



Peer- reviewed Paper

What do teachers need to know and do about literacy in the early childhood context: exploring the evidence

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Internationally, much recent research and writing has focused on the role of the early childhood teacher in supporting children's literacy prior to school entry and formal instruction. Within the New Zealand context, literacy is included in the early childhood curriculum, '*Te Whāriki*' (Ministry of Education, 1996), but how teachers should go about supporting children to gain literacy abilities remains implicit and open to interpretation. In addition, there is considerable diversity in content and philosophy of early childhood teacher education programmes within New Zealand. The knowledge that teachers need is explored in this paper, along with the research evidence concerning the most effective pedagogies for supporting literacy acquisition in young children.

Introduction

One of the challenges faced by early childhood teachers in New Zealand is deciding what their role in children's literacy acquisition can be and what types of literacy activities are appropriate in the early childhood setting, especially in light of government priorities for literacy (Ministry of Education, 2008). This lack of clarity may be due to the diversity in type and content of early childhood teaching qualifications in New Zealand (Kane, 2005). In some qualifications, understanding how to promote literacy may comprise a small part of the programme, focused around provision of literacy rich environments rather than the acquisition of literacy. With recent regulatory changes (Ministry of Education, (MoE) 2010) licensed centres will only be funded for 80% qualified staff, so current variability in qualification level of staff in centres is likely to continue. It is not surprising then that teachers may lack confidence in promoting children's literacy or have an understanding that is limited in scope (Cullen, 2006; McLachlan-Smith, 1996; McLachlan, Carvalho, Kumar and de Lautour, 2006). This paper explores New Zealand research in early childhood and the knowledge that early childhood teachers need to support young children's literacy. It also examines recent evidence on the most effective pedagogies for supporting literacy acquisition.

Literacy research in New Zealand

Research in New Zealand regarding literacy in the early childhood context has been limited in scope; that which is available tends to be small scale, often completed through postgraduate studies. My own doctoral research (McLachlan-Smith, 1996) examined the policies and practices concerning



literacy in 12 New Zealand kindergartens in the early 1990's, just prior to the formal release of *Te Whāriki*, (MoE, 1996). This study found that teachers espoused quite eclectic understandings of literacy and that the amount and type of experiences that children received differed according to teachers' beliefs about their role. More recent research using a random sample of over 100 early childhood teachers (McLachlan, et al., 2006) showed that although most teachers reported providing literacy rich environments, fewer than 50% used *Te Whāriki* for literacy planning. Teachers once more reported diverse understandings of literacy acquisition and how to support children who were struggling. Similarly, Hedge's (2003) study in kindergartens found that some teachers were in a dilemma when deciding whether or not it was their role to foster domain knowledge such as literacy. Foote, Smith and Ellis (2004) found that although teachers provided a rich literacy environment, they used formal skills based instruction to encourage literacy, without being able to articulate why.

There has been some Ministry of Education funded research into literacy with 'at risk' children in the junior primary school, which is relevant to this topic. Timperley and Robinson (2001) found teachers' perceptions of children's literacy on starting school shifted if they were encouraged to view literacy with alternative lenses and had assumptions about achievement challenged. Phillips, McNaughton and McDonald (2002) found that many early childhood teachers had limited understandings of literacy and that professional development improved literacy outcomes for children. The 'Picking up the Pace' project suggested greater collaboration and negotiation between centres and schools could support continuity in literacy development. Further research by Tagoilelagi-Leota, McNaughton, MacDonald and Ferry (2005) with Samoan and Tongan children from six months before school entry until a year later, indicated that children who were incipient bilinguals at the outset were supported to gain literacy abilities in both their home language and English when they experienced programmes which focused on quality of teaching in reading, guided reading and retelling of stories. In a country with significant diversity in language, culture and ethnicity, understanding how to promote literacy in two languages is of obvious importance.

The policy framework

Although the Ministry of Education has revised guidelines for effective literacy in the primary sector for years 1-4 and 5-8 (MoE, 2003, 2006), it has not yet published guidelines for early childhood, despite evidence that professional development of teachers influences children's literacy achievement (Mitchell & Cubey, 2003; Timperley & Robinson, 2001; Phillips et al., 2002). However, the new government's stated priorities have included literacy (MoE, 2008).

