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Emergent literacy skills in New Zealand kindergarten children: Implications for teaching and learning in ECE settings

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A concern in literacy education in New Zealand is the gap between good and poor achievers (Tunmer et al., 2009). While there is a large body of research on how children learn how to read and write, there is much less research on the development of emergent literacy skills that are necessary precursors to conventional literacy. This article describes research into the alphabet knowledge, phonological awareness, and vocabulary of 110 four-and-a-half to five-year-old children attending Auckland kindergartens using the early childhood curriculum *Te Whāriki* (1996). Children exhibited a wide range of knowledge across the three cognitive emergent literacy skills, with children who could read or spell one or more words exhibiting higher levels of alphabet knowledge and phonological awareness than children who could not read or spell. The findings are discussed in terms of realising children's literacy abilities and how literacy skills can be included within a curriculum that encourages holistic socially, and culturally mediated learning contexts.

Introduction

New Zealand has one of the largest gaps between good and poor achievers in literacy at Year 5, based on the large-scale PIRLS study (Chamberlain, 2007; Mullis, Martin, Kennedy, & Foy, 2007). One explanation for this gap is that the poorest achievers start school with the least amount of literate cultural capital (Tunmer et al., 2009). Literate cultural capital is used to refer to "literate socialisation" (Nash, 2001, p. 15) of children, but is often assessed, or operationalised, through cognitive knowledge measures such as letter-name knowledge or oral vocabulary. When assessed in early childhood, or at school entry, these cognitive measures are indicators of literacy-related activities undertaken in the home or community environment.

Cognitive skills and knowledge such as letter-knowledge, oral language and awareness of sounds in words (phonological awareness) are the key indicators of emergent literacy (Whitehurst & Lonigan, 1998). These cognitive skills and knowledge develop from birth, and are based on the idea that literacy can be conceptualised as a continuum in which cognitive skills continuously build on existing skills and knowledge. The cognitive skills collectively labelled as emergent literacy form the foundational knowledge and conceptual understandings that children develop and learn on the path to conventional literacy, at the other end of the continuum (Whitehurst & Lonigan, 1998). Conventional literacy skills and knowledge encompass the accurate decoding of



text and taking meaning from it, as well as writing in ways from which others can take meaning.

Emergent literacy is best facilitated within environments in which children are immersed in the uses of literacy and see it being valued within their community (McNaughton, 1995; Tolchinsky, 2004). Literacy immersion allows children to appropriate literacy knowledge (Sonnenschein, 2002), with more frequent literacy engagement and interaction leading to the development of cognitive literacy skills (Sonnenschein & Munsterman, 2002). Literacy takes on many forms that are culturally and socially constructed, as are interactions with print and oral language (Jones Diaz, 2007). All forms of culturally and socially constructed literacy practices can, however, lead to relevant emergent literacy, if children are immersed in it. (McBride-Chang & Kail, 2002).

The three emergent literacy skills that children can acquire during early childhood, and that contribute directly to the acquisition and development of conventional literacy, are alphabet knowledge, phonological awareness and oral language or vocabulary (Lonigan, 2006; Tunmer, Chapman, & Prochnow, 2006). Alphabet knowledge and phonological awareness each play a different role in the acquisition and development of conventional literacy, but together they form the basis of the alphabetic principle, which is the understanding that sounds in spoken words are represented by graphemes in print words (Moats, 2000). This paper discusses emergent literacy skills in an English context, but the development of skills is similar across languages (McBride-Chang & Kail, 2002).

Letter-name knowledge is a crucial element in the acquisition of conventional literacy (Foulin, 2005). Alphabet letter-name knowledge is currently thought to develop as a function of several different factors, including the letters within children's own names and the prominence of letters in words of interest, such as learning X because of the *X-Box* game (Justice, Pence, Bowles, & Wiggins, 2006). The nature of letter-name learning is similar across languages, such as English, Brazilian, and Hebrew (Treiman, Levin, & Kessler, 2007). The rate of letter-name learning is varied, however, with the average number of letters known by older 4-year-olds ranging between 23 and 6 (Treiman & Kessler, 2003). One of the uses of letter-name knowledge occurs when children begin to use alphabetic strategies to identify their own name and those of others (Share & Gur, 1999). Letter-sound knowledge develops through a combination of phonological awareness and prior letter-name knowledge (Arrow, 2007; Kim, Petscher, Foorman, & Zhou, 2010).

