

# Chapter 11

## Promoting the Predictors of Literacy in Early Childhood Settings: An Analysis of Two Studies in Low SES Settings

Claire J. McLachlan and Alison W. Arrow

**Abstract** Research suggests that professional learning can enhance the effectiveness of teachers' literacy practices and improve literacy outcomes for children prior to school entry (Cunningham, Perry, Stanovich, & Stanovich 2004, Cunningham, Zibulsky, & Callahan, 2009; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009). Two mixed methods studies (Punch, 2009) presented in this chapter examined the question of whether different approaches to professional learning would lead to improved literacy outcomes in children. Study one asked if a workshop on literacy acquisition would increase teachers' understandings of literacy in four early childhood centres and enhance children's literacy outcomes over an 8 week intervention period, with a fifth centre used as a control (McLachlan & Arrow, 2013). Pre- and post-test measures of children's literacy were collected, along with teachers' accounts of how they promoted literacy during the intervention period. The second study asked if collaborative planned reviews with kindergarten teachers would enhance literacy outcomes for children. Children's literacy was assessed at three intervals, using methods trialled in study one. Teachers' and parents' views about literacy were also collected, and discussed at regular meetings with the research team. Key findings suggest both models lead to changes in teachers' practice and children's literacy outcomes. The implications for effective literacy pedagogies, curriculum and teachers' professional learning will be explored.

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C.J. McLachlan (✉)

Te Hononga, School of Curriculum and Pedagogy, Faculty of Education, University of Waikato, Private Bag 3105, Hamilton 3240, New Zealand  
e-mail: [c.mclachlan@waikato.ac.nz](mailto:c.mclachlan@waikato.ac.nz)

A.W. Arrow

Institute of Education, Massey University,  
Private Bag 11 222, Palmerston North 4410, New Zealand  
e-mail: [a.w.arrow@massey.ac.nz](mailto:a.w.arrow@massey.ac.nz)

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## Definitions of Early Literacy

There are some key understandings of literacy that underpinned our work and were discussed with the teaching teams in both studies. The first of these is the term emergent literacy, which is based on the conceptualisation of Whitehurst and Lonigan (1998); there is literate knowledge that is necessary for the act of learning to read, that usually develops during the early years of life, and that this knowledge leads to conventional literacy acquisition. The act of learning to read is, therefore, on a continuum, with early literacy abilities necessary for the acquisition of later developing conventional reading abilities. The continuum itself is based on the Simple View of Reading (Gough & Tunmer, 1986) in which earlier developing literacy abilities directly contribute to later decoding and comprehension abilities. This means that literacy starts in infancy and when children start attending an early childhood centre they display evidence of a continuum of literacy development. Whitehurst and Lonigan (1998) further suggest that there are inside-out (phonological awareness, syntactic awareness) and outside-in (language, narrative) processes involved in literacy acquisition, suggesting both biology and upbringing have roles to play in children's literacy development.

The second set of key understandings is derived from The National Early Literacy Panel Report (NELP) (2009). According to the NELP report children need to develop knowledge of the alphabet, phonological awareness (being aware of sounds in words), the ability to name letters, numbers, objects, colours, to write their own name and to be able to remember spoken information for a short period of time. Children also need to understand print conventions and concepts, have strong oral language and the ability to match and discriminate visual symbols. Knowledge of the alphabet and phonological awareness play a particularly crucial role. Both are necessary, but not individually sufficient to support children's literacy learning. Each has a different role, but together they form the basis of the alphabetic principle, which is the understanding that speech sounds in words are represented by graphemes in print. The combined knowledge means children can use letters and sounds to make phonemically correct representations of words in reading and spelling on school entry. The differences in levels of knowledge and awareness that children have by the end of early childhood can impact on how easily they learn to read at school (e.g., Tunmer, Chapman, & Prochnow, 2006).

The third set of shared understandings is the social practice view of literacy. In terms of social practice of literacy it is understood that there are multiple literacies that children experience in their homes, communities and cultures, which shape the ways in which they experience literacy (Makin, Jones Díaz, & McLachlan, 2007). The term multiliteracies is used to capture the complexities of the range of types of texts in which visual, spatial, gestural and verbal elements are included and which use a wide range of communication channels that influence people's literate prac-

tices (Makin et al., 2007; New London Group, 1996). Like other chapters in this book, we were interested in how children acquire understandings of multiliteracies in early childhood.

