent literacy acquisition are that reading interest predicts future reading and the amount of reading predicts future reading skills. In this case, a child with little or no early literacy exposure is more likely to experience the phenomenon that has been termed the *Mathew Effects*. *Mathew effects* insinuate that differences in environmental quality of literacy reinforces rich-get-richer and poor-get-poorer patterns of reading achievement (Stanovich, 1986). Therefore, the child is more likely to develop a disinterest in reading and books very early and for that disinterest to deepen with time (Reynolds, 1991; Wigfield and Guthrie, 1997). This research provides a sound rationale to argue that intervention needs to be implemented in the pre-school and early years to prevent a higher risk of reading failure in school and adulthood and to build a genuine love of books and reading from a young age. The critical factor in any intervention is to determine the content and components that will most effectively support children's development of early literacy skills and help children become better readers for life.

The Australian Federal Government's National Plan for School Improvement has recognised that in order to put Australia into the top five countries for literacy and numeracy by 2025, it is critical for there to be an increased focus on the early years of education. Through early education, all children across Australia can arrive at school with the emergent literacy foundations necessary to take advantage of the formal literacy development curriculum opportunities in Australian schools.

With increasing recognition of the importance of the first five years of life, in particular in relation to literacy development (Gable & Hunting, 2001), there are various early intervention programs across Australia that aim to promote early literacy development and subsequent literacy school readiness.

Based on research evidence suggesting the significant impact of the home environment on a child's literacy development, various early literacy programs and interventions have subsequently been developed to support these specific home environments (Stephen R. Burgess, 2011; Edwards, 2012; Johnson et al., 2008; Veldhuijzen van Zanten, Coates, Hervas-Malo, & McGrath, 2012; Weigel et al., 2006; Edwards, 2012). In addition to this, based on research evidence also suggesting the significant role of broader out of home environments, various early literacy programs have also been developed to support early literacy development within these professional environments (Thomson et al., 2012; Sammons et al, 2002).

This literature review looks as a number of early literacy interventions, programs and initiatives to examine trends in current early literacy programs and interventions, both within the home and in the out of home environment. All interventions, programs and initiatives reviewed in this section specifically target children prior to school entry. The interventions reviewed in this section will look firstly at curriculum-based and service-based early literacy interventions, and then at book dissemination programs and current Australian literacy-promoting campaigns.

5.1 Curriculum-based intervention programs

Below are three programs that have provided early literacy intervention curriculum to children and families. The discussion summarises the theoretical frameworks underpinning the curriculum of these intervention programs, as well as the impact of these intervention programs on the targeted children and families.

HIPPY and Project EASE (Early Access to Success in Education)

Both HIPPY and Project EASE are based on improving parents' capacities to serve as teachers for their children.

HIPPY

The Home Interaction Program for Parents and Youngsters (HIPPY) has been operating in Australia since 1998 (Dean & Leung, 2010). Originating in Israel in the 1960s, it is currently active in 10 countries: Israel, the United States, the Netherlands, New Zealand, Germany, South Africa, Mexico, Chile, Turkey and Canada (Westheimer, 2003). International evaluations have found the program benefits children by enhancing school readiness, parents' self-confidence and parents' involvement in their child's education (Westheimer 2003).

HIPPY is a "structured, home-based early childhood education program" with a firm focus on the family within the broader community context (Dean & Leung, 2010, p. 14). Using a combined home and centre-based early childhood enrichment program, HIPPY aims to support parents in their role as their child's first teacher (Liddell et al., 2011). The program targets communities that experience various forms of social disadvantage. Home tutors[42] who have been recruited from the local community work with parents as peers over two years during the critical period of the child's transition to full-time school. HIPPY aims to ensure children start school on an equal footing with their more advantaged peers, and to strengthen communities and the social inclusion of parents and children (Liddell et al., 2011).

The Australian Government recognised the potential of HIPPY, which had been introduced to Australia in 1998 in a single-site trial by the Brotherhood of St Laurence (BSL). In Australia, HIPPY was expanded by the Brotherhood of St Laurence to run in nine disadvantaged Melbourne communities, and has since been funded by the Federal Government and expanded nationally (Dean & Leung, 2010; Liddell, Barnett, Diallo Roost, & McEachran, 2011). In 2008 the Australian Government began a five-year national rollout of HIPPY that would see the program delivered in 50 communities across Australia by

42 Home Tutors are individuals who are currently or have previously been involved in the program as parents and implement HIPPY in the home environment Tutors are recruited from the local community and receive their training by qualified professionals

2012. The national program has since reached its target of 50 communities, with approximately 3,000 families engaged (Liddell et al., 2011).

HIPPY targets children from disadvantaged communities and aims to improve their school readiness. The program takes in preschool children and assists them over a two-year period, concluding with the end of their first year at school. HIPPY is focused on the home environment and has three general aims:

1. Foster a love of learning in children from families living in disadvantaged areas, promoting cognitive and social development and enhancing school readiness.
2. Increase parental confidence and skills as their child's first teacher.
3. Increase participation in kindergarten, school and community life in otherwise marginalised families.

In relation to early literacy intervention, HIPPY tutors visit participants' homes fortnightly, and work through structured activities and materials with the parents. This is to prepare parents to work through the material with their children for approximately 15 minutes on five to six days each week, incorporating the activities into the family's everyday routine (Liddell et al., 2011). This material includes:

- at age 4: eight books and 30 activity packs
- at age 5: five books and 15 activity packs.

Over the nine years since the Brotherhood of St Laurence began running HIPPY in Australia, there has been a body of knowledge and evidence collated that indicates the strong positive impacts of HIPPY on parents and children. This body of evidence is what that led to the Australian Government's decision to expand the program nationally. Part of this body of knowledge was the 12 month evaluation completed in Victorian and Tasmanian HIPPY communities (Liddell et al., 2009).

This evaluation was carried out through 2008 on six of the nine HIPPY sites operating in Australia at that time. The questions addressed by the evaluation were based on children's school readiness as well as parents' sense of wellbeing and social inclusion.

Baseline interviews were completed with 93 parents[43] and 84 children were directly assessed by researchers. A total of 34 tutors' responses were also collected. A second round of interviews with parents and children were completed as close as possible to the end of the HIPPY 2008 year. The evaluation found that the only variable found to have a positive statistical correlation with school readiness as measured by direct assessment of the child, was whether the parent had completed Year 12 as their highest level of school education (Liddell et al., 2009).

Overall, the evaluation results found that over the program year, children showed statistically significant improvement of their pre-academic skills. Despite their gain, children doing HIPPY still remained, on average, below national norms. According to Liddell et al (200) the gain in pre-academic skills is an important outcome and although the average pre-academic skills level remained lower than the national norm, it must be acknowledged that these children started the program with higher levels of disadvantage than their general Australian population counterparts, and it could not be expected that the gap between HIPPY children and those in the general population would be completely closed.

Despite HIPPY's aim to increase participation in kindergarten, school and community life, the evaluation results indicated that parents' wellbeing and social inclusion networks were largely unchanged over the HIPPY year. However, aside from remaining unchanged, it should be acknowledged that parents' wellbeing and social inclusion networks remained positive and did not decrease. According to Liddell et al (2009) this could be explained by the lack of sensitivity of these measures, especially those aiming to measure broad constructs like sense of community, and the fact that some of these constructs have also been shown by other research to remain stable over time. Of significant interest however, is that the evaluation did demonstrate that parents' participation in paid work and study increased during their first year in the program. Although it was acknowledged that these changes are difficult to attribute to HIPPY, it was still recognised that parents' responses

43 (48% of those enrolled in the program at these sites)

indicated that HIPPY had at least influenced the employment of some parents. Despite the relatively small sample size, the findings from the 2008 evaluation remained positive and demonstrated positive impact, both directly and indirectly, on children's pre-academic skills and parent's wellbeing and social inclusion.

Since this evaluation and the subsequent national rollout of HIPPY in 2008, there has been a much more rigorous and expanded evaluation of HIPPY (Liddell et al., 2011). The 2011 evaluation of the HIPPY program analysed data based on a two year longitudinal sample and used a quasi-experimental design (Liddell et al., 2011). A matched control group was also used, drawing from the Longitudinal Study of Australian Children (LSAC) (Australian Institute of Family Studies, 2012). Fourteen sites were selected from across each state, including La Perouse where HIPPY had been active for 10 years, an area that caters for a primarily Indigenous population in NSW (Liddell et al., 2011). The sample included 197 parent-child pairs, 22 home tutors, 14 site coordinators and 57 school teachers (Liddell et al., 2011).

HIPPY was explored for appropriateness prior to its national roll-out and subsequent research and was identified as 'appropriate' given its alignment with the Federal Government focus on early childhood and related policies and initiatives[44] and cost effectiveness when compared with other programs in Australia and overseas (Liddell et al., 2011).

The evaluation findings were organised according to four domains: effectiveness, efficiency, HIPPY with Indigenous Australians, and governance (Liddell et al., 2011). Of particular relevance to early literacy interventions are the findings related to the effectiveness of HIPPY on school readiness and HIPPY within an Indigenous environment and context.

In order to measure school readiness, trained research assistants interviewed parents at three different times over the two-year period using structured questionnaires[45] (Liddell et al., 2011). For the children, research assistants used the *Who Am I*? booklet[46] to assess cognitive skills and, at the last time point of the study, the Peabody Picture Vocabulary Test[47] (PPVT) was administered to assess vocabulary acquisition and the Academic Rating Scale (ARS)[48] for language and literacy (Liddell et al., 2011).

When compared to the Australian average at the beginning of the program, HIPPY children scored eight points lower than the national average on the *Who Am I?*. However, at the final time point this discrepancy was no longer evident and the HIPPY children scored on par with the Australian national average (Liddell et al., 2011).

Furthermore, despite the positive results in respect to children's early literacy and numeracy skills, it is also worth noting that there were fewer statistically significant evaluation results for children, as compared to parent outcomes and measurements, in particular in relation to broader child outcomes. According to Liddell et al (2011) this is not surprising, as it does take significant time for the benefits of HIPPY to show for children's educational and school readiness outcomes. It was recommended that later assessment of the child's school progress, following their involvement in the HIPPY program, could be considered and would shed greater light on the impact of HIPPY on the child (Liddell et al., 2011).

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44 These policies and initiatives included the COAG National Early Childhood Development Strategy – Investing in the Early Years, the National Quality Framework for Early Childhood Education and Care Services, the Social Inclusion Agenda, Closing the Gap.

45 The first was conducted "as close as possible" to the parents' involvement in the first week of the program, the second was completed as near as possible to the end of the first year (at age 4) and the final conducted near the end of the second year when children were age 5

46 The 'Who Am I' booklet is a developmental assessment used to test cognitive abilities underlying early literacy and numeracy skills. It is for children who are of preschool age and in the first two years of school (de Lemos & Doig, 2000). The 'Who Am I?' booklet takes approximately 20 minutes to complete (de Lemos & Doig, 2000).

47 The Peabody Picture Vocabulary Test is a pencil and paper assessment of vocabulary acquisition, taking approximately 15 minutes to complete. The PPTV can be administered to ages 2 years 6 months – 90 years (Dunn & Dunn, 2012).

48 The Academic Rating Scale – language and literacy has nine items and requires the teacher to rate each child on their language and literacy skills. (Liddell et al., 2011) An example of an item is how well a child understood and could interpret a story or text read to them. The ARS – mathematical thinking has eight items and requires the teacher to rate each child individually on their numeracy and mathematical thinking (Liddell et al., 2011). An example of the ARS – mathematical thinking is to rate how well a child could read, write and compare whole numbers (Liddell et al., 2011). Both scales were rated from 'not yet', 'beginning', 'intermediate' and 'proficient' (Liddell et al., 2011).

Acknowledging the evidence associating the relationship between parent-child relationships and home environments with children's literacy development, the related HIPPY evaluation impacts on the child, the parent, the home learning environment and the parents' and home tutors' sense of wellbeing and social inclusion were all of positive significance.

The evaluation found the following statistically significant impacts of HIPPY when HIPPY parents[49] were compared to their matched LSAC counterparts:

- HIPPY parents felt more confident, supported and respected in their role of raising their child. A significant increase in HIPPY parents' confidence in their role as their child's first teacher was observed between the start and end of the program.
- HIPPY parents were 80 per cent more likely to consider themselves a 'good' parent, and twice as likely to feel they were supported by family and friends in their role of raising their child, compared with non-HIPPY parents.
- HIPPY parents were 60 per cent more likely to say that when they needed information about local services they knew where to find it, and twice as likely to report that they were able to access services when they needed them, compared with non-HIPPY parents.
- HIPPY parents rated their sense of 'neighbourhood belonging' more highly than did their LSAC counterparts.

Interestingly, the HIPPY evaluation also found other positive and significant findings that were of specific relevance to early literacy development. For instance, the evaluation indicated that while no differences in language and vocabulary from the Peabody Picture Vocabulary Test[50] (PPVT) were found between the HIPPY and LSAC children, parents of the HIPPY children were two thirds (66%) less inclined to report concerns about the way their child made speech sounds and 85% less likely to be worried about their child's ability to understand what they said. Liddell et al (2011) concluded that being involved in HIPPY had a positive impact on parents' anxiety levels concerning their child's verbal communication skills.

Furthermore, after two years of the program, HIPPY families were participating in significantly more in-home and out-of-home activities than LSAC households (Liddell et al., 2011). These literacy-promoting activities included telling stories, crafting activities, playing music, going to the library and visiting playgrounds.

The biggest difference between the groups was found when parents were asked about their child's enjoyment of reading (Liddell et al., 2011). HIPPY parents were 3.5 times more likely to report that their child liked being read to for a longer period of time in a single sitting as compared to the LSAC group. As is the case for all of these results, this result only has an accompanying graph, without precise numbers. By the end of the program, HIPPY parents felt significantly more "confident in their role as their child's first teacher", than they did at the beginning of HIPPY (Liddell et al., 2011, p. 45).

In order to measure the program's effectiveness within Indigenous communities, the program explored the perceived benefits of the program in five sites with a high proportion of Indigenous parents and children. In all five sites, a large proportion of children were developmentally vulnerable according to the AEDI and in some communities less than half of parents engaged with their children's school or read to their children (AEDI 2011; Liddell et al., 2011). The HIPPY delivery model in these communities was modified for Indigenous families by embedding HIPPY within a broader range of social supports. Other modifications included centre-based delivery of the program being made with provision of transport instead of home visits, additional tutors and support staff being recruited, and extended family were involved to foster social inclusion and build trusting relationships. Additionally there was flexibility with the content of the program to accommodate varying levels of literacy and confidence. An important feature was the effort to recruit tutors who identified as Aboriginal or had strong relationships with Aboriginal communities.

[49] The HIPPY sample included all parents who had been enrolled for at least the first full year of the two-year program—both those who completed the program and those who withdrew during the second year.
50 The Peabody Picture Vocabulary Test is a pencil and paper assessment of vocabulary acquisition, taking approximately 15 minutes to complete. The PPTV can be administered to ages 2 years 6 months – 90 years (Dunn & Dunn, 2012).

As part of the evaluation with these Indigenous communities, some of the families who had been approached declined to participate and some who had dropped out of the program were interviewed. Some were already utilising other services and typically had existing parenting skills. According to Liddell et al., 2011, it was apparent that HIPPY did not meet these family's needs. In addition to this, some other parents had so many challenges in their lives, including mental health difficulties, that continuing to attend HIPPY became too difficult for them.

It was concluded that those parents who remained in the program fit better with the profile for which HIPPY is designed. For these families, the key themes to emerge in the parent evaluations were the valuing of social support, social connectedness and empowerment in their parenting skills. From the results, it seemed that parents aspired for their children to be prepared for school and were concerned that their children did not acquire basic academic and social skills that would assist them in school. Based on this, the group gatherings and learning to get on with other children were valued. The evaluation suggested that mothers had a sense that their children were making good developmental progress, and a sense of personal achievement (Liddell et al., 2011). In Alice Springs specifically, the positive impact of HIPPY was noted in some increased levels of; "communicating and bonding with their children" (e.g. I read and talk more to my child), the "amount of time spent with their children or engaging in educational activities with their children" (e.g. spending quality time for learning and reading), "ability to remain patient while interacting with their children" (e.g. I became more patient in reading to him; I got more understanding of the words).