Phonological awareness is another important skill linked to the acquisition and development of reading at school (Anthony & Francis, 2005; Stuart, 2005). Phonological awareness is most commonly understood to be a single ability that manifests itself in different ways at different points throughout development (Anthony & Francis, 2005). This can be thought of as a continuum in which earlier developing forms of awareness contribute to later forms of awareness (Arrow, 2007). Syllable awareness is the first sub-word level of phonological awareness to develop, followed by rime awareness. Rime awareness is the ability to distinguish between words that rhyme and words that do not rhyme and is the level of awareness expected of children prior to starting primary school (Anthony & Francis, 2005). Rime awareness contributes to the future development of phoneme awareness, usually once formal schooling in



conventional literacy has started (Lonigan, Burgess, & Anthony, 2000; Stuart, 2005).

Vocabulary is increasingly being recognised as a key contributor to literacy development (Senechal, Ouellette, & Rodney, 2006). Vocabulary is defined as both oral language and the storage of word meanings. The effects of vocabulary on other forms of emergent literacy are three-fold. Firstly, the depth of vocabulary influences phonological awareness. As vocabulary increases, words are represented in the lexicon in an increasingly segmented manner. During early childhood this may begin as the storage of words as wholes, which become segmented at the onset-rime division (Walley, Metsala, & Garlock, 2003). Secondly, vocabulary affects comprehension, because children will not be able to make meaning from text if they do not have the vocabulary to support the text reading. Thirdly, there may be a direct connection between being able to work words out using explicit strategies, and the level of vocabulary knowledge (Ouellette & Beers, 2010).

During early childhood a range of experiences with print provide children with opportunities to develop the skills of emergent literacy (Sonnenschein, 2002). Direct interactions with resources that can assist in the development of the three main components of emergent literacy are necessary. Story book reading and the resulting interaction is one of the main ways that children can interact with literacy to assist in the development of alphabet knowledge, phonological awareness, and vocabulary (e.g., Justice & Pullen, 2003; Mol, Bus, de Jong, & Smeets, 2008). The different types, and amounts, of interaction with print provided by families, and the child's temperament, lead to individual differences in emergent literacy skills (see, for example, Makin et al., 2007). Socially and culturally relevant experiences and interactions with print in early childhood education provide additional experiences for children who may not be receiving as many experiences in their homes (Young, 2009).

In the New Zealand environment, the learning outcomes of early childhood education emphasised in the curriculum for early childhood *Te Whāriki* (Ministry of Education [MoE], 1996) are that children are encouraged to develop learning dispositions and working theories about themselves and the world around them. As a result, preparation for the transition to compulsory schooling has been limited (Blaiklock, 2008b; McLachlan, 2008). The underlying philosophy is based on learning through holistic development and linked experiences, rather than teaching specific skills (Blaiklock, 2008a). The result is a de-emphasis on literacy in *Te Whāriki*, within which there is no specific mention of literacy or alphabet knowledge (Blaiklock, 2008b; McLachlan & Arrow, 2010). Educators may, as a consequence, overlook the specific skills that children can learn, instead focusing on language and children's dispositions (McLachlan & Arrow, 2010).

Teachers' beliefs and knowledge are another area of concern when implementing literacy within the framework of *Te Whāriki* (McLachlan, Carvalho, de Lautour, & Kumar, 2006). Adequate implementation of literacy within *Te Whāriki* requires that teachers have a depth of knowledge about literacy acquisition and adequate understanding of culturally and socially appropriate approaches to literacy practices (Fillmore Wong & Snow, 2000; Foote, Smith, & Ellis, 2004; McLachlan et al., 2006). Children's emergent literacy cannot be facilitated if the teachers themselves have little knowledge of how literacy



develops, or if teachers' beliefs do not include the importance of emergent literacy for individual children when they enter formal instruction (Cullen, 2007; Cunningham, Zibulsky, & Callahan, 2009).

