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The Effects of a Phonological Awareness and Alphabet Knowledge Intervention on Four Year Old Kindergarten Children

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Abstract

Phonological awareness and alphabet knowledge are two of the strongest predictors of reading acquisition. Many New Zealand children are entering school with low levels of emergent literacy skills, so an important area of study is how to boost the phonological awareness and alphabet knowledge of four year olds in preparation for their entrance into school. The current research proposed an evidence-based intervention, using games and books, could raise the levels of phonological awareness and alphabet knowledge in children who were shown to have low levels of emergent literacy. The study examined the variation of emergent literacy knowledge, assessed using PALS Pre-K, in a sample of 42 New Zealand four year old children attending kindergarten. The study also investigated the effects of a phonological awareness and alphabet knowledge intervention in a sample of 24 four year old children (taken from the original sample of 42). The results showed 1) a large range in the emergent literacy scores of the 42 four year olds and 2) that a phonological awareness and alphabet knowledge intervention was effective in significantly raising the levels of upper-case letter-naming, letter-sound awareness and beginning sound awareness in the intervention group. The scores for name writing, lower-case letter-naming and rhyming although higher for the intervention group were not significantly so. The results suggest there is a relationship between letter-naming knowledge and letter-sound knowledge and that beginning sound knowledge was a difficult concept for many children to grasp without explicit teaching. The findings showed an evidence-based intervention that is designed appropriately with regard to focus, length of session and group size, can be effective in raising the emergent literacy knowledge of a group of four year old children with low levels of emergent literacy knowledge.

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Chapter 1: Introduction

1.1 Introduction

There are many factors that can affect a child's reading success at school. Socio-economic factors, such as low-income and limited parental education have been associated with reading difficulties (Tunmer, Chapman, & Prochnow, 2006). Pre-school literacy experiences and inadequate reading instruction have also been shown to affect reading acquisition (Nicholson, 2002; Tunmer, Chapman, & Prochnow, 2003; Vellutino, Scanlon, Small, & Fanuele, 2006). This research, however, focuses in on one factor, the emergent literacy knowledge of preschool children, in particular phonological awareness and alphabet knowledge, which research has shown to be influential on early reading success (National Early Literacy Panel, 2008; Nicholson & Ng, 2004; Phillips, Clancy-Menchetti, & Lonigan, 2008).

Quality early childhood education (ECE) has been shown to have a significant influence on children's learning as much as 12 years later (Ministry of Education, 2009a). Providing a rich, literacy environment has been identified as a marker for quality in ECE (Wylie, Thompson, & Lythe, 2001) but studies in New Zealand and abroad have shown that ECE teachers are often unsure of their role in children's literacy learning and may have a poor understanding of emergent literacy development (McLachlan, Carvalho, de Lautour, & Kumar, 2006; Moats & Foorman, 2003; Schickedanz, 2003).

Chapter 1 provides some background concerning literacy within New Zealand ECE settings and looks at children transitioning into school from ECE and the role emergent literacy plays in this process.

1.2 Literacy and Early Childhood Education in New Zealand

In New Zealand 95% of children attend early childhood education (ECE) prior to entering school (Ministry of Education, 2011a). ECE in New Zealand caters for

children five years of age and under. Over the past ten years there has been a steady increase in the number of children participating in ECE prior to school entry, especially Maori (7% growth) and Pasifika (11% growth) students (Ministry of Education, 2011b). The New Zealand Government funds 20 hours of ECE a week for all children aged from three years to five years and offers Equity Funding for children from low socio-economic communities and for ECE services that teach in a language other than English (Ministry of Education, 2011a). Therefore family income should not prevent children from attending good quality early childhood education in New Zealand.

In New Zealand there are a range of ECE settings that can be broadly grouped into teacher-led or parent-led centres. Regardless of centre set up, all the providers work with *Te Whaariki*, the Ministry of Education curriculum document (Ministry of Education, 1996). The "curriculum is specifically designed for children from the time of birth to school entry, and it provides links to learning in school settings" (Ministry of Education, 1996, p. 9). Underpinning the early childhood curriculum document are four guiding principles: Empowerment, Holistic Development, Family and Community and Relationships, and five strands: Well-being, Belonging, Contribution, Communication and Exploration (Ministry of Education, 1996). How the principles, strands and goals are emphasised and prioritised in individual centres varies a great deal (Arrow, 2010; Hamer & Adams, 2003; McLachlan, et al., 2006).

Throughout *Te Whaariki* (Ministry of Education, 1996) the holistic integration of literacy is encouraged using a range of meaningful experiences and settings; however, the Curriculum provides only a general outline and requires early childhood teachers to have a sound understanding of emergent literacy in order to create the literacy rich environment that is recommended (McLachlan, 2010).

During the 1990s there was a growing concern about the literacy levels in New Zealand and the debate about how best to teach reading was polarising New Zealanders. In 1998 the New Zealand Government created a Literacy Taskforce, to

identify some of the major factors impacting on reading achievement and to provide some recommendations on how to ensure the achievement of the long-term goal "by 2005, every child turning nine will able to read, write and do maths for success" (Ministry of Education, 1999, p. 4). To provide the Literacy Taskforce with academic and research–based advice, the Secretary of Education, Howard Fancy, formed what was to be known as the Literacy Experts Group. This group brought together academics with diverse philosophies on reading with the hope a compromise and an end to the "reading wars" might be found (Smith, 2000). Although no radical changes were made, the first recommendation acknowledged "greater attention needs to be focused on the development of word-level skills and strategies in beginning reading instruction, including the development of phonological awareness" (Smith, 2000, p. 141). This recommendation marked the gradual move away from the then current approach of relying solely on context cues for working out unknown words. The Literacy Taskforce recommended strong prioritising of literacy and numeracy in the early years of school and the flow on effect from this was a closer look at ECE and the literacy learning that takes place in this context.

In 2001 the Ministry of Education released a report that raised issues about ECE and the influence it had on the competency of children at 10 years of age (Wylie, et al., 2001). The report found the quality of ECE had a strong impact on future school success and highlighted the long term effects early childhood experiences can have right through to the end of secondary school (Ministry of Education, 2009a). Some key literacy competencies were identified at age 5 that impacted on the children's scores at 10 years old. These included being familiar with some letter-sound relationships, playing language games, reading and writing their own names, and being acquainted with books (Wylie, et al., 2001).

Most recently, in 2009 new Reading and Writing Standards for Years 1-8 (Ministry of Education, 2009b) were introduced into schools and in 2010 the Literacy Learning Progressions (Ministry of Education, 2010b) were introduced. Although this does not directly affect the ECE curriculum it is probable this will lead to some pressure on

ECE centres to look more closely at how they are preparing children for school and perhaps identifying children who do not seem to be making progress in their literacy and numeracy learning for intervention. This may reopen the debate on whether there is a place for explicit teaching of emergent literacy skills that have been identified as critical to reading acquisition at preschool level and if so, how to find a means of assessing and intervening that sits comfortably within the philosophy that underpins the ECE curriculum.

How emergent literacy skills are assessed on entrance into school and factors that influence the development of these skills before school entry will now be discussed.

1.3 Early childhood literacy practice

In New Zealand, unlike like many other Western countries, formal schooling and reading instruction begins on a child's fifth birthday. Although school is not compulsory until the age of six, a majority of children enter the classroom at five. Data obtained from the Ministry of Education (M.Ranjith, personal communication, 28 March, 2011) showed that 92% of children that entered school in 2010 were aged between five and five and one month.

All children on entrance into school have their reading skills and knowledge assessed. The Education Review Office (ERO) (2000) found the type of assessment used differed considerably from school to school and their findings showed alphabet knowledge (i,e., letter-names and letter-sounds) and a modified form of a test called Concepts about Print (CAP) (Clay, 2005) were most often used. These two assessments are taken from the Marie Clay's Observation Survey which is also used for the 6 Year Net (Clay, 2005). The Observation Survey is broken into six literacy tasks: letter identification, a word test, concepts about print, writing vocabulary, hearing and recording sounds in words, and text reading. Oral language is also assessed at school entry and throughout the junior years. Some type of assessment of phonological awareness at school entry does not feature in many schools despite the

empirical support for phonological awareness in reading acquisition (Greaney & Arrow, 2010).

What is becoming a concern in New Zealand is the number of children entering school with limited emergent literacy skills which can affect their ability to learn to read and later academic performance. The idea that these children merely have a developmental lag and will catch up to their peers with time is not supported by empirical research (Foorman, Francis, Shaywitz, Shaywitz, & Fletcher, 1997; Nicholson, 2003).

The 2006 Progress in International Reading Literacy Study (PIRLS) covering 40 countries showed that in New Zealand there is a large disparity in reading achievement between good and poor readers (Tunmer, et al., 2008). Furthermore research in New Zealand has indicated that there is also a notable disparity in the early literacy knowledge of children at school entry (Nicholson, 2005; Tunmer, et al., 2003). Numerous studies cite the strong relationship between essential reading-related skills on entry into school and later reading achievement (Tunmer, et al., 2006; Whitehurst & Lonigan, 2003). School success is closely connected to reading ability and in turn later success in society. Children who struggle to read early on tend to struggle right through their schooling and "are effectively prevented from capitalizing on the power of education to improve and enrich their lives" (Honig, 1996, p. 1).

Why some children have difficulties learning to read has received substantial attention. Research has highlighted a number of reasons for the possible occurrence of reading difficulties. Evidence shows that poor instruction and literacy experience (Pressley, 2006; Vellutino, et al., 1996), biological disorders such as dyslexia (Gillon, 2004; Pressley, 2006; Shaywitz, Morris, & Shaywitz, 2008), and low general intelligence (Gillon, 2004; Pressley, 2006) lead to difficulties in learning to read, but perhaps most significant is the number of studies that corroborate the important role phonological awareness and alphabet knowledge play in reading difficulties (Adams,

1990; Gillon, 2004; Juel, 1988; Stanovich, 1986; Tan, Wheldall, Madelaine, & Wah Lee, 2007; Torgesen, 2002; Tunmer, et al., 2008).

Research further suggests that children from lower socio-economic backgrounds have a higher risk of later reading difficulties and that without effective interventions for these children it would be unlikely that they would enter school in a position to benefit from a reading programme (Ministry of Education, 1999; Nicholson, 2003; Vernon-Feagans, Scheffner Hammer, Miccio, & Manlove, 2003; Whitehurst & Lonigan, 2003). Children from low socio-economic backgrounds tend to start school with limited alphabet knowledge and low levels of phonological awareness which hinders their ability to learn to read (Nicholson, 2003). This may be due to economic hardship and social problems in the home, where time to read books, interact verbally and play games that promote early literacy skills may not be available (Tunmer, et al., 2006). Furthermore, economic disadvantage can lead to lower levels of education and a mother's formal education has been shown to have a strong influence on later school success (Wylie, et al., 2001).

There has been much debate for and against the introduction of explicit teaching of emergent literacy skills in ECE (Boyd, 2009; Katz, 1990; Moustafa, 1997) and research into the role ECE centres play in the preparation of children for school and their contribution to literacy acquisition. Nicholson (2005) supports the introduction of pre-reading skills such as phonological awareness and alphabet knowledge at early childhood education (ECE) using a range of fun language games and activities (Boyd, 2009). Nicholson (2005) believes these foundational skills help get children off to a good start in reading. In support of Nicholson (2005), research suggests that to help children to get off to the best possible start in reading, emergent literacy needs to be actively promoted in early childhood centres and in the home (Lonigan, 2003; McLachlan, et al., 2006; Phillips, et al., 2008).

Home environment, a mother's education and socio-economic situations have all been shown to have a strong influence on school success but good quality ECE can

also be influential and make a difference on school success even 12 years later (Ministry of Education, 2009a). Providing a literacy rich learning environment and placing value on written material are considered to be important factors in the provision of good quality ECE according to the findings of a longitudinal New Zealand study (Wylie, et al., 2001).

Studies have shown that instruction that focuses on critical emergent literacy skills, such as phonological awareness and alphabet knowledge can benefit reading acquisition in the early years of schooling, irrespective of the child's background (Nicholson, 2002). However, recent studies in the United States have shown an obvious absence of instruction in phonological awareness and letter-knowledge in some early childhood centres (Phillips, et al., 2008). In New Zealand McLachlan et al. (2006) found teachers generally promoted literacy by providing a literacy-rich environment then waiting for 'teachable moments' to extend children's knowledge. However, the data did not show how teachers were assessing children's literacy or if specific strategies were being used to encourage the development of literacy. According to Nicholson (2005, p. 7) "For children to become good readers, they must have essential pre-reading skills… research shows that a child who starts school without them has a 70-80 percent chance of having reading problems".

A recent New Zealand study that surveyed 107 ECE teachers on how they promoted literacy in early childhood settings found that many teachers, although providing print-rich environments, were not up to date with current research on emergent literacy and best practices to use in building skills for a strong foundation for future reading (McLachlan, et al., 2006). A further concern was the uncertainty of whether the teachers were identifying children with risk factors that may lead to later reading difficulties. Despite the introduction of the early childhood curriculum, Te Whaariki (Ministry of Education, 1996), which provides broad guidelines for early childhood teachers, 50% of the surveyed teachers admitted it had very little influence over their practice, an indication of how difficult it can be to change teachers' beliefs (McLachlan, et al., 2006).

As part of a longitudinal Australian study investigating the literacy development of preschool children, Young (2004, November) interviewed 5 preschool teachers about what they saw as their role in literacy development and found in general they understood the importance of creating a literacy-rich environment but tended to avoid any explicit literacy learning experiences.

Hamer and Adams (2003) published a handbook for New Zealand Early Childhood Educators to provide theoretical and practical support in the development of their literacy policy and programme. Hamer and Adams (2003) believed by being informed, educators can make better decisions on appropriate and effective literacy practices in their individual centres. Book reading, phonemic awareness, letter-sound knowledge and children's writing were highlighted as key areas to ensure that children "are open to learning to read" (Hamer & Adams, 2003, p. 128) when they start school.

Despite evidentiary support for the benefits of phonological awareness and alphabet knowledge instruction to early reading acquisition, studies have shown early childhood teachers may be unsure of their role in literacy development. How emergent literacy knowledge may affect children's transition into school will now be discussed.

1.4 Transition between Early Childhood Education (ECE) and Primary school

There is a considerable difference between the type of education provided in ECE centres and the first year of school. How teachers, families and the community can help to smooth this transition for children into the formal school system has been the subject of a recent literature review commissioned by the Ministry of Education (Peters, 2010). The findings show a complex array of issues that affect the transition; however, social issues make up a bulk of the text, with an obvious move away from academic readiness in the literature reviewed. According to Peters (2010) "the poor predictive value of individual skills in relation to successful transitions is not surprising given that performance on assessments (for example, measures of literacy

and numeracy) do not predict how children will navigate the effects of a poor relationship with their teacher, peer rejection, fear of the playground, lack of engagement with learning, cultural alienation, and so on (p. 73)".

There is no arguing that social skills are critical in school transition; however, the influence of emergent literacy knowledge can not be ignored. Studies have shown that children's emergent literacy skills at school entrance give a good indication of early reading success (Adams, 1990; Gillon, 2004; Juel, 1988; McLachlan & Arrow, 2010). This possible success is closely connected to children's academic self-perceptions which are important in school achievement (Chapman & Tunmer, 2002). Chapman and Tunmer's (2002) three year longitudinal study of beginning literacy achievements found children who were having difficulty with learning to read early on, tended to have low levels of phonological awareness and poor alphabet knowledge at school entry. These reading difficulties were reflected in their academic self-perceptions within 6 to 8 weeks of starting school.

The New Zealand 'Competent Children' project (Wylie, et al., 2001) examined how family resources, early childhood education, school experiences, children's interests and activities in home and outside school, and their relationships with peers, impact on the development of 10 specific competency measures which have been linked to success in learning. Alongside literacy and mathematics, communication, perseverance, social skills with peers, social skills with adults, individual responsibility, logical problem-solving, curiosity and fine motor skills, made up the 10 competencies (Wylie, et al., 2001).

The 'Competent Children' project began in 1993 with 307 four and a half year old Wellington children from a range of early childhood education services and followed them through to secondary school and beyond (assessing the children every two years). At ten years old 274 children from the original sample remained (Wylie, et al., 2001). The report found the aspects of ECE that helped smooth the transition into school were quality relationships between the staff and the children, exposure to print

and language, and the provision of a range of interesting resources (Wylie, 2002). At 16 the impact of ECE was still discernable although less strong (Wylie, et al., 2001).

Peter's report (2010) also highlighted the difficulty many children from lower socio-economic groups experienced in the transition process and inferred from research that home-school relationships and teacher expectations could be possible reasons. What was not discussed in this report was the link studies have shown between children from lower socio-economic groups and the heightened risk of developing reading difficulties due to lower levels of emergent literacy knowledge at school entry (Nicholson, 2003; Tunmer, et al., 2006; Vernon-Feagans, et al., 2003).

In New Zealand the holistic nature of early childhood centres mean explicit skills instruction is not generally seen as fitting within this philosophy (Hamer & Adams, 2002), but international research shows that preschool children who have a higher risk of experiencing future reading difficulties, can significantly benefit from some form of intervention that boosts emergent literacy skills (Justice, Chow, Capellini, Flanigan, & Colton, 2003; McIntosh, Crosbie, Holm, & Dodd, 2007). Recent research however, disputes the idea that teachers need to choose between play-based activities and emergent literacy promoting activities, rather explicit emergent literacy instruction can be successfully integrated into the preschool programme alongside explorative and imaginative play (Phillips, et al., 2008).

The counter argument made by American-based researcher Katz (1990) is "the risk of early instruction in beginning reading skills is that the amount of drill and practice required for success at an early age will undermine children's dispositions to be readers" (Education Review Office, 2000, p. 10). Katz (1990) discussed the possibility of children who may struggle to acquire these emergent literacy skills developing feelings of inadequacy and as a result being put off reading.

However, beginning reading skills need not be taught by drill and practice. A recent Australian research by Young (2009) has shown that not only can implicit and

explicit literacy activities be embedded within a play-based philosophy, this style of teaching is effective in raising the levels of emergent literacy knowledge of preschoolers.

The information covered in this chapter has shown that there is a concern about emergent literacy skills of New Zealand preschool children, and also that research shows that interventions in this area can be successful and need not be in a drilled manner, but could be done in a play-based manner which sits with the holistic approach of the New Zealand ECE curriculum. Thus knowing more about the emergent literacy skills critical for beginner readers and the potential of intervention is desirable. In Chapter 2, literature concerning international research in this area will be reviewed, and specific research questions will be given.