Overall, based on the evaluation within the five Indigenous communities, some of the considerations noted by HIPPY for further or future implementation, particularly those likely to impact early literacy development were as follows:

- Materials for the four-year-old program need adapting to better accommodate the literacy competencies of many families[51].
- Need for extended timeframes and specific planning to strengthen partnerships to ensure Indigenous inclusion in program development and delivery.
- Enrolment at age 3.5 years in NT preschools impacts on potential HIPPY enrolments, so it is imperative that the program works closely with these services for co-referral.
- Second home tutor will enable increased flexibility by offering choice of tutor to respond to any particular language or cultural needs.
- Consider mixture of home visits and centre-based delivery to accommodate parents' needs and comfort.

Overall, the effectiveness evaluation found significant positive impacts of the HIPPY program that are consistent with the program aims for children and parents. Furthermore, the overall effect size or benefit of HIPPY is consistent with similarly targeted early childhood development interventions overseas (Liddell et al., 2011).

Project EASE

Project EASE arose from a conventional view of early literacy development, where language skills are identified as the domain in which children at risk of literacy failure most need support and enrichment. Therefore, print-related skills are included in this program, but given less time than language. Project EASE aimed to improve kindergarten children's language and literacy skills through a program focused on parent training (Jordan, Snow & Porche, 2000). In a recent evaluation, the program was administered to a total of 248 kindergarten students, composed of 177 kindergarten children and their families; a further 71 children composed the control group (Jordan, Snow & Porche, 2000). The project was administered in Minnesota in the United States, across four schools with a higher percentage of families in poverty (18-20%) compared to the district average of 15% (Jordan, Snow & Porche, 2000). The Project EASE intervention was designed to increase the frequency and quality of language interactions through book-centred activities and to give parents information about and opportunities for engagement in their children's literacy development.

51 In order to make the materials accessible and relevant to some parents, the staff had to 'break it down' into manageable chunks

Project EASE provided structured sessions with information and modelling of effective language and literacy interaction, and provided the opportunity for parents to enact these enriched interactions through parent-child activities (Jordan, Snow & Porche, 2000). The sessions were run within the kindergarten classes during the day and, as a night-time alternative, with both the parent and their child present with the parent educator and classroom teacher (Jordan, Snow & Porche, 2000). Parent training sessions were held in five one-month units, run by a trained parent educator. Each unit included parent education, modelling and practice. After each training session, structured parent-child activities were organised so that parents could practice the interactions they had been coached in with their child (Jordan, Snow & Porche, 2000). A guidebook was also provided to parents so that they could go over the information covered in each session (Jordan, Snow & Porche, 2000). Teachers from the participating schools were also involved, and they provided scripted activities each month that showed how parents could engage children in discussions about books they have read (Jordan, Snow & Porche, 2000). Books were specifically selected for use in the at-home activities, to help facilitate high quality parent-child interactions (Jordan, Snow & Porche, 2000). One of the monthly themed activities, 'words, words, words' was based on encouraging parents to engage their children in labelling, defining, describing and words in the environment and relating it to their children's attributes. These activities were aimed specially at building the capacity of parents to foster language development in children. Such practical activities were modelled and incorporated into each parent education session.

In order to evaluate the effectiveness of Project EASE, a child's language and emergent literacy skills were assessed pre-test and post-test[52] using the Peabody Picture Vocabulary Test-Revised (PPVT-R) and the Comprehensive Assessment Program (CAP) [53] (Jordan, Snow & Porche, 2000). The CAP tests were grouped into three domains: language, sound and print (Jordan, Snow & Porche, 2000). Language consisted of vocabulary, story comprehension and sequencing in story production, sound was made up of sound awareness and forming words, and print included letter recognition, concepts of print and environmental print (Jordan, Snow & Porche, 2000).

Results indicated that the Project EASE intervention participants had significantly higher scores on a number of CAP tests including vocabulary, story comprehension, story sequence, sound awareness and print concepts (Jordan, Snow & Porche, 2000). When analyses were performed using the composite measures, the Project EASE intervention had a significant effect on only language skills (Jordan, Snow & Porche, 2000). Results also indicated those children with lower language scores at pre-test had greater increases at post-test across both control and intervention groups, indicating change was more significant for those with poor or below average pre-test scores. However, despite this change across the intervention and control groups, these increases were still more pronounced for those children in the intervention group, and those who had better home literacy environments (Jordan, Snow & Porche, 2000). In addition, parents who attended the intervention sessions more often (vs. less often), completed more of the scripted at-home activities and reported higher levels of overall satisfaction (Jordan, Snow & Porche, 2000). Both attendance and scripted at-home activities were significantly, albeit weakly, correlated with child literacy outcomes at post-test (Jordan, Snow & Porche, 2000). The study demonstrated the potential for kindergarten schools to engage parents in a meaningful way in supporting their children's literacy development, as well as further supported the importance of sensitivity of children's oral language skills to the impacts of structured learning environments (Jordan, Snow & Porche, 2000).

Early Head Start (EHS)

Head Start is a federally funded US program targeted at both children and their families, which encompasses the Early Head Start (EHS) program. Early Head Start was developed in 1995 and has a holistic view of early literacy development, believing that improving family resources across the board, including parental finances, employment and health status, should generate improvement in child outcomes, including literacy outcomes. The parent-empowerment model is a strong feature in all Head Start programs, with enhanced attention to literacy preparation for children up to the age of 3 years (Barbara et al., 2006).

52 Pre-tests were given in September prior to the parent orientation sessions and before the intervention commenced and post-tests were given in May the following year after completion of all activities.

53 The PPVT-R provides a measure of verbal receptive vocabulary and the CAP measures vocabulary, story comprehension, sequencing in story production letter recognition, sound awareness print concepts, environmental print and forming words by invented spelling.

There are a number of options available for program delivery (e.g. from a full day to a full year) to meet the different levels of need for each family (ECLKC, 2013). A family can be involved in centre-based services, home-based services[54], family childcare services or a combination of all three. There are currently over 1000 EHS programs run across all states in the US, in addition to the District of Columbia, Puerto Rico and the US Virgin Islands. In 2012 over 167,000 children under three were involved in the program (ECLKC, 2013). It must be noted that EHS programs vary by program approach across these sites, based on the varying amount of home visiting hours offered and the extent to which centre-based care was offered.

As part of the provision of an early years version of the existing Head Start Program, an Early Head Start (EHS) Research and Evaluation Project began on launch of the new early years program. The randomised trial followed a total of 3,001 families and children with the first 17 EHS program sites (Vogel et al., 2010). These children were randomly assigned to either the EHS or control group (Vogel et al., 2010). These children have since been followed-up at ages 3, 5 and 10 years (Vogel et al., 2010), assessed at each time point on a number of child measures including assessment of language and cognition, and school readiness measures at the pre-kindergarten assessment (Vogel et al., 2010). Data collection included both 'time in program assessments'[55] as well as the 'child age-based assessments'[56]. Most of the EHS programs used a case management system to provide an array of services to families, including guidance about child care and access to child group care settings. Regular attention to teaching parents about ways to improve children's pre-academic skills was also prescribed as part of each home visits. In all 17 sites, virtually all children and families did receive home visits, although the number of visits was much smaller in centre-based programs than in home-based and mixed-approach EHS programs.

The EHS evaluation expected that children's language would be enhanced by the EHS program; however it was also expected that the overall impact of this would be smaller than those seen in previous evaluations of centre-based programs for infants and toddlers (such as the Abecedarian approach) (Vogel et al., 2010). The researcher concluded that, in general, evaluations of home visiting focused programs have found either small or no effects on young children's language and cognitive development and that given the moderate intensity of centre-based services in the EHS program sites, and the likelihood that home-based services might not affect language cognition, only small effects when averaged over time were expected from the EHS program (Vogel et al., 2010). Despite such assumptions, in terms of children's language and cognitive development, the results did in fact indicate that EHS enhanced children's cognitive skills at both ages 2 and 3, and vocabulary was positively affected at both ages as well. However, no differences between the intervention and control group were found on the early achievement test scores at age 5 and after the program was completed when children were aged 3, results indicated that EHS children still performed below the national standards on measures of cognitive and language development (Vogel et al., 2010). Affirming the researchers' initial expectations, the results also indicated that families that engaged in both centre and home-based care were impacted more strongly by the EHS intervention than the control group.

Overall, at the two year follow-up (age five), those children who transitioned into formal education (e.g., pre-kindergarten or Head Start) recorded the best outcomes overall (Vogel et al., 2010). In addition to this, African American families and those families that were enrolled in the program during pregnancy and had medium demographic risk factors were also more strongly impacted by the EHS intervention than the control group (Vogel et al., 2010).

5.2 Service-based intervention programs

Below are various early literacy intervention programs that are structured and implemented within existing early childhood and community-based service delivery models and structures. These early literacy programs have either originated from existing early childhood services or have implemented their intervention through existing service systems and organisations.

54 Home- based services involve weekly home visits that facilitate a parents' capacity to support their child's development
55 The time in program assessments included Parent Services Follow-Up Interviews (PSI) and Exit Interviews When Children Reached 3 Years of Age
56 The child age based assessments included Parent Interviews (PI) and Child and Family Assessments

Early childhood education and care services

Australian Literacy and Numeracy Foundation (ALNF)

Founded in 1999, the Australian Literacy and Numeracy Foundation (ALNF) works from the philosophy that "being able to read and write is a basic human right". The Foundation teaches marginalised Australians—including those in refugee and Indigenous communities—how to read and write and aims to develop the skills of teachers, carers, healthcare workers, community workers and volunteers to pass on good literacy practices to families and communities[57].

The ALNF Early Childhood Language and Literacy (ECL&L) Program provides literacy instruction to preschool teachers, early years teachers, special needs teachers, teachers' aides, parents and community members. It consists of a five-day course and ongoing assistance to ensure the inclusion of phonemic-awareness activities and early language skill builders into the curriculums of pre and primary schools. These pre-literacy games and activities provide children with the basics of English language development that are essential building blocks for learning to read, spell, write and comprehend English. The Early Childhood Language & Literacy program also works with communities in Indigenous first Languages where requested[58]. According to the ALNF, making connections between Indigenous first Language and English is vital for the development of personal and community health, welfare and education.

Funded by the Australian federal government, the ALNF ECL&L Program conducted a pilot project in 2009 to evaluate the effectiveness of the ECL&L course, the Mentor Tutor Support Program and Parent and Community Involvement Program components of the ECL&L program. The programs are aimed at ensuring that Indigenous children are ready, willing and inspired to learn in the school environment. The pilot study had two key objectives:

- Closing the literacy gap for Indigenous preschool, pre-preparatory and infant school children.
- Supporting all children, Indigenous and non-Indigenous, to allow them to learn pre-literacy and language.

Three pre-schools in the Kempsey (NSW) area nominated to participate in the pilot project. This consisted of:

- five day ECL&L course (the ECL&L five-day course is divided into two areas; 'Developmental learning subsets[59]' and 'Multisensory teaching styles'[60])
- two mentoring visits
- pre and post evaluation
- parent and community outreach and provision of specific literacy resources to children and parents.

The ALNF supported parents, teacher's aides and teachers by providing:

- understanding of pre-literacy and language concepts
- specially selected games and activities
- practice in multisensory teaching
- specially designed resources
- testing to track children's learning experiences to provide feedback to teachers to adjust their teaching programs
- integration of new concepts into existing programs and daily activities.

The Preschool and primary Inventory of Phonological Awareness[61] (PIPA) and the Preschool Language Scale Screener[62] (PLS – 4 screener) were administered to 141 children from the three participating schools. Teachers from the three

57 https://alnf.org/Pages/about/our-beliefs

58 ALNF provides three interrelated First Language programs that aim to firstly address instruction in First Language literacy and secondly assist in developing connections and comparisons to English language and literacy; 1) Coding Aboriginal Languages for Indigenous Literacy (CALIL); 2) Reading and Writing in First Language (First Language WRAP); 3) First Language (FL) Workshops

59 These subsets consist of: pre-phonics, pre-writing, pre-reading, phonemic awareness, receptive and expressive linguistic skills

60 These are a combination of stimulations; auditory perceptual, visual perceptual, tactile-kinaesthetic; memory and recall; self-talk for learning management, questioning technique, focused modelled, shared and independent learning scaffolds.

61 PIPA measures skills development of Australian children and reflects preschool children's skills development in comparison to other Australian children of the same age

62 PLS-4 is a norm-reference criterion test that measures language skill development and identifies children at risk for language disorder

participating preschools were trained to administer these tests and administered them at the commencement and completion of the pilot project.

Results from the pre-testing phase (October 2008) indicated that 94% of the children were entering school below the 50th percentile for phonological processing and 45% of the children were entering without a competitive level of language development. The results also indicated that not only were 94% of all children entering school with below average or well below average pre-literacy and language skills, but no student actually demonstrated phonological awareness processing and language skills at or above the 75th percentile. Furthermore, almost half (45%) of all children tested did not demonstrate adequate language development on the vocabulary and sentence variety subset and were not rated as 'school ready' (ALNF, 2009). The results clearly demonstrated the vulnerability of these children in school readiness and language and literacy difficulties.

Following the pilot program, a post test was conducted in April 2009, and found very positive post-test results. The results indicated that overall, children progressed along the development scale towards the average range or into the above average range. Results also indicated a 5% increase in the proportion of the children who passed the Language subset. According to ALNF the greatest improvement was seen in the three year old cohort where the number of children performing at or above the 50th percentile doubled.

Other improvements found for the participating Indigenous children included the fact that the teachers learnt what to teach, how to teach it, how to adjust individual and group learning levels and how to select and use task-specific resources. This regular and increased exposure to developmental concepts through games, activities and stimulating resources were contributing factors to children's increased development of foundational literacy skills. Children's increased literacy development and knowledge also helped stimulate curiosity and dialogues with teachers about children's literacy experience. Providing teachers and parents with the pre-literacy and language knowledge, skills and resources that underpin reading and writing lessons, contributed most to increased benefits to children's literacy skills and development. Providing parents with developmentally appropriate pre-literacy and language knowledge, activities and resources to work on with teachers allowed for a strong and beneficial connection between children's home literacy environment and centre-based learning (ALNF, 2009). Effective pedagogy provided to teachers, which combined speech pathology understandings and skills with best practice early childhood teaching and practices, allowed for a more qualified and skilled method of teaching, but also an instructive learning and play environment that guided but did not dominate children's thinking (ALNF, 2009). According to Siraj-Blatchford (2004), this method of 'sustained shared thinking' between adults and children allows for a more intellectual way to solve problems and extend appropriate narratives, such as those in early literacy development.

Sure Start

Sure Start is a UK government-led initiative aimed at giving every child the best possible start in life, through improvement of childcare, early education, health and family support, with an emphasis on outreach and community development. Sure Start centres offer a broad range of services focusing on family health, early years care and education and improved wellbeing programs to children aged 4 and under. Sure Start children's centres provide integrated services for young children and their families and are often described to families as a 'one stop shop'. With similarities to the Head Start program in the US, Sure Start was initially announced by the UK government in 1998, and was implemented primarily in England with slightly different versions implemented in Wales, Scotland and Northern Ireland.

Although early evaluations by the University of Durham, UK, did not find Sure Start Local Programmes (SSLPs) to have been particularly effective—reading ability in particular remained unchanged over time (Merrell & Tymms, 2011)—by 2008 the National Evaluation of Sure Start (NESS) conducted by Birbeck, University of London was able to demonstrate more positive results (Melhuish et al., 2008; Melhuis et al., 2010a).