This article aims to show two things: firstly, the levels of knowledge existing within a sample of New Zealand children; and, secondly, that children are capable of developing emergent literacy skills within existing, holistically-focused early childhood environments. Prior to commencing the study reported on here, it was anticipated that children would show a wide range of variability in emergent literacy skill, as illustrated in North American-based studies (Anthony, Williams, McDonald, & Francis, 2007; Evans, Bell, Shaw, Moretti, & Page, 2006). In addition, children's reading and spelling skills were examined, including children's own name reading and spelling. Children's own name knowledge has increasingly been recognised as an important first step in children's literacy development (e.g., Blair & Savage, 2006)

The children in this study all attended morning sessions at sessional public kindergartens. Morning sessions are usually attended by children aged between four and five-years-of-age. Kindergartens have philosophies and curricula that may be eclectic (McLachlan-Smith, 1996), but which tend to be based on constructivist notions of 'free play' in which children actively seek out experiences, and in which the teacher waits for the teachable moment (McLachlan-Smith, 1996). At the time of data collection, this was the philosophy advertised by the Kindergarten Association overseeing the kindergartens involved in this study (Auckland Kindergarten Association, n.d.). Based on informal observations, the kindergartens who participated in this study engaged children in various amounts of literacy during occasional whole-group mat-times but this was inconsistent within and across settings. Additionally, there were many opportunities for children to engage in literacy activities, in generally literacy-rich environments. This is consistent with surveys of New Zealand kindergarten and early childcare settings (Foote et al., 2004; McLachlan-Smith, 1996; McLachlan et al., 2006)

Methodology

Participants

The participants in this study were 110 children aged from four years, five months to four years, 11 months, with an average age of four years, seven months, or 55 months of age. There were 59 girls and 51 boys in the study. The children were recruited from seven kindergartens in the central-west Auckland region. An analysis of the closest primary schools to the kindergartens found that the decile ratings of those schools ranged from four to ten, but the mode was eight. Informed consent was obtained from the *Auckland Kindergarten Association*, the Head Teacher at each kindergarten and from the parents of children. The sample was predominantly Pakeha/New Zealand European (80%), followed by children who were identified in kindergarten records as either Maori or Pakeha and Maori (6.3%), children of Pacific Island descent (4.5%), children who were identified as Indian (3.6%), children who were identified as Chinese (2.7%), and others (1.8%). At the time of the study children's first language was not recorded. Eighty of the children then participated in a short-term intervention study, which is not discussed here (see Arrow, 2007).



Materials and procedure

Children completed a number of tasks to assess their development of vocabulary, phonological awareness, alphabet knowledge, reading and spelling (see Arrow, 2007, for a full description of these tasks). The tasks were conducted over a number of sessions that depended on the child's attention and willingness to participate. Child assent was a critical part of this project, which relied heavily on willingness to participate in sometimes difficult tasks. Such willingness was also rewarded with stickers.

Alphabet knowledge: This was assessed by asking children to say the name of each of the 26 letters of the alphabet, which were arranged in a random order and presented in lower case. Letter-sound knowledge was also assessed in the same way.

Phonological awareness: This was assessed using two types of tasks: identity and blending. The identity tasks were adapted from Byrne and Fielding-Barnsley (1991) and required children to identify which of three pictures started with the same sound as the first picture provided, and rhymed with the first picture provided. There were ten items for each task. The blending tasks were adapted from O'Connor, Jenkins, and Slocum (1995) and required children to blend together either two syllables to form one word, blend an onset and a rime unit to form one word, or to blend three phonemes to form a word. There were five items for each type of task.

Reading and spelling: Children were asked to first read their own name, presented in 24pt Arial font, centred on an A4 portrait piece of paper, without being told what the word was. They were then asked to write their name on another piece of paper, with no copying, although the researcher assisted if motor skills were interfering in the writing process. Additionally children were presented with 12 words from the Ready-to-Read test (Clay, 1985) and asked to spell up to 12 words taken from Fletcher-Flinn and Thompson (2000).

Vocabulary: This was measured using the standardised British Picture Vocabulary scale (Dunn, Dunn, Whetton, & Burley, 1997) in which four black and white pictures are presented to the child, who is then asked to point to the "best picture of [the target word]". The items gradually increase in difficulty. The task results in a standardised score with an average of one hundred. Five children were inadvertently not administered this measure.

Results

The results will be discussed in terms of the type of emergent literacy skills measured. The descriptive means and standard deviations are provided, along with a general description of the relationships among the main variables measured in the study.



Table 1: Means and Standard Deviations for Participants Age and Task Performance (N = 110).