New Zealand's early childhood curriculum, *Te Whāriki* does not provide specific support for teachers. The statements it makes are holistic in nature, which a knowledgeable teacher can interpret; but it's open to interpretation and research evidence is not explicit. The principles of empowerment, holistic development, family and community and relationships are relevant as a literacy framework, as long as a teacher knows what the research evidence is concerning literacy in relation to each principle. The major link for literacy is the Communication/Mana reo strand, in which outcomes for children include developing verbal and non



verbal communication, is for a range of purposes including: experiencing the stories and symbols of their own and other cultures and discovering and developing different ways to be creative and expressive. There is no specific advice on the role of the teacher in terms of promoting literacy achievement, as the key predictors – alphabetic awareness and phonological awareness – are not named. Apart from stating that adults affirm home language and culture the document does not discuss bilingualism, biliteracy or multiliteracies in any depth. These issues are significant however with increased diversity through immigration, as well as social changes in family and community use of information communication technologies (ICT) (Makin, Jones Díaz & McLachlan, 2007).

As argued elsewhere (McLachlan, Fleer & Edwards, 2010), *Te Whāriki* is a *competence* based curriculum, in which learners have some control over the selection, pacing and sequencing of the curriculum, although this type of curriculum also requires teacher judgement of when and how to introduce new ideas to children. For teachers with strong understandings of literacy, *Te Whāriki* offers maximum flexibility and scope, but for teachers with poor understandings, it's potentially a recipe for few or poor literacy practices.

A theoretical framework

So what do teachers need to know about literacy acquisition? Whitehurst and Lonigan's (1998, p. 848) seminal definition of emergent literacy is a useful starting point:

the acquisition of literacy is conceptualised as a developmental continuum, with its origins early in the life of a child, rather than an all or none phenomenon that begins when children start school. This conceptualisation departs from other perspectives in reading acquisition in suggesting there is no clear demarcation between reading and pre-reading.

They argue children develop reading, writing and oral language concurrently and interdependently from exposure to literacy in social contexts and without formal instruction (Whitehurst & Lonigan, 1998). They also argue that there are outside-in and inside-out processes, which stem from children's developing cognitive capacity and their social and cultural experiences. The outside-in processes (p. 850) include the following:

- language – semantic, syntactic and conceptual knowledge
- narrative – understanding and producing narrative
- conventions of print – knowledge about print format
- emergent reading – pretending to read

Inside-out processes (p. 850) include knowledge of graphemes, phonological awareness, syntactic awareness, phonological memory, phoneme-grapheme correspondence, emergent writing, rapid naming and print motivation.

Whitehurst and Lonigan's definition of literacy is complemented by social practice definitions of literacy, sometimes called multiliteracies, which focus on how people participate in literacy in their social lives. Gee (2002) proposed that



people adopt different ways with printed words within differing social practices; they are always meaning producers, not just consumers. Gee argues literacy is always a sociocultural practice, integrally linked into ways of talking, thinking, believing, knowing, acting, interacting, valuing and feeling. Similarly, Jones Díaz states:

Young children's understandings of literacy develop within their sociocultural and linguistic communities. As children move across these communities, they encounter a variety of literacies and literacy practices. Many of these literacies are multimodal and technologically based, requiring simultaneous and combined uses of visual, audio and critical meaning systems (2007, p. 31).

The emergent literacy and social practice definitions of literacy combined provide a robust framework for understanding literacy, in which literacy is acquired as a result of ongoing cognitive development and social and cultural experiences.

Children who may be “at risk”

Children's knowledge and abilities in specific areas relates to later literacy achievement in English (Nicholson, 2005), although there is evidence that these abilities also develop in other languages (Whitehurst & Lonigan, 1998). Nicholson argues these abilities include:

- knowledge of alphabet letters
- phonological awareness (awareness of sounds in words)
- concepts about print
- ability to use decontextualised language
- ability to produce narratives
- an extensive vocabulary of unusual words

Arguably, the most important accomplishments are alphabet knowledge and phonological awareness, which are both necessary, but not individually sufficient for the acquisition of literacy. Each has a different role to play but together they form the basis of the alphabetic principle, which is the understanding that speech sounds in spoken words are represented by graphemes in print. This combined knowledge means that children can use letters and their sounds to make phonemically correct representations of words when both reading and spelling (Nicholson, 2005).

A child's language development and family literacy patterns can predict literacy difficulties. Children who are language delayed or come from families with a known history of reading difficulties may also have difficulties. Children who may be 'at risk' (Justice & Pullen, 2003) of reading failure include: children with impaired vision or hearing, cerebral palsy, intellectual disability, specific early language disorder, attention deficit/hyperactivity disorder, emotional disturbance, and speakers of other languages.