Chapter 2: Literature Review

2.1 Introduction

Emergent literacy skills play an important role in the acquisition of reading (Arrow, 2010; National Early Literacy Panel, 2008; Young-Suk, Foorman, Petscher, & Zhou, 2010). Phonological awareness and alphabet knowledge at preschool level have been shown to be strong predictors of future reading success (McLachlan & Arrow, 2010; Nicholson & Ng, 2004; Phillips, et al., 2008). Furthermore the role early childhood education (ECE) plays in school success has been shown to be significant (Wylie, et al., 2001), and research suggests that by actively promoting emergent literacy skills in ECE, children can get off to a good start in reading (National Early Literacy Panel, 2008). The purpose of this chapter is to review the literature concerning the role of phonological awareness and alphabet knowledge in reading acquisition and examine the effectiveness of emergent literacy interventions.

The literature review has two main parts. Section 2.2 defines emergent literacy and looks at why it is important, which leads into a review of the literature on the importance of phonological awareness and alphabet knowledge in children's emergent reading skills. Section 2.3 discusses the findings of emergent literacy intervention studies. Finally the research questions for the present study will be outlined.

2.2 Emergent literacy

It was once thought that children needed to be of a certain age before they could begin to learn to read, this was termed "reading readiness" (Neuman & Dickinson, 2003; Young, 2004, November). Children were still being tested to determine if they were "ready" for school and formal reading instruction well into the 1950s. In the 1960s, Clay (1966) disputed the idea of reading readiness and proposed children develop an understanding of literacy prior to school by taking part in day-to-day

activities with others, such as interactions during play, having books read to them or going shopping.

Today the term "emergent literacy" is used to refer to the continuum of literacy behaviours that begin at preschool age (5 years and under in New Zealand) and continue right into the formal reading and writing instruction that begins at primary school. This perspective, unlike the reading readiness approach, proposes that early literacy-related behaviours are critical in developing the precursors needed to learn to read (Whitehurst & Lonigan, 2003).

Henry (2010) states a child at school entry should have the following knowledge: letter identification, the ability to recognise and label some letters of the alphabet, phonological awareness, an appreciation that words are made up of and can be broken into small speech elements, vocabulary knowledge and print concept. There are many studies supporting Henry's (2010) list of critical foundational skills, particularly the role that phonological awareness and alphabet knowledge play in later literacy attainment (Juel, 1988; National Early Literacy Panel, 2008; National Reading Panel, 2000; Tunmer, et al., 2006). These two skills have been shown to be two of the most important skills needed for learning to read and are highly predictive of future reading development (Adams, 1990; National Early Literacy Panel, 2008; Nicholson, 2003; Scarborough, 2003).

Literate Cultural Capital is "a generic term referring to reading-related variables at school entry" (Tunmer, et al., 2006, p. 183) which has been linked to later reading achievement. Four key components were included in the conceptualization of the term Literate Cultural Capital: phonological sensitivity, grammatical sensitivity, receptive vocabulary and letter-knowledge. These four components were chosen because studies have shown they have a strong influence on early literacy development (Carroll, Snowling, Hulme, & Stevenson, 2003; Foulin, 2005; Tunmer, et al., 2006). To examine the validity of the Literate Cultural Capital construct Tunmer et al. (2006) followed a group of 76 children in New Zealand from school

entry (5 years old) to Year 7 (12 years old). Data on a range of reading-related measures (onset-rime segmentation, sound matching, oral cloze, word order correction, receptive vocabulary, and letter identification) was collected at the beginning of Year 1 (mean age 5 years, 1 month) and the end of Year 7 (mean age 11 years, 9 months). Results showed Literate Cultural Capital accounted for a large percentage of the variance in children's reading at Year 7. All the children in the bottom quartile of Literate Cultural Capital scores were found to be at least one year behind in reading age at Year 7. The results also showed that the Literate Cultural Capital of children from low-income backgrounds was significantly lower than children from more advantaged backgrounds at school entry**.**

Thus it can be seen that the concept of emergent literacy has developed significantly since the notion of reading readiness, and that phonological awareness and alphabet knowledge are important components. Phonological awareness and alphabet knowledge will now be defined in more detail, and research relating to these two skills will be reviewed.

2.2.1 Phonological awareness

Phonological awareness is the ability to understand that words have a sound structure, and that there are differing levels of structure, which are often depicted in a hierarchical manner (Gillon, 2004). Phonological awareness is an awareness of spoken language rather than written language and requires attention being drawn to the sounds in spoken words. For many children mere exposure to spoken language alone is not enough to develop phonological awareness (Adams, 1990).

The theory is that phonological awareness develops in a continuum, with the larger word parts initially more easy to identify (Lane, Pullen, Eisele, & Jordan, 2005). Development levels can be divided into word awareness, syllable awareness, onset/rime awareness and phonemic awareness (see Figure 1). When a one syllable word is divided into onset-rime, for example the word mat, the onset consists of the first consonant /m/ and the rime /at/ is the vowel and following consonant. If mat was

to be further divided into phonemes, there would be three individual sounds /m/ /a/ /t/. Within each level there are developmental steps, for example in rhyming tasks, the generation of rhymes is seen to be more difficult than recognising rhymes (Arrow, 2010; Gillon, 2004) and phonemic deletion requires more sophisticated skills than phoneme blending (Nicholson, 2005).

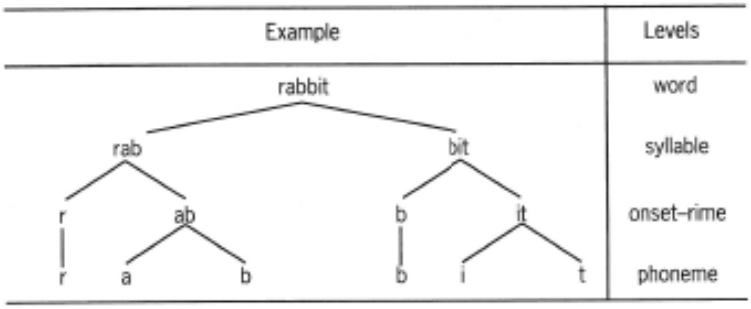

Figure 1 Phonological awareness [1]

It is important to distinguish between phonemic awareness and phonological awareness as these terms are often used interchangeably (Walsh, 2009). Phonological awareness and phonemic awareness sit at different points along the metalinguistic development continuum. Phonological awareness is a broader term to encapsulate a range of spoken word features (for example, syllables, onset-rime awareness and phonemic awareness). Phonemic awareness in comparison is more specific and is "a conscious awareness that spoken words are made up of individual speech sounds, ... it represents the pinnacle of phonological awareness development" (Walsh, 2009, p. 215). Often studies will talk about phonemic awareness activities that involve rhyme and alliteration, which technically should be labeled partial phonemic awareness or phonological awareness.

[1] From At the cutting edge: The importance of phonemic awareness in learning to read and spell (p. 27), by T. Nicholson, 2005, Wellington, New Zealand: NZCER Press. Reprinted with permission.

Children can gain phonological awareness at the word and syllable level through minimum teaching whereas phonemic awareness can be more difficult to grasp and often requires more explicit teaching (Gillon, 2004). In speaking we do not individually enunciate phonemes instead they are blurred together into a string of sounds, a process called co-articulation. In order to separate out these speech sounds, children need to learn to "hear" them (Adams, 1990). Studies have shown that phonemic awareness can be successfully taught and that these skills can result in improved reading performance (Castle, Riach, & Nicholson, 1994; Ehri, et al., 2001; Lundberg, Frost, & Petersen, 1988; National Reading Panel, 2000).

In 2003 the New Zealand Ministry of Education released a text that focused on effective literacy practice in Years 1 to 4 (Ministry of Education, 2003) and in 2006 another text was published for Years 5 to 8 (Ministry of Education, 2006). The development of phonemic awareness and the use of phonics are highlighted as critical components of literacy learning in the text aimed at Years 1 to 4 (Ministry of Education, 2003). Furthermore in the text aimed at Years 1 to 4, the importance of children having phonemic awareness and an understanding of the relationship between letters and sounds at school entry in order to benefit from reading and writing instruction is discussed (Ministry of Education, 2003), and it is concluded that "[p]honemic awareness is fundamental to early success in reading and writing" (Ministry of Education, 2003, p. 32).

Research has shown phonological awareness at preschool level to be a reliable predictor of later reading success and phonological awareness is highly stable from late preschool to early primary school (Adams, 1990; Lonigan, 2003; Lonigan, Burgess, & Anthony, 2000; National Early Literacy Panel, 2008). Furthermore it has been shown that the more complex the phonological awareness measure, the more correlated with later decoding skills, for example, rhyming tasks, requiring relatively simple phonological skills, were found to have the weakest correlation of all phonological awareness measures (Ehri, et al., 2001).

Lonigan et al.'s (2000) longitudinal study examined a range of emergent literacy skills in 2 samples of American preschool children in order to determine the predictive relations between these emergent literacy skills and future reading. Sample one was made up of 96 children (mean age 3 years 4 months) who were assessed at early preschool and then again near the end of their preschool time. The second sample consisted of 97 children (mean age 5 years) who were followed from late preschool into kindergarten or early elementary school. The findings highlighted the developmental continuum between early literacy skills in preschool and reading acquisition. Phonological awareness was found to be one of the strongest predictors of future reading ability especially in the children in the "late preschool" group. A high level of stability in phonological sensitivity was also shown from late preschool aged children into school, so while there was an increase in reading skills between preschool and school, the relative ability of each child in relation to their peers did not alter.

A New Zealand study (Milina, 1994) looked at the phonemic awareness of 112 kindergarten children (nearly 5 year olds) who were about to start their first year of school. The children were initially tested at kindergarten then retested 4 months later at school on their reading and spelling ability. The results showed a strong correlation between initial phonemic awareness levels and future reading and spelling. These findings support Stanovich's (1986) "Matthew effect", a pattern of reading acquisition where those with well developed phonemic awareness develop more sophisticated reading skills whereas those with less developed phonemic awareness skills suffer in the development of reading skills, thus the rich get richer whilst the poor get poorer.

Juel's (1988) longitudinal study followed 54 American children from a low socio-economic community from the beginning of Grade 1 (6 to 7 years) to end of Grade 4 (approximately 10 years), and looked at whether the same children remained poor readers and writers throughout their first four years of school. Juel (1988) also investigated what skills the poor readers and writers lacked and what prevented them

from improving. Her findings showed that poor readers had little phonemic awareness at school entry and lacked decoding skills right through to fourth grade. The study showed there was a .88 probability that a poor reader at first grade would be a poor reader at fourth grade. The poor readers tended to read less frequently than good readers and found the experience of reading difficult and "boring". Children who had difficulties reading also tended to have difficulties writing due to a lack of phonemic awareness skills that affected the ability to acquire letter-sound correspondences.

The predictive nature of phonological awareness on future reading has been shown only to be useful up to a certain school level (Torgesen, 1999). For example Hogan, Catts and Little's (2005) longitudinal study followed 570 American children from kindergarten to fourth grade in order to examine the usefulness of phonological awareness assessments in predicting word reading at different school levels. They found that phonological awareness assessments measuring syllable and phoneme deletion at kindergarten age provided useful information on second grade reading outcomes; however, beyond second grade the predictive nature of phonological awareness and influence on reading achievement appeared to lose strength. Further research, however, needs to be done using other measures of phonological awareness, such as phonemic blending to test if these results hold across a range of phonological awareness measures.

Developing phonological awareness

Research shows that phonological awareness can be developed using a range of activities. It is important the instruction is explicit and systematic and children get to use their new skills in a range of settings (Phillips, et al., 2008). According to Phillips et al. (2008) teachers of beginning readers should endeavour to include activities that develop a variety of phonological awareness levels, for example, word, syllable, onset-rime and phonemic awareness rather than focusing on one level exclusively.

Gillon (2004) suggests beginning emergent literacy instruction with word and syllable awareness as they tend to be learnt with minimum instruction and are seen as sitting near the beginning of the phonological awareness development continuum. Studies have shown that using physical movement when working on blending and segmenting activities can help children visualize the process, such as hand gestures (Phillips, et al., 2008). Phillips et al. (2008) discusses how word and syllable awareness can be developed using clapping or tapping games for example, to count the words in a sentence or syllables in a word.

Onset-rime awareness can be divided into activities that focus on developing rhyme awareness and activities that focus on onset or beginning sound awareness. Nicholson (2005) and Henry (2010) encourage using nursery rhymes and language games as a fun and effective way to introduce the concept of rhyme to preschoolers. There are also a myriad of children's books that use rhyme and can be used in shared reading (McLachlan, 2010). Rhyme awareness is often mistakenly seen as an easy phonological skill to master but research has shown that in fact rhyming activities require children to understand that for words to rhyme they need to share a common ending or rime, and to be able to determine this they need to isolate the onset from the rime and compare the endings of the words (Phillips, et al., 2008). This process involves having some prior understanding of the sound structure of words and the ability to manipulate these sounds. Rhyming instruction therefore needs to include plenty of time and practice opportunities for the children and be taught alongside onset awareness.

A phonological awareness intervention used in a study by McIntosh et al. (2007) included sound bingo games to increase onset awareness in preschoolers from low socio-economic backgrounds. The games involved the teacher saying a sound and the children matching pictures on their bingo games that start with that sound. The results from the study showed significant growth in the phoneme isolation skills of the intervention group. To help some children hear an onset of a word stretching out of that sound in an exaggerated style may be required, "I spy" is a useful game for this.

McLachlan (2010) suggested moving children off the mat to play according to the initial sound in their names.

Research has shown that phonemic awareness tends to develop after syllable and onset-rime awareness and builds on to this knowledge of larger phonological units (Carroll, et al., 2003). Phonemic awareness activities aim to draw children's attention to the individual sounds within words, without using letters. Segmenting phonemes in words can be difficult for preschool aged children so it is recommended to start with blending activities. "Troll talk" or "Turtle talk" slow down the pronunciation of individual phonemes in words and can be an effective method for developing blending skills. The teacher can slowly segment the phonemes in a word and the children need to blend the sounds to identify the word (Adams, Foorman, Lundberg, & Beeler, 2004; Nicholson, 2005). Nicholson (2005) discusses the effectiveness of another technique to introduce basic segmentation called iteration, where phoneme are repeated in order to reduce distortion that can occur when stretching out particular phonemes, for example /b-b-b-b-all/.

2.2.2 Alphabet knowledge

In addition to phonological awareness, to be able to read children need to be able to break the alphabetic code. This requires translating graphemes (letters) into phonemes (sounds). Without alphabet knowledge this becomes an almost impossible task (Whitehurst & Lonigan, 2003; Young-Suk, et al., 2010). Letter-naming and letter-sound knowledge are often merged together to form "alphabet knowledge" but in fact looked at separately it can be seen that letter-naming knowledge tends to develop earlier than letter-sound knowledge (Burgess & Lonigan, 1998). At preschool level letter-naming knowledge is a strong predictor of later reading acquisition but once children have reached ceiling level for alphabet naming, letter-sound knowledge becomes a better predictor (Foulin, 2005).

Adams (1990) proposes alphabet knowledge develops in stages, usually involving adult mediation at each stage. Firstly the children learn the names of the letters, then

the associated shapes and finally the sounds of the letters. However, there is a lack of empirical evidence regarding letter-knowledge instruction (Phillips, et al., 2008). Different orders in which to teach letters have been proposed. Byrne and Fielding-Barnsley (1991) suggested initially introducing a small number of letters that had the most common associated phonemes: /s/, /m/, /p/, /l/, /t/, /g/, /sh/, /a/ and /e/. Henry (2010) also suggests following a specific sequence when introducing the letters of the alphabet, beginning with the five or six consonants that regularly appear in early readers (e.g., p, t, b, s, m and g) and one short vowel sound, this then gives children the tools to read a range of simple words.

Data from pilot studies on PALS-PreK, an emergent literacy assessment tool designed by the Virginia Department of Education at the University of Virginia, in the United States, suggested naming upper-case letters was more age appropriate for preschoolers, with children generally being able to name more upper-case than lower-case letters (Invernizzi, Sullivan, Meier, & Swank, 2004) but New Zealand studies tend to either assess lower-case letters only (Arrow, 2010) or both upper-case and lower-case letters in the same assessment (Clay, 2005; Nicholson, 2003). Studies do, however, suggest it may be beneficial to children to introduce letter-names before letter-sounds (Foulin, 2005; Share, 2004) and that children have a higher motivation to learn the letters in their names (Arrow, 2007; Phillips, et al., 2008).

It is believed that letter-name knowledge aids children in gaining letter-sound knowledge. The alphabetic theory proposes when a letter-name provides a clue to the associated letter-sound, the correspondence between the two is more easily learned. This has been supported by findings that children taught pseudo-letters, some with the letter-sound included in the name and others without, showed a stronger tendency to recall the pseudo-letters with some letter-sound information (Share, 2004). The English alphabet has many consonant names that are related to the letter-sound. Some letter-sounds are connected directly to the initial phoneme in the letter-name (e.g., b, p) and others the final phoneme (e.g., f, s) (Foulin, 2005). There are also letters that

have no obvious connection to the letter-sound (e.g., w and y) which can cause confusion (Treiman, Pennington, Shriberg, & Boada, 2008).

Studies that support the idea that letter-names can help children acquire letter-sounds, lead to the suggestion that it could be useful to introduce letter-names before they begin formal reading instruction, especially instruction that is based on a phonics method and depends on children building grapheme-phoneme correspondences. This letter-naming knowledge potentially could help children to draw phonological clues from letter-names (Foulin, 2005). Recent studies have shown that learning letter-sounds without letter-name knowledge is very difficult for preschool children (Cardoso-Martins, Mesquita, & Ehri, 2011; Castles, Coltheart, Wilson, Valpied, & Wedgwood, 2009).

Moats (2005) argues that teaching print-to-sound is an approach that leads to confusion as there are many sounds that cannot be connected clearly to one letter and there are many letter-names that do not show iconic characteristics (e.g., h, x). However, this argument has been disputed. The small number of letter-names that could possibly cause confusion are in general outweighed by the many letter-names that are phonologically linked to the letter-sound (Foulin, 2005).

Often preschooler's first experience with print is with their own name. The letters in their own names, particularly the first letter, has been shown to be the start of young children's alphabetic knowledge. They may also show interest in learning the names of their family members and friends at kindergarten and may use their developing alphabet knowledge to find these names in print (Arrow, 2007).

Learning letters can be a slow process, with some studies showing only modest effects of interventions on alphabet knowledge and it is argued that unlike phonological awareness, alphabet knowledge may require more practice, more explicit instruction and longer periods of time to learn (Matheson, 2005; Piasta & Wagner, 2010b). How best to teach the alphabet has been debated but there is a

general consensus that letter-names and letter-sounds should be taught in combination (Piasta, 2010a).