The NESS was aimed at measuring whether the Sure Start model was effective in achieving its presumed impact on service, child, family and community outcomes[63]. Of particular relevance to this review is the NESS impact evaluation, which was designed to examine effects of Sure Start on children, families and communities and to identify the conditions under which Sure Start proves most effective in enhancing child, family and community functioning. The impact study was designed around an integrated cross-sectional and longitudinal framework, using 150 Sure Start communities and 50 control communities and a longitudinal framework[64]. The 8,000 children drawn from the 150 cross-sectioned studied Sure Start communities were compared with each other and similar children and families studied as part of the Millennium Birth Cohort Study, at 3, 5 and now 7 years of age. Cognitive and language development was measured at both 3 and 5 years of age.

By 2008, the NESS was able to conclude "For the time being, it remains plausible, even if by no means certain, that the differences in findings across the first and second phases of the NESS Impact Study reflect actual changes in the impact of SSLPs resulting from the increasing quality of service provision, greater attention to the hard-to-reach and the move to children's centres, as well as the greater exposure to the program of children and families in the latest phase of the impact evaluation (Melhuish et al., 2008; 2010). In 2010, robust research conducted by NESS demonstrated significant effects of SSLPs on eight of 21 outcomes: two positive outcomes for children (lower BMIs and better physical health), four positive outcomes for mothers and families (more stimulating and less chaotic home environments, less harsh discipline, and greater life satisfaction), and two negative outcomes (more depressive symptoms reported by mothers, and parents less likely to visit schools for planned meetings) (NESS, 2010).

However, specifically related to literacy development, the NESS has had mixed results. For instance, the results from the NESS Impact Study (NESS, 2010) indicated that by age 5 children from Sure Start Local Programmes (SSLPs) did not show any greater language development than children in comparable areas elsewhere. Interestingly, confirming previous research on the importance of quality literacy environments on children's language development, the results indicated that after consideration and control for pre-existing family and area background characteristics, the higher the preschool childcare quality[65], the higher the child's attainment in language development[66]. In addition to this, at age 3-4 years the NESS also found that the higher preschool childcare quality was, the higher the scores were for communication and language and total Foundation Stage Profile (FSP)[67] score. No other child outcome showed significant effects associated with overall preschool childcare quality (NESS, 2010). According to Melhuish et al (2010b), the effects of preschool childcare quality appeared to apply to all sections of the population studies, and did not vary in size across select policy-relevant population subgroups (e.g. lone parents, workless households).

The longitudinal outcomes by age 5 reaffirmed previous research that asserted that it is highly important to improve the aspects of education and care environments in order to improve children's language development (Melhuish et al., 1990; NICHD, 2005). The NESS concludes that if SSLPs are to produce greater long-term impacts on children's literacy development, there needs to be a focused effort to improve the quality of childcare across all settings (NESS, 2010). Melhuish (2004) indicates that one way to improve the quality of centres, and therefore the outcomes of children's language and literacy skills, is to improve staff training and the capacity of the early education and care workforce.

Abecedarian Project (ABC)

The Carolina Abecedarian Project (ABC) was run in the United States between 1972 and 1977 (Muennig et al., 2011). Two of the major strengths of the Abecedarian Project were its randomised controlled trial design and longitudinal follow-ups at age 12, 15, 21 and 30 years (Campbell et al., 2012; Frances A. Campbell et al., 2008; Muennig et al., 2011). A total of 111 infants were recruited from low-income families, with approximately half randomly assigned to receive the intensive

63 The NESS addressed this through five components 1) implementation evaluation 2) impact evaluation 2) local community context analysis 4) cost-benefit analysis and 5) support for local evaluation
64 randomly selected from Sure Start-to-be communities
65 This was measured by performance on standardized test and teacher rating through FSP scores
66 Measured by the BAS 'Naming Vocabulary' scale
67 Foundation Stage Profile - Under the UK Statutory framework for the early years foundation stage (published in 2007 by the Department for Children, Schools and Families) an Early Years Foundation Stage profile must be completed for every child during the academic year in which they reach their fifth birthday. The framework has legal force through an Order and Regulations made under the Childcare Act 2006.

educational childcare-based intervention and the remainder to the control group (Muennig et al., 2011)[68]. The project was designed to investigate whether the effects of intensive early educational intervention could overcome the possibility of developmental delay and academic failure due to social disadvantage (Campbell et al., 2012; Muennig et al., 2011).

The childcare environment was designed to be stimulating, with each day structured and involving a number of research-based activities (Ramey, 1974), as outlined in the early literacy promoting activities section. These include:

- learning games
- conversational reading
- language priority
- enriched caregiving.

During one of the three longitudinal studies intervention periods[69], cognitive development in the treatment group was shown to be significantly improved as compared to the control group (Campbell et al., 2012). Follow-up at each age group shows the significant effect of this intervention on the treatment participants' lives (F. A. Campbell et al., 2012). For instance, at age 21, the treatment group, as compared to controls, had significantly higher scores on measures of cognitive development, reading and mathematics; more years of education; an increased likelihood of attending a four-year higher education program; and a lower chance of being teen parents (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002).

These gains were continued into adulthood, as the 30-year follow up shows (Campbell et al., 2012). At age 30, those who had received the intervention, compared to controls, were 4.6 times more likely to have completed a college degree; they were more likely to have had consistent employment over the previous two-year period; and less likely to have depended on government benefits (F. A. Campbell et al., 2012). Although the sample size limited the power of analysis and restricted certain comparisons (e.g. gender), the RCT design is a key strength of the project, in addition to the very low drop-out rate across the 30 year longitudinal follow up. The follow up was able to include 90% of the original intervention participants (F. A. Campbell et al., 2012).

Overall, the Abecedarian Project evaluation demonstrates that quality and stimulating early education environments for at-risk children can produce positive and long-lasting effects on the course of development (Campbell et al., 2012; Muennig et al., 2011; Ramey & Ramey, 2004). The Abecedarian Project is the only early childhood education program that has demonstrated statistically significant cognitive benefits into young adulthood. According to Campbell et al (2012), the research evidence for the role of the Abecedarian Approach on children's development provides a powerful tool for early childhood education and care services and professionals to improve the competence and quality of life, particularly for children from low-resource environments (Campbell et al., 2012; Muennig et al., 2011).

What is interesting to note within this research, is that consistent with previous evaluations in the quality of ECEC environments, it is the staff members' skills and qualifications themselves that often contribute to the impact of ECEC interventions on children's development. The original Abecedarian program was implemented in a child development centre with teaching staff that comprised a lead teacher and at least one teaching assistant per child group. Staff-to-child ratios ranged from 1:3 for infants to 1:6 for children aged four to five. According to Ramey & Ramey (2004) all the positive results from the Abecedarian research suggest that early education staff members must possess strong language skills themselves to teach language to young children and to effectively communicate with children's family members and/or primary caregivers. On the basis of the evaluation findings, Ramey & Ramey (2004) recommend that lead teachers possess a bachelor's or master's degree in education and that teaching assistants possess at least a high school diploma. It is under these quality environments, in combination with the Abecedarian approach that benefits were gained regardless of disadvantage, family factors and other contextual issues (Sparling, 2010).

68 The intervention was based in a full-time childcare setting that participants attended from as early as six weeks of age, until they started kindergarten at age 5 (F. A. Campbell et al., 2012; Muennig et al., 2011).
69 The Abecedarian studies consisted of three longitudinal research projects conducted over 30 years with at-risk children

Health services

Below are various early literacy intervention programs that are structured and implemented within existing early childhood and community-based health care service delivery models and structures.

Let's Read Cluster Randomised Controlled Trial (RCT)

Let's Read is an early literacy initiative that promotes reading with children from birth to five years[70]. Let's Read is designed to be delivered at four points during a child's development—from 4 months, 12 months, 18 months and 3 ½ years. Early literacy resources and materials, including parent tip sheets, book suggestion lists, age appropriate books and key message collateral are delivered at each of the multi-points with a family on an ongoing basis.

A Let's Read cluster randomised controlled trial (RCT) was conducted to determine whether a Let's Read population-based primary care literacy promotion intervention during the first two years of life improved literacy by age four. Based in Melbourne, Australia, the Let's Read trial used a two-stage randomised sampling process[71] to select five Local Government Areas (LGAs) interesting in participating in the trial.

The Let's Read RCT was delivered by maternal and child health (MCH) nurses in the selected five LGAs at scheduled well-child visits at maternal and child health centres[72]. A clustered randomisation occurred after recruitment for all 65 participating MCH clusters in the study. MCH nurses were unaware of site assignment throughout the recruitment and enrolment period in each LGA[73].

Only intervention nurses were trained in intervention delivery post randomisation and again before the children turned 12 months of age. A two-hour group training session was delivered by the same research coordinator, which consisted of role play, feedback and modelling practice and nurses were provided with tip sheets and a desk mat that acted as a quick reference guide and study reminder. Control group nurses delivered their usual care, which comprised a standardised-language promotion printed tip sheet handed out at each key developmental visit.

The RCT was a low intensity program, with four visits in total. Therefore, consistent with the Let's Read multi-point framework, the intervention was delivered across four visits in total, one visit each between 4-8 weeks, at 12 months, at 18 months and at 3.5 years. At the usual well child visit, the nurse spent approximately five minutes delivering:

- promotional messages, modelled shared reading and discussion regarding the program
- a Let's Read take-home pack containing a free book from the Let's Read book suggestion list, guidance messages on the best ways to go about shared reading and an age-appropriate booklist[74], plus a DVD in the first session only.

Outcome measures for when children were 2 years of age were expressive vocabulary[75], communication skills[76] and home-based literacy environment. The analyses of the 2 year olds in the Let's Read intervention trial suggested no benefits to children's vocabulary production and communication or to parent literacy activities. Although the trial's final outcome was measured at 4 years and not 2 years, the absence of any effect size at 2 years of age could reflect program issues, such as insufficient intensity or dose of intervention (Goldfeld et al, 2011). Furthermore, although the sampling was based on disadvantage, the trial did not encounter extreme deprivation and the majority of the recruited families were Australian-born,

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70 Let's Read is an early years literacy program developed by the Royal Children's Hospital Centre for Community Child Health. Together, the Murdoch Children's Research Institute (MCRI) and The Smith Family (TSF) have worked with communities across Australia to introduce Let's Read and support children's early literacy

71 In the first stage, Melbourne's LGAs (31 in total) were ranked according to mean SE indexes of Areas Index of disadvantage, from the 2001 Australian census data. From those in the bottom areas of disadvantage a convenience sample of 5 LGAs were selected.

72 Throughout the state of Victoria, well child care (10 visits up to the age of five years) is delivered by publically funded maternal and child health nurses

73 Thirty-three MCH clusters were randomly assigned to control arm (265 families) and 32 to the intervention arm (365 families)

74 Guidance materials were evidence based and designed to promote share reading and included messages known to enhance literacy acquisition, such as promoting parental verbal responsiveness and encouraging appropriate book selection.

75 The vocabulary subscale of the Sure Start version of the MacArthur Bates Communicative Development Inventory was used to assess vocabulary production.

76 The communication and Symbolic Behavior scale Infant toddler checklist provided a standardized total score, as well as composite scores for the domains of social, speech and symbolic skills. These domains broadly relate to children's pre-linguistic, linguistic and cognitive abilities, each of which related to later expressive language development.

had homes where English was spoken as the main language and had completed high school. It was also noted that some families may have already had access to resources promoted by the trial. Although the final outcome measures were assessed at 4 years of age, the RCT indicated that there was again no comparable difference between the intervention and control groups for all outcome measures and on home literacy environments and practices (Goldfeld et al., 2012).

According to Law (2010) the results of the Let's Read trial highlight the tension between targeted and universal interventions in relation to demographic characteristics of the populations concerned. Law (2010) states that this type of early literacy intervention may be the type that works better in the most disadvantaged populations, as seen in research from Reach out and Read, and that universal interventions may not be the way forward for two reasons; 1) those in need of the messages may respond to their intervention more readily and 2) care needs to be taken to ensure that parents are not already using the intervention strategies. Law (2010) notes that simplistic notions of whether an intervention works or doesn't work are just informative. It is in the more elaborate analysis of why such similar interventions (such as Let's Read and Reach Out and Read) achieve such divergent results that are of primary importance (Law, 2010).

Building on the above argument, Mendelsohn (2012) states that the results of the RCT provided key lessons for the future delivery of early literacy intervention programs, particularly:

- *Intensity is a critical consideration in intervention design*—the RCT suggests that a higher and broader intensity delivery method may prove more beneficial for families building their child's literacy. There is an opportunity for the early years sector to provide higher quality and higher intensity emergent literacy activities in a way that engages families and opens up a conversation with parents about their role in promoting language and literacy development in the home. According to Mendelsohn (2012) home visitation programs that have been shown to have impact typically provide a dosage of approximately 10 contacts or more.

- *Population characteristics need to be considered*—previous intervention programs such as Reach Out and Read have been performed with low-income US families, where only a small percentage of families read with their children and an equally small percentage of children had basic literacy skills. According to Mendelsohn (2012) the Let's Read RCT study population was not of such vulnerability and risk, and in fact had a sample where three-quarters of the caregivers were high school graduates and only one-fifth met criteria for low income.

Consistent with Law (2010), given the identification of limitations to the Let's Read RCT and the impacts already achieved from similarly structured intervention programs (e.g. Reach out and Read), efforts and focus on future and related work in this area should consider the above points, as well as optimising study methods to best portray the potential positive impact of such interventions.

Reach Out and Read (ROR)

Reach Out and Read (ROR) was one of the first health care-based intervention programs specifically designed to promote early development in low-income families within a model that encouraged increased reading aloud. ROR is an emergent literacy program, based in a primary care setting and delivered by paediatricians (Zuckerman, 2009). Operating since 1989, it is now active in all 50 states in the US and internationally. In the US it is active in over 5,000 sites and provides advice and free books to approximately 3.9 million children every year (Diener, Hobson-Rohrer, & Byington, 2012; Reach Out and Read, 2012). Reach Out and Read is embedded within a larger focus on child development within paediatrics, and specifically aimed at improving emergent literacy skills in children and thus improving their school readiness (Diener et al., 2012).

In the US, a total of 10 paediatric well-child checks may be conducted between the ages of 6 months and 5 years (Zuckerman, 2009). At each visit, the paediatrician provides advice about shared book reading to the parent, so that the visit is "based less on telling and more on creating real-time learning experiences" (Zuckerman, 2009, p. 1660.).This includes demonstrating specific strategies like pointing, naming and asking questions. In addition to this advice, a free book is given

at each well-child visit. Volunteers in the waiting room may also be present to model shared reading, and more recently waiting rooms have been changed so that they are 'literacy promoting and encouraging' (Zuckerman, 2009). ROR is more than a book gifting program, as it includes advice and modelling provided by the paediatricians who are specifically trained in clinic-based, best practice strategies for this interaction (Zuckerman & Khandekar, 2010).

There have been a number of studies demonstrating the effectiveness of ROR (e.g. Golova, 1999; High et., 1998; High et al.,, 2000; Mendelsohn, 2001; Sharif, 2002; Weitzman, 2004). Research conducted by Needlman et al (2005) evaluated the effectiveness of ROR in a sample of 1,647 families[77]. A before and after intervention design was used, with one sample recruited from clinical sites who had not yet received the ROR program and a different sample recruited from the same site composed of families who had been involved in the program for one year (Needlman, 2005). Results demonstrated that significantly more parents in the ROR intervention group reported reading aloud to be a favourite activity; having shared reading at bedtime; reading aloud on, or on more than, three days each week; and owning more than 10 picture books, compared to the comparison group (Needlman et al., 2005).