## What Do We Know About Literacy in New Zealand Children?

There is a significant literacy achievement gap in New Zealand between children from diverse backgrounds in terms of socio-economic status (SES) or ethnicity, and children who struggle with literacy on school entry have lower alphabet knowledge, phonological awareness and receptive vocabulary skills (measures of literate cultural capital). Children in lower SES areas are more likely to have lower levels of literate cultural capital than children from higher SES areas (Mullis, Martin, Kennedy, & Foy, 2007, Mullis, Marton, Foy, & Drucker, 2012; Tunmer et al., 2006). These differences widen from school entry on through Matthew effects where the rich-get-richer and the poor-get-poorer (Stanovich, 1986), leading to the achievement gap reflected in PIRLS (Mullis et al. 2012) and other data. In addition, New Zealand has some specific challenges in relation to the literacy achievement of its multilingual children, as the population includes indigenous Māori, the largest Pacific Island population in the world who speak numerous Pasifika languages and dialects, and an increasing migrant and refugee population speaking a range of languages. In total, nearly 200 languages are spoken in New Zealand (Statistics New Zealand, 2013), creating language and literacy challenges for teachers. There is very little recent data available on New Zealand children's literacy knowledge and skills prior to school, apart from some of our own work (Arrow, 2007; McLachlan & Arrow, 2013) and a few others (Rachmani, 2011; Tagoilelagi-Leota et al., 2005; Tunmer et al., 2006). Research shows that teaching letter sound knowledge and phoneme sensitivity is crucial for children who are "at risk" of reading difficulties, as they lack these particular inside-out processes (Tunmer et al., 2006). Knowledge of children's abilities, combined with knowledge of alphabetic and phonological awareness progression enables the teacher to tailor programmes and instruction to children's level of development (Anthony & Francis, 2005; Boyer & Ehri, 2011).

Literacy is poorly defined in the New Zealand early childhood curriculum, *Te Whāriki* (Ministry of Education, 1996). The curriculum is the legislated curriculum for use in all licensed early childhood services (New Zealand Government, 2008) and the effectiveness of implementation is reviewed on a regular review cycle by the Education Review Office which is independent of the Ministry of Education. The major link is with the curriculum strand of Communication/Mana reo, in which children are expected to:

- Develop verbal and nonverbal communication for range of purposes;
- Experience the stories and symbols of their own and other cultures;
- Discover and develop different ways to be creative and expressive.

There are more minor links with the curriculum strands of Contribution (equitable learning opportunities and valued contributions by children) and Exploration (learning through active exploration) (Ministry of Education, 1996).

*Te Whāriki* is a competence focussed curriculum, in which children and teachers have choices over the content, sequence and pacing of the curriculum (McLachlan, Fleer, & Edwards, 2013). It has been internationally lauded as a socioculturally focussed curriculum document, which recognises the importance of children's family and community in their learning. However, as critiqued elsewhere, references on how to promote literacy are non-specific and multi literacies and bilingualism/biliteracy are not mentioned, although this is probably due to the age of the curriculum document and changes in immigration patterns in recent years (McLachlan & Arrow, 2011). It does not provide specific advice on the role of the teacher in terms of promoting literacy and has never been evaluated, although the Education Review Office (ERO) recently investigated how centres use *Te Whāriki* and recommended review and revision (ERO, 2013). The findings also suggest that for most services *Te Whāriki* is not used to reflect on, evaluate or improve practice. ERO found that 80 % of the 627 services reviewed included *Te Whāriki* in philosophy, but found wide variation in practice. An earlier review of literacy in 353 services (ERO, 2011) found that approximately 25 % of all centres used inappropriate literacy resources or pedagogies with young children. Although most services provided an appropriate range of literacy opportunities for children, a number of concerns were identified regarding the use of commercial phonics packages with very young children, large formal mat times that did not cater to the diverse abilities of children, and formal and teacher led literacy teaching, which limited children's engagement with meaningful literacy activities. ERO (2011) recommended to the Ministry of Education that written guidelines and expectations for literacy teaching and learning in early childhood be developed, although this has not been acted on.

Levels of literacy knowledge of early childhood teachers in New Zealand is generally unknown. One study that did include early childhood teachers in a study of explicit phonological knowledge found that the ECE teachers had low explicit knowledge overall (Carroll, Gillon, & MacNeill, 2012). Kane (2005) reported that literacy is not a large part of initial early childhood teacher education and early childhood teachers have been found to espouse eclectic understandings of literacy and may be unsure about how to promote literacy acquisition in young children (Foote, Smith, & Ellis, 2004; Hedges, 2003; McLachlan & Arrow, 2013; McLachlan, Carvalho, de Lautour, & Kumar, 2006; McLachlan-Smith, 1996).