	Chance	Max	Mean	SD	Range
Age (yrs.; months)		4; 11	4; 7	0; 2	4; 5 - 4; 11
BPVS ^a		-	102.7	11.02	73-126
Letter Knowledge		26	11.04	8.03	0-26
Own name ^b		26	2.59	4.54	0-20
Names		1	.65	.48	0-1
Sounds		1	.71	.46	0-1
Identification on Spelling		10	3.54	2.59	0-10
Onset identity	3.33	10	4.47	3.18	0-10
Rime identity	3.33	10	2.45	1.76	0-5
Syllable blending		5	2.68	1.93	0-5
Onset-rime blending		5	0.57	1.22	0-5
Phoneme blending					

^aN = 105

^bMean score represents proportion of children who could spell or identify their own name

Alphabet knowledge

There was a strong correlation between letter-name knowledge and letter-sound knowledge, $r = .64$, but there was a significant difference between the number of letter-names known and the number of letter-sounds, $t(109) = 14.23$, $p < .05$. The mean number of letters that children could name was 11.04 ($SD=8.03$) and the mean number of letter sounds that children could provide was 2.59 ($SD=4.54$), see Table 1. The distribution of letter sounds indicated that the 19 children (17%) who could read or spell one or more words represented the children who could provide letter sounds, see Table 2.

Table 2: Readers and spellers compared to non-readers and non-spellers

	Readers & spellers <i>n</i> = 19		Non-reader spellers <i>n</i> = 91		& <i>t</i> -value (unequal variances)
	M	SD	M	SD	
Reading words	2.47	3.67	.00	.00	2.94
Spelling words	2.00	2.45	.00	.00	3.56
Letter names	17.84	8.12	9.62	7.28	4.08
Letter sounds	7.95	6.44	1.47	3.05	4.28
Phoneme blending	1.68	2.08	.34	.79	2.77

Note: all *t*-values are significant at the .05 level of significance.

Phonological awareness

All phonological awareness tasks were correlated (see Table 3), indicating that they all measured the same construct, namely phonological awareness. See Table 1 for the means and standard deviations. The tasks that involved identifying and blending the larger phonological units of rimes or syllables were



the easiest for children, as reflected by the higher mean scores. The phoneme blending task was very difficult, with a mean of .57, out of a maximum of five.

Reading and spelling

The easier of the reading and spelling tasks were those that made use of children's own names. Although 71% of children could spell out their own names and only 65% could read their own name outside of familiar contexts, there was no difference between being able to read or spell their own names, $t(109) = 1.00$, $p = n.s.$ The other reading and spelling tasks were much more difficult, with a mean words read of only .43 ($SD=1.76$) and a mean words spelt of only .35 ($SD=1.25$). However, these mean scores were the result of the 19 children who were able to read or spell one word, which is illustrated more clearly in Table 2.

Table 3: *Correlations between measures of phonological awareness*

	Onset identity	Rime Identity	Syllable blending	Onset-rime blending	Phoneme blending
Onset identity	-	.30**	.33**	.31**	.61**
Rime identity			.37**	.49**	.35**
Syllable blending				.48**	.31**
Onset-rime blending					.43**

Vocabulary

The mean standard score for this sample was 102.70 ($SD=11.02$), which is very close to the average of 100. Vocabulary knowledge was correlated with name reading ability ($r = .31$), letter-sound knowledge ($r = .29$), rime identity ($r = .37$), syllable blending ($r = .37$), onset-rime blending ($r = .47$), and phoneme blending ($r = .25$), at the .01 level of significance.

Discussion

The findings show, as expected, that there is large variation in children's cognitive emergent literacy skills in the early childhood education setting. Children are developing alphabet knowledge and phonological awareness within holistic, literate environments, without explicit and specific instruction in these skills. The phonological awareness of children, for example, indicates that children are developing rime awareness over other forms of phonological awareness, especially the more difficult phoneme awareness. This is in keeping with the expected development of phonological awareness along a continuum (Anthony & Lonigan, 2004).



The findings also provide an average number of letter-names and letter-sounds known by New Zealand four-year-old children prior to starting primary school. Children knew an average of 11 letter-names and 2-3 letter sounds. However, the 17% of children who were able to read or spell one or more words had greater letter-sound knowledge and nearly double the letter-name knowledge. Those same children also had greater phoneme awareness, as measured by the phoneme blending task. Although the nature of the relationship between letter-sound knowledge and phoneme awareness is not known, it may be that children who know a large number of letter names and have also acquired phoneme awareness are using this to develop letter-sound knowledge, commensurate with the findings of Kim et al. (2010) in American kindergarteners.