Diener et al (2012) also investigated the impact of ROR on school readiness and performance among a sample of 40 kindergarten children from low-income Latino families. Data was collected to assess reported home literacy environments[78] and children's emergent literacy skills[79]. All children had commenced ROR at 6 months of age and had received an average of six books from the ROR program. Results indicated that the home literacy environment of these children was positive, despite their low-income status. For instance, one third (33%) of families owned between three and 10 children's books, 21% of families owned between 11 and 25 books and almost half (46%) owned more than 25 books {Diener, 2012}. In addition, in 80% of cases children were read to three or more times each week and shared book reading was taking place by the time the child was 1 year old for more than half (58%) of the sample. In terms of emergent literacy skills, the results indicated that in the summer prior to kindergarten entry, over half (56%) of the ROR children were able to write their name. The results of the formal emergent literacy test indicated that a higher proportion of children were at high-risk (average of 41%) for poor reading as compared to children with low risk (average of 19%). However, the results also indicated that at the end of kindergarten, teacher's assessment of early literacy demonstrated that of children's overall literacy skills, 77% of ROR children were rated average, above average or far above average relative to all other children at the same grade level.

To assess the impact of ROR on children's school readiness and performance, a child's emergent literacy skills were assessed using two subtests of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS)[80] (Diener et al., 2012). Thirty-seven percent of the ROR children were identified as 'high risk for poor reading' on the DIBELS initial sound fluency measure, 41% on the letter naming fluency measure and 45% on the Fluidez en la Segmentación de Fonemas (FSF) measure (administered in Spanish). At the end of kindergarten, teacher reports indicated that 77% of the ROR children were either average, above average or well above average in comparison to all other children in the same grade (Diener et al., 2012). In addition, the ROR intervention group was significantly associated with improved phonemic awareness on the initial sound fluency DIBELS test, and an increased comprehension of print when starting kindergarten (Diener et al., 2012).

Interestingly, in support of the review of the Let's Read RCT findings, research has indicated that the more intensive the dose of intervention for ROR the higher the levels of literacy development outcomes for children and families. For instance, Mendelsohn et al. (2000) found that high-risk urban families participating in Reach Out and Read read more frequently to their children. Children exposed to Reach Out and Read had higher receptive and expressive language scores. The overall findings suggested that an increased exposure to Reach Out and Read led to larger increases in language scores (receptive and expressive). This finding was further found in a more recent study conducted by Theriot et al., (2003) among children aged 33 months to 39 months attending a well-child clinic in Louisville, KY, expressive and receptive language scores were

77 730 participated in the intervention group and 917 participated in the comparison group
78 Mothers were interviewed to assess the home literacy environment and included frequency and enjoyment of adult and child book reading activities, and several open ended questions regarding children's favourite activities
79 Tests of the Dynamic Indicators of Basic Early Literacy skills (DIBELS) were administered with children before kindergarten entry and teacher assessments of child's emergent literacy skills were gathered using the Kindergarten Teacher Questionnaire
80 The DIBELS Initial Sounds Fluency (ISF) and Letter Naming Fluency (LNF) were administered before the child entered kindergarten

significantly associated with both the number of Reach Out and Read-enhanced well-child visits they had attended, and with the number of books purchased for them by their parents. This finding further supported a "dose effect" for the Reach Out and Read intervention, where the more Reach Out and Read was implemented, the higher the score. In fact, results found that given the same number of books purchased for each child, the outcome scores were still higher the greater the number of clinic visits implementing ROR.

Overall, ROR has an extensive and growing evidence base, with the body of published research supporting the efficacy of Reach Out and Read that is more extensive than for any other psychosocial intervention in general paediatrics. Since 1991, the Reach Out and Read model has been studied by academic investigators in a variety of settings, providing an extensive body of peer-reviewed research on the effects of the program, with over 15 published research studies suggesting it to be a proven early literacy intervention.

According to the ROR Research Summary Report, the following key findings have been found:

- Parents served by Reach Out and Read are up to four times more likely to read aloud to their children.
- Reach Out and Read reaches the child through effectively teaching the parent to start lifelong learning in the home.
- During the preschool years, children served by Reach Out and Read score three to six months ahead of their non-Reach Out and Read peers on vocabulary tests. These early foundational language skills help start children on a path of success when they enter school.

Library services

Below are various early literacy intervention programs that are structured and implemented within existing community-based library services and organisations.

Better Beginnings

Created by the State Library of Western Australia, Better Beginnings is a family literacy early intervention program focusing on children from birth to age three (Barratt-Pugh & Rohl, 2010). Better Beginnings aims to have an impact at both the community and individual level to “provide positive language and literacy influences for young children through supporting parents as their children’s first teachers” (Barratt-Pugh & Rohl, 2010, p. 7). Better Beginnings offers a toolkit containing books and resources to all families with children from birth to age three. The library is also a major focus of this intervention, with shared-reading sessions in local libraries designed to reinforce the messages delivered through the kits (Barratt-Pugh & Rohl, 2010).

Better Beginnings was launched in three metropolitan and three regional areas of identified need (Allen, 2010) after the success of a pilot program run in January 2004. Since the official launch in 2005, an estimated 100,000 reading packs have been given to families with newborn babies (Barratt-Pugh & Rohl, 2010). In 2010 alone, 27,000 of the 30,000 babies born in Western Australia received a Better Beginnings pack (Barratt-Pugh & Rohl, 2010). Additionally, 90% of local governments were engaged in the program, with the other 10% in the process of getting involved. This program has been successfully delivered in 100% of WA metropolitan areas and 75% of WA regional areas (Allen, 2010).

The program is structured around a number of key activities:

- *Reading pack dissemination*: families receive a Better Beginnings reading pack (‘literacy toolkit’) from the community child health nurse at the 6-8 week visit containing an age-appropriate book, a frieze printed with nursery rhymes, a brochure with ideas for how to improve shared reading experiences, suggested book lists, information about the local library resources, a library membership form and a DVD illustrating positive shared reading and singing between parents and children. These kits are primarily distributed by the Community Child Health Nurses at the 6-8 week visit, with the exception of some communities where local librarians deliver the kits (Barratt-Pugh & Rohl, 2010)
- *Baby Rhyme Time and Story Time sessions at the library*: these are free and designed to provide ideas for stories, rhymes and games for parents to share with their children. Certain libraries also held workshops on speech and

language development, child development, nutrition and parenting. These sessions provide the opportunity to reinforce the messages delivered through the reading pack (Allen, 2010).

- *Story Time Boxes:* these contain various resources and are available to families to borrow from community agencies. These are also used at the library reading sessions.
- *Family resource centre in libraries*: This consists of parental resources and "providing interactive early childhood learning spaces".
- *A Reading Gateway*: a website that contains information for parents, teachers and librarians about early literacy (e.g. developmental milestones and tips for reading to children).There are also links to fun and educational activities, book lists and links to other online resources for children to promote interest in reading.

Edith Cowan University, in partnership with the State Library of WA, conducted a longitudinal evaluation of the Better Beginnings program for the period between 2007 and 2010 (Barratt-Pugh & Rohl, 2010). The evaluation examined the effectiveness and sustainability of the program in four different communities through interviews and surveys from parents, community child health nurses, local librarians and the Better Beginnings coordinator.

Reading pack

Mothers who received the Better Beginning pack in 2007 completed a survey before and after they received the pack over a period of four years (Barratt-Pugh & Rohl, 2010). The survey covered items regarding literacy practices in the home, library membership, reading to their children, their attitude and confidence toward literacy activities and the contents of the Better Beginnings pack (Barratt-Pugh & Rohl, 2010). Community child health nurses were interviewed on topics such as program delivery, pack contents, the training received and their overall perceptions (Barratt-Pugh & Rohl, 2010). Interviews with the librarians were also conducted on topics such as pack contents, the story-time sessions and training received (Barratt-Pugh & Rohl, 2010). The Better Beginnings coordinator was interviewed on the development, sustainability and future of the program (Barratt-Pugh & Rohl, 2010). Overall, results indicated that Better Beginnings had a positive effect on parental early literacy practices, attitudes and beliefs (Allen, 2010).

Three hundred parents filled out the initial 2007 pre-program survey, with 177 (59%) continuing to the first post-program survey in 2008, 102 (34%) continuing to the second post-program survey and a final 84 (28%) parents going on to complete the last post-program survey in 2010 (Barratt-Pugh & Rohl, 2010). Parents' reports about the use of the reading pack were positive, with almost all mothers (98%) in 2008 having read the book included in the pack to their child, and with over half (58%) continuing this practice when surveyed in 2010. In addition to this, 42% of parents reported using the nursery rhyme chart in 2007 with over half (55%) having kept the chart in 2010. Despite positive findings, the discrepancy in sample size of parents in the first survey (n=177) and final survey (n = 84) should be considered in interpretation of the results.

Home literacy environment

The evaluation also found that the number of books in participants' homes also increased considerably from 2007 to 2010 (Barratt-Pugh & Rohl, 2010). In 2007, the average number of books in parents' homes was 18 (with 44% indicating they had no books in the home that they read to their child) and by 2010, there was an average of 125 books in the home and a minimum of 6 books by the time the children were 3 years old (Barratt-Pugh & Rohl, 2010).

Mothers' attitudes to early literacy

By 2010, almost all (88%) parents felt very confident sharing books with their child (Barratt-Pugh & Rohl, 2010). The biggest increase occurred between 2007 and 2008. In 2007 64% were very confident when they received the pack, and in 2008 81% of parents felt very confident (Barratt-Pugh & Rohl, 2010). In 2008, 62% of parents reported that the program had influenced their confidence levels, and by 2010, 88% of parents reported that the program had contributed to their confidence levels (Barratt-Pugh & Rohl, 2010). According to Barratt-Pugh and Rohl (2010) those parents who had already indicated high levels of confidence expressed that the program reinforced these feelings.

Parents also reported an increased perception of the importance of shared reading, with 98% of parents reporting an

increased perception of the importance of shared reading, compared with 76% of parents in 2007 (Barratt-Pugh & Rohl, 2010). Almost all parents (96%) in 2010 and just over half (54%) in 2008 credited the Better Beginnings program for their perception in the importance of shared reading.

Change in home literacy practices over the previous year

The evaluation monitored the changes in reading practices over the course of each year (Barratt-Pugh & Rohl, 2010). For instance, the frequency of shared reading on six or seven days each week between mother and child increased from 72% in 2008, to 80% in 2009 and 83% in 2010. In addition, the percentage of toddlers who asked for a book to be read to 'a great deal' increased from 15% in 2008 to 25% in 2010. In 2010, 90% of parents attributed these changes to the influence of the Better Beginnings program.

Parent skills in reading with child

Parents were asked in detail about their shared reading practices over the previous years (Barratt-Pugh & Rohl, 2010). By 2010, almost all parents engaged in the following practices

- 'choosing a comfortable place and the right time to share a book' (77% in 2008 vs. 91% in 2010)
- 'holding the book within the child's visual range and turning pages slowly' (87% in 2008 vs. 92% in 2010)
- 'letting their child hold and play with board books' (94% in 2008 vs. 95% in 2010)
- 'choosing books with bright pictures and a small amount of print' (82% in 2008 vs. 97% in 2010)
- 'reading stories with expression' (86% in 2008 vs. 94% in 2010)
- 'reading and re-reading favourite stories' (87% in 2008 vs. 97% in 2010).

Other early literacy activities that also increased during the 2009-2010 period, but on a smaller scale, included:

- parents selecting books with a lot of rhyme and repetition (53% in 2008 vs. 60% in 2010)
- parents pointing to pictures, naming and describing them (83% in 2008 vs. 79% in 2010), and asking questions about the pictures (35% in 2008 vs. 61% in 2010)
- parents encouraging their child to predict events in the story (16% in 2008 vs. 46% in 2010), and talking about the words in the story (NA in 2008 vs. 45% in 2010).

Children's literacy attitudes and behaviours

Children's behaviour towards reading also changed over the evaluation period (Barratt-Pugh & Rohl, 2010). By 2010, almost all (88%) children were 'very interested' in books, compared to the 74% being 'very interested' in 2008. Parents also reported on changes in specific early literacy behaviours such as their child talking about the pictures in the book (64% in 2008 vs. 96% in 2010), joining in the reading (61% in 2008 vs. 85% in 2010), asking questions about the story (24% in 2008 vs. 73% in 2010), pretending to read (74% in 2008 vs. 95% in 2010), and saying what will happen next (40% in 2008 vs. 79% in 2010) (Barratt-Pugh & Rohl, 2010).

Library membership and use

Between 2007 and 2010, library membership rates had increased for mothers and children (Barratt-Pugh & Rohl, 2010). In 2007, 47% of mothers and 6% of children were library members, and in 2010 this number increased to 84% for mothers and 65% for children (Barratt-Pugh & Rohl, 2010). In 2010, 82% of new library members indicated that Better Beginnings had contributed to their decision to join the library (Barratt-Pugh & Rohl, 2010).

Uptake of library activities was also measured 'Story Time' attendance increased from 17% in 2008 to 37% in 2010 and 'Baby Rhyme Time' attendance decreased from 10% in 2008 to 3% in 2010; attendance at workshops was 9% in 2008 and 1% in 2010 (Barratt-Pugh & Rohl, 2010). While the attendance numbers are relatively small, 'useful' or 'extremely useful' ratings of library-based activities increased from 55% in 2008 to 91% in 2010 (Barratt-Pugh & Rohl, 2010).

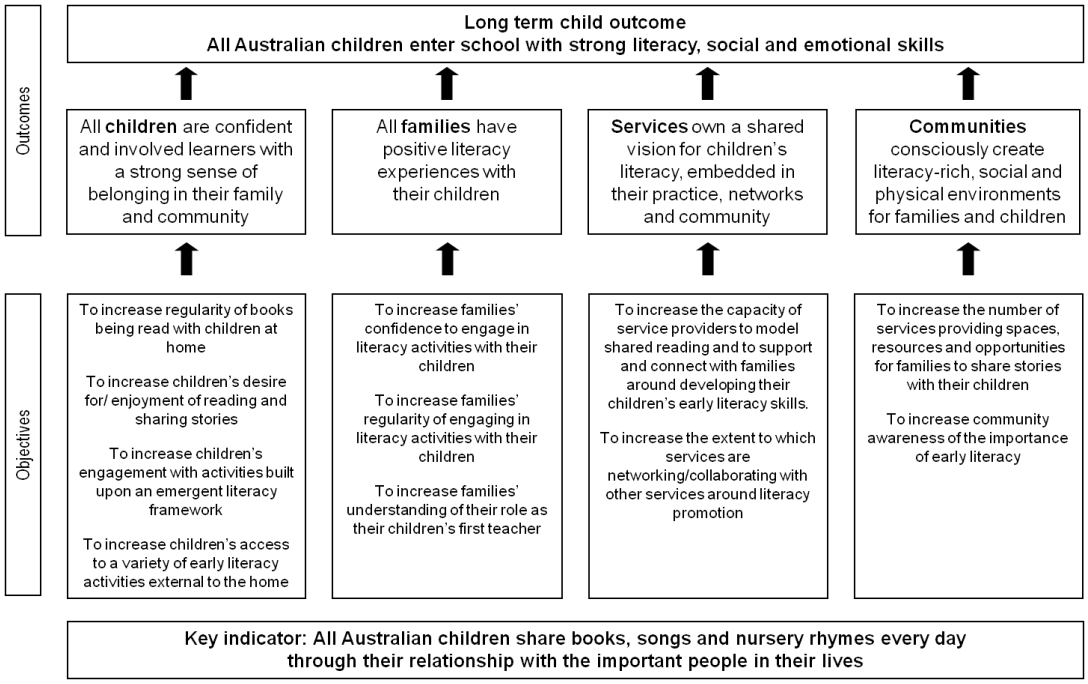
Overall, the key results from the Better Beginnings evaluation suggest that the greatest improvements reported where of mothers increasing reading activities with their children, which could have been a result of increases in mothers reporting an increased confidence in sharing books with their children. Furthermore, in support of the importance of early literacy environments, the evaluation results also demonstrated an increase in the number of books in the home, as well as an increase in early literacy activities within the library service environment.