New Zealand has national expectations about the types of literacy knowledge, skills and experiences that children should have on school entry at 5 years of age, confirming Olsen's (2009) statement that most countries have expectations for their children regarding 'read what' and 'how well' which underpin policy. The *Literacy Learning Progressions* (Ministry of Education, 2010) specify expectations for chil-

dren at school entry, which include phonological awareness, alphabet knowledge, vocabulary, own name reading and writing, and storytelling. Although the Ministry of Education revised guidelines for literacy in junior primary (Ministry of Education, 2003), it has not done the same for early childhood, despite international evidence supporting the need to do so (NELP, 2009) and local evidence that professional development of teachers influences children's literacy achievement (Mitchell & Cubey, 2003; Tagoilelagi-Leota et al., 2005). Although there is less professional development available to teachers since the National Government sharply reduced early childhood funding in the Budget of 2009 (New Zealand Treasury, 2009), there is growing evidence of what types of professional learning have the most impact on practice. This includes time for reflection, leadership, partnership models and challenging thinking over time (Edwards & Nuttall, 2009), as well as the direct coaching on literacy teaching, which leads to significant gains in children's literacy capabilities (Cunningham et al., 2009; Hseih, Hemmeter, McCollum, & Ostrosky, 2009; Justice et al., 2009; Phillips, Clancy-Menchetti, & Lonigan, 2008).

## Supporting Literacy Prior to Primary School Entry

Although there has been considerable writing on how literacy develops in young children, building on the early work of Dame Marie Clay (Clay, 1982; Teale & Sulzby, 1986), more recent research has focussed on how it can be promoted in homes and early childhood settings. There is some international research on how literacy can be taught in early childhood, which was useful to teachers in the present studies. Enriching literacy in the environment is an obvious way to promote literacy, but only if adult mediation is a planned part of the environment (Neuman, 2007). Children who experience a literacy rich environment with adult mediation display greater gains in print awareness, alphabet knowledge and environmental print recognition (Justice & Pullen, 2003; Justice et al., 2009). The curriculum needs to include naturalistic, embedded opportunities for literacy, as well as explicit exposure to written language and phonological awareness.

Piasta and Wagner's (2010) meta-analysis found that specific letter name and sound instruction in ECE had small to moderate effects on the learning of letter names and sounds over and above the influence of phonological processing abilities. Phillips et al., (2008) found that phonological awareness could be supported in children displaying difficulties, using scaffolding and guided participation. They recommend holistic, free play curriculum with 10–15 min per day of explicit tuition for PA. Justice and colleagues (Justice & Pullen, 2003; Justice et al., 2009) found that the way in which teachers used story-book reading also influences literacy knowledge. Book-reading that emphasises the print elements lead to significant gains in concepts about print, alphabet knowledge and name writing ability. Book reading that emphasises questioning and discussing the meaning of the texts leads to gains in oral language and emergent literacy skills. Neuman and Dwyer (2009) found that effective teaching involves being systematic with lots of practice, periodic review of new words and informal assessment of gains over time.

In cultural historical theorising (Vygotsky 1978), there is strong argument that teachers need to provide both *access to* and *mediation of* literacy in the early childhood setting (e.g., Casbergue, McGee & Bedford, 2008; Neuman, 2007). However, Moats and Foorman (2003) propose many teachers have inadequate understandings of literacy, do not recognise children's literacy development and miss opportunities to encourage literacy in natural settings. Cunningham et al. (2004) argue that teachers do not always know what they don't know and that research is needed on 'knowledge calibration' between teachers' perceived and actual knowledge. They further propose that many teachers cannot articulate which literacy resources are effective for promoting literacy and why. Cunningham et al. (2009) further suggest that teachers need to know the predictors of literacy achievement, provide opportunities to enhance literacy acquisition and recognise when children demonstrate achievement of these.

Finally, teachers need to be able to identify children's linguistic capacity and in what language and provide support in bilingualism and biliteracy in the early childhood setting (Du Fresne & Masny, 2006). McGill-Franzen (2010) argues that early childhood teachers have the most marginalised knowledge and skills in literacy of all teachers and few opportunities for professional learning. She proposes teachers need professional learning to increase knowledge of literacy acquisition, the needs of dual language learners, understanding of multilingual, multicultural learners and a range of appropriate pedagogies.