Children's own name knowledge was also high, with most children being able to spell their own name when asked, and a slightly smaller number able to identify and read their name when shown it out of context. The difference between name spelling and letter-knowledge has also been noted by Molfese, Beswick, Molnar, and Jacobi-Vessels (2006), who found that children were able to write their names spontaneously before they could write letters to dictation. In another study of children's emergent literacy, Welsch, Sullivan, and Justice (2003) concluded that own-name writing reflects print knowledge more than it differentiates children on the basis of alphabet knowledge or phonological awareness. Although not assessed here previous research has found that children's own name knowledge plays a more critical role in literacy development than environmental print reading of logos and common signs (Blair & Savage, 2006).

One of the most striking findings of this study is the level of correlation between vocabulary and most of the other measures. This is consistent with the increasingly segmented nature of phonological awareness as vocabulary develops (Walley et al., 2003). There has been very little research on the nature of the relationship between emergent literacy skills and vocabulary beyond comparing outcomes based on book-reading activities in homes or early childhood education settings (e.g., Aram, 2006). The relationships found in this study suggest that emergent literacy skills come as a package of inter-related skills that operate together to facilitate further literacy learning.

Implications

This paper provides evidence of emergent literacy skills in children attending early childhood education. The findings suggest that children are capable of developing emergent literacy skills. One implication is that implicit instruction of the alphabet, phonological awareness, and vocabulary extension is possible. The variation in emergent literacy skills discovered during the study emphasises the need for assessment of literacy abilities in early childhood settings (McLachlan, Flear, & Edwards, 2010). Assessment of literacy requires that educators have knowledge of how emergent literacy and conventional literacy are acquired and developed, so they can identify and plan for children's literacy learning (Cunningham et al., 2009).

In the New Zealand context this also means applying literacy strategies, and assessing literacy, within the curriculum framework of *Te Whāriki*. It has been



argued that the identification of literacy skills, such as writing one's own name or naming letters of the alphabet, is formal, didactic, and drilled-based (Foote et al., 2004), and therefore at odds with teachers' beliefs about authentic literacy within play environments. However, it could also be argued that these literacy skills can be conveyed by teachers responding in teachable moments with strategies that reflect a child's assessed level of literacy. Education, in early childhood as well as primary school, needs to focus on differentiation, rather than strategies that are the same for all (Tunmer et al., 2006). Assessment of literacy within a *Te Whāriki* framework can include embedding literacy in authentic activities, while assessment can include identifying the emergent literacy skills used by children (Cullen, 2007).

There are a number of practices that have been suggested by the literature, to provide effective facilitation of emergent literacy skills within authentic (culturally and socially appropriate) contexts. Justice and Pullen (2003) make recommendations for effective literacy programmes in early childhood settings. The first is to make use of effective story-book reading practices, which may include dialogic reading (Mol et al., 2008) or print-referencing (Justice & Ezell, 2002). This refers to the use of discussion around books, in one-to-one reading sessions or formal 'mat-time' settings. Discussions can include reference to print features, using the book to start rhyming games (McLachlan et al., 2010), or talking about experiences relevant to the book. Such reading strategies also lead to dramatic play, an example of which is illustrated in Foote et al. (2004).

A second teaching practice is to make use of literacy-rich play opportunities by providing, for example, a shop-based literacy centre, where children can make use of shopping lists, reading signs on shelves, wall-signs, etc.. Providing literacy-rich play environments is a strength of New Zealand early childhood education centres (Foote et al., 2004; McLachlan et al., 2006). Identifying the teachable moments for engaging children in making meaning of print, and engaging in reading and writing, is necessary for the extension of children's literacy abilities, as is recognising what children are doing in terms of emergent literacy and the social practice of literacy (Cullen, 2007; McLachlan et al., 2010).

Conclusion

It is important that teachers have an understanding of emergent literacy and its role in the acquisition of conventional literacy ability (Cunningham et al., 2009). Recognising gaps in children's emergent literacy, and addressing those gaps, can make the difference between success, or not, with conventional literacy. It provides all children with a bridge between their home literacy practices and those used in primary school contexts, enhancing their literate cultural capital and chances for literacy success. The ability of early childhood teachers to make appropriate text choices, to recognise teachable moments and to assess children's learning are all crucial to children's emergent literacy development, and to their future success in conventional literacy at primary school and beyond.



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