Community services

Below is a summary of the Let's Read early literacy intervention program, which is structured and implemented within broader existing community-based services, organisations and initiatives.

Let's Read community program

Let's Read is an early literacy initiative that promotes reading with children from birth to five years, was developed by the Centre for Community Child Health at the Royal Children's Hospital, Melbourne. The Murdoch Childrens Research Institute (MCRI) and The Smith Family (TSF) have partnered to implement Let's Read with communities across Australia. Based on the research evidence, the vision for Let's Read is: *all Australian children share books, stories, songs and nursery rhymes every day from birth with the important people in their lives.* The diagram below provides the outcomes framework for Let's Read, which aims to contribute to the long-term outcome that all Australian children enter school with strong literacy, social and emotional skills:



The Let's Read community program provides families with information and resources that support a community understanding of early language and emergent literacy development. Let's Read has been delivered in over 100 disadvantaged communities across seven Australian states and territories with over 200,000 children participating in the program since its initial implementation in 2004. Let's Read has been delivered successfully to Aboriginal and Torres Strait Islander families in communities across Australia. In Queensland, the program has incorporated books developed through a partnership with Budburra books, an Indigenous-owned business in Cherbourg, Queensland.

Integral to the success of the Let's Read community program is the role of the trusted community-based professional in encouraging and providing ongoing support to families with children from birth to 5 years to help their children to develop the building blocks of literacy before children enter school. In the Let's Read community program, community-based

professionals (e.g. community health nurses, early learning centre staff and general practitioners) participate in Let's Read training that enables them to promote reading with children from birth with families and in their local services. The Let's Read community program utilises existing community networks and can be integrated with services and early literacy initiatives.

The Let's Read community program was developed based on the research on early literacy development that has shown that shared reading has a significant and positive impact on vocabulary development (receptive and expressive), listening comprehension and understanding the conventions of print. The key components of Let's Read are delivered in community programs through:

- providing messages and resources to support community approaches to early literacy development
- encouraging and supporting partnerships and initiatives for literacy activities and promotion
- providing professional training about the development and importance of early literacy and the activities that support it
- training for professionals to engage with families and caregivers regarding early literacy
- supporting the Let's Read universal multi-point intervention, which is provided by a trusted community professional at or around child ages 4 months, 12 months, 18 months and 3 ½ years
- providing messages, information and resources that support literacy-rich home environments
- making high quality children's books available at low cost for use in the home and community
- encouraging the provision of child-focused literacy-rich experiences in the community.

The 2011 Let's Read Annual Evaluation Summary presents a small portion of the qualitative data provided to Let's Read in annual reports for 2011 Let's Read community program activities (CCCH, 2012). The report explores how community program activities can assist communities to progress toward Let's Read outcomes and objectives. It provides evidence of Let's Read's engagement in community activities throughout Australia that can assist communities to make progress toward Let's Read outcomes and objectives.

The activities detailed in the summary report reflect community capacity to provide literacy-based activities that are creative and relevant to the community's particular needs while meeting the broader Let's Read outcomes and objectives. Collectively, the short case studies in the summary report demonstrate how the Let's Read community program responds to local needs and operates at a range of levels to deliver better language and literacy outcomes for children from birth to 5 years (CCCH, 2012).

5.3 Literacy-promoting initiatives

Below are three recent national campaign initiatives aimed at promoting the importance of literacy and the implementation of literacy-promoting activities and environments across Australia.

Let's Read National Early Literacy Campaign

In July 2012 the Department of Education, Employment and Workplace Relations (DEEWR) funded MCRI to implement a 12 month Let's Read National Early Literacy Campaign.[81] Building on existing evidence-based programs, the Let's Read campaign engaged families, professionals and communities to promote high quality early literacy environments for children from birth to 5 years.

The Let's Read campaign utilised a multi-tiered, ecological approach to engage families, professionals and communities in a range of messages relevant to children's early literacy development. The desired outcomes of each of the tiers of the Let's Read National Early Literacy Campaign are below:

- Families in Australia are aware of the importance of early literacy and how they can support their children's emergent literacy development.

[81] The Let's Read National Early Literacy Campaign funded by the Department of Education, Employment and Workplace Relations (DEEWR) in 2012-2013 will be referred to as the Let's Read campaign 2012-13 throughout this communications and stakeholder engagement strategy.

- Children participating in early childhood education and care experience high quality early literacy environments.
- Early childhood and health professionals share strategies with families for promoting emerging literacy with their children.
- Vulnerable communities across Australia are mobilised to support families in providing emergent literacy experiences for their children.
- Awareness is raised and used to stimulate co-investment by local communities, business and philanthropy to ensure sustainability of early literacy promotion in Australia.

As part of the Let's Read campaign, MCRI conducted market research in 2012 to explore families' understanding of the importance of emergent literacy development and explore how to encourage all families to read with their children every day from birth. The market research findings showed that although some families were reading with their children most days and enjoyed the activity, there were also families who were cynical of the benefits of reading from such an early age, and families that wanted to read more with their children, but faced barriers preventing them from doing so. Some families also did not see reading with their children as relevant, desirable or appropriate to their circumstances (CBSR, 2012).

The 2012 Let's Read market research suggested that to make reading every day with children from birth more appealing, this action needs to be seen as fun, achievable and something special between the families and their children. The market research suggested there is also a need to reduce the perceived costs and barriers to reading with children from birth (CBSR 2012). The market research findings informed the development of a range of resources and campaign promotional materials, including the Let's Read tagline and key messages.

The Let's Read campaign had numerous successes, some of these included: national media engagement on the importance of early literacy; mass dissemination of new market-tested Let's Read resources to over 10,000 families across Australia; successful completion of a Let's Read endorsed services pilot with Goodstart Early Learning; and the development of the new Let's Read eLearning course for ECEC professionals. The campaign successfully established various engagement and support platforms placing it in a unique position to expand its impact across Australia using the broad infrastructure developed through the campaign's achievements. Some of these engagement and support platforms include:

- ongoing support of national senior experts within the early literacy and early childhood sector
- a suite of evidence-based and market-tested early literacy resources and assets
- over nine years of relationships with Australian children's publishers
- an affiliation with the Raising Children Network (RCN) that provides expert information on parenting issues. The RCN is a trusted authority in the 'parenting information' marketplace and a respected producer of practical parenting content. The website receives approximately four million visitors annually.
- infrastructure and engagement platforms such as social media, web development, training and professional development packages, eLearning platforms and a Learning Management System.

The Let's Read campaign is in a significant position to further promote this national early literacy agenda. Working in partnership with the Australian government, Let's Read 2013-14 will continue to engage families, professionals and communities throughout Australia to promote reading with children from birth to five years. In addition, Let's Read 2013-14 aims to contribute to the evidence base about the most effective ways to increase activities in the home and community that are known to contribute to development of emergent literacy skills and subsequent language and literacy success.

An evaluation of pre and post shifts in attitudes, knowledge and behaviours of families reading with their children is of great importance to Let's Read. As a result, Let's Read established a partnership with Australia Post to leverage existing research data collection sources. The 2013 Australia Post Let's Read survey provided Let's Read with quantitative analysis of the number of families who read to their children from birth every day, as well as the attitudes and behaviours families have

towards reading to their children from birth to five years (Australia Post 2013).The survey was conducted online in March 2013 with 1,107 responses received across all states and territories. The results revealed that:

- 51% of families don't realise reading books and sharing stories with children from birth gives them the best start in life
- 34% of families do not understand the importance of reading and sharing stories with their children from birth
- only 47% of families are reading to their children from 0-4 months old
- children aged 0-5 years are spending eight hours a week watching television compared to 4.4 hours a week reading books and sharing stories (Australia Post 2013).

These findings indicate that while most families understand the importance of reading and sharing stories with children in the preschool years, many families throughout Australia need additional education and access to resources to encourage early literacy development with children from birth. Options for a conducting a formal campaign evaluation will be pursued by Let's Read in 2013-14.

Wall of Hands

The Australian Literacy & Numeracy Foundation (ALNF) is dedicated to raising language, literacy and numeracy standards in Australia and raises funds to develop, implement and sustain innovative projects for individuals, families and communities. According to NAPLAN data, only one in five children living in remote Indigenous communities are able to read and write at the minimum standard (NAPLAN, 2012). The Wall of Hands Indigenous Literacy campaign raises funds for the ALNF to deliver literacy and numeracy programs in remote Indigenous communities in Australia.

Now in its fourth year, this campaign was created as a way for people and organisations to help close the Indigenous literacy gap by raising money and awareness through their friends, schoolmates and colleagues. There is currently no evaluation data available for the Wall of Hands campaign.

2012 National Year of Reading

In response to the 2006 ABS data that showed 46% of adults struggled with reading and writing, the National Year of Reading (NYR) was adopted at the Australian Library and Information Association (ALIA) Public Libraries Summit, held in July 2009, in Canberra (Smith & Anderson, 2013). In 2012, Australian libraries and library associations came together behind the 2012 NYR campaign. The purpose of the NYR campaign was to help build a nation of readers. The campaign's three goals were:

- for all Australians to understand the benefits of reading as a life skill and catalyst for wellbeing
- to promote a reading culture in every home
- to establish an aspirational goal of sharing a book with your child every day.

In order to achieve this, NYR sought to create a unified national framework to link together all existing initiatives around books, reading and literacy, which allowed for flexibility at state/territory and local level.

An evaluation of how the NYR campaign helped to build a strong reading culture across Australia was conducted by The Centre for Research in Early Childhood Education, Edith Cowan University Australia (Barratt-Pugh, Smith & Anderson, 2013). The evaluation report utilised case studies to describe the nature and outcomes of the NYR in the identified evaluation sites (WA, ACT and QLD), including a consideration of what participating organisations delivered beyond what would normally be expected of them. The findings lead to a series of conclusions about how these successes can be sustained beyond 2012 (Barrett-Pugh, Smith & Anderson, 2013).

The evaluation findings showed that the NYR campaign made a difference through:

- state/territory library-led partnerships that enhanced the capabilities and capacity of agencies to build a stronger, more unified national literacy network

- the delivery of more than 4,000 programs and events to over 200,000 people in diverse communities through multiple media platforms facilitated through libraries with the support of over $5.6 million in in-kind support and $26 million-worth of media coverage
- raising the status and visibility of reading and literacy nationwide through the central and coordinating role of libraries, the use of ambassadors and establishing a brand that provided a central focus for partnership agencies and unified their work (Barrett-Pugh, Smith & Anderson 2013).

In addition, the evaluation report showed that the NYR generated a range of enduring legacies including: a national infrastructure of agencies led by state/territory libraries, a well-recognised national brand and a national family and community reading agenda with cross-agency support to extend this beyond 2012 (Barrett-Pugh, Smith & Anderson 2013).

5.4 Book distribution programs

Unlike the curriculum-based and service-based interventions, which are structurally delivered often over a number of years to families and children, 'book distribution' interventions focus on the provision of books in homes and other early literacy-appropriate environments. For obvious reasons, book dissemination programs still remain appealing as a literacy resource and asset-promoting activity. The logistics of such pure book dissemination programs are much more simplistic than curriculum-based or service-based intervention programs, as they have limited intellectual property or program fidelity concerns and provide a tangible resource within existing community-based organisations, such as community health centres and libraries. Furthermore, for book dissemination programs targeting the home literacy environment, the rationale is clear and supported by evidence emphasising the importance of the early home literacy environment (Snow & Powell, 2004; Edwards, 2012) and the significant impacts of the number of books in the home on children's literacy development (Thomson et al., 2012). Before 2013, in Australia only Local Government Area (LGA) book dissemination initiatives were present and a state-wide or national book distribution intervention were not in operation. In contrast, the US and the UK both continue to boast national book distribution interventions. Based on the development and evolution of research into these two book distribution programs, United Way Australia are now implementing the first national book distribution program in Australia through the US-established Imagination Library book distribution program.

Of particular significance to Australian Indigenous literacy intervention, are the book dissemination efforts of the Australian Literacy and Numeracy Foundation (ALNF). The ALNF implements two book distribution programs; Share-A-Book (SAB) and the Literacy Pack Program. The SAB program provides new and quality pre-loved books to Indigenous, refugee and marginalised communities in need of resources. Books are often donated by schools, businesses, publishing houses, booksellers and individuals. These books are then packed and distributed to targeted communities across Australia, such as Palm Island, Groote Eylandt and Wagga Wagga. Once books are received by the community, an SAB library is established and community members are encouraged to borrow and take books home to read at their leisure. The program builds on research that demonstrates that books in the home are a facilitative precursor for language development, reading and success in school (Arnold et al., 2007). Although a formal impact evaluation of this initiative is not yet available, to date, this initiative has grown from a single delivery of books to the NT, to ALNF acquiring warehouse space to store and sort tens of thousands of books for distribution across Australia (ALNF, 2013). In 2012, close to 10,000 books were distributed to various communities across Australia, with 60 boxes of books shipped to 12 sites across Australia in October alone. The books have catered to a variety of different age groups, ranging from elderly Indigenous women to preschoolers, to refugee youth and families.

The ALNF Literacy Pack Program provides literacy supplies to Indigenous and marginalised communities, to support home/school learning environments. This program builds on research evaluation which indicates that the provision of literacy-support materials for parents and free books in homes positively impacted reading practices with children (Barratt-Pugh & Rohl, 2010). The provision of the ALNF Literacy Packs is part of this approach, as the items therein facilitate oral language, literacy and cognitive stimulation for children and families. To date, Literacy Packs have been well received in targeted communities and have fostered high levels of student, parental and community engagement in the literacy learning

process (ALNF, 2013). In 2012, ALNF sent 220 Literacy Packs to two sites on Palm Island and an additional 65 Literacy Packs were sent to locations in the Northern Territory.

Below is a summary of the research evidence supporting the larger scale international book distribution programs; the US Imagination Library book distribution program, and the existing and well-established UK Bookstart book distribution program.

Imagination Library

Dolly Parton's Imagination Library was launched in 1996 in East Tennessee, USA. The Imagination Library was developed with the vision to foster a love of reading among preschool children and their families by providing them with the gift of a specially selected book each month. By mailing high-quality, age-appropriate books directly to their homes, Imagination Library aimed to ensure that children were excited about books and to feel the magic that books can create. Moreover, Imagination Library was intended to ensure that every child would have books, regardless of their family's income or background.

The Imagination Library became so popular that in 2000, Dolly Parton announced that the program would become available for replication to any community that was willing to partner with Imagination Library to support it locally. Since the initial program launch in the United States, Dolly Parton's Imagination Library has gone from just a few dozen books to nearly 40,000,000 books mailed to children in the United States, into Canada and across the United Kingdom. Currently over 1600 local communities provide the Imagination Library to almost 700,000 children each and every month. Most significant to the Australian context is the recent partnership developed between Imagination Library and United Way Australia. As part of United Way's ReadLearnSucceed initiative, United Way Australia have committed to bringing Dolly Parton's Imagination Library to children in the Australian community. United Way Australia commenced the project in May 2013 and have so far distributed 2,500 books and have 770 children and families signed up to the program.

Recent reports have shown Dolly Parton's Imagination Library drastically improves early childhood literacy for children enrolled in the program. Further studies have shown improved scores during early literacy testing. For instance, in 2001 an annual evaluation was conducted in four school districts in Greater Battle Creek, US. From May 2008, each month a free book was mailed directly to children enrolled in the program and children continued to receive monthly books until their fifth birthday. The goals of the program that was being evaluated were to:

- increase the number of books in the homes of children in the Greater Battle Creek area
- increase literacy activities in the homes of participating children
- increase parent-child interaction in the homes of participating children
- increase child interest in reading in the homes of participating children
- increase parent awareness of children's reading level in the homes of participating children.

The evaluation used parent/family surveys to measure changes in family interaction, amount of time spent reading together and individually, children's interest in reading and excitement at receiving books. Interview with project staff members were also conducted, as well as analysis and presentation of secondary data that was provided by Imagination Library and Literacy researchers.