## Definitions of Literacy Underpinning the Studies

For the teachers in the present studies, we defined what we meant by literacy, so that it was clear from the outset what our theoretical position was in relation to the professional learning. Principally, we support the simple view of literacy (Gough & Tunmer, 1986). Our definition included Whitehurst and Lonigan's (1998) 'inside-outside' definition of emergent literacy, the NELP (2009) key predictors and recommendations, and a social practice view of literacy (Makin et al., 2007). We proposed that the skills encapsulated in terms of literate cultural capital (Tunmer et al., 2006) for young children included alphabet knowledge, phonological awareness and a large vocabulary. We also drew on the framework for literacy in the curriculum proposed by McLachlan et al. (2013) which involved teachers considering how literacy development, like other essential learning areas of the curriculum, is viewed, what content is valued for supporting learning and who decides on it, what knowledge is prioritised, and how progression is viewed.

Doubek and Cooper (2007) identify critical variables for professional learning for literacy: time; the importance of the role of the leader and their awareness of obstacles to change; understanding an effective literacy environment; and receptiveness to change. Mitchell and Cubey (2003) identified key features of effective professional learning: it builds on teachers' existing knowledge; includes alternative theoretical knowledge and practices; involves investigation and analysis of data by

teachers in their own settings; involves critical reflection; inclusion of diversity; challenges beliefs and practices; and enhances insight into teachers' own thinking and actions. Taken overall, it is considered that single event workshop models cannot give enough time to the key variables when compared to longer-term process models of professional learning (Edwards & Nuttall, 2009). These principles were implicit to both studies discussed in this chapter, but different approaches were explored. The next section presents a brief summary of both studies and key findings.

## Methodology: Study 1

Although we accepted the time limitations of event models of professional learning to create changes in teachers' beliefs and practices, we trialed an event model based intervention within four early childhood settings, using a fifth centre as a control. A mixed methods design was used (Punch, 2009) in order to obtain a range of data to answer research questions.

Our aim was to see if we could promote change in teachers' understandings of literacy and their literacy practices with children, using short term professional learning. By deepening teachers' understandings of literacy acquisition, we hoped to promote change in children's knowledge and skills (see McLachlan & Arrow, 2013). Our research question was:

*Does professional development for early childhood educators on facilitating alphabetic and phonological awareness contribute to growth in alphabetic and phonological awareness in 3–5-year-olds in full-time centre-based care?*

Our objectives were twofold:

1. To examine if professional development can improve teachers' knowledge regarding facilitating alphabetic and phonological awareness in 3–5 year old children.
2. To examine if children's alphabetic and phonological awareness can be enhanced within a holistic, child centered curriculum context within an 8 week period.

A quasi-experimental design was used in which teachers' and children's knowledge was tested at the beginning and end of a data collection in five early childhood centres, beginning with pretesting of children and a professional learning session on facilitating alphabetic and phonological awareness. One centre was used as a control, whereby teachers did not receive the professional development until after the intervention period, so that we could evaluate whether any changes were the result of typical development, rather than changes in resources, activities or teaching practices. We asked teachers to keep a brief log on how they had promoted literacy within the intervention period.

The New Zealand Ministry of Education national database of early childhood centres was used to identify the total number of eligible centres in a medium-sized

**Table 11.1** Composition of sample

Centre	Ownership model	Type	No. teachers	Teacher all data	Children with all data	Children included
Centre 1	'not for profit'	Full day care	6	4	17	12
Centre 2	'not for profit'	Sessional, parent educators	8	3	21	13
Centre 3	Private	Full day care	4	4	5	6
Centre 4	Private	Full day care	8	5	12	0

Centres 1–3 are intervention centres and Centre 4 is the control group centre

provincial city. Centres were targeted that had children who were primarily in full-time child care in low socio economic communities, as coming from a low SES background is one of the predictors of reading failure in young children in New Zealand (Tunmer et al., 2006). At the end of the data collection it was discovered that none of the teachers at one of the intervention centres had participated in both pretesting and posttesting, and only five children had completed all data collection. As a result this privately owned full day care centre was dropped from the analyses. The composition of the remaining sample in each setting is presented in Table 11.1. Not all children were post-tested as some did not want to participate and some had moved on to primary school as children in New Zealand start primary schooling on their fifth birthday rather than in yearly intakes. The total number of children included in the following analyses is indicated in the last column of Table 11.1. Not all teachers completed the data collection, thus the number of teachers from each centre that did is also indicated in Table 11.1.

## *Teachers*

Across the five centre 32 teachers completed pretests or posttests and a total of 16 teachers completed both pretesting and posttesting data collections. The sample was all female; five (31.3 %) had Bachelor's degrees, three (18.8 %) held a Diploma in Teaching, two (12.5 %) held Graduate Diplomas in early childhood education, three (18.8 %) were currently training to become qualified, and a further three (18.8 %) held no qualifications. There were no differences between the intervention and control centres in the distribution of qualifications (Mann-Whitney  $U = 30$ ,  $Z = .28$ ,  $p = .77$ ). Overall, however, the number of teachers in Centre three that completed all data does not show that the majority of adults in the center at any one time were parent educators, most of whom did not take part in all the data collection. The number of years spent teaching varied from half a year to 24 years ( $M = 8.84$  years,  $SD = 8.79$ ), with no differences in distribution across intervention and control centres (Mann-Whitney  $U = 31$ ,  $Z = .41$ ,  $p = .68$ ).