Second language learners are a particular group for attention in New Zealand, because of the cultural and linguistic diversity of the population. Second language learners in this country include children who have attended language



immersion settings, immigrants and refugees. These children are in danger of losing their emergent literacy skills in mainstream education settings (Tabors & Snow, 2001). A lower literacy achievement is not inevitable, but these children may need dedicated help (Tagoilelagi-Leota, et al., 2005) and an enriched emergent literacy environment and skilful, knowledgeable teachers (Tabors & Snow, 2001).

'Knowledge calibration' and effective teaching

Cunningham, Zibulsky and Callahan (2009) propose that although the importance of children's early literacy experiences and links to later achievement are understood, limited attention has been paid to the complex knowledge base of early childhood teachers and its effects on children's learning. As they explain: "It is daunting to determine what teachers need to know, under what circumstances, and how they need to know it to be masterful, adaptive and responsive in the preschool classroom" (p. 488). Research also indicates that many teachers have an inadequate understanding of how literacy develops (e.g. Moats & Foorman, 2003) and consequently miss opportunities to encourage children's development. Cunningham et al. (2009) argue that teachers:

need to understand that early oral language development is the main precursor of reading development, and that it unfolds with steady growth of vocabulary, a deepening syntactical awareness, ever maturing grasp of pragmatics, and an evolving ability to hear, blend, segment and manipulate phonemes in words and sentences (p. 491).

Fillmore and Snow (2000) similarly argue that teachers need to have an in-depth understanding of language, the predictors of literacy achievement and how to support these through pedagogy. They propose that most teacher education programmes inadequately prepare students in what they term educational linguistics.

It is well known that children enter early childhood centres and primary schools with very different language and literacy experiences, some of which map well to the context of the centre or school and some which do not (McNaughton, 2002). Tunmer, Chapman and Prochnow's (2006) longitudinal study found that these differences at school entry in what they term 'literate cultural capital', predicted reading achievement seven years later in New Zealand. Differences in abilities that children have in early childhood impact on the efficiency with which they transition into school where accurate reading and spelling is desired (Tunmer, Chapman, & Prochnow, 2006).

Although literacy occurs in most homes and is valued by families, children bring different 'funds of knowledge' into the early childhood setting and there can be a mismatch between the literacy practices of homes, communities and cultures and those of the school (Gee, 2004; Heath, 1983). Working with children's funds of knowledge requires acceptance of different forms of literacy (Makin, Diaz & McLachlan, 2007). However, as Cunningham et al. state:

Whether children come from impoverished or enriched language environments, their preschool teachers are in a unique position to



provide opportunities to build the fundamental skills and knowledge they will need for the transition into the first years of formal schooling – the years when reading and writing will be among their most significant core achievements (2009, p. 488).

Cunningham, Perry, Stanovich and Stanovich (2004) explain that although teachers' domain knowledge in maths and science has been studied, this sort of study is embryonic in regard to teachers' knowledge of literacy and the relationship with teaching practice. In their study of 722 teachers, the researchers focused on three domains of knowledge which are recognised as important for K-3 (kindergarten to grade 3) teachers: children's literature, phonological awareness and phonics. Cunningham et al. cite evidence of the importance of teachers knowing what constitutes good children's literature and how to use it, as well as needing strong understanding of phonological awareness and phonics, particularly for children who need extra assistance. In addition, Cunningham et al. explored a metacognitive skill: knowledge calibration. Simply, this means whether a teacher is aware of what they know and do not know. As they state (p. 143): "It has been shown that people learn information more readily when they are relatively well calibrated as to their current level of knowledge because they can focus on areas where their knowledge is uncertain and allocate less attention to areas of relative expertise".

The results of their study revealed that teachers did poorly on all three areas of domain knowledge: revealing poor knowledge of children's literature, little about phonemic awareness (e.g. knowing how many sounds are in the word "stretch") or phonics (e.g. knowing that "what" an irregular word is). The results also revealed a significant difference between teachers' actual knowledge of the domains of literacy and their perceived knowledge and teachers overestimated actual knowledge. As Cunningham et al. point out, this doesn't mean teachers weren't literate, it simply means they lacked technical knowledge. Furthermore, the difficulties with knowledge calibration suggested that teachers were unaware of the areas in which they lacked knowledge and hence may not be receptive to new ideas about literacy. As they argue:

Receptivity to new ideas and methods depends on good calibration of one's knowledge and experience. Reading experts agree by consensus that if teachers are poorly calibrated and significantly overestimate their knowledge of important reading related information, they will not seek to acquire or be open to new constructs presented in the context of professional development. Thus while Nolan, McCutcheon and Berninger (1990) have rightly maintained that "Teachers cannot teach what they don't know" (p. 70), it might also be the case that teachers do not always know what they do not know (Cunningham et al., 2004, p. 162).