The findings indicated, as expected, a clear and steady increase in the number of books in the homes of participating children, with almost 1,700 children having received over 27,000 books as a result of Imagination Library. Of more significance, was that the data demonstrated a 54% increase in family-owned books in the home, with Imagination Library books only constituting 16% of family book ownership. These results indicate that as a consequence of the implementation of Imagination Library, families were more likely to independently source books for their home (Lelle, 2011).

Building on the above results, the evaluation also indicates further success in positively changing parent's early literacy behaviours. For instance, the results also indicated that almost 80% of parents reported that Imagination Library had encouraged them to spend more time interacting with their children and subsequently, the percentage of parents who did

not read with their children dropped from nearly 12% to 1% while participating in Imagination Library (Lelle, 2011). Acknowledging the importance of the broader home literacy environment influences, the evaluation also reported an increase in family interaction among extended families where grandparents play an active role in their grandchildren's lives. Furthermore, the evaluation also demonstrated that the Imagination Library books benefited other siblings in the family who were directly participating in the Imagination Library program (Lelle, 2011).

The impact on children's literacy behaviours also showed change, with the evaluation findings demonstrating that the percentage of children who did not read by themselves dropped from almost 90% to 75% during their participation in Imagination Library. Interestingly, the percentage of children reading to themselves 1-2 hours per week tripled, with almost 99% of children in the program reading their Imagination Library books for at least one hour per week (Lelle, 2011). Furthermore, the evaluation also found that 71% of parents reported that Imagination Library increased their children's interest in reading by "Quite a bit" or more, with a further 76% of parents reporting improvements in vocabulary. Although fewer reported improvements in actual reading ability (42%) this was deemed as expected by the evaluators given that the average range of participants were less than two years of age and almost half (44.9%) of parents indicated they "didn't know" if their child's reading ability improved (Lelle, 2011).

A similar evaluation project was completed in May 2011 with 13,146 Alaskan children enrolled in Dolly Parton's Imagination Library and results were similarly positive and suggest that Imagination Library is making a meaningful difference in the lives of participating families (Seitz & Capuozzo, 2011). In order to gauge pre and post affect sizes in behaviour change, this evaluation project conducted Survey 1 (administered with families at time of enrolment) and Survey 2 (administrated with families after the family had been in Imagination Library for one full year). Surveys 1 and 2 were assigned simultaneously with two different groups, where families fit the criteria. Survey 1 was administered across six communities and to a total of 2,435 participants. The data gathered from this group included the following areas:

- number of books in the home
- child's enthusiasm towards books and reading
- frequency of parent reading to child in a week
- perceived parental importance of reading and books.

The results of Survey 1 indicated that on enrolment in Imagination Library, the results were already positive. The proportion of families with 20 or more books in the home versus the proportion of families with 1-10 books in the home were almost identical (36.6% vs. 36.3% respectively) and over half of the sample stated that their child was "very enthusiastic" about books and reading (51.8%). Furthermore, 89.4% of families also indicated that they thought it was "very important" to read to their children.

Survey 2, which was conducted with families that had been enrolled into Imagination Library for one full year, demonstrated a higher prevalence of positive literacy activities and behaviours. Although the sample size was substantially lower for Survey 2 (n=348) in response to how many times a week families read to their child, 73% of respondents indicated every day of the week on average across the three participating communities. This was further supported by the fact that on average 96% of families indicated that they thought reading to their children was "very important". In comparing results between Survey 1 and Survey 2 families, the results did indicate some points of comparison between parents newly enrolled in the Imagination Library program and those that had been enrolled for one full year. For instance, in relation to number of books in the home, results indicated that 92.1% of the Survey 2 families had 20 or more books in the home, as opposed to 59% of Survey 1 families. However families in Survey 2 had been enrolled in the program for a year and had obviously had more time to accumulate books in the home. Interestingly, although the evaluation suggests greater positive impact on literacy behaviours in Survey 2, the differences are not substantial for certain domains. For instance, although 76% of families in Survey 2 were 'very enthusiastic' towards reading with their children, 62% of families in Survey 2 expressed the same level of enthusiasm. In fact, more families in Survey 1 were 'enthusiastic' (22.4%) as opposed to Survey 2 families (18.2%). Overall, the general improvement in literacy activities and behaviours was positive for families who had been

enrolled in Imagination Library for one year. The most significant impact was in the area of families who did not read with their child, with 2.4% of families in Survey 1 not reading with their children and none in Survey 2 not reading to their child.

Although there are notes for consideration in improving the longitudinal and effect measures of the above evaluation projects, other evaluation projects similarly measuring the impact of Imagination Library have found similar positive changes in the number of literacy resources in the home and the prevalence of parent and child literacy behaviours and activities (e.g. Picard, 2010). Recent evaluation of the impact of Imagination Library for rural and remote children in aboriginal communities across British Columbia has also found positive outcomes with parent satisfaction with the program; parents increased reading with their children; children's enthusiasm about books, and children spending more time looking at or playing with books independently (Ministry of Aboriginal Relations and Reconciliation, 2010). This evaluation has supported that Imagination Library can also be culturally relevant, appropriate and respectful and can achieve mutual benefits as with other communities (Ministry of Aboriginal Relations and Reconciliation, 2010).

Bookstart

Bookstart is a national book gifting program that has been operating in the UK since a pilot in 1992 (Bookstart, 2009). It was the first national book gifting intervention in the world, and now operates in over 24 countries. Bookstart now reaches up to 95% of all children in the UK, representing approximately 1.5 million babies, toddlers and preschoolers across England, Wales and Northern Ireland (Bookstart, 2013). Bookstart has separate packs for infants (Bookstart baby pack), toddlers (Bookstart+ toddler pack) and preschoolers (my Bookstart Treasure Chest) (Bookstart, 2013).

Health visitors distribute age-appropriate packs[82] to each child, either at home for babies or in health clinics or early childhood services for toddlers and preschool-age children (Bookstart, 2009). When distributing the packs, health visitors go through what the packs contain and the benefits of reading to young children. One of the distinguishing features of Bookstart as a book gifting program is the fact that the packs are personally delivered to the parent. Personal delivery gives an opportunity for the professional gifters to talk through the contents of the pack and convey some of the pleasure of sharing books with a young child. Delivering the message is a key aspect of the Bookstart program and is supported by training and guidance provided to the schemes. Packs are also available for children who are deaf[83], blind[84] or partially sighted and for children where English is a second language[85] (Bookstart, 2013).

The Bookstart message comes in three parts:

- *Information*—how to share books with your baby and the benefits. Bookstart helps to build the foundations of lifelong learning and a lifelong love of books.
- *Invitation*—for parents to recognise themselves a baby's first, most important and most enduring teacher. Regular book sharing increases bonding, assists with school readiness and promotes the concept of parent partnership.
- *Celebration*—Bookstart is about confidence-building, empowerment and fun! Bookstart celebrates what parents already do and encourages them to share books with enthusiasm, making it a regular part of their family routine.

Moore and Wade have evaluated Bookstart in a couple of studies spanning from 1992 to 2000 (Moore & Wade, 1998; 2000, 2003). Findings from both Moore & Wade studies have been positive, with evidence from a Bookstart Pilot Program in Birmingham, UK in 1992 affirming that the distribution of books to families of 6-9 month old babies, via health clinics and health visits, positively impacted children at follow up analyses at 2-3 years of age and then at 5 years of age (Wade &

82 The baby pack contains two board books, tips for shared reading, book recommendations, a £1 book voucher, a rhyme poster and a purple book bag. The toddler's pack contains two books, a My First Marks drawing pad, a Numbers are Fun frieze, pack of crayons, a books guide, tips for shared reading and a colourful book bag. The pre-schoolers Treasure Chest contains two picture books, a My First Marks drawing pad, coloured pencils, tips on book sharing and other activities, and a red and blue book bag {Bookstart, 2013}.
83 These packs contain advice on book sharing with deaf children, a book list and lists of organisations and resources, and a placemat with rhymes and pictures of babies singing
84 The Booktouch packs for blind and partially sighted children are available in addition to the standard packs for 0-2 and 2-4 year olds. They contain two touch and feel books, advice about shared reading with blind and partially sighted children, a book list, a list of useful services, and a Bookstart Rhyme time CD and booklet
85 The dual-language books are available in 29 languages and offer a variety of titles

Moore, 1998). The final stage of Bookstart longitiudinal studies took a random sample of 43 pupils who had been given Bookstart packs at the age of nine months in 1992, and matched with a comparison group. Performances of both groups were measured by comparing children's Key Stage 1 SATS[86]. On both teacher assessment measures and test results the Bookstart group were ahead of the comparison group to a significant degree, reinforcing previous studies that have also indicated that early intervention provides children a head start in school that can be sustained as they progress through their primary education (Wade & Moore, 2000). This was further supported by results indicating that the Bookstart group that started school with an advantage according to baseline scores, had maintained this advantage throughout their primary education to the end of Key Stage 1 (Wade & Moore, 2000). A follow-up at age seven also indicated that Bookstart children still had higher reading, reading comprehension, writing, spelling and mathematics scores than their comparison group (Wade & Moore, 2000).

Building on the above research findings, the Bookstart National Impact Evaluation was conducted in 2009 to evaluate the more recent impact of Bookstart on children and families (Bookstart, 2009). The 2009 evaluation interviewed 694 parents within a month of getting the Bookstart book pack as part of Phase 1 of the evaluation. Three months later, 440 of the same parents participated in a second interview as part of Phase 2 of the evaluation (Bookstart, 2009). Findings from the 2009 evaluation were mixed. When looking at the parent sample as a whole, many of the reported behaviours remained more or less unchanged. Although, the reading frequency did register some change it was not always in the desired direction. For instance, although parents reporting that they read "once a day" increased from 35% to 44%, those indicating they read "on two or more occasions every day" decreased from 40% to 33%. Although, the researchers indicate that caution should be made in interpretation of these results as it is perhaps unrealistic to expect individuals to accurately assess the frequency of routine activities. Library membership saw a significant increase between the two timeframes: 76% of families reporting library membership in the first interview and 83% in the second (Bookstart, 2009).

Findings from the 2009 evaluation were more consistently positive for the 'less active'87 reading subset of the sample (Bookstart, 2009). 'Less active' reading families who reported never reading to their child before receiving the pack declined from 14% to 2%. A corresponding increase was found for those families reading once a day, from 0% to 30% and more than twice a day from 0% to 7% (Bookstart, 2009). In terms of children's and parents' attitudes towards books the results were again mixed, with the number of 'less active' reading parents reporting that their children were "very interested" in books rose only slightly from 34% at Phase 1 to 36% at Phase 2. Furthermore, responses from parents in the 'less active' subset did not show any significant improvement between the two interviews either. Parents who said they were "very interested" in reading with their children actually decreased slightly from 41% to 38% of the group. Parents in the rest of the sample similarly decreased slightly from 82% to 77% (Fig. 5.9) (Bookstart, 2009).

Results from the whole sample showed fewer consistent trends and behaviour change from the first interview to the second, three months later (Bookstart, 2009). While the authors of the report do not speculate on possible reasons, the results could have stemmed from a number of factors. While their sample size was larger than previous evaluations, participants were approached randomly in public spaces and interviewed on the spot and were therefore not selected or targeted (Bookstart, 2009). Furthermore, the interview questions were developed in house, and were not standardised measures. Some questions may have been subject to significant recall bias, for example in asking parents to recall how frequently they read to their children over the three-month period without being told to record this information (Bookstart, 2009). The three-month follow-up period is also quite short in comparison to other longitudinal studies, which could also be a reason inconsistent behaviour change trends were observed (Bookstart, 2009).

According to Bundy (2004) the evidence from the UK, is the success and real return on modest investment by the British Government, charities and a major commercial sponsor (Sainsbury, a supermarket chain) of its world leading and

86 UK Department of Education school entry statutory testing and assessment
87 The 'less active' subset was included those parents who: i) read to their child 'a few times a week' or less, and ii) parents who had 19 or less baby/toddler books in the home (Bookstart, 2009).

comprehensive scheme. Since its inception in 1992 in England, it has been implemented in Scotland, Wales and Ireland and has broadened internationally to over 10 affiliated countries around the world.

The successful implementation of Bookstart in the UK ignited much interest in Australia, in particular within the public library sector and municipal health service. Unlike the centrally coordinated national program in the UK, Australia implements a variety of Bookstart-style projects. The first sustained large Australian Bookstart initiative was in the City of Moreland libraries in metropolitan Melbourne. This initiative was launched in August 2000 and has been noted as overwhelmingly successful and has been the source for the most accolades regarding the Moreland reading project (Bundy, 2004). Results from a survey with 300 respondents found that 35% of parents began to read to their babies for the first time as a result of the Bookstart kit, while 69% began reading to their babies more often (Bundy, 2004). Since its implementation, it has been noted by a Bundy (2004) report on Australian Bookstart that a total of eight Australian local authorities were providing or commencing Bookstart programs through their public libraries[88]. At a 2004 national committee meeting in Melbourne, Friends of Libraries Australia (FOLA) discussed the Bookstart need in Australia and endorsed a proposal to identify the provision of Bookstart in Australia for national consultation and action (Bundy, 2004).

5.5. Summary

This literature review presents a consistent concern regarding the differing and inconsistent empirical support underpinning the actual design, structure and content of interventions and programs. This noted limitation is not a new one, and has often been criticised in the broader educational policy and reform area, where De Lemos (2002) continues to recommend stricter quality assurance measures of underpinning theory and evidence before developing and adopting new practices and programs.

In addition to this, the inconsistency regarding the evaluation of interventions and programs remains a limitation in this literature review and in the broader policy and reform area. De Lemos (2002) laments the departure from experimental studies and quantitative-based assessment in exchange for sociological descriptive methods such as case studies and observational methods in evaluating the effectiveness of intervention strategies, teaching practices and different approaches to the teaching of reading. Furthermore, the need for more consistent evaluation measures of impact and outcomes remains an issue in this literature review. A recent feature article by Inspiring Impact (2013) has recently addressed the issue of inconsistent evaluation approaches and has stated that shared measurement ensures that all stakeholders working on similar issues and goals reach a common understanding of what outcomes to achieve and how to measure impact. Finally, according to Inspiring Impact (2013), shared measurement can improve standards of impact measurement, allowing for greater consistency and comparability, and help organisations understand what works best and how to improve their practices based on evidence.

Presently, interventions developed for prior-to–school-aged children are limited by poor evaluation methodologies and often conducted in the absence of norm-based outcome measures. This limits the extent to which interventions can report conclusive findings or be effectively critiqued or improved upon. Reach out and Read (ROR) continues to be one of the few interventions reviewed here, in addition to more recent studies from Let's Read, EHS and ABC, which has been subjected to randomised control trials in an effort to measure its impact and effectiveness in comparison with non-intervention groups. Of the Australian randomised controlled trials, there is a lack of empirical significance or evidence on the impact on early literacy development, raising further research measure and methodology concerns. The issue of research and evaluation seems to be a discipline-specific issue and is therefore acknowledged to be beyond the scope of this paper.

While all interventions reviewed here share the common goal of support children in acquiring literacy skills, there remains little consensus on an adequate definition of literacy. Definitional disparity has led to differing assumptions about literacy acquisition, which has accordingly influenced the content and structure of programs. The diversity in target audiences and stakeholders used in early literacy intervention programs (i.e. educational/teaching, cognitive/psychological, and medical/primary health care professionals) is a key factor in this definition disparity. Such diversity brings with it varying

88 These included ACT, Bega Valley NSW, Darwin NT, Gannawarra Vic, Geelong Regional Vic, Lithgow NSW, Merriden WA and Moreland Vic

approaches, promoting different aspects of literacy success, relative to discipline specific priorities. Teachers will assess and prioritise the needs of a child very differently to a paediatrician and indeed to a speech pathologist or psychologist. This can be seen as a positive when all aspects are weighed in favour of the child's long term success. However, these different theoretical paradigms become problematic when all interested parties still seek to achieve the common goal such as literacy success. As noted in this literature review, the focus on specific professional environments (e.g. libraries versus health professionals versus early childhood professionals) also continues to present a disparity in early literacy intervention and priority, and therefore the disciplinary focus on the importance of early literacy and early literacy theory. While there is potential benefit in leveraging different professional foci, it is also apparent that relationships and partnerships between these differing early literacy approaches are tacit at best. It is apparent that a whole of community integrated and interdisciplinary approach to early literacy intervention, encapsulating various community-based professionals, is less prominent in current early literacy programs and requires further consideration in the design of early literacy interventions.