## *Children*

Of the children who participated, 55 children (27 boys, 28 girls) completed the data collection at both pretest and posttest. Children's ages ranged from 36 to 58 months ( $M = 49.25$  months,  $SD = 5.65$ ). There were no significant differences in children's age between intervention and control centres (Mann-Whitney  $U = 232.5$ ,  $Z = -.521$ ,  $p = .60$ ).

## Measures

### *Teachers*

Teachers were asked to complete a *questionnaire on current practices* concerning alphabetic and phonological awareness, which was based on surveys previously used for assessing teachers' knowledge and beliefs about literacy acquisition (McLachlan et al., 2006; Taylor, Blum & Logdon, 1986). The questionnaire has three components. First, it identifies teacher's perceptions of opportunities they afford children within the centre. Thirteen questions were scored to provide a measure of literacy opportunities, with a higher score indicating higher levels of opportunity for literacy activities. The second component examined teachers' recognition of children's emergent literacy abilities, such as writing, reading signs, and alphabet recognition. This component has a maximum score of 7. Finally, teachers' knowledge of literacy development and their role in this development were examined. Teacher responses to the questionnaire were analysed using content and thematic analysis. At the same time as completing the questionnaire teachers' were asked to complete a *phonological awareness assessment* requiring phoneme segmentation (adapted from Moats, 2000). The maximum score for this assessment was 30. Finally, during the course of the intervention teachers were also asked to keep a logbook of the activities initiated on literacy.

### *Children*

Child data was collected with children in a quiet corner of the centre, by the researchers. Most children had their data collected over several sessions at both pre- and posttest, stopping a session at their request. A brief explanation of measures is provided here, but full details can be found in the report of the study (McLachlan & Arrow, 2013).

The first set of tasks at both pretest and posttest for children were phonological awareness measures. In the first task, *rhyme identity*, children were presented with four pictures, all of which were named by the researcher. The first is the cue word

(e.g., pet) and the remaining three are the target and distracter words (e.g., barn, net, hand). Children are asked to identify which of the three rhyme with, or end the same as, the cue word. The second phonological awareness task assessed *onset identity* in which children were asked to identify which of the three words began the same, or started the same as, the cue word. There were two additional phonological awareness tasks which were developmentally more advanced than the identity tasks (Anthony & Francis, 2005). The *onset labeling task* used a picture of the cue word with children asked to name the first sound of that word. This was followed by a *phoneme blending* task in which children were provided with the phonemes of three to four phoneme words and asked to put the sounds together to identify what the picture was on a card placed upside down in front of them.

Children's letter-knowledge and own name knowledge was also assessed. In the *letter knowledge* task children were presented with each of the 26 alphabet letters in a set random order in lower case. Children were asked to name the letters they know. As letter-sound knowledge lags behind the letter name knowledge of New Zealand young children (Arrow, 2010) a letter-sound task was given to children who had scored 12 or more on the letter-name task. The procedure for this task was identical for the letter name task, but with letter-sounds. *Own-name knowledge* was also assessed by providing children with presented with their name printed on A4 paper in a standardised sans serif font. Children were not told what it was, but simply asked what the word said. This was immediately followed by children being asked to write their own name on a piece of A4 paper, but without the printed name in front of them. Finally, children's *receptive vocabulary* was assessed at pretest only, using the British Picture Vocabulary Scale (2nd edition, Dunn, Dunn, Whetton, & Burley, 1997).

## Procedures

The children's pretest data were collected first, and once all the pretests on children had been completed in the centre, a time was scheduled to meet with the teaching team in each of the intervention centres to provide the one-off professional development event. This event took approximately 2 hours for each centre and included the completion of the teacher phonological awareness assessment and survey. The professional development session focused on the predictors of literacy acquisition (NELP, 2009) and different pedagogies for story reading, language and rhyming games, learning alphabet and vocabulary (e.g., Justice & Pullen, 2003; Justice et al., 2009; Phillips et al. 2008; Piasta & Wagner 2010). After the session, teachers were asked to implement what they learned and to a brief journal of new literacy practices.