Castles, Coltheart, Wilson, Valpied and Wedgwood (2009) examined the influence phonemic awareness and letter awareness training had on learning letter-sound correspondences of 76 Australian preschoolers (mean age 4 years 1 month). The participants were selected on the basis that they were unable to read even the simplest words and could not name any of the sounds of the printed letters shown to them. This allowed the researchers to determine if there was any causal link between the training given and the learning of letter-sound correspondences. The findings showed that phonemic awareness could be successfully taught to preschoolers over a 6 week period and the learning did generalize to untrained items; however, there was no strong evidence suggesting that prior knowledge in phonemic awareness or letter awareness aided the subsequent learning of letter-sound correspondences.

Despite the significant relationship between letter-knowledge and reading acquisition, studies have found interventions that focus only on letter-names are less beneficial than interventions that combine letter-names and phonological awareness (Gillon, 2004; Whitehurst & Lonigan, 2003) .

Development of alphabet knowledge

Although the importance of alphabet knowledge in reading development is well researched, the same can not be said for the acquisition of alphabet knowledge (Piasta & Wagner, 2010b). A recent instructional comparison study by Piasta, Purpura and Wagner (Piasta, 2010a) comparing letter-name and letter-sound instruction, letter-sound only instruction and a treated control group of 58 three and four year olds found a combined approach of letter-name and letter-sound did appear to be more beneficial in alphabet knowledge acquisition. However, other studies have suggested teaching children letter-names before letter-sounds (Justice, Pence, Bowles, & Wiggins, 2006; Share, 2004).

Singing the alphabet song whilst pointing out the letters on a poster and matching letters from the alphabet with children's names were techniques used in an emergent literacy intervention in a study by Justice et al. (2003). The results showed a significant improvement in the participant's alphabet knowledge after only 6 weeks. In a meta-analysis by Piasta and Wagner (2010b) they found instruction in letter names had a significant effect on learning of the associated letter-sounds, particularly when there is a clue to the sound in the letter-name. Alphabet books which have the printed letter alongside pictures that begin with the associated sounds have been shown to be useful in building these letter/sound connections (Hay & Fielding-Barnsley, 2009; Tunmer, et al., 2006).

McLachlan (2010) discussed several strategies to encourage the development of alphabet knowledge. Name recognition, for example children finding their name on a board and name writing encourage the development of alphabet knowledge. Sign in lists on arrival and for activities provide authentic opportunities for writing and there are many play-based literacy settings that can further enhance alphabet knowledge, for example a shop or Post Office with resources to promote writing and letter recognition (Arrow, 2010; Justice & Pullen, 2003).

Story book reading exposes children to print in books and "print referencing" is a book reading strategy that has been shown to increase preschool children's print concepts, word awareness and alphabet knowledge (Justice & Pullen, 2003). Justice and Ezell (2002) compared a shared reading intervention with a focus on pictures and a print referencing intervention with a group of preschoolers (mean age 4.5 years). Print referencing draws attention to written language explicitly, for example with specific questions and comments about print or implicitly, for example tracking print with a finger during usual book reading times. They found that the print referencing group outperformed the shared reading group on post-test measures for environmental print, word awareness and alphabet knowledge.

2.2.3 The combination of phonological awareness and alphabet knowledge

The strength of the predictive powers of phonological awareness and alphabet knowledge on subsequent reading has been questioned by a literacy research project done in New Zealand in lower decile schools (Phillips, McNaughton, & MacDonald, 2001). This project was supported by the Ministry of Education and sought to raise the reading levels of new entrants by providing professional development for the teachers (Phillips, et al., 2001). It was reported that after one year of school, children with low entry measures of literacy knowledge, showed that even though their progress in alphabet knowledge and phonological awareness was within or close to the expected progress of a child of that age, their text based reading and writing put them at risk of experiencing reading difficulties. Furthermore this was evident for the children in their study who had entered school with higher emergent literacy knowledge. Phillips et al. (2001) dispute the accuracy of generalisations that assume deficits in early language knowledge extend to later reading and writing ability because they argue that causal relationships are difficult to establish with any certainty. However, a critique of this study by the Education Policy Response Group at the College of Education at Massey University (Chapman, et al., 2003) found major deficiencies in the research, for example, no clear control group was used, and there was no significant data to show entry characteristics did not lead to differences between children and schools. It is argued that due to these flaws the findings can not be considered valid (Chapman, et al., 2003).

In a more recent study of 32 Brazilian preschoolers (mean age 4 years 2 months) examining the effect of phonological awareness and letter-name knowledge on letter-sound learning, Cardoso-Martins, Mesquita and Ehri (2011) found that Portugese-speaking preschool children that lacked letter-name knowledge and phonological awareness found it very difficult to learn letter-sound relations. When training was given to the children in phonological awareness, letter-sound learning significantly improved, especially for letters-sounds that were embedded in the letter-name.

2.3 Efficacy of emergent literacy interventions

A large range of research has been done investigating the efficacy of emergent literacy interventions and in this section some of these studies will be reviewed. The findings of two recent meta-analyses and a longitudinal New Zealand study will also be discussed.

The studies reviewed in this section have been chosen according to several criterion:

1) The children taking part were of a similar age to the children in the current study. This meant the children had received no or a minimal amount of formal reading instruction before the intervention.

2) The intervention included explicit teaching of phonological awareness or alphabet knowledge or a combination of the two.

3) The study was done in English.

4) The study was recent (no older than 1999)

The studies are presented by country of origin, and a summary of each is provided in Table 1.

Table 1 Studies Relating to Emergent Literacy Interventions

Author/s	Country	Participants	Intervention focus	Findings
Bailet, Repper, Piasta, & Murphy (2009)	United States	• N = 220 • Mean age 4 years 6 months	• Letter-names and letter-sounds • Phonological awareness.	At risk preschoolers can make significant progress in emergent literacy skills, especially in rhyme and alliteration recognition.
Vellutino, Scanlon, Small, & Fanuele (2006)	United States	• N = 1373 • Mean age 5 years	• Print concepts • Alphabet knowledge • Phonological awareness • Sight word reading • Shared and guided reading.	At risk children can significantly improve foundational literacy skills with intervention. Intervention at kindergarten or kindergarten/ 1st grade can be useful in preventing reading difficulties.
Justice, Chow, Capellini, Flanigan, & Colton (2003)	United States	• N = 18 • Mean age 4 years 5 months	• Name writing • Alphabet knowledge • Phonological awareness	Significant growth in emergent literacy knowledge over the 12 week intervention. Greater gains seen during the 6 week experimental explicit intervention.

Lonigan, Driscoll, Phillips, Cantor, Anthony & Goldstein (2003)	United States	• N = 45 • Mean age 4 years 7 months	• Phonological awareness	Computer-assisted instruction (CAI) is beneficial in raising phonological sensitivity of children at risk of reading difficulties.
Torgesen, et al. (1999)	United States	• N = 138 • Mean age 5 years 5 months	<u>Explicit intervention focus</u>: • Phonemic awareness • Phonemic decoding. <u>Embedded intervention focus:</u> • Reading sight words • Letter-sound correspondences • Writing sentences	The more explicit intervention approach produced higher levels of growth in word level reading skills. A balanced intervention needs to include not only word level skills but comprehension skills.
Young (2009)	Australia	• N = 50 • Mean age 4 years 11 months	• Phonological awareness • Alphabet knowledge • Vocabulary and print concepts	Significant improvement in emergent literacy measures over the 5 months. Change seen in teacher perceptions on emergent literacy pedagogy .
McIntosh, Crosbie, Holm, & Dodd (2007)	Australia	• N = 97 • Mean age 4 years 9 months	• Name writing • Letter-naming • Phonological awareness	Phonological awareness programme highly effective in raising emergent literacy skills.

Byrne, Fielding-Barnsley, & Ashley (2000)	Australia	• N= 106 • Mean age 4 years 7 months • N = 103 Grade 5 sample	• Phonemic awareness	Instruction in phonemic awareness at preschool level had "modest but detectable effects" on Grade 5 children's reading. Children who made slower progress in achieving phonemic awareness at preschool age had a higher risk of being poor readers.
Nancollis, Lawrie, & Dodd (2005)	United Kingdom	• N = 213 • First assessment mean age 4 years 7 months • Second assessment mean age 6 years 8 months	• Phonological awareness	At 6 years old intervention group outperformed control group on rhyme awareness and nonword spelling. Control group performed better on phoneme segmentation task. Concluded this intervention had little effect on later literacy.

2.3.1 Findings of American studies

The largest number of studies has been done in the United States and the five reviewed in this study all focus on the benefits of emergent literacy interventions for children who have been identified as at-risk of experiencing reading difficulties. Although the interventions differ, the results show an improvement in the emergent literacy knowledge of the preschoolers who took part in the interventions.

Bailet, Repper, Piasta and Murphy (2009) investigated the effects of a 9 week emergent literacy intervention with 220 American preschoolers who had been identified as at-risk of experiencing reading difficulties. The children were assessed three times over the preschool year on print awareness, alphabet knowledge, syllable deletion and blending, picture naming, rhyming and alliteration. After the initial assessment the children were randomly assigned to either the immediate intervention (November 2005) or delayed intervention (February 2006). The intervention was taught by highly skilled literacy teachers and focused on emergent literacy skills that had been identified in research to be critical in reading acquisition. These skills included letter-names and letter-sounds, syllable counting and segmentation, rhyming, alliteration and onset-rime. The results indicated that with 9 hours of targeted instruction, at-risk preschoolers can make significant progress in emergent literacy skills, especially in rhyme and alliteration recognition.

Vellutino, Scanlon, Small and Fanuele's (2006) study examined the effectiveness of an early intervention aimed at American kindergarten children (in the United States children begin kindergarten at 5 years) with risk factors for future reading difficulties. All participants were identified as having low emergent literacy skills in letter-knowledge and phonological awareness. The participants were randomly assigned to either a project treatment group or school-based comparison group. The small group treatment programme met two times a week for a 30 minute session throughout the kindergarten year and took part in activities that focused on promoting emergent literacy skills, such as print awareness, alphabet knowledge, phonological awareness,

shared and guiding reading. The school-based comparison group received no additional teaching above what their kindergarten offered.

The findings showed that an early intervention that aimed at boosting emergent literacy skills could result in a reduction in the number of children who would have qualified as poor readers on entrance into school. This study shows some children need a relatively small amount of help to reach significantly higher emergent literacy levels. Furthermore the results showed that the progress children make during the early intervention is a useful way of distinguishing children who may need continued intervention in school.

Justice, Chow, Capellini, Flanigan and Colton (2003) compared two intervention programmes with a small group of American preschoolers (mean age 4 years 5 months) over a period of 12 weeks. The participants all came from low SES communities and many displayed difficulties in oral language development. Intervention 1 used an explicit approach to teaching emergent literacy and included twelve 30 minute sessions over a six week period. Each session was broken into three components; name writing, alphabet work, and phonological awareness games. In Intervention 2 the children also completed a six week programme of twelve 30 minute sessions but in contrast to Intervention 1, Intervention 2 sessions comprised adult-child shared reading and story retelling. All 18 participants were randomly assigned to one of two groups and each group received both types of intervention, but in a different order. The participants were assessed on their emergent literacy knowledge three times; at pre-test (prior to beginning any intervention), during a week between the two six week waves of intervention and post-test (immediately after the 12 week intervention was completed). The participants were tested on 5 measures: alphabet knowledge, print awareness, name writing, phonological segmentation and rhyme production.

Justice et al.'s (2003) findings showed significant gains in the children's emergent literacy knowledge over the 24 sessions, but as they had hypothesized the greatest growth could be seen during the explicit intervention particularly in the areas of

alphabet knowledge, phonological segmentation and rhyme production. Justice et al. (2003) also found oral language proficiency was linked to the children's responsiveness to the intervention. Furthermore the study highlighted the importance of children's interest in literacy activities in facilitating emergent literacy growth. Low interest in literacy may negatively affect the development of emergent literacy skills during an intervention. The study was limited by the small sample size and the lack of untreated control group, so a comparison between growth of emergent literacy skills over time for children without any intervention was not made.

Lonigan, Driscoll, Phillips, Cantor, Anthony and Goldstein (2003) examined the effectiveness and practicality of computer-assisted instruction (CAI) programmes in enhancing the phonological sensitivity of preschoolers at risk for future reading difficulties. Children in the intervention group worked individually on a computer using two programmes, DaisyQuest and Daisy's Castle. Each programme consisted of interactive tasks in the context of an adventure game. The children followed digitalised speech instructions through a range of phonological sensitivity focused modules. When the DaisyQuest modules had been successfully completed twice the children were able to move onto the more advanced Daisy's castle.

The intervention involved 15-20 minutes of activities, 4 to 5 days a week for 8 weeks. The control group received their normal Head Start programme curriculum during the same 8 weeks. The CAI provided instruction on recognizing rhyme, beginning, middle and end sound matching, onset-rime, blending and counting phonemes. The children moved through the instruction at their own pace and were able to request assistance if needed. Results showed growth in scores from pre-test to post-test were significantly higher for the intervention group for rhyme oddity, rhyme matching, word elision, and syllable/phoneme elision tasks. There was no difference in scores between the intervention and control group for oral language or letter-knowledge, two skills not targeted in the CAI. This study suggests CAI may be an effective means of increasing phonological awareness of preschool children but the study also showed that the children required additional one-on-one help from the research assistants to

understand the instructions, suggesting rather than using the programmes as a primary tool for promoting emergent literacy skills, they could be used as a fun interactive way to practice new skills.

The aim of Torgesen et al.'s (1999) study was to determine which instructional approaches are most effective for reducing the risk of reading difficulties in young children. The relative effectiveness of three interventions that varied in the explicitness in instruction of phonemic decoding skills was compared. The 138 American participants were selected because of their slow development of phonological processing skills and were randomly assigned to one of four conditions: 1) no-treatment control (NTC); 2) regular classroom support (RCS); 3) embedded phonics (EP); or 4) phonological awareness plus synthetic phonics (PASP). The participants (mean age 5 years 5 months) were then followed from the second semester of kindergarten (this is comparable to new entrants in the New Zealand schooling system) to second grade (7 years). Word level reading skills and phonological awareness were assessed six times over the period of the intervention. At the end of the 88 hours of intervention, spread over two and a half years, additional reading skills were measured alongside spelling and math ability.

The findings showed that the most explicit instructional condition (PASP) resulted in the most significant growth in word level skills, and across group comparisons showed the PASP group outperformed the other three groups on all measures. This indicates that children with weak phonological skills can be successfully taught foundational literacy skills if the instruction is explicit. However, despite the strong results in word level skills, comprehension scores varied little across the groups, implying a more balanced approach to intervention that includes both word level skills and skills for constructing meaning will be more beneficial to early readers.

This study also attempted to answer the question of why some of the children in the PASP group made limited improvement. Child variables were analysed and home environment and behaviour problems were found to be associated with differing responses to the intervention.

2.3.2 Findings of Australian studies

Literacy researchers in Australia have also examined ways in which to improve the emergent literacy skills of preschool children. Two of the studies reviewed involved interventions that were integrated into the preschool programme by the teachers and both showed how effective this style of intervention could be in raising emergent literacy skills of 4 year old children. The third study was longitudinal and looked at the benefits on long term reading performance of a solely phonemic awareness programme, Sound Foundations (Byrne, et al., 2000).

Young's (2009) study focused on using a more informal style of intervention that embedded the literacy activities into the play-based programme. The Australian preschool teachers worked alongside Australian Catholic University personnel to plan activities that would enhance the children's emergent literacy and looked at ways these activities could be successfully incorporated into the programmes whilst still working within the play-based philosophy. Two preschool teachers implemented the intervention over a 5 month period with 50 children aged 4 and 5 months to 6 years. The children were initially assessed on vocabulary, phonological awareness, name writing, vocabulary writing, code identification, alphabet knowledge and concepts about print, and at the post-test there was an additional activity that determined recognition of environmental print[2]. The teachers were also interviewed prior to the study beginning and midway through the study.

The intervention aimed at making phonological awareness more explicit. This was done, for example, during shared reading by including syllable clapping or rhyme recognition and production activities. In order to help the children learn more about print, the teachers used environmental print that the children had brought from home to make language games and activities The results showed significant improvements in the children's learning, particularly in alphabet knowledge and phonological awareness.

[2] Contextualised print within the environment, for example McDonalds signage.

In the interviews, teachers talked about the increase in children's interest in learning about print and the fun the children had playing the literacy games. The teachers reflected on the positive influence of being more explicit with their literacy teaching and how pre-tests can be very revealing and useful for planning. "We are just giving them a better foundation, a better appreciation of all the skills they need to succeed with literacy" (Young, 2009, p. 174). This Australian study is particularly relevant to the early childhood education setting in New Zealand, as the philosophy of teaching in the two countries is very similar and resistance to introducing "formal" literacy teaching has been strong (Katz, 1990).

McIntosh, Crosbie, Holm and Dodd (2007) studied the efficacy of a phonological awareness intervention and a spoken language intervention on a group of kindergarten aged children. All 97 participants (mean age 4 years 9 months) attended the same preschool located in a low SES area of Queensland, Australia and were randomly assigned to either an intervention class or an untreated control class. The intervention was split into a phonological awareness programme (e.g. syllable segmentation, rhyme identification and generation, initial sounds) and a language programme (e.g. story retelling, following directions) and were integrated into the daily preschool teaching plan by the teacher. The phonological awareness programme was taught in Term 2 (10 weeks) and the language programme was taught in Term 3 (10 weeks). All the participants were assessed 4 times; at the end of term 1 (pre-test), at the end of the phonological awareness intervention, at the end of the language intervention and in the middle of term 4 (post-intervention). The children's language skills and phonological awareness (rhyme awareness and phoneme isolation of beginning sound) were assessed.

The results showed the phonological awareness programme was highly effective in raising the levels of emergent literacy skills of the children taking part in the intervention and this growth was maintained, shown when the children were reassessed 3 months after the intervention was completed. However the effect of the language programme was only observable in the 3 month post-intervention

assessment scores. The researchers interpreted these findings as meaning that possibly language skills require more time for consolidation.

Byrne, Fielding-Barnsley and Ashley (2000) assessed a programme (called Sound Foundations), that they had developed, which focused on teaching phonemic awareness. The original sample involved 126 Australian preschoolers (64 in the intervention group and 62 in the treated control group) with a mean age of 55 months. The intervention group was taught 6 phonemes in initial and final positions in words using posters, games, worksheets and audiotape, whilst the control group took part in semantic categorization activities using the same programme resources. The two groups received instruction for 30 minutes per week for 12 weeks. On completion of the 12 week programme the findings showed greater increases in the phonemic awareness of the intervention group.