Finally, with the recent introduction of national literacy public campaigns in Australia, this literature review also raises questions about the channels required to influence and mediate actual literacy behaviour. Many studies analysing the results of national social marketing campaigns fail to demonstrate subsequent behaviour change, although there is often a reported increase in the public awareness of an issue. According to Bronfenbrenner (1979) a child is influenced by multiple environments and any child development program or intervention should consider a multi-faceted model of implementation. Bronfenbrenner (1979) states that a child is influenced not only by a child's immediate networks (e.g. parents, family etc.) but also by the wider community, environment and institutions (e.g. neighbours, child care centres, school, mass media and government policy). In line with the Bronfenbrenner theory and model, a paper released by the Literacy and Social Inclusion Project in the UK has considered the impact of a 'perfect literacy system' that considered the role of parents, primary school teachers and pre-school professionals in the promotion of literacy behaviour (Bird & Akerman, 2005). The intervention aimed at influencing behaviour change at multiple levels to encourage literacy behaviours, but also to provide alternative solutions to facilitate behaviour change.

While the multi-faceted approach of the Let's Read national early literacy campaign is consistent with Bronfenbrenner's (1979) ecological model of human development, there remains a lack of current research evaluation to monitor the impact of the campaign on literacy behaviour change. The campaigns reviewed here, given evaluation constraints and limitations, have not yet been able to demonstrate the same behavioural change impact as successful national campaigns, such as those from the Transport and Health sector, including the Accident Commission (TAC) and Australian National Tobacco Campaign.

6. Conclusion

Literacy is a vital skill in our society and reading with children from birth is widely acknowledged as of the most important activities families, communities and professionals can undertake to enhance their child's future ability to read and write. It is evident from the research and evidence, both nationally and internationally, that a child's early experiences can have a profound impact on their brain development and subsequently on their development of literacy skills (Kupcha-Szrom, 2011). It is also evident from the research that vulnerability in literacy in the early years can have a lasting impact of future literacy success the years and that it is the years before school that can lay the foundations for literacy success (Oberklaid, Goldfeld, Moore 2012, Lonigan and Shanahan, 2010.

Child development consists of several interdependent domains—physical, social, emotional, language development, and cognitive skills—and is affected by psychosocial and biological factors as well as genetics. The domains of development are interdependent and work together to promote a child's overall health and wellbeing (National Scientific Council on the Developing Child, 2007). The first few years of life are particularly important because vital development occurs in all of these domains (Shonkoff & Phillips, 2000).

Language is a crucial component of early childhood development. Because of the interdependent nature of early child development, any problems that hinder the acquisition of language during these critical years can affect other areas. While literacy acquisition (the ability to read and write)[89] differs from language, literacy is strongly influenced by language development. These links are well documented, with evidence identifying a clear link between speech and language difficulties and subsequent literacy difficulties (Whitehurst et al. 1999; Duncan et al. 2007).

The importance of early childhood reinforces the notion that timing is of upmost importance in early intervention. Numerous studies have confirmed that the skills that children possess when they get to school either reinforce and amplify their initial skills, or actually exacerbate initial difficulties and even produce new ones (Rigney, 2010; Shonkoff & Meisels, 20000).

In understanding the importance of the early years on brain development and literacy development, it is astonishing to know that in Australia we continue to see almost half of Australians over 15 lack the literacy skills they need to meet the demands of everyday life and work. Furthermore, it is even more staggering that current research also shows that in Australia:

- not all children arrive at school ready to take advantage of the learning opportunities provided at school (ABS, 2013)
- those who do not arrive at school with early literacy skills sometimes never catch up (Duncan et al., 2007; Chatterji, 2006; Roberts et al., 2005; Lonigan and Shanahan, 2010)
- currently our primary school children are some of the worst performing internationally in literacy (Thomson et al., 2012).

These findings further emphasise the importance of early literacy intervention and promotion, but also demonstrate the need for further investment in early literacy in an attempt to improve Australia's literacy outcomes. In fact, a study conducted by High/Scope in 1992 on the Parry Preschool program in Michigan, USA, during the 1960s found that for every dollar invested in the preschool program, over $8 in benefits were returned to the programs participates and society as a whole through reduced crime rates and related social risks (Grunewalk & Rolnick, 2003). In a paper that considered alternative policies for promoting skill formation that are targeted to different stages of the life cycle, Heckman and Krueger (2003) found that the evidence points to a high return to early interventions and a low return to remedial or compensatory interventions later in the life cycle. Heckman and Krueger (2003) concluded that at current levels of funding, traditional policies like tuition subsidies, improvements in school quality, job training and tax rebates are unlikely to be effective in closing gaps.

Despite the noted high return on early intervention, such as early literacy intervention, research outlining the levels of vulnerability in Australian children's literacy development and literacy skills still presents another issue: inconsistent measurement and definition of literacy. Although all the summarised literacy reports demonstrate a consistent theme of literacy vulnerability among Australian children and adults, given the variations in literacy standards and definitions within these reports, a national review is needed to clearly understand common vulnerabilities and standards for literacy (Tout & Mendelovits, 2013).

Furthermore, although no single early literacy program lays claim to being the universal remedy to the challenge of long-term literacy success, many of the programs reviewed in this literature review have produced clear, replicable findings in language development and even increases in emergent literacy skills. However, few of the programs reviewed are able to provide empirical evidence of long term literacy success. Many of the programs reviewed have focused on promoting home-based literacy practices and promoting activities connected to books and other literacy-related material. While there is unquestionable value in promoting book-based activities and other literacy practices within the home, there is still a lack of evidence to show the long-term benefits of these initiatives in relation to literacy acquisition. Although this review clearly presents the benefits of literacy-promoting activities, such as shared reading, there must still be a clearer empirical rationale and evidence-base as to how such any early literacy-based activity and message relates to the acquisition and development of formal literacy success.

[89] The term literacy, as defined for the purpose of this literature review, refers to the ability to *read* and *write* printed text. This definition is consistent with that used in other studies which report deficits in *literacy* as referring to the specific skill of *reading* and *writing* (Baker, 1999; Weiss et al., 1992; AMA, 1999; Weir, 2001; Hardy et al., 1997; Rowe & Rowe, 2002; High et al., 1999)

What is paramount from this literature review is the subsequent inconsistency being represented in the vast and differing design and delivery models of early literacy intervention programs and initiatives. Given the noted differentiation between the early literacy intervention program designs presented in this literature review, it raises concerns regarding the consistency of early literacy frameworks and models; not only for the empirical basis and rationale for early literacy intervention designs, but for the long term effectiveness of such programs for children's later literacy success.

In a meta-analytic review of family literacy interventions on children's acquisition of reading, Senechal (2006) stated that in order to better conceptualise the effectiveness of early literacy interventions, the following key elements must be considered within each intervention program:

- *Intervention characteristics*—An analysis of the characteristics of the intervention can reveal which aspects of the interventions were associated with the significant findings. The intervention characteristics can include; the type of audience involvement (e.g. shared reading versus teaching children specific reading skills); the intensity of the program or training, the presence of additional support mechanisms (e.g. feedback to audiences during the interventions, professional development); the duration of the intervention.

- *Participant characteristics*—An analysis of participant characteristics across interventions can also reveal how the intervention is applicable or generalise across the audiences it most relates to. The participant characteristics can include: children's age groups; the existing reading levels of children; the socio-economic level of families.

- *Study characteristics*—An analysis of study characteristics allows reviewers to determine whether the effects of intervention were related to quality factors of the intervention or to other aspects of the study. The study characteristics can include; sample size, type of research model used (e.g. randomised controlled trials versus quasi-experimental studies); timing of post-test administration (e.g. administered immediately after the intervention or significantly after the intervention); the type of outcomes measures.

The above review model will be used below to draw conclusions from the literature review and the current context of early literacy intervention.

Intervention characteristics

In relation to the intervention characteristics of the early literacy interventions, the following key conclusions can be drawn from the current literature review and existing research:

- although families want the best for children, many families are not aware of the importance of promoting their children's early literacy or strategies to ensure its development.
- the early home learning environment makes a difference for children's later academic and literacy success, particularly for children in disadvantaged circumstances.
- the environment of the Early Childhood Education and Care (ECEC) sector can make a difference to children's emergent literacy development

The role of parents and the home environment is vital in early literacy interventions and has been a key feature in most of the early literacy interventions reviewed here. Equally, the facilitative role of parent(s) or primary caregiver(s) in the delivery of program content and activities has been universally acknowledged in most of the early literacy interventions reviewed. Although the available research and evidence indicates that the immediate role of families and the home environment is often predictive of children's later literacy success, the specific intervention characteristics formulated to address parents' involvement and role are often mixed. One example of this is the inconsistency of the mechanisms in which parents are actually engaged in early literacy intervention, and the framework in which the home environment is addressed in promoting early literacy development. Although some interventions demonstrated a consistent focus on parent empowerment and

development for supporting their children's literacy development, other programs focused on the provision of home literacy-based tools and resources to indirectly support parent's engagement of broad early literacy activities.

The distinction between home-based intervention programs and book distribution programs is paramount, yet both forms of intervention have demonstrated benefits in raising awareness about literacy and the benefits of shared reading. However, given inconsistent measures and definitions of early literacy measures, it is often difficult to distinguish between such programs in their effect on long-term literacy success. For instance, the primary intention of book distribution interventions (e.g. ROR and Bookstart) has been to increase the numbers of books in low-income households, increase the amount of time children are read aloud to daily and thereby increasing children's exposure to language and book interactions. Although successful in achieving this outcome, the importance of other emergent literacy prerequisite development skills (e.g. phonological awareness) in children is often not tangibly measured. It may well be that the emergent literacy prerequisites outlined here are often too difficult or too complex to operationalise and thus too difficult to embed within an early literacy intervention framework, or indeed too costly compared to the relatively simple activity of shared reading.

It is interesting to note that existing studies fail to support a direct link between shared reading and growth in emergent literacy components such as phonological awareness, which is in fact regarded as the most important predictor of later reading success (Carroll et al., 2003). Frijters, Barron and Brunello (2000) have also found that although quality home literacy environments are directly related to vocabulary (a language skill), it is actually phonological awareness that mediates its relationship with written language (a literacy skill). Likewise, Whitehurst & Longinan (1998) reported that the variable reflecting inside-out skills (letter knowledge, phonological sensitivity and emergent writing) are the strongest predictor of reading at the end of first grade. To this end we acknowledge the benefit of shared reading as a crucial activity in the journey toward literacy success but also acknowledge the critical importance of additional emergent literacy activities and strategies (finger pointing, book genre, reading style) that have been found to promote later literacy success. Given the current limitations in early literacy interventions explicitly relating the development of such emergent literacy skills with later literacy success, this literature review recognises the significant value of early literacy interventions providing specific strategies within their program that promote the explicit development of emergent literacy skills.

Finally, the crucial role that parents play in promoting literacy success seems to be a common feature of most of the programs reviewed here. Yet there is still a lesser focus on the additional role of broader audiences in the development of children's literacy skills. A broader audience focus is often required because of the complexities associated with a narrow focus on parent engagement. For example, the method by which the content of a program is delivered is important as many manual-based programs will limit parents who have poor literacy skills. The complexity of activities and the degree to which measures are implemented to ensure that activities are being completed in the correct manner are a further problem for manual-based programs as activities that are too complex or too specific may also become too difficult to explain and implement. In this case, facilitated programs with full time staff can often overcome this issue as staff can train, supervise and provide ongoing input and feedback to parents so that activities are carried out successfully. Of course facilitated programs present a further problem in relation to sustainability, as ongoing funding must be secured to employ specialist staff.

What is of most significance here, is the evidence supporting the important role of early childhood professionals, and early childhood education and care environments, in children's later literacy success and impending emergent literacy development. Although current early literacy interventions support an array of professionals (e.g. librarians, pediatricians, child and family health nurses) in the provision of early literacy activities, it is rare that an early literacy program supports the important role of ECEC environments in both the provision of emergent literacy activities for children and in the engagement of parents and families. A multi-tiered or multi-faceted model of intervention has been consistently supported by theories such as Brofenbrenner's (1979) ecological model, but also more recently from collective impact theorists, which recognise that an intervention created with focus and isolation of one group, rather than part of an integrated system, not only risks sustainability but also long-term impact. A systematic, collective, multi-tiered and integrated approach to early literacy

intervention is crucial to future intervention designs and strategies, as is recognition of the important role of the ECEC environment and professionals in children's literacy development skills and successes.

Participant characteristics

Often in early literacy intervention, the focus and target is in the early years. However, consistency across the points in which children are engaged in the intervention can range dramatically between one intervention program and another. In addition to this, the timing of intervention is an important consideration as a number of studies have shown that deficits in emergent literacy skills are already evident in children prior to school commencement (Makin, 2004). Careful consideration must be given to implementing an intervention early enough so that children (especially high risk children) have the best chance at normal development in relation to the acquisition and development of emergent literacy and formal literacy skills. Given the cumulative effects on brain development from a child's various environmental and relationship experiences in the early years (Shonkoff, 2012), it is of utmost significance that such intervention programs provide support and intervention throughout a child's early years, rather than at one specific point in time.

There is overwhelming evidence of the impact of disadvantage on children's brain development and learning, but there is equivalent evidence suggesting that a child's socio economic home environment, parent education levels and subsequent limited literacy-promoting home environment, provides ongoing risk and susceptibility to literacy vulnerability. Research has indicated children from low SES environments, not only have a higher risk of sustained poverty later in life, but tend to begin school well behind their affluent peers and lose ground during the school years (Duncan & Magnuson, 2013). According to Duncan and Magnuson (2013), there are three pathways that predict these negative outcomes in children from low SES homes, and they are that children in low SES homes:

- have less stimulating environments and improvised language environments
- have lower income parents that engage in less responsive interactions with their children
- must contend with a wide range of stressors that impact negatively on brain development

Based on the above defined pathways and the overwhelming evidence demonstrating higher vulnerability for children's later literacy success within low SES home environments, an ongoing systematic and integrated approach to early literacy intervention that encapsulates the following elements is required:

- supports disadvantaged families' home environments (e.g. providing stimulating environments, resources, books etc.);
- supports disadvantaged families' capacity to engage their children's emergent literacy skills and
- supports the broader early childhood and ECEC environment to engage in children's emergent literacy skills and engage families in their capacity to build their children's emergent literacy skills.

Despite homes of lower SES consistently demonstrating a lower frequency of reading to their children and having fewer books in the home, recent research has also demonstrated a similar pattern (albeit less frequent) in higher SES homes. For instance, the research presented from the LSAC report (Commonwealth of Australia, 2012) indicated that homes of middle or high SES are also presenting with occurrences of little or no reading engagement with children on a daily basis. With evidence still strongly demonstrating higher literacy success for children from higher SES homes later, there is little evidence providing insight into middle and high SES family home environments and whether increases in dual working parents in modern society are contributing to limited reading activities with children from these homes. Promoting the importance of early literacy to these homes could still be of high significance based on the above findings and assumptions on children's literacy development from these homes. Based on behavior change theory (Glanz et al, 2003) even families that demonstrate a clear understanding of the importance of an activity may still require support and resources to either:

- **find the capacity or time to engage in and action the behavior** – According to behavior change theory, these stages of behavior can include: *Contemplation* (have started to think about reading with their children and recognise the need for it, but may feel like they are unable to do it or do not know where to start) and *Preparing* (Parent concerned about

the importance of reading, made a decision or a commitment to change and are currently completing any 'pre-change' steps with a view to making the required change within the next month).