Teachers and children were post-tested after approximately 8 weeks. Once data were analyzed, the researchers returned to centres to discuss the findings and their literacy practices. In the control center the professional development program was offered after all data was collected, where the implications of the pre- and post-test data for teaching practice were discussed.

## Results

The initial analyses of children's data compared the pretest data across the intervention and control early childhood centres. There were no significant differences across centres, except for own name reading. More of the intervention group knew their own name to read, as a proportion, than the control group. However, the effect size for this difference was very low at  $r^2 = .09$ . As the phonological awareness tasks were administered in order of anticipated difficulty, a number of children did not complete the onset naming or phoneme blending tasks. In the intervention group 15 children scored a mean of 2.80 ( $SD = 3.57$ ) on the onset naming task while two control group children attempted the task but did not score on it. In the next level of difficulty 5 intervention group children attempted the phoneme blending task, scoring a mean of 3.00 ( $SD = 3.67$ ), but no control group children were offered it. Additionally, the alphabet letter sound task was only administered to children who scored 12 or more on the alphabet letter name task. In the intervention group 11 children attempted the task, with a mean of 8.00 ( $SD = 5.55$ ) and two control group children attempted the task with a mean of 7.50 ( $SD = 9.19$ ).

The posttest analyses of the 51 intervention children and the 12 control group children who completed all the analyses are reported in Table 11.2. There were no significant differences that favored the intervention group, but one significant difference that favored the control group, where they improved in own name reading compared to the intervention group. However, the effect size for this was very low at  $r^2 = .08$ . For the more difficult tasks, 19 children from the intervention group attempted the phoneme blending task, with a mean of 3.26 ( $SD = 3.57$ ), but no control group children completed it. Seven children from the intervention group then completed the phoneme naming task, with a mean of 2.14 ( $SD = 3.39$ ). For the alphabet letter sounds task 11 intervention group children had a mean of 8.09 letter sounds ( $SD = 6.77$ ), and two control group children had a mean of 8.50 ( $SD = .71$ ). What these results suggest is that children in the intervention groups had progressed in terms of literacy knowledge, as more children achieved higher scores on the simpler literacy tasks than the control group.

**Table 11.2** Pretest and posttest means for intervention and control groups

	Intervention (N = 43)		Control (N = 12)	
	Pretest	Posttest	Pretest	Posttest
Age in months	50.51 (5.12)	–	48.92 (4.87)	–
Vocabulary SS	92.60 (10.55)	–	99.33 (11.06)	–
Rhyme identity	3.47 (1.76)	4.07 (1.75)	4.08 (1.68)	3.91 (1.44)
Onset identity	2.84 (1.45)	3.40 (1.80)	2.83 (1.64)	2.50 (1.31)
Own name reading	74 (.44)	76 (.43)	42 (.52)	75 (.45)
Own name spelling	.30 (.46)	.48 (.51)	.42 (.51)	.42 (.51)
Alphabet names	5.53 (6.45)	6.69 (6.52)	6.17 (7.18)	6.33 (7.24)

The teacher results were analysed in terms of teachers' perceptions of the provision of literacy opportunities for children, the recognition of literacy abilities within centers, and teachers' understanding of literacy and their role in facilitating literacy development. A thematic analysis of the open-ended questions regarding literacy opportunities for children in the centers found that both intervention and control centers considered they provided language and literacy rich environments for children through the provision of song, name tags, books, posters, games, music, and puzzles. This did not change for any centre type across the course of the intervention.

Similarly, in the recognition of literacy in young children there were no significant differences in the scores on this measure across intervention and control centers at pretest or posttest. However, most teachers were at ceiling on this measure. Understanding how children develop literacy was not well understood by teachers, with no mention of specific forms of knowledge that children would develop, or ideas of developmental progression of emergent literacy skills. The majority of responses to the question on how children develop literacy referred to literacy rich environments, followed by children being read to and being immersed in literacy. Teachers' roles primarily included reading to children, encouraging language development, and providing literacy resources, although the control centre teachers mainly mentioned literacy experiences. There was little change across pretest and posttest on this issue, but there was a drop in the intervention centres for the belief that the teacher's role is to facilitate language development for literacy. Also of concern was the majority response of no response to how the teachers made use of *Te Whariki* in their planning for literacy.

Teacher knowledge of phonological awareness was also low. The average score on phonological awareness was 15.1 from a maximum of 30 at pretest, with higher scores from the control centre. The repeated measures ANOVA carried out on the phonological awareness of teachers measure found no significant differences between centres at pretest or posttest, but it did find an interaction. This interaction is explained by the score drop between pretest and posttest for the control centre and the increase for the intervention centres, suggesting that teachers in intervention centers had a stronger understanding of phonological awareness at posttest and that teachers had collaborated in their answers at pretest in the control centre.