Byrne et al. (2000) followed the original sample of children through kindergarten, into school. At Grade 5 the fifty-six children remaining from the intervention group and forty-seven from the control group (mean age for both groups 11 years) were reassessed on five reading tests. The findings showed that the intervention group outperformed the control groups on three measures, irregularly spelled words, nonword decoding and a print identification measure; however, the results also showed that some children who were part of the intervention group became poor readers. These findings highlight that early phonemic awareness instruction can have some moderate long-term effects on children's reading but it is by no means a guarantee against future reading difficulties. The authors note that the limited amount of time the children originally received on the Sound Foundations Programme (6-7 hours) and narrow focus on phonemic identity may have also affected the long term reading performance of the children in the intervention group.

2.3.3 Findings of an English study

The single reviewed study from the United Kingdom (UK) looked at the long-term benefits of a solely phonological awareness intervention.

A UK longitudinal study by Nancollis, Lawrie and Dodd (2005) looked at the long-term effects of an intervention for four year old preschoolers that focused on syllable and rhyme awareness. All the participants were from low SES backgrounds. The control group consisted of 114 children (mean age 4 years 7 months) and the intervention group 99 children (4 years 6 months). The participants were initially assessed on receptive and expressive language, receptive vocabulary, phonological awareness and articulation. The phonological awareness intervention consisted of one 45 minute lesson a week for nine weeks. Each lesson was broken into three components: syllable, rhyme and initial phoneme discrimination. Two years later the participants were reassessed on eight measures: linguistic concepts, rhyme awareness, phoneme segmentation, letter reproduction, spelling, non-word spelling, reading and non-word reading. The results showed the intervention group performed significantly better than the control group in rhyme awareness and non-word spelling, however the control group performed significantly better on the phoneme segmentation task. All other measures showed no significant difference. Nancollis et al. (2005) suggest from these results that benefits from the intervention did not carry over to literacy two years later and support Byrne et al.'s (2000) finding that a narrowly focused intervention may not have the expected positive effect on literacy acquisition long term.

2.3.4 Summary

It appears from all the above studies, whether based in the United States, Australia or United Kingdom, that emergent literacy interventions can be effective. The interventions ranged in content, from more narrowly focused programmes, for example, Nancollis et al. (2005) and Byrne et al.(2000) to interventions embedded into the day to day preschool programme, for example, Young (2009) and McIntosh

et al. (2007) but all the interventions included phonological awareness instruction and some, a combination of phonological awareness and alphabet knowledge.

The longitudinal studies emphasised the importance of including a range of emergent literacy skills that are strongly correlated with early reading acquisition in an intervention if long term benefits in reading performance are to be seen. These include higher level phonological awareness skills, for example phonemic awareness and alphabet knowledge. These findings were supported by the National Early Literacy Panel (NELP) which examined five categories of instructional interventions: code focused, shared reading, parent and home, preschool/kindergarten and language enhancement and found only the code-focused instruction that taught skills that helped children "crack the alphabetic code" had moderate to large effects on the emergent literacy skills most related to later literacy growth (Shanahan & Lonigan, 2010).

The effectiveness of explicit teaching of emergent literacy skills was also highlighted but as Young's (2009) Australian study showed, this explicitness did not mean a formal skill and drill style of teaching. Recent meta-analyses of studies focused on emergent literacy knowledge and acquisition further support these findings and these will now be reviewed.

2.3.4 Findings of meta-analyses

The National Early Literacy Panel (NELP) was convened in 2002 by the National Institute for Literacy in the United States and conducted a meta-analysis of approximately 500 studies in order to determine the relationship between emergent literacy skills and later literacy acquisition and the impact of instructional interventions on children's learning (National Early Literacy Panel, 2008). NELP found phonological awareness and alphabet knowledge had strong predictive influence on later literacy development, a finding that is supported by previous research (Lonigan, et al., 2000; Nicholson, 2003; Snow, Burns, & Griffin, 1998). Phonological awareness and alphabet knowledge together provide the basis for

acquiring the alphabetic principle, the knowledge that speech sounds are represented by letters in print. According to Bailet et al. (2009) "[m]astery of this fundamental relationship between spoken and written English is the single most important factor in the development of literacy in our language" (p. 337).

Hattie's (2009) synthesis of meta-analyses on reading found that phonics instruction that emphasises letter-sound correspondents was beneficial, particularly with preschoolers and children in the early years of schooling. The importance of phonemic awareness and alphabet knowledge on reading outcomes was also highlighted in the National Reading Panel meta-analysis findings of 52 published studies (National Reading Panel, 2000).

Whether these findings are supported in a New Zealand based study will now be discussed.

2.3.5 New Zealand longitudinal findings

There are very few studies conducted in New Zealand examining the literacy skills of preschoolers. However, a five year longitudinal study was conducted in New Zealand by Nicholson (2003) who looked at the alphabet knowledge, phonemic awareness skills and receptive vocabulary of 111 children at the beginning of school (mean age 5. 26 years), at the end of year 1 (n=94, mean age 5.9 years), in year 2 (n=78, mean age 7 years) and year 5 (n=46, mean age 9.9 years). The children were divided into two groups according to socio-economic (SES) background.

At the beginning of school the results showed a wide range of scores for both groups but the children from high-SES scored on average more highly than children from low-SES on all measures: letter-naming (upper-case and lower-case letters), phonemic awareness, invented spelling and pseudoword reading; similar findings were reported at the end of year 1. When partial correlations were calculated to find the strongest predictor of reading development in year 1, alphabet knowledge was

shown to be most highly correlated with Burt Word Reading[3] (Gilmore, Croft, & Reid, 1981). At the end of year 2 the correlation analysis showed phonemic awareness was now a stronger predictor of Burt word reading (Nicholson, 2003). In the partial correlations in year 1 and year 2, receptive vocabulary, measured using the Peabody Picture Vocabulary Test, was not significant in predicting reading success.

The children's reading, writing and spelling progress was followed until they were ten years of age. The longitudinal results showed the children with lower pre-reading skills (i.e., alphabet knowledge, phonemic awareness and phonological recoding) on school entry tended to lag behind in reading and writing in comparison to their peers who began school with higher levels and schools were unable to reduce this gap. Nicholson (2002) argues that "in early childhood education there needs to be specific, systematic but appropriate teaching of alphabet knowledge, phonemic awareness and letter-sound correspondences, especially for children from less-privileged backgrounds" (p. 48).

2.4 Summary and Research Questions

To summarise there is some difficulty in comparing interventions because of the substantial variation in assessments, intervention approaches, and findings. However, in general the findings show that interventions that are based on phonological awareness and alphabet knowledge have positive effects on literacy learning. There are still questions as to whether we can infer that interventions that take place in lower SES areas can have the same benefits for children from higher SES areas and vice-versa and although a number of researchers have used a range of literacy interventions with some success, it is not absolutely clear what is most crucial as far as content for emergent literacy interventions (Gillon, 2004).

There appears to be only a limited number of New Zealand longitudinal studies on the impact of literacy interventions at preschool on future reading achievement and

[3] Assesses reading words in isolation. New Zealand standardised test with age norms from 6.0 to 12.11 years.

studies that focus on the efficacy of preschool interventions in New Zealand (A. Arrow, personal communication, February 21, 2011, T. Nicholson, personal communication, February 15, 2011). Therefore there is a need for a New Zealand study examining the potential effect of a preschool intervention aimed at boosting the emergent literacy skills that have been identified as critical to future reading achievement, phonological awareness and alphabet knowledge.

Based on the literature presented in this chapter, my research questions are:

What is the range in emergent literacy skills in a sample of kindergarten children in New Zealand?

Can four year old kindergarten children with limited emergent literacy knowledge be successfully taught phonological awareness and alphabet knowledge, two powerful predictors of later reading achievement?

In Chapter 3 I will present the details of the methodology which will be used to examine these questions.

Chapter 3: Method

3.1 Introduction

Educational research covers an enormous field of issues and attempts to answer a diverse range of questions. There are many ways to approach a research question and to systematically gather information. Choosing the most appropriate research design for a particular study requires careful consideration of the research question, the participants and the setting (Drew, Hardman, & Hosp, 2008).

Quantitative and qualitative research are two of the main research methodologies. Qualitative research is seen as an explorative approach that focuses on human attitudes, perspectives and issues in context. Information is gathered using methods such as observations and interviews. Control and random assignment are not relevant to this method and samples are often carefully chosen to gather the desired information. A hypothesis may emerge during the gathering of information rather than being the driver of the study. Once collated the information is examined for patterns or themes that may have arisen for that particular setting (Wallen & Fraenkel, 2001).

Quantitative research methods, in comparison, develop a hypothesis which is tested by collecting numerical data that can be statistically analysed. When variables are controlled for and random assignment of participants is followed there is the assumption that researchers can then make inferences to the wider population. Quantitative research allows for larger sample sizes and is widely used for comparing the effects of a particular intervention (Liberty & Miller, 2003).

An experimental pre-test/post-test control group design was chosen for this study to test the hypothesis that four year olds can benefit from an intervention that promotes phonological processing skills and letter-knowledge. The purpose of this design was

to collect empirical data in order to gauge the effectiveness of the intervention and allow outcomes of the control and intervention group to be compared. This research design is commonly used in educational research that is attempting to test the efficacy of a particular intervention (Justice, et al., 2003; McIntosh, et al., 2007; Nancollis, et al., 2005; Piasta, 2010a).

3.2 Participants

In New Zealand the choice of Early Childhood Education (ECE) is extensive, however, for this study participants were recruited from public kindergartens. The original sample of participants was drawn from six kindergartens in a small New Zealand city. All six kindergartens fall under the umbrella of the North Island Kindergarten Association and offer 20 hours ECE (six hours a day, 20 hours a week at no charge) to children between three and five years of age. Each kindergarten runs on a sessional basis (8.30am–2.30pm Monday, Tuesday, Thursday and Friday and 8.30am-12.30pm Wednesday) with most children attending four to five days a week.

The kindergartens were chosen from a diverse range of areas within the city in order to give a representative sample of the larger population. The socio-economic situation of each area is indicated by the decile rating of each local primary school (ECE centres do not have decile ratings). This rating can range from 1 to 10 and is calculated using information from the 5 yearly Census of Population and Dwellings (Ministry of Education, 2010a). The decile rating is determined by the socio-economic catchment the school draws from, with decile 1 schools containing a higher proportion of children from lower socio-economic groups (Ministry of Education, 2010a). Most of the children attending the kindergartens in this study will move onto the local primary school. The decile ratings of the closest primary schools to the 6 kindergartens, ranged from 1 to 9, with 7 of the 8 local schools rating 4 or below.

All of the chosen kindergartens work from the same curriculum, Te Whaariki (Ministry of Education, 1996) but have developed their own personal philosophy and teaching programme, which varies from kindergarten to kindergarten. Free play is a

large part of the day, with rolling kai (the children choose when they would like to eat) and a mat time which may be at the start or finish of the morning or afternoon session. Mat time is often seen as a whole group teaching opportunity and may involve a number of the following: a shared book, music and movement, sharing of news, number or letter activities, discussing manners and appropriate kindergarten behaviour.

3.3 Selection process

The following criteria were applied for selection of participants:
They were children

1) aged between 4 years and 4 years 9 months. Children could not be older than 4 years 9 months as they would enter school before the intervention and post-testing had been completed. The only exception was for children who were not starting school on their birthday due to the date being so close to the end of term.
2) who were native English speakers
3) for whom parental consent had been given
4) who attend kindergarten a minimum three days a week

Forty–six students at the six kindergartens met the criteria. Of the 46 children, one child chose to withdraw from the assessment before completion, one child was found not to meet the minimum attendance criteria, one was too young, and one would be starting school before the completion of the intervention, leaving a total of 42 children.

3.4 Measures

There were two assessment measures used in this study, 1) the Phonological Awareness Literacy Screening PreK (PALS-PreK) (Invernizzi, et al., 2004) and; 2) the Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 2007). The PALS-PreK assessment measure provided data to answer the research questions. The

purpose of using the PPVT was to gather information on the receptive vocabulary of the children who had been identified as having low levels of emergent literacy skills. These tests and their administration will now be detailed.

3.4.1 PALS-PreK

PALS-PreK (Invernizzi, et al., 2004) is a standardised assessment designed at the University of Virginia, Charlottesville Virginia specifically for four year old children with the aim of providing information that will aid teachers in designing their early literacy programmes. PALS-PreK consists of six tasks: name writing, alphabet knowledge (split into upper-case and lower-case letters and letter-sounds), beginning sound awareness (initial phoneme identification), print and word awareness, rhyme awareness and nursery rhyme awareness.

Although PALS-PreK is not commonly used in New Zealand ECE settings, care was taken to choose an appropriate assessment tool for this study. The PALS- PreK assessment was chosen for this study because of its focus on phonological awareness and alphabet knowledge of preschoolers and because it is research-based (Lane, et al., 2005). Four pilot studies using PALS-PreK data have shown reliability of measurement and validity in assessing emergent literacy (Invernizzi, et al., 2004). Gillon (2004) also recommended PALS-PreK as a means of assessing early literacy knowledge.

I modified the PALS-PreK to suit the context of the present study in the following ways: of the six sections in the PALS- PreK assessment, I chose to administer the four tasks that were most relevant to my research question: name writing, alphabet knowledge (split into upper-case letter-naming, lower-case letter-naming and letter-sound), beginning sound awareness and rhyme awareness. Name writing and letter-naming (upper-case and lower-case) assess children's alphabet knowledge and phonological awareness is assessed with beginning sound and rhyme awareness tasks. The letter-sound task, a part of the alphabet knowledge section, gives an indication of children's knowledge of letters as well as whether they are taking phonological cues

from the letter-names. The print and word awareness section was excluded as this knowledge has not been highlighted in literature as a strong predictor of future reading success. The nursery rhyme awareness section was also excluded as I felt one rhyming activity was sufficient and I was aware of the need to keep the assessment time to a minimum given the age of the participants.

Based on the results of pilot studies, the developers of PALS-PreK decided to set levels in the alphabet knowledge section. If children scored under 16 on the upper-case alphabet they would not continue on to the lower-case alphabet or letter-sound tasks. Pilot study results in the United States indicated that children consistently identified more upper-case letters than lower-case letters (Invernizzi, et al., 2004). They further discovered that children who scored more than nine on the lower-case letters generally knew some letter-sounds.

However, after speaking with several kindergarten teachers about the approaches they used when introducing letters to preschool children, I decided in New Zealand these findings may not be applicable. The general consensus with these New Zealand teachers was that children's first introduction to letters was with the printed version of their name which only included one upper-case letter and the remainder of letters in lower-case form. They further commented that children's print awareness was often based on their exposure to print in books which are also made up of mainly lower-case letters. In Arrow's (2007) study letter-knowledge measures only included the lower-case as it was seen to be a more sensitive test of children's letter-knowledge. Therefore I chose to assess both upper-case and lower-case letter-knowledge and letter-sounds regardless of scores. However to reduce frustration with children with lower levels of letter-knowledge, the letter-sound section was often just briefly looked at and if the child showed no understanding I did not continue assessing letter-sound knowledge.

Each participant was individually tested following the instructions outlined in the PALS –PreK Teacher's manual, taking up to 20 minutes to complete the four tasks.

As recommended in the PreK Teacher's manual (Invernizzi, et al., 2004), the beginning sound awareness task and rhyme awareness task were not performed one after the other, instead name writing was the first task, followed by rhyme awareness, then alphabet knowledge, and finally beginning sound awareness. All parts of the assessments could be stopped at any stage if the task was found to be too difficult for the participant. Each participant had their own PALS-PreK assessment form which included the pre-test and post-test.

Assessments within PALS-PreK

Each of the six assessment tasks will now be described in more detail.

Name writing

Each participant was given their assessment form which had a blank page for the name writing task. The participants were asked to draw a picture of themselves and write their name. If the participant did not want to draw a picture, they were encouraged to just write their name the best that they could. The participant's name writing was scored from 1-7 according to the scale set out in the PALS-PreK teacher's manual.

Rhyme awareness

Each participant was presented with four pictures, one slightly larger and separated from the other three. It was explained to the participants that we were going to be listening for words that rhyme or sound alike. There were two practice items and corrective feedback was given for an incorrect answer. Each of the four pictures was named, and then the participants were told to listen for a word that rhymed with the first larger picture. The participants needed to point out the picture they thought rhymed. For example "Listen for the word that rhymes with mop; that sounds like mop. Listen: mop-top, mop-bike, mop-can. Point to the picture that rhymes with mop". No indication was given to whether their answers were correct or not in the testing stage. There were 10 test items.

Alphabet knowledge

Upper-case and lower-case letter-naming

The participants were presented with the 26 letters of the alphabet in upper-case font arranged in random order. Participants were instructed to point and name the letters starting from the top left hand corner. A blank page was used to uncover the letters line by line so the children could focus on each line separately. If the participants were unable to name a letter they simply needed to say "I don't know this one" and skip to the next letter. Incorrect answers were also noted down, along with words or comments the participants may have made. The number of correct answers was recorded out of a possible 26. This task was repeated with lower-case letters.

Letter-sounds

The participants were shown the upper-case letter M and it was explained in this task instead of giving the name of the letter, we were looking at the letter-sound. The M was used as an example. The participants were then presented with 23 upper-case letters (M, X and Q excluded) and 3 diagraphs (sh, th, and ch) in a random order and were asked to point and give the letter-sound of each. If the participants gave the letter-name, this was acknowledged as "yes that is the name of the letter, can you also tell me the sound the letter makes?" The task was scored out of 26.

Beginning sound awareness (initial phoneme identification)

This task was not only used as an assessment but also as a teaching opportunity with 4 practice items with corrective feedback before beginning the test items. This task focused on the beginning sounds /m/, /s/ and /b/. It was explained to the participants that they were listening for the way a word sounded at the beginning, with attention being drawn to the way the mouth felt with different beginning sounds. The practice items, 'man', 'sock', 'sink' and 'bag', allowed the participants to hear an example of each of the focus beginning sounds. Participants were asked to identify the picture and give the sound the word started with. The first answer was recorded along with any other sounds or comments. The pictures were then grouped according to beginning sound, however this was not part of the assessment task. There were 10 test items.

3.4.2 The Peabody Picture Vocabulary Test (PPVT)

Receptive vocabulary was measured using the Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 2007). In this assessment the participants are shown a set of four coloured pictures. The administrator says a word, for example 'sleeping' and the child needs to point to the picture that best illustrates the word. This test was chosen because oral language (vocabulary) has been shown to be associated with phonological awareness and written language awareness (Justice & Pullen, 2003). This test was not administered again in the post-testing, as this information was gathered as baseline data rather than data to show growth from one period of time to another. Vocabulary was also not explicitly taught in the intervention.

3.5 Selecting participants for the intervention

From the original sample of 42, 24 participants (14 boys with a mean age of 4 years 5 months and 10 girls with a mean age of 4 years 5 months) who scored at or below the set minimum scores (described below) in at least three of the 6 sections of the PALs-PreK assessment were chosen to be in either the intervention group or control group.