Pedagogies for supporting literacy acquisition

In addition to teachers having well calibrated understandings of literacy acquisition, it's also important that teachers know about the evidence concerning the most effective pedagogies for supporting literacy in early childhood.



Alphabet knowledge

Alphabet knowledge provides beginning readers with the knowledge necessary to make connections between the spoken word and its print representation (Piasta & Wagner, 2010). The meta-analysis of 60 studies by Piasta and Wagner revealed that letter name knowledge, letter sound knowledge and letter writing outcomes all showed small to moderate teaching effects in the early childhood context, suggesting alphabet knowledge can be enhanced through appropriate teaching. They also note that children receive incidental teaching of alphabet knowledge through involvement with family and community, aiding understanding. Knowledge of letters can influence literacy acquisition up to Grade 4, as Sénechal (2006) found when French parents provided their preschool children with tuition in the alphabet. Alphabet knowledge is used by children for early attempts at spelling and later, for making phonemically correct attempts at reading unfamiliar words and spelling. Alphabet knowledge can be taught in a variety of ways within a holistic curriculum, including story book reading, games, writing names and routines within mat sessions and so forth. Some simple ways to encourage alphabet knowledge include the following:

- Name boards
- Dictating names onto artwork
- Sign up lists for activities
- Using a letter card to send children off the mat
- Talking to children about alphabet charts – sing the song while pointing to the letters
- Use cards and magnetic letters to make words

Phonological awareness

It is important to differentiate between phonological awareness and phonics: a common misunderstanding. Phonological awareness is an ability that children develop, whereas phonics is a method of teaching that focuses on the links between letter sounds with printed letters or groups of letters (Phillips, Clancy-Menchetti & Lonigan, 2008). As Phillips et al. state:

Children's understanding that words are made up of smaller sounds such as syllables and phonemes helps them to "break the code" of written language and acquire the alphabet principle. The alphabetic principle refers to the fact that written words represent spoken words in a sound by sound correspondence. Sounds are signified by a single letter, or in some cases, several letters indicating a single sound in a word (e.g. *sh* or *ch*). When teachers and parents tell a child to "sound it out", this suggestion only makes sense if the child grasps the concept that the word can be broken down into smaller components" (2008, p. 4).

Phillips et al. (2008) explain that it is important to be able to identify children's level of awareness. They also explain that it will not develop "naturally", so children need to be identified if they are displaying difficulties in relation to their peers. Drawing on sociocultural theory, Phillips et al. advocate teaching phonological awareness using scaffolding and guided participation to a range of



children's abilities and they suggest targeting activities at subgroups of children. Phillips et al. cite evidence that an holistic curriculum can support phonological awareness through exploration, sociodramatic and free play, as long as it is supported with brief and interactive small group or individual sessions supporting phonological awareness lasting **no more** than 10 to 15 minutes per day.

Phillips et al. (p. 6) argue that early childhood teachers should begin with helping children to enjoy nursery rhymes, Dr. Seuss books and other rhyming texts, but should not push children into rhyming manipulation tasks (e.g. "say words that rhyme with boat"), as this is a conceptually difficult task related to abilities developed later on the phonological continuum. They suggest that teachers should focus on tasks that encourage word, syllable, onset-rime and phoneme level awareness, rather than starting with rhyming activities. There are a range of things that teachers can do:

Encourage knowledge of nursery rhymes

- Sing nursery rhymes and emphasise rhyming parts
- Point out humour in rhymes
- Use rhymes at appropriate moments – "we know a rhyme about that..." or make up "our very own rhymes"

Encourage knowledge of beginning sounds

- During story reading – group and one to one
- During songs, rhymes, language games (e.g. I spy something that begins with a /b/ sound)
- Using first sound of name to send children off the mat (e.g. names beginning with /k/ sound)

Story book reading

- Play with rhymes and rimes (word families) in story books
- Identify beginning sounds – e.g. f is for *frog*, *football*, *friend* so the children learn they begin with the same sound
- Talk about links between pictures and words
- Define unfamiliar words