Teachers in all centres, including the control, commented that they were more conscious of supporting literacy during the intervention period. The ways in which intervention centres supported literacy were quite similar, possibly stemming from the discussions at the professional development session. Views on the importance of a literacy rich environment were unchanged, however, more viewed story reading as promoting language development. The intervention centres reported an increased emphasis on sounds in words, pointing out alphabet, recognition of children's names and greater encouragement of writing, which is arguably evident in the results.

## Methodology: Study 2

Study two was designed to further develop study one. Our aim was as follows: To examine if collaborative planned reviews with teachers in low SES kindergartens would enhance literacy and numeracy learning outcomes in children aged 3–5 years of age. We wanted to investigate if a more collaborative form of professional learning (Edwards & Nuttall, 2009; Mitchell & Cubey, 2003) would be more effective.

For this study, we again used a mixed-methods design (Punch, 2009) and used many of the instruments and procedures used in study one, with some variations. First, we recruited four low SES kindergartens to participate via the local Kindergarten Association, all of whom had decided to pursue a planned review of either literacy or numeracy. Two of the kindergartens planned to review literacy and two planned to review numeracy. The data reported here relate to the two kindergartens that reviewed literacy, accompanied with control data on literacy from one of the kindergartens reviewing numeracy. Our research design included the following:

- Pre and post semi structured interviews with teachers.
- Pre, mid and post measures of children’s literacy (using measures previously described).
- Parent survey.
- Meetings with teachers to discuss findings and explore options for developing the review.

Kindergarten 1 had three teachers, all with qualified, registered and experienced, who had been teaching together for a couple of years, although the head teacher had been in the role for several years. Parents of 30 children gave consent for children to take part in the study, which was essentially all enrolled children, although we only collected data from 26, due to illness and other factors.

Kindergarten 2 had four teachers, also all qualified, registered and experienced. This was a new teaching team, with the head teacher recently appointed from a childcare teaching background and one teacher a relatively new graduate, who previously taught in primary schools. Parents of 14 older children gave consent for children to participate in the study.

A semi-structured interview protocol was used at the beginning and end of the study with teachers. We also developed a questionnaire that was sent home to parents at the beginning of the study. The measures used with children were the same as in study one, except that we gathered them at three intervals throughout the year (pre, mid and post) and we used the British Picture Vocabulary Scale at each interval, so that we measured vocabulary development over the period of intervention. Data from children were collected in centres during session time, like Study one.

## *Parents' Views of Children's Literacy in Kindergartens*

All parents were surveyed about their literacy home practices at the outset of the study, so that opportunities for building on children's funds of knowledge (Moll, 1990) could be built on by the teaching teams. Teachers in Kindergarten 1 later sent a more specific follow up survey, which asked a range of questions that responses to our survey had raised. There was a 100 % response rate from Kindergarten 1 and about 30 % from Kindergarten 2, due to differences in distribution techniques used by teachers in each site. However there was strong commonality in the results. All parents said that they read stories to children every day and most commented that children could write their name, recognise some letters of the alphabet and some showed an interest in playing games like "I spy" or rhyming games. About half of parents said that children used digital technology, such as computers every week, which was of surprise to both teachers and researchers, given the low socio-economic community in which families lived. Most parents commented that they wanted to know more about how to support literacy in their preschool child. Few parents expressed any concerns about their children's literacy abilities or the teachers' knowledge and skills to support them.

In Kindergarten 1 the principle researcher, teachers and a university professional development (PD) facilitator, funded by Ministry of Education, met with families twice – for shared lunches – at which the planned review and results from children were discussed. We also shared labelled photos of children engaged with different types of literacy. The majority of families attended these meetings and engaged in detailed discussions about how to support children's literacy at home.

In Kindergarten 2, one meeting was held with parents in the evening prior to a committee meeting, but was attended by only 4 parents. At this meeting, pictures taken of children engaged with literacy in the kindergarten were also shared, and discussed in relation to literacy learning. Teachers in Kindergarten 2 explained that they had difficulties in getting parental attendance at meetings as many worked full-time or do shift-work. The planned collaborative reviews.

On-going professional development was offered in two kindergartens using a coaching and guiding, collaborative, in-service model (Mitchell & Cubey, 2003). Each self-review was driven by teachers, with input from the research team. At Kindergarten 1 this meant regular meetings (approximately once a month) with the teaching team and a university based PD facilitator. At Kindergarten 2, meetings were less regular (approximately 6 weekly) with just the teaching team. At each meeting, results from children were discussed, along with teachers' assessment and documentation of children's learning. The research team located resources such as free websites for parents and articles on specific aspects of literacy, which had been prompted by the finding of high computer access in homes. The planned review belonged at all times to the teachers, but the Massey research team and PD facilitator acted as critical facilitators.