The following criterion was used for selecting participants for the study:
Name writing: A score of three or less (maximum score is 7). The Name Writing scoring was outlined in the PALS-PreK Teacher's manual, with explanations and pictorial representations to help. A score of 3 indicated a name consisting of random letters and symbols, whereas 4 was clearly a child who knew at least some of the correct letters in their name.

Rhyme awareness: A score of four or less (maximum score 10). The rhyming section was scored at four or less as these were the scores found to most often indicate chance.

Upper-case alphabet recognition: A score of five and less (maximum score 26).

Lower-case alphabet recognition: A score of five or less (maximum score 26).
The alphabet sections were set at a score of 5 or less based on the findings of Nicholson (1997) that of the 88 Year 1 children from low-income schools surveyed the average score on the alphabet knowledge test was 10 out of a possible 26.

Letter-sounds: A score of five points or less (maximum score 26). The PALS-PreK developmental ranges indicate that children should be able to name between 4 and 8 letter-sounds at this age. This minimum score was set at the lower end of this range as it appeared to be a very difficult task for many of the children.

Beginning sound awareness: A score of four points or less (maximum score 10). The beginning sound scores, unlike the rhyming scores, were not highly influenced by guessing as the child tended to either understand the concept or did not. For example some of the children who did not have an understanding of beginning sounds answered the following questions, "what sound does bird start with?" or "what sound does map start with?" with "tweet tweet" or "x marks the spot" respectively. Many others simply gave no answer for all 10 questions. A minimum score was set at 4 as this tended to identify any child who was struggling with this task.

The 24 participants who met the above criterion were then paired according to scores, and then randomly selected to be in the intervention or control group. The control group continued to take part in their kindergarten programme without any extra literacy support. The intervention group received 15 minutes of small group instruction aimed at boosting phonological awareness and alphabet knowledge twice a week for ten weeks. The kindergarten attendance rate for the whole group over the ten weeks (N=42) was 87%. The kindergarten attendance rates for the intervention group (n=13) and control group (n=11) were 89% and 86% respectively. Attendance records of the intervention sessions showed 12 of the 13 children (92%) attended 17 or more of the 20 sessions.

This study did not include a treated control group because a recent meta-analysis of studies evaluating phonemic awareness instruction, undertaken by the National Reading Panel (2000), showed no significant statistical difference between the treated and untreated control groups (Ehri, et al., 2001). What does seem more important is the need for equivalent groups that have been randomly selected, a selection criteria used by Ehri, et al. (2001) when choosing studies to be included in the National Reading Panel's (2000) meta-analysis.

Small group instruction, as opposed to one-on-one instruction, was chosen because it has been shown to be more effective. This may be the result of heightened motivation due to the social makeup of the group or the opportunities that arise for learning from peers (Ehri, et al., 2001).

3.6 Procedures

After ethical approval was obtained from the University of Waikato, Faculty of Education, Human Research Ethics Committee, a letter (see Appendix A) was sent to the General Manager of the North Island Kindergarten Association requesting permission to approach the six kindergartens. Once this permission was received a phone call was made to the Head Teachers of the kindergartens to explain the study and see if they may be interested in taking part. Following the phone call a letter outlining the study and containing a permission slip was posted to the teachers for further perusal and the opportunity was given to ask any questions (see Appendix B). When the teachers had all signed the permission slip, a letter addressed to the parents/caregivers explaining what the study would involve for their children and requesting written consent for their child to participate was delivered to the kindergartens (see Appendices C and D). The teachers distributed these to the parents/caregivers whose children met the study criteria and collected them once signed. A date was given for returning the consent forms and after this date the assessments of the children whose parents had given written consent began. It is important to note that the assent of the children to take part was requested on an

ongoing basis throughout the whole study. At the beginning of each lesson the children were simply asked if they would like to join in the activities planned for that particular day and during the 10 weeks of intervention some children chose to join a short period of time after the session had started but none chose not to participate for the full session.

A quiet area with as few distractions as possible was sought for the assessment process within each kindergarten. Only in one kindergarten were the children assessed in the teacher's office, on the recommendation of the Head Teacher, as the assessment time coincided with mat time and would have been very distracting for all.

Each individual child was asked if they would like to participate in the study (see Appendix E). If they were happy to take part, the PALS-PreK assessment was administered. At any stage during the assessment the children were able to withdraw from the study. Each child completed the test in one sitting, ranging in time from approximately 10 to 20 minutes. All the testing was completed in 3- 4 weeks.

3.6 Intervention

The development of the intervention in the present study was based on previous emergent literacy research. Findings have shown explicit, small group instruction for between 10 and 15 minutes at one time provides the optimum learning environment for children (Byrne & Fielding-Barnsley, 1995; Ehri, et al., 2001). Four year old children were chosen to participate in the present study for several reasons: 1) research has shown that preschool levels of phonological awareness and alphabet knowledge are highly predictive of later literacy achievement (Ehri, et al., 2001; Nicholson, 2003); 2) significant benefits of emergent literacy interventions have been shown with preschool age children (Ehri, et al., 2001); and 3) there is a lack of research in New Zealand on phonological awareness and alphabet knowledge intervention at preschool level (McLachlan & Arrow, 2010).

A combination of phonological awareness and alphabet knowledge instruction was chosen for the intervention as focusing on only one of these skills has been shown to be less effective (Gillon, 2004; National Reading Panel, 2000).

The intervention focused on teaching the children phonological awareness and letter-sound knowledge using games and books. The intervention design was based on the theory that phonological awareness develops in a continuum, from larger sound units, for example onset/rime to smaller more difficult to discern sound units for example, phonemes (Lane, et al., 2005). The lessons introduced the concept of rhyme, using rhyme detection activities initially, with the gradual introduction of rhyme generation, an activity which is seen to be more challenging for younger children (Lane, et al., 2005). Onset/rime tasks involved identifying the phoneme at the beginning of words and grouping words according to this beginning sound, working towards the blending of the onset and rime and eventually phonemes.

Immersed within the phonological awareness activities was the introduction to letters and the associated sounds. The alphabet knowledge activities aimed to teach only a small number of letter-phoneme correspondences. The phonemes and associated letters that were chosen had been identified as common in speech by Byrne and Feilding-Barnsley (1991).

Two days a week for the length of the intervention all six kindergartens were visited for 10 to 15 minutes. The kindergartens were spread out across the city, so in order to get to each kindergarten at a time that was suitable, the sequence in which the kindergartens were visited had to be fixed for the whole intervention. Even with these fixed times there was often changes to the programme or children were busy with activities on arrival so working around these challenges was often a complex task and required a certain amount of flexibility. The following timetable gives an approximation of a typical day

9.15- 9.30am Kindergarten 1

9.45- 10am Kindergarten 2

10.15- 10.30am Kindergarten 3

11-11.15am Kindergarten 4

11.30-1pm Lunch break for the children

1-1.15pm Kindergarten 5

1.40-1.55pm Kindergarten 6

3.6.1 Outline of three lessons

An overview of 3 sample lessons from the intervention will be given here and activities will be labeled according to whether they focus on phonological awareness (PA) or alphabet knowledge (AK). Full lesson plans for all lessons can be found in Appendix F.

Lesson 1a began with the introduction of Lime the Monster hand puppet who loved to rhyme (PA). We talked about what a "rhyme" was and Lime gave some examples, cat-hat, dog-log. The book *Dragon in a Wagon* (Dodd, 2001) was then read emphasizing the rhymes. At the end of the book Lime wanted to remember the rhymes but needed some help when his attempts went wrong, (e.g., a snake eating popcorn, a snake eating pizza…..oh yes a snake eating cake).

The next activity provided some practice in matching rhyming objects (PA). The children were given two bags, one was full of animals and the second with items that rhymed. The aim was to work together to match the pairs. The lesson was finished with some nursery rhymes, "Here is a beehive, where are all the bees, hidden away where nobody sees, watch as they come out of the hive, 1,2,3,4,5 bzzzzz" and "1,2 buckle my shoe".

The first activity in lesson 5A involved the children matching the phoneme /s/ to the letter Ss (PA and AK). The children were asked to identify pictures that began with the phoneme /s/ and then match these pictures with an example of a printed Ss which was written on a large piece of paper. By correctly placing the pictures on top of all the letter Ss's the children shaped out a large S on the paper.

To revise rhyming I read the first 31 pages of Dr Seuss (2003) *Hop on Pop* (PA). We talked about the similarities in word pairs like hop/pop, red/bed, tree/bee, what they could hear that is the same in these words. How do they know they rhyme? The last activity focused on connecting the phoneme /m/ with the letter Mm (PA and AK). The children were shown upper-case and lower-case letters and we talked about the shape, the differences between upper-case M and lower-case m and if it reminded them of anything. I emphasised its sound then talked about some words that began with Mm. Using toy animals the children made an upper-case M and with pipe cleaners shaped a lower-case m. Upper-case M and lower-case m were then added to their letter/sound books and they chose a picture that started with the letter M to stick in their books.

Lesson 10b began with a game called "Letter jumping" (AK). Cards with the letters Ll and Aa written on them in large font were laid on the ground. I would call out a letter and the child needs to jump on that letter, then slowly other letters were added, for example, upper-case and lower-case Mm, Tt, Ss, and Pp, until they were having to recognise the 6 letters they had been learning. The next game was "Beginning sound freeze" (PA). The children walked around and when I called out a word they needed to freeze, they could only "unfreeze" when they called out the beginning sound of that word. Words I called: cat, bear, tiger, penguin, mouse, ant, snake, lion, dog, fish and goat. To finish I read Julia Donaldson's (2008) book *Stick Man*.

3.7 Summary

This study was conducted in six kindergartens in a North Island city. The phonological awareness and alphabet knowledge of 42 children was first measured then 24 four year olds were selected on the basis of their emergent literacy knowledge, assessed using PALs Pre-K, to take part in the study. The 13 children that were randomly selected to be in the intervention group received instruction in alphabet knowledge and phonological awareness for 30 minutes a week for 10 weeks. The children that were in the control group continued with their regular early childhood programme. Pre-test and post-test scores for all the participating children

were then analysed to determine the efficacy of the emergent literacy intervention. These results will now be presented in Chapter 4.

Chapter 4: Results

4.1 Introduction

The purpose of this study was to determine if an intervention that focused on phonological awareness and alphabet knowledge could boost the emergent literacy skills of 4 year old children. The pre-test data was also examined to determine the range in children's preschool emergent literacy skills and compare this range with those seen in New Zealand in previous studies (Arrow, 2010; Tunmer, et al., 2006).

The chapter initially describes and presents the data collected from all the 42 participants for the 6 measures (name writing, upper-case and lower-case letters, letter-sound awareness, beginning sound awareness and rhyming) that were assessed, then moves onto the comparison of intervention and control group data pre-test and post-test.

4.2 Pre-test data

In order to address the research question, 'What is the range in emergent literacy skills in a sample of kindergarten children in New Zealand?', descriptive statistics for the original sample of 42 participants on the six emergent literacy skills tested will now be presented. The original sample of 42 participants was assessed on six emergent literacy skills. Four of these relate to alphabet knowledge (i.e., name writing, upper-case and lower-case letters, and letter-sound awareness) and two relate to phonological awareness (i.e., beginning sound awareness and rhyming).

As is detailed in Chapter 3, each measure was given a minimum score and children who scored at or below this score on at least three measures would then continue on in the study. Twenty-four of the original 42 children met the criterion and moved into either the intervention group (n=13) or the control group (n=11).

Figure 2 shows six samples of name writing. The samples show the large range in name writing abilities in this group of children. It can be seen that two children drew symbols and pictures; three wrote in mirror image but with recognisable letters and one correctly wrote all the letters of her name.

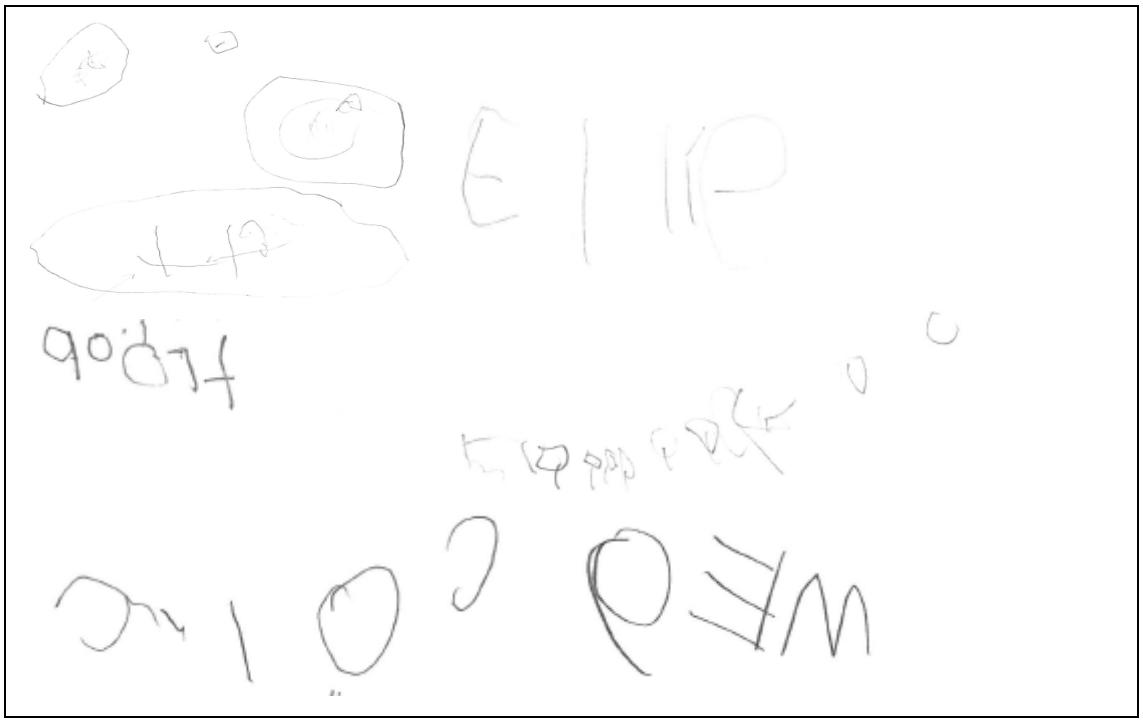

Figure 2 Name writing samples from PALS-PreK assessment

Table 2 presents the scores for the six separate measures of emergent literacy skills. It can be seen that for each measure the range of scores start from the lowest possible score (0) and in 5 out of 6 measures come close to, and if not reach the maximum possible score. By comparing means it can be seen that children tended to know more letter names than letter-sounds. The mean number of upper-case letters named was 9.88 (SD=9.7) and the mean number of lower-case letters named was 8.6 (SD=8.71) in comparison to the mean number of letter sounds provided which was 2.93 (SD=4.95). The most commonly known letters were X, O and S.

In the phonological awareness tasks (i.e., beginning sounds and rhyming), the rhyming task that required working with the larger phonological units resulted in

higher mean scores (4.43) than the beginning sound task (3.62). The beginning sound task required children to separate the initial phoneme of each word, and is considered a more complex task.

Table 2 Pre-test Mean Scores for all Participants (N=42)

Measures (Maximum Possible Score)	M (SD)	Range
Name writing (10)	4.86 (1.92)	0-7
Upper-case letters (26)	9.88 (9.7)	0-26
Lower-case letters (26)	8.6 (8.71)	0-25
Letter-sounds (26)	2.93 (4.95)	0-20
Beginning sounds (10)	3.62 (4.19)	0-10
Rhyming (10)	4.43 (2.70)	0-10

PPVT scores

As described in Chapter 3 the 24 children that moved into either the intervention group or control group were administered the PPVT assessment. The reason for using the PPVT assessment was to gather information on the receptive vocabulary of the children who had been identified as having below average emergent literacy knowledge. The results showed a score range of 72-122, a mean score of 96.71 and a standard deviation of 12.52, where a score of 100 is considered average on the standardised bell curve. The children that had the two lowest scores 72 and 78, both scored 3 for name writing, 0 for letter-naming (upper-case and lower-case) and letter-sound awareness and 2 for rhyming. The children that had the highest PPVT scores, 122 and 117, scored slightly higher on name writing, 4 and 6 respectively and were able to name between 1 and 3 letters but were unable to name any letter-sounds. On

the phonological awareness tasks they appeared to have a better understanding than the children with the lower PPVT scores. Beginning sound scores were 6 and 4 respectively out of the possible 10 and both scored 4 for the rhyming task out of a possible 10.

4.3 Comparison of intervention and control group means

In order to address the second research question 'Can four year old kindergarten children with limited emergent literacy knowledge be successfully taught phonological awareness and alphabet knowledge?', the post-intervention results will be now presented for the 24 children that moved into the intervention (n=13) and control groups (n= 11).

To show there was no significant difference between the intervention group and the control group before the intervention, a one way ANOVA was conducted for each of the six measures. Table 3 shows the pre-test means for each group used to calculate the one way ANOVA. Statistical analyses confirmed the two groups were not statistically different; name writing, $F(1, 23) = .193$, $p = .665$, upper-case letters, $F(1, 23) = .130$, $p = .721$, lower-case letters, $F(1, 23) = .002$, $p = .961$, letter-sound, $F(1, 23) = .831$, $p = .371$, beginning sound, $F(1, 23) = .385$, $p = .541$ and rhyming, $F(1, 23) = .167$, $p = .687$.

Table 3 Pre-test Mean Scores for the Intervention and Control Groups

Measures (Maximum Possible Score)	Intervention (n= 13) Pre-test M (SD)	Control (n = 11) Pre-test M (SD)
Name writing (7)	4.00 (2.00)	4.33 (1.78)
Upper-case letters (26)	3.23 (4.88)	3.83 (3.21)
Lower-case letters (26)	2.92 (4.41)	3.00 (3.19)
Letter-sounds (26)	0.08 (0.28)	0.25 (0.62)
Beginning sounds (10)	1.61 (2.75)	0.92 (2.87)
Rhyming (10)	3.46 (1.13)	3.17 (2.33)

4.4 Effectiveness of emergent literacy intervention

Table 4 shows the mean and standard deviation for the intervention and control groups, pre-test and post-test on the six assessment measures. These data suggest some growth in all the measures over the 10 week period for both groups. The higher mean scores for name writing and rhyming suggest they may have been the easiest of the six tasks for the children. By contrast, the letter-sound task was very difficult, with the pre-test mean scores being less than 1 out of a possible 26. The beginning sound task proved also to be challenging with mean pre-test scores sitting below 2 out of 10. The children generally knew similar numbers of lower-case and upper-case letters, as is evident in both pre-test and post-test scores.