Story book reading

Justice, Kaderavek, Fan, Sofka and Hunt (2009) argue that story book reading has traditionally been used for supporting literacy knowledge and skills and experience of story reading predicts later reading achievement. However, they argue that the way teachers read to children determines different outcomes. In their randomised control trial of 106 preschool children in 23 centres over a 30 week period, they found that children who experienced a 'print referencing' style of story reading made significant gains in concepts about print, alphabet knowledge and name writing ability in relation to children who received 'business as usual' story book reading from teachers. In a print referencing style, teachers use verbal and non verbal techniques to heighten children's attention to and interest in print. Simple techniques include asking questions (can you see the letter S on this page?), commenting (that word says "splash") and tracking a finger along text while reading (p. 68). Justice et al. suggest this style of story book reading can be used at home too.



Justice and Pullen (2003) in their analysis of evidence based interventions for promoting literacy also identify 'dialogic reading' as a useful style, which involves building on children's interests, asking open ended questions, following up with additional questions, expanding on what children say, offering praise and feedback. This method of reading encourages children's engagement, creates a dialogue and provides adult models of language. This style of reading is particularly useful for encouraging phonological awareness.

Story reading is an obvious way of increasing children's vocabulary on a regular and systematic basis. Neuman and Dwyer (2009, p. 386) cite evidence that effective teaching of vocabulary includes the following strategies:

1. Be systematic and explicit, providing children with plenty of opportunities to use words in interactions.
2. Involve a great deal of practice that is active, guided and extensive.
3. Incorporate periodic review of new words over time, to check that understanding of new words has been retained.
4. Include observation and progress monitoring assessment to inform further teaching.

Neuman and Dwyer reviewed a number of commercial vocabulary 'packages' in light of these principles and found most lacking. They caution against teachers using such packages without critical scrutiny and thoughtful use within early childhood environments.

Literacy rich environments

Justice and Pullen (2003) argue that although enriching the literacy within an environment leads to an increase in literacy play, further gains are achieved if adult mediation is part of the planned environment. Building on Vygotsky's (1978) notions of access and mediation, research shows that those children who experienced literacy rich environments with adult mediation display greater gains in print awareness, alphabet knowledge and environmental print recognition. Justice and Pullen (2003, p. 110) propose three principles for literacy curriculum:

1. Intervention activities should address both written language and phonological awareness.
2. Intervention activities should include naturalistic, embedded opportunities for knowledge attainment as well as explicit exposure to key concepts (an "explicit embedded balance").
3. Practices should be evidence based.

This notion of a balanced curriculum is a useful one. As McNaughton (2002) argues, the curriculum must be wide enough to incorporate the familiar while unlocking the unfamiliar. For this reason, teachers need not only knowledge of children's out of centre literacies to build on children's strengths, but also to identify what is unfamiliar and support children's developing repertoire of literacy knowledge and abilities. Of significant interest is the growing body of research which demonstrates that teachers' skills in these areas can be significantly enhanced through direct coaching and feedback, leading to an increase in children's literacy abilities (Hsieh, Hemmeter, McCollum & Ostrofsky, 2009;



Cunningham et al., 2009; Justice et al. 2009; Phillips et al., 2008), which offers insights for teacher education and professional development providers.

Conclusion

New Zealand early childhood teachers do not have a specific curriculum or policy framework to guide their practice and so it's necessary to turn to international research for insights into what will make a difference in children's literacy acquisition. The research examined identifies that children need teachers who have in depth and well calibrated understanding of literacy acquisition, provide a literacy rich environment and are able to support children's developing abilities in pedagogically sound ways. Teachers need to be able to identify when children are struggling and use a range of individual and small group strategies to help children to learn. Teachers can use specific pedagogical strategies within an holistic curriculum to get the most gains out of story book reading, literacy rich environments and activities aimed at promoting alphabet knowledge, phonological awareness and vocabulary. The implications for teacher education and professional development providers are clear: teachers need in depth, evidence based knowledge to support their teaching of young children and providers need to ensure that the programmes they offer are current, practical and evidentially based.

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Research that informs early literacy teaching with e-books is in its infancy, hence largely descriptive. Studies explore teacher knowledge and beliefs about technology, digital practices, implementation in classrooms, and how print vs. digital reading instruction influences early literacy skills. Overarching theories and models of the digital teaching of reading, however, are lacking.Â Key Research Questions. What do teachers need to know and be able to do to instruct with e-books? What e-book practices are promising in teaching early literacy? What are issues of implementation in early childhood classrooms? Recent Research Results.