- **continue the behavior** - According to behavior change theory, these stages of behavior can include: *Action* (parents have made a concerted effort to read to their child and are open to receiving support and help) and *Maintenance* (parents working to consolidate any changes in their behaviour, to maintain the 'new' status quo and to prevent relapse or temptation).

A broader strategy that also engages these families is of significant value, as is further research to demonstrate the needs of families not theoretically 'vulnerable' or 'disadvantaged'.

Study characteristics

In terms of study characteristics, the inconsistent approach to measuring literacy outcomes is evident throughout this literature review. Presently, interventions developed for prior–to-school-aged children are limited by poor evaluation methodologies and often conducted in the absence of norm-based outcome measures, which limits the extent to which interventions can report conclusive findings or be effectively critiqued or improved upon. ROR continues to be one of the few interventions reviewed here, in addition to more recent studies from Let's Read, EHS and ABC, that has been subject to randomised controlled trials in an effort to measure its impact and effectiveness in comparison with non-intervention groups. Of the Australian based randomised controlled trials, there is a lack of empirical significance or evidence of the impact on early literacy development, raising further research measure and methodology concerns. The issue of research and evaluation seems to be a discipline-specific issue and is therefore acknowledged to be beyond the scope of this paper.

However, what is of particular significance and within scope of this literature review is how current and future early literacy intervention programs evaluate and measure early literacy outcomes and program effectiveness. To date, most early literacy interventions use various forms of literacy definitions and outcome measures, with very little agreement or consistency on norm literacy levels or expected outcomes. For this, the need for more consistency and agreement to ensure interventions can be appropriately measured and researchers and policy makers can make credible and accurate inferences regarding future practices and research needs is vital. According to Bates (2005), to ensure the effectiveness of a model of intervention or prevention, there is a significant need to increase methodological rigor and to systemically evaluate intervention programs to determine the efficacy of the program and to guide program implementation. Furthermore, according to Moore (2012) despite the proliferation of evidence-based programs and strategies, we are still not getting the kind of results we would expect when we try to apply these strategies in the real world, therefore lending to possible evaluation and implementation fidelity issues.

Kramer and Kania (2013) argued that while organisations continue to work in isolated ways, social problems will remain elusive. One of the most critical methods to tackling social problems is good data, so that organisations can work closely together to set goals to enable long lasting positive change.

- Scan global best practice (including Australia) in measuring changes in behaviour and impact in consumers (i.e. families).
- Develop an evaluation framework, including outcome and impact statements and associated indicators.
- Develop a data collection tool i.e. standardised survey to align with the framework.
- Create a prototype dashboard for the data to be collated and aggregated to track progress against collective and mutual goals.

Based on the above notion, we are seeing more organisations across the world beginning to look at a collective impact as a new and effective process for social change. Within the collective impact notion is establishing a common agenda, shared measurement and mutually reinforcing activities. Although collective impact and evaluation poses many logistical challenges, the greatest obstacle can often be to continue developing discrete and inconsistent programs that address a social problem in isolation and from varying understandings and perspectives (Kania & Kramer, 2013). Based on the current

methodological inconsistencies and limitations of early literacy intervention programs, there is a significant need for a systematic, collaborative and collective evaluation at a national or sector level.

Furthermore, with the recent introduction of national literacy public campaigns, this literature review also raises questions in regards to the various channels required to influence and mediate actual literacy behaviour change through public campaigns. Despite the success of various national literacy campaigns, there is still uncertainty regarding the subsequent behavior change results. The campaigns reviewed here, given evaluation constraints and limitations, have not yet been able to demonstrate the same behavioural change impact as successful national campaigns, such as those from the Transport and Health sector, including the Transport Accident Commission (TAC) and Australian national tobacco campaign.

It is evident that certain elements within the design and implementation of these successful campaigns are of high importance. These include mass media campaign strategies (with television often having the highest impact), public promotional efforts to increase awareness, mass marketable resources and information and a market-tested strategy that creates behaviour change, not just awareness. For instance, the TAC and national tobacco campaigns are known for their attention grabbling and often confronting strategies. Consistent with the collective impact approach, the Australian national tobacco campaign found that broader and wider community mobilisation and engagement reinforces social capital and influences eventual improved social outcomes. A collective and strategic national approach to early literacy promotion should address the behavioural changes in both families and broader communities to support children's early literacy development.

Overall, the recent research evidence suggests that we can improve future literacy outcomes for children by promoting specific emergent literacy-promoting activities during the years prior to school entry. Based on these findings, future early literacy interventions and programs aimed to prepare children to succeed in learning to read should consider the following key components:

- Consider an agreed definition and standard of literacy and emergent literacy prerequisite framework. Use the agreed definitions of literacy and emergent literacy prerequisite development skills in the design, delivery and measurement of early literacy interventions and programs.
- Consider an agreed empirical rationale and evidence base of emergent literacy promoting activities and messages in the acquisition and development of formal literacy success. Using the empirical rationale and evidence develop subsequent design and delivery standards and strategies for early literacy interventions and programs, which promote the explicit development of emergent literacy skills.
- Broaden the audience focus of early literacy intervention, particularly the important role of early childhood education and care professionals, educators and environments. Develop systematic, multi-tiered and integrated approaches to the design of early literacy interventions and programs, which consider the broader audience role of literacy development skills and success.
- Design and develop early literacy interventions which support emergent literacy development throughout a child's early years, rather than at one specific point in time.
- Support disadvantaged and vulnerable communities of lower SES with a multi-tiered and ecological model of early literacy support, targeting home literacy resources and capacity building of families and early childhood and education professional's ability to support children's emergent literacy skills development.
- Consider strategies that also engage families not traditionally viewed as 'vulnerable' or 'disadvantaged' and broaden understanding of families in modern society needs and influences on children's emergent literacy development.
- Consider the potential influence of modern technology on families in modern societies (e.g. iPads) on children's literacy development
- Develop a systematic, rigorous and collective evaluation framework for the measurement and evaluation of early literacy interventions and programs at both a national and early literacy sector level. Establish common goals and measurement systems to accurately and rigorously measure early literacy outcomes and program effectiveness.

- Develop an integrated, ecological and collective impact approach to national literacy campaigns, promoting the importance of early literacy development. Implement a strategic social marketing national campaign through collaborative and collective impact, working with social marketing strategists.

Finally, although the above conclusions strongly and empirically support the need for further development of early literacy intervention design, delivery and evaluation, there is a particularly broader need for further policy development and investment in early literacy intervention across Australia. Not only is there a significant need to consider all relevant policy contexts (e.g. adult literacy, childhood literacy, school reforms) in the development and implementation of ongoing and future early literacy programs, but there is also a stronger need for early literacy advisors, stakeholders and policy makers to compile collective recommendations and implications for policy and practice, not only in an effort to model and pursue collective impact strategies, but also to effectively address the current, reoccurring and impending future child and adult illiteracy issues in Australian society. The literacy gaps effect on our society is profound and well-understood and the need for a collective and national impact strategy in the early years is clearly evident in achieving a higher literacy standard and success in our society. At its heart, literacy is about communication, which begins long before a baby even utters his/her first word (Kupcha-Szrom, 2011). According to the Heckman (2013) equation it is only when there is an investment in, development of, and sustaining of early childhood nurturing interventions from birth to five years, that we can gain a more capable, productive and valuable workforce that pays dividends to society for years to come (Heckman, 2013).

"A society that is good to children is one with the smallest possible inequalities for children, with the vast majority of them having the same opportunities from birth for health, education, inclusion and participation"
(Stanley, Richardson & Prior, 2005)

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8. Literature search strategy

Scope

There were four aspects to the literature review that required consideration. The first was to describe and define language and literacy in the context of early child development. This review of the literature focused on the theory of brain development in understanding the role of language and literacy development in the early years. The second section focused on the need for literacy development and its importance in social, educational, health, emotional and psychological contexts. This aspect of the review also drew attention to the continuing problem of illiteracy in contemporary Australian society for adults and children. The third and fourth aspect of the literature review, and the largest, focused on exploring and defining current early literacy-promoting activities and quality environments and the subsequent interventions that have been undertaken to promote reading/literacy to young children. This aspect of the literature review detailed outcomes and methods of interventions that have been implemented with children from birth to five years with the view of identifying key learnings and considerations for future implementation and policy development.

The scope for this literature search was defined as:

- describing language and literacy
- defining emergent literacy
- searching the literature for studies that have measured the benefits of early literacy development
- searching the literature for studies that have measured interventions to promote literacy
- searching the literature for studies that define specific skill sets that promote and assist children in literacy development and that identify prerequisites for later literacy success.

Search strategy

The development of a search strategy was undertaken at the commencement of the project (July, 2012). In the first instance the project was broken down into a series of concepts that allowed for more defined and limited searches. The search included areas and focus identified in the table below:

Search area	Description
Language:	English
Population:	Infants, children, parents. A limited search of the adult literature was also undertaken
Setting:	Home, community setting, school, kindergarten / preschool, health service providers (Hospitals, Health Care Centres/Clinics).
Outcome:	Determinants of literacy/reading success both in interventions implemented and as isolated prerequisite factors.
Study design:	Surveys, cohort studies, intervention studies, evaluations
Databases	The literature search focused on peer reviewed publications, but included grey publications, in particular reports by government and non-government agencies in relation to literacy promotion in Australia and internationally.
Sourcing peer reviewed publications:	Search strategies used these electronic databases: Medline, OVID, Psychlit, University of Melbourne Discovery Education Research Complete (EBSCO), PubMed.
Search engines for the World Wide Web	The search engine used was Google.
Efforts to identify unpublished data	Communication via email and telephone was conducted with a number of senior researchers in the psychological, educational and speech pathology research fields.
Identifying keywords	Examples included: Literacy, reading, emergent literacy, literate, reading routine, child, infant, parent, parent / child, socioeconomic status, books, book sharing, early intervention, literacy promotion, health, wellbeing, oral storytelling, home literacy environment.

Methodology

The CCCH has a unique methodology for undertaking reviews of research that we refer to as the 'realist approach'. A realist approach to reviewing literature does not exclude a systematic approach (see below, 'Searching for Programs') nor does it exclude the valuable lessons from experimental research methods such as RCTs. Rather, it is a systematic approach that incorporates the findings of experimental research and other credible and valuable forms of research in order to make way for innovative methods for addressing the issues faced by contemporary families.

The key foundations and justification for the various aspects of the realist approach are as follows:

- When addressing the types of issues encountered by child and family service policy-makers and practitioners (e.g. child poverty and disadvantage, child abuse and neglect, school refusal and drop out) ***RCTs are often non-existent or limited in their scope and usefulness*** (Fonagy, 2001; Greenhalgh, 2012; Prevention Action, 2012; Schorr, 2012).
- A realist approach to systematic reviews of literature incorporates the findings of RCTs and other forms of research (e.g. qualitative research), taking into account the fact that RCTs may not always provide answers to the questions that child and family service policy-makers and practitioners are concerned with.
- ***How programs are delivered to children and families is as important as what programs are delivered*** (CCCH, 2007; Moore et al., 2012a). However, traditional 'gold standard' research typically focuses on what programs work, rather than what makes programs work (Prevention Action, 2012). Based upon the finding that how programs are delivered is as important as what programs are delivered, we would argue that this approach is short sighted.
- A realist approach to systematic reviews of literature incorporates research regarding the effectiveness of programs (i.e. which programs work) but also considers the factors that might make a program work for a specific population (e.g. vulnerable children and families).
- A realist approach also recognises the programs that do not align with the values of those they are designed to help are less likely to be accepted by them, and are therefore less effective. Delivering interventions involves a combination of program fidelity (administering the intervention as designed), process fidelity (delivering the intervention in ways that are known to promote efficacy) and values fidelity (ensuring that the interventions are congruent with the values of recipients).
- The type of issues faced by the policy-makers and practitioners who plan and deliver services to children and families are often complex, far-reaching and interconnected. Issues like overweight and obesity, child abuse and neglect and intergenerational disadvantage (i.e. 'wicked' problems) have multiple causes and effects (Bradford, 2005; Conklin, 2006; Devaney & Spratt, 2009; Moore, 2011; O'Donnell et al., 2008; Scott, 2006).
- A realist approach to systematic reviews of literature recognises the complexity of contemporary issues faced by children and families and, as such, incorporates the lessons from multiple disciplines (e.g. psychology, sociology, medicine, community development)—combining the lessons from multiple disciplines to build upon the strengths of each.
- The methodology that we used for the two key components of the search (i.e. programs and the broad-based review of literature) was different. We have described the methodologies separately below.

Broad-based review of literature

The methodology that was used to undertake the broad-based review of literature concerning early brain development, early language and literacy development and current literacy states in Australia, involved the following key tasks:

Reviewing existing CCCH resources, papers and literature reviews: CCCH has already conducted a number of relevant literature reviews on topics such as working with vulnerable families, integrated early childhood services, place-based approaches, early childhood intervention services, and home visiting services
(see http://www.rch.org.au/ccch/resources_and_publications/Literature_Reviews/ for examples).

Reviewing other recent authoritative summaries of the literature on early intervention (e.g. Department of Education and Children's Services, 2007; National Institute for Literacy, 2006; Melbourne Institute of Applied Economic and Social Research, 2013).

Consulting websites of key research centres in Australia (e.g. NATSEM, Social Policy Research Centre) and overseas (e.g. Center on the Developing Child at Harvard University) to identify grey literature.

Conducting supplementary focused reviews of specific topics (e.g. 'collective impact' initiatives) for further information.

The main limitations of the broad-based literature review pertain to the scope of the work. By considering a range of different disciplines, the amount of literature that could be reviewed is substantial. The broad based literature review relies upon the expertise and knowledge of the individual undertaking it to determine where to look for the most relevant literature.

Searching for intervention programs

The methodology that was selected to undertake the search for programs was chosen to reflect the need for both comprehensiveness and efficiency. Ideally we would have searched as many relevant databases as possible to identify early intervention programs that meet the aforementioned criteria however this was not feasible given the time and resources available. We focused therefore on three academic databases (MEDLINE, CINAHL, Scopus) for published articles and Google for grey literature.

In addition to searching for publications pertaining to programs, we also searched for meta-analyses, systematic reviews and narrative reviews that have similarly explored early literacy intervention. We used the same aforementioned databases for this search.
In addition to these searches, we also searched for publications that listed and described multiple early intervention programs—using the bibliographies of those publications to 'cross check' our list of programs in order to ensure we had identified as many relevant programs as possible.

Given the complicated nature of early literacy intervention methodologies, although we searched for programs that have demonstrated effectiveness via a randomised controlled trial (RCT), we did also include large scale and well-known early literacy interventions that did not use this nature of research methodology. Because of the limited number of programs that used an RCT-designed research methodology, we have also included early intervention programs that have long-term follow up data, were evaluated using a quasi-experimental methodology and have applicability to the Australian context.

The main limitations of this methodology were as follows:

- because of the need for efficiency, some programs that do meet the criteria may have been missed
- There is a lack of good quality long-term evaluations of early intervention programs. The lack of these types of evaluations is well recognised in the literature (Peters et al., 2010; Manning et al., 2009; Ramey & Ramey, 1998; Campbell et al., 2012; Currie, 2000; Nelson et al., 2003).
- There are certain programs reviewed from the US and the UK. The US-based programs especially may not be as effective in the Australian context considering that social inequalities in the US are more pronounced (Hertzman & Wiens, 1996). This limitation in the current evidence base is also recognised in the literature (Hertzman & Wiens, 1996).
- Some of the programs that are included were developed decades ago (although some have been adapted since then) and, as such, may not be 'in touch' with the needs and circumstances of families in the present day. This is an unavoidable limitation—if we want to know what programs work in the long-term, we will always be considering programs implemented during a different time period.

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