Table 4 Changes in Emergent Literacy Performance from Pre-test to Post-test

Measures (Maximum Possible Score)	Intervention (N = 13)				Control (N = 11)			
	Pre-test		Post-test		Pre-test		Post-test	
	M	SD	M	SD	M	SD	M	SD
Name writing (7)	4.00	2.00	5.38	1.19	4.33	1.78	5.09	1.64
Upper-case letters (26)	3.23	4.88	8.62	6.14	3.83	3.21	5.82	4.49
Lower-case letters (26)	2.92	4.41	7.08	5.72	3.00	3.19	5.18	4.51
Letter-sounds (26)	0.08	0.28	3.38	2.87	0.25	0.62	0.91	1.38
Beginning sounds (10)	1.61	2.75	8.31	2.02	0.92	2.87	3.27	3.35
Rhyming (10)	3.46	1.13	7.46	2.70	3.17	2.33	5.45	2.88

In order to answer the research question, statistical analysis was required. The data was analysed using Multivariate Analyses of Variance (MANOVA) to determine the influence of the emergent literacy intervention. Separate analyses were conducted for each measure. Results showed that the intervention group made significantly greater gains in scores on three measures: upper-case letters, $F(1, 23) = 11.521$, $p = .003$, letter-sound, $F(1, 23) = 9.054$, $p = .006$, and beginning sound, $F(1, 23) = 12.254$, $p = .002$.

Upper-case letters, letter-sound and beginning sound were also analysed to compare the Effect size (d). Letter-sound and beginning sound showed large Effect sizes, according to Cohen's criteria, scoring d= 1.38 and d= 1.82 respectively. Upper-case letter knowledge showed a medium Effect size (d) of .52.

The three measures that showed significantly different scores, pre-test and post-test between the intervention and control group have been represented in Figures 2-4 using the data from Table 4.

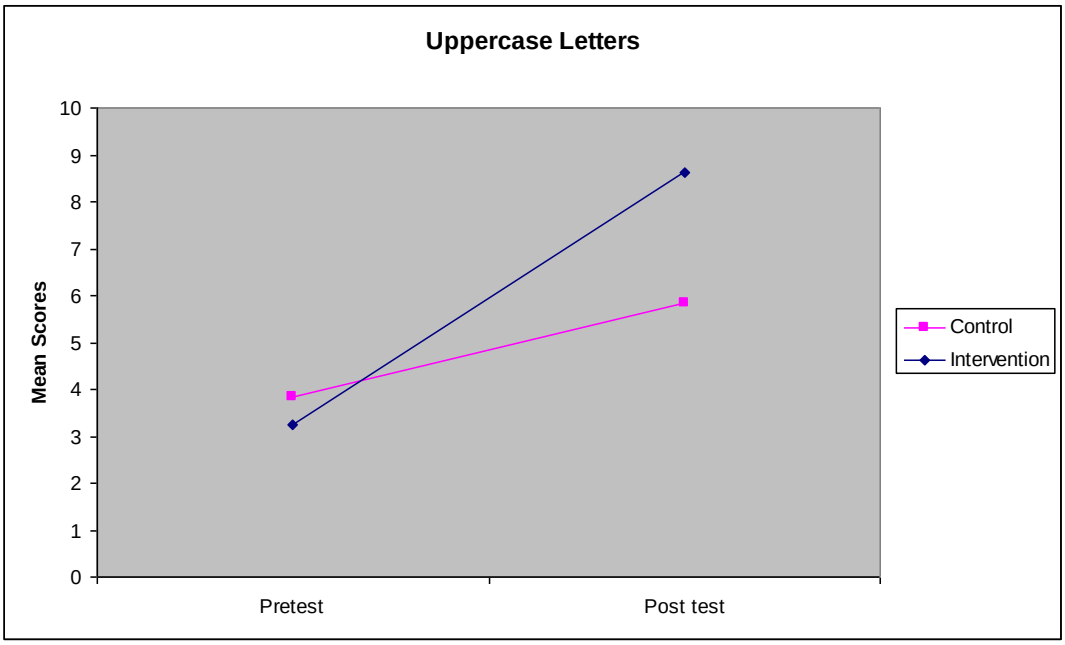

Figure 3 Mean scores (pre-test and post-test) for significant gains in upper-case letter knowledge.

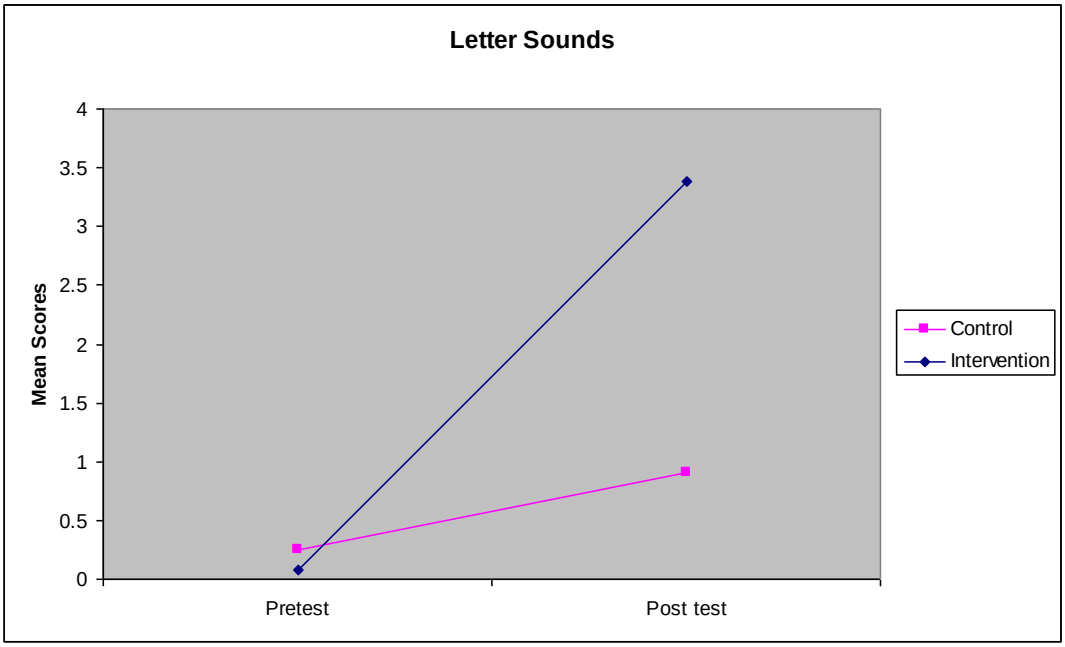

Figure 4 Mean scores (pre-test and post-test) for significant gains in letter-sound knowledge.

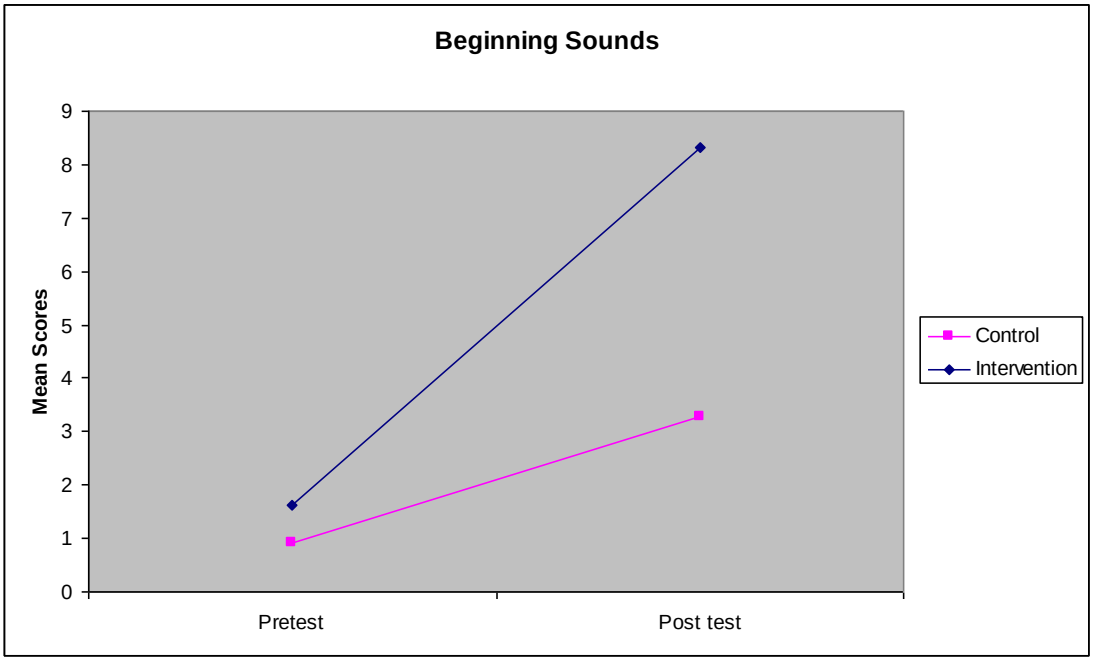

Figure 5 Mean scores (pre-test and post-test) for significant gains in beginning sound knowledge.

Three measures elicited no significant difference between the two groups: name writing, $F(1, 23) = .142$, $p = .095$, lower-case letters $F(1, 23) = 2.873$, $p = .104$, and rhyming, $F(1, 23) = 1.642$, $p = .213$. However, although not a significant difference was seen between the control and intervention group, it should be noted the intervention group scored more highly than the control group on all these three measures.

4.5 Summary

To summarise, the results show a large range in emergent literacy knowledge in this sample of four year old children, with children scoring from the minimum to the maximum score on many of the measures. The PPVT scores, however, showed that this sample of children sat within average scores for receptive vocabulary. Returning to the research question on the efficacy of such an intervention for 4 year olds with limited emergent literacy knowledge, the findings suggest that an emergent literacy intervention can help to boost the development in some areas of phonological awareness (i.e., beginning sounds) and alphabet knowledge (i.e., upper-case letters and letter-sounds). The findings will now be discussed in relation to existing literature in Chapter 5.

Chapter 5: Discussion and Conclusion

5.1 Introduction

The purpose of this study was to examine the emergent literacy knowledge of preschoolers in New Zealand and to explore whether an intervention focused on teaching phonological awareness and alphabet knowledge could be beneficial in boosting these critical reading skills. There is a large amount of research on the efficacy of preschool literacy interventions, however there is very little originating from New Zealand. This chapter aims to discuss the findings of the present study in relation to similar recent studies done in the United States, England and Australia, to consider limitations, and lastly to draw final conclusions.

The research questions addressed are: 1) What is the range in emergent literacy skills in a sample of kindergarten children in New Zealand? and 2) Can four year old kindergarten children with limited emergent literacy knowledge be successfully taught phonological awareness and alphabet knowledge? The findings show a considerable range exists in emergent literacy knowledge in preschoolers and statistical analyses of the data revealed that an intervention can help improve progress in the learning of alphabet knowledge and phonological awareness.

This chapter looks more closely at the literacy range, discusses the findings of each assessment measure and discusses what makes an effective intervention.

5.2 The range of literacy knowledge in New Zealand children

The growing gap between literacy achievement in New Zealand teenage children, apparent in the 2001 and 2006 PIRLS studies, is seen as one of the biggest challenges in literacy education in New Zealand (Tunmer & Chapman, 2004; Tunmer, et al., 2008). A similar disparity in literacy knowledge has been shown in children entering school in New Zealand and is equally concerning (Arrow, 2010; Nicholson, 2005; Tunmer, et al., 2003). The results of this study are consistent with previous findings,

showing large variability in emergent literacy knowledge of a group of 4 year old children in a small New Zealand city. The repeat of findings from previous studies underlines the existence of this phenomenon in New Zealand, and the need to find a way to deal with it.

The children with the higher scores tended to be able to name most of the letters, upper-case and lower-case, were beginning to make connections between letters and the corresponding sounds, and showed relatively high levels of phonological awareness. This was in comparison to the children with lower scores, who struggled to name more than one or two letters, generally had not developed any understanding of letter-sound correspondences, and had little phonological awareness. This range in emergent literacy knowledge suggests there are many children starting school who will be well equipped to begin the formal reading programme but it also indicates there will be others who may struggle to learn to read and will be at higher risk for reading difficulties (Juel, 1988; Lonigan, 2003; Milina, 1994; Nicholson & Ng, 2004).

These findings give an indication of how the "Matthew effect" can develop (Stanovich, 1986). The children with lower levels of emergent literacy skills at school entry may have more difficulty breaking the alphabetic code and therefore learning how to decode efficiently. This may lead to less desire to read and this lack of practice then slows down the development of automaticity in reading (Nicholson & Ng, 2004). Automaticity in reading is critical as it allows more cognitive resources to be allocated to comprehension, the ultimate aim of reading (Dymock & Nicholson, 1999).

It has been suggested that in order to prevent this range from widening and get all children off to a good start in reading, interventions focused on the critical skills needed to read, phonological awareness and alphabet knowledge, should be introduced at preschool level (Nicholson & Ng, 2004). The National Reading Panel (2000) found phonological awareness interventions were particularly beneficial to

preschool age children. The findings of Vellutino et al.'s (2006) longitudinal study also identified early intervention that focuses on foundational literacy skills to be a useful tool in reducing the number of children who go on to have reading difficulties in school.

On the basis of the results from this study, it appears a 10 week intervention that focused on phonological awareness and alphabet knowledge can be beneficial to preschool children with low levels of emergent literacy skills. Unlike Nancollis et al.'s (2005) findings in which the control group performed better than the intervention group on certain measures, children in this study who received the intervention scored higher than the control group across all 6 measures, significantly so on beginning sound, upper-case letter naming and letter-sound measures. Such growth in children's emergent literacy skills after an intervention has also been shown in studies by Justice et al. (2003), Vellutino et al. (2006), McIntosh et al. (2007), Young (2009), and Bailet et al. (2009).

Improvement in the scores of the control group over the 10 weeks was also seen although none of it significant. Research has shown many children develop emergent literacy skills from day to day interactions at home and being immersed in holistic, literate early childhood settings (McIntosh, et al., 2007; McLachlan & Arrow, 2010). What should be noted was all of the children in the intervention group made some progress in their learning regardless of their initial emergent literacy skills, whereas 2 out of the 11 children in the control group showed no growth in their scores across the 10 weeks. This supports the idea that for some children phonological awareness and alphabet knowledge need to be explicitly taught and that simply being immersed in a rich literate environment may not be enough (Justice & Pullen, 2003; McLachlan, 2010; Schickedanz, 2003).

5.3 Assessment measures

The assessment measures have been grouped into alphabet knowledge tasks and phonological awareness tasks, with name writing and receptive vocabulary/oral language (PPVT) findings discussed separately because they were not explicitly taught in the intervention.

5.3.1 Name writing

Name writing is a skill that is actively promoted at preschool level. In most of the kindergartens in this study there was a sign in sheet for the children on arrival. They were encouraged to write their names on any art work and for certain activities the children needed to write their name on a list in order to have a turn on the computer, for example. Arrow (2010) found 71% of the 110 four year old New Zealand children in her sample were able to write their names, and in this study 69% (29 of the 42) children were able to write some form of their name.

Name writing was not explicitly taught as part of the intervention so there was no expectation that the scores between the two groups would differ significantly. However, the increased interest in letters which developed during the intervention certainly seemed to help some of the children to improve their name writing skills as the mean score after the intervention was higher than pre-intervention. In Young's (2009) study the teachers observed such a flow-on effect, where children playing alphabet games and taking part in reading activities were able to transfer this learning into their writing

Interestingly some children in the present study were able to write their names but were unable to name any of the letters. This could be possibly from rote learning how to write their names without an understanding that the symbols they are writing are letters representing particular sounds.

5.3.2 PPVT findings

Oral language, along with phonological awareness and alphabet knowledge, has been shown to be associated with the development of emergent literacy and later reading acquisition (Lonigan, 2003; Lonigan, et al., 2000; National Reading Panel, 2000). The predictive nature, however, of oral language on reading acquisition appears to be more strongly related to long-term literacy achievement rather than emergent literacy skills (Hart & Risley, 2003; National Early Literacy Panel, 2008; Nicholson, 2003; Teale, 2003). Hart and Risley (2003) found the vocabulary use of children at age three was strongly related to reading comprehension at age nine. The National Early Literacy Panel (NELP) (2008) also found oral language correlated more highly with later literacy achievement when more complex measures were used for assessment. Supporting these findings, Nicholson (2003) found the vocabulary knowledge of 94 children (mean age 5.27 low-SES group and 5.26 high-SES group) although different was not identified as a strong predictor of reading acquisition in Year 1 and Year 2.

Despite research showing the importance of phonological awareness and alphabet knowledge to early reading acquisition, in a recent New Zealand study (McLachlan, et al., 2006) of 107 preschool teachers, they showed a preference for oral language (i.e., talking and being read to) as a means for promoting emergent literacy.

In the present study the mean PPVT score was 96.71 (SD=12.52), this score shows the children in this study were in the 'average range' for PPVT. This may be explained by the strong promotion of oral language as a foundation to reading and writing in Te Whaariki (Ministry of Education, 1996).

Opportunities for the development of oral language in New Zealand preschools appear to be more prevalent than opportunities to develop other skills that are also critical to reading development, such as alphabet knowledge and phonological awareness (McLachlan, et al., 2006). This is why, although important, explicit teaching of oral language was not included in the intervention in the present study.

5.3.3 Alphabet knowledge

Letter-naming knowledge of preschool children is known to be a reliable predictor of future reading acquisition (Foulin, 2005). Furthermore studies have shown that letter-naming knowledge is predictive of later phonemic sensitivity development. In the present study alphabet knowledge was separated into upper-case and lower-case letter knowledge and letter-sounds, as the two kinds of knowledge are quite different in their development and the roles they play in literacy development (Foulin, 2005).

No previous studies were found that specifically compared the difference in the learning of upper-case and lower-case letters when both are included in an intervention. There seems to be a tendency to favour assessing and teaching either upper-case or lower-case letters, rather than both together. Studies originating in the United States generally examine upper-case letter knowledge (Foulin, 2005), whereas New Zealand and Australian studies either combine the two or focus on lower-case letter-naming knowledge (Arrow, 2010; Young, 2009). Young's (2009) Australian study assessed the two together; however, she only used one letter of any pair where the upper-case and lower-case letter were the same configuration (e.g., S or s).

When the data from the present study for upper-case and lower-case letters are looked at separately it can be seen that the children's upper-case letter knowledge improved more rapidly when they were part of the intervention. Justice et al. (2003) showed similar findings, although despite teaching both upper-case and lower-case letters, only the upper-case letter knowledge was assessed.

The lower-case letter knowledge of the children in the intervention conducted in the present study, although slightly higher than the control group, was not significantly so. This non-significant difference between the groups may be due to a stronger focus and more exposure to lower-case letters in preschool settings, particularly name writing. Research shows children have a higher motivation to learn the letters in their names and with a maximum of one or two capital letters per name, a larger number of

lower-case letters certainly have a better chance of being learned by all the children in kindergarten (Arrow, 2007).

Letter-name knowledge and letter-sound knowledge have been shown to be correlated (Arrow, 2010). Only children with some letter-name knowledge were able to give any letter-sounds in the present study and the results showed that children who knew more letter-names in turn knew more letter-sounds. These findings support the alphabetic theory that letter-name knowledge aids children in gaining letter-sound knowledge (Foulin, 2005). In the present study, children who had some letter-naming knowledge showed how they were beginning to draw cues from these letter-names to learn the associated sounds, for example, C was pronounced as the sound /s/, Y the sound /w/ and W as 'double'.

Despite this correlation between letter-names and letter-sounds, there still appears to be a large difference in the letter-naming knowledge and letter-sound knowledge of preschoolers. This is in keeping with Adam's (1990) proposed continuum of alphabet knowledge development, which states that letter-names and shapes tend to be learnt before letter-sounds .

Children who begin school with letter-naming knowledge have the advantage of not having to suddenly learn a large number of abstract symbols and the associated sounds at school entry when formal reading instruction begins. Their letter-naming knowledge allows them to recognize letters and begin to draw phonological cues from the names (Foulin, 2005).

The initial letter-sound knowledge of the 42 participants in the present study closely resembled Arrow's (2010) results from a study of New Zealand 110 four year olds. Arrow's (2010) findings showed very low levels of letter-sound knowledge but in the present study these levels were significantly raised after the intervention. It appears from these findings that without some explicit teaching, letter-sound knowledge develops very slowly or for some children not at all. The control group made

significantly less progress in this area in comparison to the intervention group, consistent with Vellutino et al.'s (2006) findings.

5.3.4 Phonological awareness

Phonological awareness can be divided into three distinct levels: syllable awareness, onset-rime awareness and phonemic awareness. Phonemic awareness is seen as the most complex level (Gillon, 2004; Lane, et al., 2005; Nicholson, 2005; Phillips, et al., 2008). Arrow's (2010) New Zealand study data showed such a pattern with the children scoring more highly on tasks that involved working with larger phonological units, for example, syllable blending. The PALS-PreK assessments used measured onset-rime awareness using rhyming and beginning sound tasks. The beginning sound task also measured if the children had started to develop some phonemic awareness as the task required children to isolate and name, rather than simply match, the beginning sound of words.

Beginning sounds

In the present study the beginning sound task required children to isolate the initial phoneme from the word. To be able to do this the children must be able to hear the individual phoneme and articulate the sound (Gillon, 2004), a more complex task than identifying pictures that begin with the same sound. This can be seen as the beginning of phonemic awareness. This is a step towards identifying all the phonemes in a word, a skill that is seen as critical to reading and spelling (Ehri, et al., 2001; Juel, 1988; Nicholson & Ng, 2004; Phillips, et al., 2008).

Many children in the present study found this a difficult concept and often gave sounds they associated with the words, for example, when I asked one child the beginning sound of milk she said 'weetbix'. In the intervention (see Appendix F) a rubber band was used to help the children visualize the idea of stretching out the sounds of words, initially just the beginning sound. 'Troll talk' was then introduced, an exaggerated slowed down style of talking, where the children needed to help make sense of the words by blending the sounds into a recognisable word. These blending

activities drew the children's attention to the fact that words are made up of many different sounds and like a jigsaw can be taken apart then put back together.

The children in the intervention group made significant progress in their beginning sound learning in comparison to the control group, consistent with McIntosh et al.'s (2007) findings. McIntosh et al. (2007) found preschool children from low SES backgrounds were performing well below the level expected of their chronological age and were seriously disadvantaged by their low levels of phonological awareness and language skills at school entry. They found an intervention that focused on phonological awareness and language, implemented by the preschool teachers, led to significant gains, such that the children who participated in the intervention performed equally as well as the children from average SES communities. These findings indicate that phonological awareness may not naturally develop but rather an explicit approach may be required to help children with low levels of emergent literacy knowledge to gain a basic level of phonemic awareness.

Rhyme awareness

In this study there was no significant difference between rhyme detection scores between the two groups post-intervention. Vellutino et al. (2006) observed similar findings in their study, with rhyming scores between the project treatment and kindergarten based comparison being very similar at the completion of the intervention. There are three possible explanations for these results: 1) Children often are exposed to nursery rhymes from a young age. In a New Zealand study by McLachlan et al. (2006) 90% of teachers (N=107) surveyed said that singing nursery rhymes was part of their literacy practice, 2) Children's literature read at preschool and at home often follows a rhyming pattern, for example, Lynley Dodd's *Hairy Maclary* books, therefore children may be more aware of this language feature and may get more chance to practice it at preschool or home (Bailet, et al., 2009), or 3) The 10 week intervention in the present study did not provide enough time or repeated exposure for the children to fully master this skill, supporting Phillips (2008)

suggestion that rhyming is a more complex skill than people assume and develops later on the phonological continuum.

Unlike the results of the present study, other studies have shown large growth in rhyming skills for children in an intervention group in comparison to a control group, for example, Bailet et al. (2009) conducted a 9 week study involving eighteen 30 minute lessons, four of which were specifically focused on rhyming. It could be inferred from these results that teaching one phonological awareness skill at a time may well have been more effective with helping children master each skill than introducing two or more skills in one lesson, as was done in the present study.

McIntosh et al.'s (2007) study also showed significantly improved rhyme awareness in children that received the phonological awareness programme. The participants in this study were all from low socio-economic society (SES) backgrounds and this may have affected the outcomes. Studies have shown that children from low SES have less exposure in the home to the kind of literacy experiences that boost foundational reading skills (Tunmer, et al., 2006), therefore the children receiving the intervention were greatly advantaged in comparison to the control group. In contrast the present study drew children from a range of socio-economic backgrounds, with the children in the intervention and control groups not specifically coming from low income homes.

5.4 Effective emergent literacy intervention

It could be argued that the intervention in the present study was effective in raising the phonological awareness and alphabet knowledge of the four year old children that participated because it was research based and age appropriate. As put by McLachlan and Arrow (2010) "[d]evelopmentally-appropriate resources and activities that are research and evidence based are the cornerstone of effective literacy intervention in preschool settings"(p.91). Future studies may further improve results by having initial lessons focused on a specific phonological skill, for example rhyming, and perhaps

extending the length of the intervention to allow children more time to practice using their new knowledge.

The aim of a preschool literacy intervention is usually to boost the emergent literacy skills that are seen as critical to later reading acquisition (Lonigan, 2003; Phillips, et al., 2008); however, not all interventions are equally effective. Research has shown integrating phonological awareness and alphabet knowledge instruction leads to a stronger transfer of knowledge to reading performance than teaching either of these areas in isolation (Ehri, et al., 2001). This style of intervention helps children make links between spoken and written language (Gillon, 2004). Instruction focused on the lower levels of phonological awareness such as word and syllable level, appears not to transfer to phoneme analysis skills, skills that have been shown to be important for future reading. Therefore, in order to promote skills that impact on reading and spelling, age appropriate phoneme level activities need to be included in any phonological awareness intervention combined with alphabet knowledge (Gillon, 2004).

Nancollis et al.'s (2005) longitudinal study is an example of a 9 week intervention that showed no effect on later literacy learning 2 years after the intervention. A closer look at the intervention showed only syllable awareness, rhyme awareness and initial phoneme discrimination were taught. No higher level phonemic awareness or alphabet knowledge was included, so based on previous research perhaps no long term improvement could be expected. This understanding adds to the knowledge base of what needs to be included in an effective preschool literacy intervention to have long term effects on reading acquisition. Furthermore the lessons in the study by Nancollis et al. (2005) were taught to a full class of 4 year olds and each lesson was 45 minutes long. Research shows these are less than optimal learning conditions. Small group teaching in comparison to full class teaching, has been shown to have a considerable impact on learning (Byrne & Fielding-Barnsley, 1995; Ehri, et al., 2001) and the suggestion for maximum lesson length has been 30 minutes (Ehri, et al., 2001).

To be effective any emergent literacy intervention needs to be research-based and able to be implemented by the teachers within their preschool programmes. Age appropriate assessment at preschool should be used in determining children's existing knowledge and meeting the literacy needs of all children, especially children who have been identified as having particularly low levels of emergent literacy knowledge. An intervention, like the one in the present study, could easily be embedded within ECE programmes. The nature of the intervention allowed explicit teaching of phonological awareness and alphabet knowledge in a fun and informal way.

5.6 Limitations

This study used a relatively small sample of kindergarten children; however the diverse range of SES areas in which the kindergartens were situated resulted in fairly representative sample of the larger population. A replication of this study with more participants would be useful, as some of the results may have shown significance had the sample been larger.

There are always challenges when working with preschool children inside their early childhood setting as a researcher. Unlike a teacher, who is able to choose the best time for explicit teaching moments, in the present study not all six kindergartens received the intervention at the most opportune learning times, for example just before lunchtime or at the end of the day were more difficult times for the children to concentrate as opposed to first thing in the morning or straight after food. The intervention may have been even more effective if the kindergarten teachers had implemented it as the researcher did not know the children and had to establish a relationship with them.

There were many factors that were difficult to control for in such an environment, distractions, attendance and the challenge of accurately assessing the knowledge of four year olds. There was also always an awareness of children in the control group being near enough to hear the lesson content or friends sharing their new learning

with others in the study. In one case a teacher was listening to the lesson on rhyming and started to repeat the activity with the other children not participating in the intervention.

5.7 Future research

Emergent literacy research in New Zealand is limited and future research following from this study could help build on the knowledge base here in New Zealand. Further research could involve following the 42 children into school to observe reading acquisition and to examine which emergent literacy skills correlate with later reading success. Another possibility for future research could be a comparison between the reading development of the intervention group and the control group at the end of year 1, which could indicate if this intervention has had long-term effects on children's reading. Further research working with ECE teachers could investigate if they can implement this intervention as part of the early childhood programme and how it sits within *Te Whaariki*.

5.8 Summary

This study showed a large range in the emergent literacy knowledge of a sample of 42 four year old children in New Zealand. Emergent literacy knowledge, in particular phonological awareness and alphabet knowledge, has been shown to be strongly related to later reading acquisition. An evidence-based phonological awareness and alphabet knowledge intervention was designed for the present study and was delivered over a 10 week period. The post-test results showed that children that took part in the intervention made faster progress in learning phonological awareness and alphabet knowledge in comparison to the control group. This shows that children with low levels of emergent literacy can benefit from a relatively short intervention aimed at boosting phonological awareness and alphabet knowledge. Upper-case letter naming, letter-sound knowledge and beginning sound awareness were areas which showed the most growth and this may infer these skills may benefit from a more

explicit style of teaching, especially for children with low levels of emergent literacy knowledge.

The present study supports previous emergent literacy research findings and opens up more emergent literacy research possibilities, especially in the New Zealand context.

5.9 Conclusion

The present study set out to examine 1) the range of emergent literacy skills that exist in preschool age children and 2) if an evidence-based intervention that focused on phonological awareness and alphabet knowledge could be effective in raising the levels of these skills. A sample of 42 four year old children were assessed using PALS-PreK (Invernizzi, et al., 2004) to gather information on their phonological awareness and alphabet knowledge. The results showed a range of skills was prevalent and more than half of the children scored below the mean. From this original sample 24 children met the criterion to move into the intervention study. Over a 10 week period the intervention group received an evidence-based intervention focusing on phonological awareness and alphabet knowledge. The post-test results showed the intervention group made more progress in their literacy learning than the control group, significantly so, in upper-case letter-naming, letter-sounds and beginning sounds. These results show that certain areas of alphabet knowledge and phonological awareness require explicit exposure in order to develop. The results further showed that when interventions are designed appropriately with regard to focus (phonological awareness and alphabet knowledge), length (10-15 minutes a session) and group size (small), they can be effective.

The success of the intervention used in the present study underlines the importance of the conclusion of Simmons, Kame'enui, Stoolmiller, Coyne, and Harn (2003) "instruction, if carefully designed and delivered within a specific 'window' of time, is sufficient to correct or remove the phonological and alphabetical deficits of a significant percentage of children who are initially identified as at risk of reading failure" (p. 200).

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Appendices

Appendix A: Letter to the General Manager of the Central North Island Kindergarten Association

Dear

My name is Rachel Rachmani and I am a Masters student at the University of Waikato. I am planning to conduct a research project in a number of [name removed] kindergartens and I am writing to seek your permission to approach these kindergartens. I have a real passion for reading and I will be looking at whether it is possible to reduce the risk of children experiencing reading difficulties by raising their emergent literacy skills before school entry.

I will need to gather information on the childrens' emergent literacy skills initially using two assessments designed specifically for preschoolers and following these some children (aged four years) will be randomly selected for an additional emergent reading experience. At the end of this experience I would notify the teachers of children who due to lower levels of emergent literacy knowledge may not get off to a good start in reading.

Research shows that such interventions, aimed at helping children get a better grasp of the alphabet and phonological awareness, have a positive effect on later reading acquisition. This study will be an opportunity to evaluate if this group of preschoolers can benefit from this type of early intervention.

The intervention will involve small group teaching for two sessions a week (twenty minutes each) for ten weeks and although it will only be a selection of children who are participating, the results will help to assess the benefits of working with preschool children to raise their preliteracy knowledge and skills.

I will work to minimise any disruption my research may cause to the kindergarten routines by working within the programme and discussing with the Head teacher, the staff and children when would be the best time to carry out assessments and the intervention. Furthermore I will be flexible and sensitive to the needs of the children, with their best interests in mind at all times.

To protect the children's privacy, individual names will not be included in the report. A summary of findings will be available on request.

Participation in this study is voluntary, and the children will be free to withdraw at any stage without explanation. If you have any questions about this research, or would like further information, please contact me at home [redacted] my supervisors, Dr Sue Dymock or Dr Nicola Daly or the Chairperson of the Arts and Language Education, Professor Terry Locke (phone: 07 838 4500) at the University of Waikato. This study has been approved by the University of Waikato Faculty of Education Human Research Ethics Committee.

I appreciate your time and welcome any questions.

Yours sincerely
Rachel Rachmani

Permission to approach [name removed] kindergartens regarding conducting research

I have read and understood an explanation of this study. I have had an opportunity to ask questions and have them answered.
I agree that Rachel Rachmani can approach the kindergartens in [name removed] that come under the umbrella of the Central North Island Kindergarten Association, to discuss her research and seek written permission to conduct her study.

Signed:_____
Date:_____

Please include a postal address if you would like a summary of the study to be sent to you.

_____
_____
_____

Appendix B: Letter to the Head Teacher of each kindergarten

Dear

My name is Rachel Rachmani, I am a Masters student at the University of Waikato and I am planning on doing a research project in a selection of [name removed] kindergartens. I have a real passion for reading and I will be looking at whether it is possible to reduce the risk of children experiencing reading difficulties by raising their emergent literacy skills before school entry.

I am writing to ask if you would be happy for me to conduct my study in (name of kindergarten) and seek your permission to approach parents/caregivers of children selected to participate.

I will need to gather information on the childrens' emergent literacy skills initially using two assessments designed specifically for preschoolers and following these some children (aged four years) will be randomly selected for an additional emergent reading experience. At the end of this experience I would notify you of any children who were identified as at risk of experiencing reading difficulties in the initial evaluation but were not offered the intervention on this occasion.

Research shows that such interventions, aimed at helping children get a better grasp of the alphabet and phonological awareness, have a positive effect on later reading acquisition. This study will be an opportunity to evaluate if this group of preschoolers can benefit from this type of early intervention.

The intervention will involve small group teaching for two sessions a week (twenty minutes each) for ten weeks and although it will only be a selection of children who are participating, the results will help to assess the benefits of working in small groups with preschool children to raise their preliteracy knowledge and skills.

I will work to minimise any disruption my research may cause to the kindergarten routines by working within your programme and discussing with you, your staff and children when would be the best time to carry out assessments and the intervention. Furthermore I will be flexible and sensitive to the needs of the children, with their best interests in mind at all times.

To protect the children's privacy, individual names will not be included in the report. A summary of findings will be available on request.

Participation in this study is voluntary, and the children will be free to withdraw at any stage without explanation. If you have any questions about this research, or would like further information, please contact me at home [redacted] my supervisors, Dr Sue Dymock or Dr Nicola Daly or the Chairperson of the Arts and Language Department, Professor Terry Locke (phone: 07 838 4500) at the University of Waikato. This study has been approved by the University of Waikato Faculty of Education Human Research Ethics Committee.

I appreciate your time and welcome any questions.

Yours sincerely
Rachel Rachmani

Permission to participate in study

I have read and understood the explanation of this study. I have had an opportunity to ask questions and have them answered. I understand that by signing this form I am giving permission to Rachel to conduct her research in (name of kindergarten) and approach parents/caregivers of children attending this kindergarten. I understand that the parent/ caregiver needs to give written signed consent for their children to participate and the children are able to withdraw at any time from this project.

Signed:_____ Date:_____

Please include a postal address if you would like a summary of the study to be sent to you.

_____

_____

_____

Appendix C: Parent information sheet

Dear Parents

My name is Rachel Rachmani and I am a Masters student at the University of Waikato. I am planning on conducting a study at _____ Kindergarten. I have a real passion for reading, and my study will be looking at whether it is possible for preschool aged children to increase their beginning reading knowledge using a range of fun reading activities.

My intention is to explore the children's beginning reading knowledge on up to two occasions during this study. Some children will be randomly selected to participate in a small group reading activity for two twenty minute sessions per week for up to ten weeks. The activities will be informal and fun with a focus on games and books. This study will be an opportunity to learn more about early reading skills in preschoolers.

To protect the children's privacy, individual names will not be included in my final report. If you would like a copy of my report, please provide an address at the bottom of this form, so I can send one to you.

Participation in this study is voluntary, and the children will be free to withdraw at any stage without explanation. If you have any questions about this research, or would like further information, please contact me at home [redacted] my supervisors, Dr Sue Dymock or Dr Nicola Daly or the Chairperson of the Arts and Language Department, Professor Terry Locke (phone: 07 838 4500) at the University of Waikato. This study has been approved by the University of Waikato Faculty of Education Human Research Ethics Committee.

I appreciate your time and welcome any questions.

Yours sincerely
Rachel Rachmani

Appendix D: Consent Form for Parents/Caregivers

Parent/Caregiver's Name (Please print clearly) _____

I understand the purpose of this research project and what will be required of the child under my care as a participant, and I have had an opportunity to ask questions and have them answered. I understand my child can withdraw from this study at any time without having to give an explanation by informing the researcher whose details are given in the information sheet.

I understand that assessment results may be shared with the Head Teacher of the kindergarten but confidentiality will be ensured.

I understand if I have any concerns regarding this research which I prefer not to discuss with the researcher, I can contact:

Dr Sue Dymock, Dr Nicola Daly or Professor Terry Locke
School of Education, University of Waikato
Private Bag 3105 Hamilton
Phone: (07) 838 4500

I agree to (**child's name**) _____ taking part in this research.

Signed: _____
Date:_____

Please include a postal address here if you would like a summary of the study to be sent to you.

_____
_____

Appendix E: Information sheet for the children

This sheet contains information that will be shared orally with the children. After sharing or during the sharing of this information I will encourage an informal discussion to bring up any worries, questions or problems the children may have.

Hi everyone, my name is Rachel Rachmani and I am really excited to be visiting your kindergarten today. I am here because I am interested in reading books and letter and word games. I have some games and questions that we could work on together, would you like to do that? Now if you don't want to that's okay, it is your choice.

Just so I know who would like to work on the questions and games I am going to give you all a piece of paper and we are going to think of some ideas of how we could show whether we wanted to take part or not…… (write or draw ideas on a big sheet of paper)

Now even if you say yes now and you change your mind during the activities, that's okay too.
Does anyone have any questions they might want to ask?

Appendix F: Intervention lesson plans

Lesson 1 A	**Introduction**; Introduce myself and Lime my monster puppet that likes to rhyme. Talk about what a rhyme is "when words have the same sound in the middle and end" Get Lime to give the children some examples, e.g cat and hat, dog and frog, tree, see, key…. **Shared book:** *Dragon in a Wagon* (Dodd, 2001) Explain to the children this book is full of rhymes and they are to listen out for them Read the story emphasizing the rhyming pairs. **Rhymes** Okay let's see if anyone remembers a rhyme in the book we just read. Give the children the first word of the rhyme them make up a nonsense rhyming pair, e.g dragon in a car, boat….now what was it again, snake eating pizza, popcorn… Look back over the book to prompt them **Match the animal to its rhyming pair** Provide the children with 2 bags, 1 full of animals and the other with an item that rhymes with each animal, e.g goat and boat, duck and truck, giraffe and scarf, snake and cake. Work together to match the rhyming pairs To conclude the lesson teach the children 2 nursery rhymes. 1) Here is the beehive, where are all the bees? Hidden away where nobody sees. Soon they come creeping out of the hive, 1,2,3,4,5!) 2) 1,2 buckle my shoe….
Lesson 1B	**Rhyming** What is a rhyme? Did they remember some of the rhymes from the story we read last lesson. Prompt them to complete the rhyming pairs Dragon in a …. Giraffe with a … Bat in a … Yak on his …. Shark in the …..

	Snake eating ….. **Match the animal rhyme** Using some of the animals and rhyming object pairs from last week, get the children to name all the animals then pull an object out of the bag and match it to its rhyming pair. Giraffe/scarf, fox/box, duck/truck/fish/dish, snake/cake and cat/hat **Rhyme flip** I have a series of cards with pictures, each with a matching rhyming pair. 4 cards are laid face up and 4 face down. After naming the pictures the children need to pick a face down card, name it and match it to make a rhyming pair. When they are all matched, name the pairs together. **Shared book:** *Never Use a Knife and Fork* (Goddard, 2007) Read through once, then second time get the children to fill in the rhyme. Finish with the Beehive nursery rhyme
Lesson 2A	**Rhyme matching** Using the same cards as last time, each child is given between 2-4 rhyming pairs to match. Give as much or little help as required. **Nursery rhymes** Does anyone know a nursery rhyme? (Give ideas if they can not think of any) e.g. Hickory Dickory Dock Humpty Dumpty Sat on a Wall One Two Buckle my Shoe Recite the nursery rhyme for the children exaggerating the rhymes, repeat it line by line with them if they are unfamiliar with it, and then recite it together. Next recite it in a whisper but say the rhyming words aloud, then recite the nursery rhyme in loud voices but whisper the rhyming words (Adams, Foorman, Lundberg, & Beeler, 1998). **Guess Who?** <u>Beginning sounds</u> Today we are going to play a guessing game. Are you ready? Guess whose name I'm going to say…..” Enunciate the initial phoneme of one of the children's names clearly and repeatedly until they guess **Guess who.. animals?** Repeat the same activity but using animals set out on the table. e.g Tiger, monkey, fish, duck, pig, bear, fox

	Shared Book: *Don't Put Your Finger in the Jelly, Nelly!* (Sharratt, 2006) Read and then get the children to identify the rhyming pairs
Lesson 2B	**Revising Rhymes** <u>Yes/No Game</u> Show the children 2 pictures-do they rhyme? If they do call out "yes" or they don't call out "no". <u>Stand up/sit down</u> Similar idea to above, I call out 2 words, if they rhyme the children need to sit down and remain seated until the next rhyming pair is called. **Nursery Rhyme** Sing Eensy Weensy Spider together with actions, emphasizing rhymes, either with loud voices or whispered voices. **Rhyme Memory** Lay out 6 rhyming pairs, face down. The children need to turn over 2, name them then decide if they rhyme or not. If they do they can take the pair. **I Spy** Line up 7 animals that all start with a different sound, name them together then play a game of "I Spy". I spy with my little eye something beginning with the sound …..? I used a tiger, shark, pig, bear, monkey, lion and goat. **Shared Book** *Rumble in the Jungle* (Andreae, 1998)
Lesson 3A	**Rhyming Odd One Out** 3 cards are laid out on the table, 2 of which rhyme. Together we name the pictures and the children need to point to the odd one out, the one that doesn't rhyme. **Phonemes /s/ and /m/** In this activity I will present the children with 8 pictures, 4 that begin with the phoneme /s/ and 4 /m/. To begin we will name the pictures together to make sure they are familiar with them all, then each child will have a turn to choose a picture, say its name, then repeat it stretching out the initial phoneme. (I will model how to do this first). E.g. sun, s-s-s-un. We will work through one set of target phoneme pictures at a time. Remember to draw attention to what their mouths are doing, where is their tongue, what are their lips doing… I used a rubber band to explain how like a rubber band, words can also be stretched and today we are stretching out the beginning sound.

	Pairing by initial sound Mix up the cards and flip over two, name them then ask the children if they start with the same sound (Adams, et al., 1998) **Shared Book** *From Acorn to Zoo and Everything in Between in Alphabetical Order* (Kitamura, 2005) Find the pages that feature words that begin with /s/ and /m/. Can the children name some of the pictures that match these beginning sounds.
Lesson 3B	**Name a Rhyme** Fill a box with pictures they have used previously in rhyming activities. The children need to pull out one card, name the picture then try and think of a rhyming word. If they can name a rhyme they get to keep the card. **Phonemes /s/and /m/** Review sounds, can the children give me any words that begin with these sounds. Give the children the same pictures from the last lesson and ask them to sort them according to beginning sound. **Alliterative sentences** Make up some silly sentences that are full of words that start with /s/ and /m/. Get the children to repeat back to me.e.g Six slithery snakes. Seven smelly socks. Monkeys make macaroni. **Distinguishing between letters and nonletters** The children will be given a set of letters and a set of shapes mixed together. Their task is to sort them into letters and shapes. Repeat with letters and numbers. **Letter/sound books** Each child will make a little book to add the letters as we learn them. On each page the children will stick pictures that begin with the target letter to help remind them of the sound linked to that letter. Today we will just be writing their names on the cover.
Lesson 4A	**Rhyming Bingo** Each child has a board with 8 pictures. We will name each object on the boards together and then I will explain how to play Bingo. Each child needs to flip a card from the pile, name it then check their board for a rhyme. The other children may also have a rhyme on their

	boards. If they have a word on their board that rhymes they need to cover it, until all the pictures are covered (Gillon, 2008). **The Alphabet** Can anyone sing the alphabet? Shall we sing it together? I have a poster of the alphabet here perhaps we could sing it while I point to the letters. **Connecting the phoneme /s/ with the letter Ss** Remind the children of the two phonemes /s/ and /m/, can we remember some of the examples of words that begin with these sounds. Explain that these sounds actually have a corresponding letter /s/ =Ss and /m/ Mm The children will be given a piece of paper with Ss on it and they need to trace the shape of the Ss with their finger. Talk about it's shape, what does it remind them of. A good way to remember is it looks like a snake and snake starts with Ss, emphasise the phoneme at the same time…sssslippery sssssslithery ssssnake. Give each child a ribbon, can they make an S with the ribbon. Repeat "My name is Ss, my sound is /s/" Give each child an alphabet book, can they find the page with Ss, what is written on these pages? **Letter/sound books** Add Ss, trace over and name the pictures that start with /s/.
Lesson 4B	**Rhyme Game**: The truck is full of… The children will sit in a circle with a beanbag to toss. To begin the game I will say "The truck is full of cheese." Then I will toss the beanbag to one of the children and they must produce a rhyme (e.g. the truck is full of peas) and then return the bean bag to me. The game continues on with the truck full of different things, e.g. logs, hats, cars, bees, boys, cakes, pears (Adams, et al., 1998) The children will be given the 8 pictures they used in a previous lesson starting with /s/ and /m/. They need to work together to sort pictures using their beginning sound knowledge. Encourage the children to stretch out that initial sound and think about what their mouths are doing. Once they have sorted these 8, add in another 8 pictures they haven't previously had to sort, that also begin with either /s/ or /m/. **Sound/letter books** Talk about the letter we wrote in their book last week and how this

	letter makes the /s/ sound. Do they remember the name of the letter that makes this sound? My name is Ss, my sound is /s/. Give them each a pipe cleaner and get them to shape it into an S. The children can then chose 2 pictures each that begin with Ss to stick into their books **Treasure Hunt for Ss** Go around the kindergarten searching for the letter Ss, making sure each time they find one the name is emphasized
Lesson 5A	**Matching /s/ to Ss** On a large piece of paper write down random letters, try and include the first letter of each child's name as well as the letter Ss distributed so when covered they will make a big letter S. Place pictures that begin with /s/ and /m/ on the table and the children take turns finding a word that begins with /s/ then finding an S which the picture is placed on. When all the pictures are placed on the letter S, get the children to tell me what letter they see drawn out. **Shared Book:** *Hop on Pop* Dr Seuss (2003) Read only to page 31 Talk a little about the similarities in word pairs like hop/pop, red/bed, tree/bee, what can they hear that is the same in these words. How do they know they rhyme?? **Connecting the phoneme /m/ with the letter Mm** Children will be shown the shape of Mm, what does it remind them of? Emphasise its sound. Talk about some words that begin with Mm. What differences do they see between the upper-case and lower-case Mm? Give the children some toy animals, can they make a M with them? What about a lower-case m pipe cleaners? **Sound/Letter books** Write Mm into their books and choose a picture that starts with /m/ Mm to stick in.
Lesson 5B	**Rhyming "I say"** Model how we play this game "I say bat, you say…(cat for example)." "I say tree, you say….." (Mraz, Padak, & Rasinski, 2008) **Briefly review letter/sound books.** **Revise my name is _____, my sound is ___.**

	Give the children some upper-case and lower-case cards with either S, s, M or m and ask them to sort into matching letter pairs. **Matching letters and sounds** Spread out pictures that begin with /s/ or /m/ and place a page with a large Ss written on it and a page with Mm alongside. The children need to be able to stretch out the beginning sound of each picture, then name the letter that makes this sound (either Ss or Mm) and place the picture on the matching letter. **Shared Book:** *Find Me a Tiger* (Dodd, 1991) Read, highlighting rhyming words throughout.
Lesson 6A	**Phonemes /l/ and /p/** Review the sounds we have already covered /s/ and /m/ and explain today we are going to listen out for two new sounds /l/ and /p/ Can the children think of any words that start with /l/ or /p/. Then show the children 4 cards with pictures that begin with /l/, say the names, stretch out the beginning phoneme, say it together Repeat this with /p/ Talk about what their mouths are doing, can they feel the difference in their mouths between /l/ and /p/? Get the children to hold their hand in front of their mouths when they make the sound /p/, do they feel the breath of air, does this also happen with /l/? **Game Guess Who?** Place 4 animals that start with one of the phonemes we have covered so far /m/, /s/, /l/, /p/. Ask the children to guess what animal I am thinking of, it starts with a /m/ sound for example. Work through all the phonemes then ask one of the children if they would like to choose an animal for us to guess **Connecting the phoneme /l/ with the letter Ll** Turn to the page in their books where the letter Ll is written.Talk about what Ll looks like, what are the differences between the upper-case and lower-case letters? Using their finger draw the letter in the sky, on their hand, on the floor. Write the letter, sound it, then find a picture that begins with this sound to stick in their book.
Lesson 6B	**Blending activity** In this activity the children will need to synthesise an onset and rime to make a whole word. Make it into a game, I have a list of words but I dropped it on the way and broke the words in two, so I need you to

	rebuild them. e.g.f-ox, m-ouse, p-ig, p-en, m-op, l-ight, s-ocks, c-at and d-og . Write the words down as they rebuild them. **Phoneme Identity (Gillon PAT Programme)** Page 14-15 in Gillon Handbook (Gillon, 2008). Followed basic outline, adjusting according to children. Showed the children 3 of the "Phoneme Identity" cards, we named the pictures together, stretched out the beginning sound of some of the pictures, then I paired pictures, asking the children if they started with the same sound. Gillon activities continued. Now adding letter blocks the children need to find the pictures that start with chosen letter (m, s or l) and cover them with a coloured block. **Shared Book:** *The Newt in the Suit* (Weale, 2010)
Lesson 7A	**Odd one out phoneme identity game** Using pictures of words that begin with /s/, /m/, /l/ and /p/, line up 3 cards (2 of which start with the same initial phoneme) and get the children to tell me which starts with a different sound or is the "odd one out". Ask the children if they can find the letter block to match the initial phonemes (Gillon, 2008). **Troll Talk II Phonemes** The children are told a story about a troll who loves to give presents to children but he will only give the present if the child can blend his Troll Talk (phoneme by phoneme) to name the present, for example /p/ /e/ /n/. Each child gets a turn using the words, bike, book, dog, train. (Adams, et al., 2004) www.readingrockets.org/article/377 **Connecting the phoneme /p/ with the letter Pp** Review all the letters and their associated sounds we have covered until now, Ss, Mm and Ll. What are our mouths doing for each sound? Show the children the letter books I brought from the library, name the letter, name the sound, then look at the pictures under each letter. Introduce Pp and look through the Pp book. Remind the children of the /p/ sound and the puff of air it makes when we say it. Show them what the letter looks like and talk about its shape and how we would write it. Add Pp into their letter/sound books with a picture that starts with /p/.

Lesson 7B	**Gillon's generating rhyme game** The children are each given a rhyming card from Gillon's PAT Programme (Gillon, 2008) and a coloured block. They need to toss the block and whichever picture the block lands on they need to think of a rhyming word. **Analysis Game** Children need to coloured blocks each. The children choose a card (boy, bee, shoe and egg) and using our "Troll talk" we say the words sound by sound, using the blocks to symbolize a sound. Point to each block and enunciate the first sound, then point to the second block and enunciate the final sound. Slowly say the sounds faster and faster until you have the complete word again. www.readingrockets.org/article/377 **Letter Hunt** Give the children their letter/sound books and revise the letters so far. Head out into the kindy and find as many of each letter as possible. Encourage the children to name the letters out loud when they discover one, then name the associated sound.
Lesson 8B	**Rhyming Leapfrog** A word is called out and the children need to think of a rhyme or rhymes, each word they give allows them to jump forward, with the aim of reaching a designated end point as fast as possible. Examples of words, fall, fun, head, socks, see, ear, pool, go, leap, dog, bat, pup, day, hop, light, rose, tie, bake , goat, fish **Pat a Cake walk** Set out in a circle on the floor pieces of paper with the letters Ss, Mm, Ll, Pp and Tt written on them. Each child will have a turn walking around the circle while the nursery rhyme "Pat a cake" is sung. Each time the letter B in the rhyme is exchanged for one of the letters on the floor. When the rhyme is over the child has to find the letter from the song, name it, give the associated sound and a word that begins with this sound if possible. www.scholastic.com/classroom_solutions **Shared Book** *Mr McGee and the Biting Flea* (Allen, 1998)
Lesson 9A	**Troll Talk** My troll who lives under the house wants me to go to the supermarket for him but before I can go we need to make a shopping list, the only problem is I am finding it really hard to understand what he wants, so I thought I'd ask you if you understand what he wants since you are so

	good at "Turtle/troll talk". Items to blend, eggs, fish, peas, soap, cake, cheese, pie, chips, apple **Speech train** Set a number of stations with a group of pictures starting with different sounds (/s/, /m/, /l/, /p/ and /t/. Each trip around, the train has to collect words that begin with a target sound e.g. /s/ and drop them at the associated letter station (Gillon, 2004). **Connecting the letter Aa with the phoneme /a/** Show the children 4 pictures that start with the letter Aa, enunciate the beginning sound (focus on short /a/ as in ant, apple). Explain that this sound is written like this, Aa. Talk about how the capital A and lower-case look different but make the same sound. Can we think of any other words that start with an /a/ sound? Write Aa in their books.
Lesson 9B	**Rhyming Game** Set out 3 of Gillon's rhyme boards end to end, the children each choose a coloured block, then throw the dice. They move their block the number shown on the dice and whatever picture they land on they need to think of a rhyming word. Continue until they have moved right around the 3 boards. **Rubber band game** Focussing on Aa, Ll and Tt. Pictures beginning with Aa, Ll or Tt are set out face down on the table. The children choose a card, name the picture, then stretch out the beginning sound. They then need to match the picture to the correct letter. **Yes/no game** Same pictures from the above game are laid out face down on the table. The children need to flip two then decided if they start with the same phoneme. If they do they can keep that pair.
Lesson 10A	**Rhyming match/memory** Mix up some rhyming pairs and place them face down on the table. The aim is to find rhyming pairs. **Guess Who** Lay out a series of pictures starting with each of the letters we have covered in this intervention. I tell them I am thinking of a picture and want to see if they have super sonic powers and can read my mind. I

	give them the beginning sound as a clue… **Review letter books** Look through the children's letter books, naming letters, associated sounds and words that begin with this letter. **Letters in our names** Added into their books are their names and some pictures of things that begin with the same letter. With each child look at the letters in their names and circle the letters they know in their names already.
Lesson 10B	**Letter Jumping** Lay out cards with the letters Ll and Aa written on them in large font. I call out a letter and the child needs to jump on that letter, slowly add in Mm, Tt, Ss, and Pp, until they are having to recognise the 6 letters they have been learning. **Beginning sound freeze** The children walk around and when I call out a word they need to freeze, they can only "unfreeze" when they call out the beginning sound of that word. Words to call: cat, bear, tiger, penguin, mouse, ant, snake, lion, dog, fish and goat. **Shared Book** *Stick Man* (Donaldson, 2008) Finish the lesson by praising the children for all their hard work and attention and telling them how enjoyable it has been working with them.