### ***Planned Collaborative Review in Kindergarten 1***

The interviews with the teaching team in Kindergarten 1 revealed strong consistency in beliefs about literacy acquisition. Their primary beliefs about literacy were framed around maturational readiness, with statements about children learning essential knowledge and skills when they are 'ready'. To support development, teachers said that they provided a literacy rich environment and that literacy was integrated into the curriculum for most children. The exception was a more structured literacy time with older children, who were close to starting school, which involved teaching the alphabet, phonological awareness and some high frequency words. None of the teachers could explicitly name a theoretical position that they adopted to guide their literacy practice, but said they were influenced by the theories of Piaget and Vygotsky. Teachers commented that they used *Te Whāriki* (Ministry of Education, 1996) and in particular the Communication strand as a general framework for literacy in the curriculum, but they did not use it for specific planning or activities.

In preparation for the review, the teaching team looked at various areas within the kindergarten environment and how they were being used for literacy using photographs and videotaping of interactions with children, with the support of the PD facilitator. Their observations concentrated on interactions with children. They looked at routines with children and adjusted these as needed. Teachers decided they had more literacy opportunities in inside areas than outside areas. They agreed to have shared and collaborative practices within the teaching team as part of the review.

The surveys of parents reinforced teachers' views of children's early multi literacies at home. Our survey revealed that a number of the families (15 of 20 responses) tell oral stories, which made teachers question the place of oral story telling in the curriculum and how to support children's funds of knowledge (Moll, 1990). Many family traditions of literacy practice were found to be around music and drama. Teachers focussed more intently on the literacy experiences children were bringing to kindergarten and concentrated on how to extend them. They observed that when children were helped to enact family literacies in the curriculum such as use of ICT that their confidence and participation increased.

The ways in which teachers in Kindergarten 1 supported literacy throughout the review were simple yet effective. They increased literacy resources in the kindergarten overall and carefully looked at where literacy resources were located and used. They developed portable resources that could be used outside as well as making tactical resources that children could interact with. They put resources at child level and at thoroughfare points and created opportunities for intentional teaching of literacy. They also increased the use of mats and cushions outside for reading. They put writing materials inside and outside, as their review revealed that literacy materials were mainly inside and used by girls. Teachers increased the use of the alphabet by making alphabet resources using stones and sandpaper, which were used inside and outside the kindergarten. They purchased an iPad and focussed on games

and stories that would promote literacy learning. They more deliberately selected stories and resources to support learning of alphabet, sounds, new vocabulary and increased their focus on high frequency words, but for all children. They increased the use of physical substances such as dough for letter recognition as part of activities provided for children. They also increased their focus on reading stories, singing nursery rhymes and waiata (Māori songs) and songs from other languages, because of the multilingual group of children. They also used resources from other cultures to reinforce children's developing identities and sense of belonging. Teachers utilised puppets outside and oral story telling more to build on oral story telling at home.

Teachers also addressed how they were planning for literacy in the curriculum. In the beginning the majority of documentation was related to using literacy for a purpose, but teachers were less convinced that they were capturing critical questioning or transformation of literacy learning. They began to question what they were documenting and asked what literacy learning looked like for children who spent most of their time outside. Teachers decided they needed to capture children's learning journeys in literacy – from standing back and observing, through to beginning to explore different types of literacy, to mastery of new knowledge and skills – and to look for evidence of progression. They also considered that they needed to make literacy learning more visible in their assessment and documentation of children's learning. Very positive team dynamics and strong established relationships with families made this a dynamic and positive review.

### *Planned Collaborative Review in Kindergarten 2*

Teachers' explanations of literacy were somewhat different in Kindergarten 2. Most explained that they focussed their literacy teaching around perceptions of children's interest and engagement, but would not push children who did not display interest. They all expressed confidence in their ability to promote literacy, given their years of experience, although most said that they were less confident of their knowledge and expertise to promote phonics or phonological awareness. Like the teachers in Kindergarten 1, they were unable to name specific theory or research which might underpin teaching literacy in early childhood, although they also named Piaget and Vygotsky as influential theorists. They all expressed concern about recent changes in routines and the loss of the 'whānau' groups (family groups of 10–15 children) for 10–15 min per day, which had occurred when the head teacher started. Like Kindergarten 1, this group of teachers used the communication strand in Te Whariki as a general framework, rather than a specific guide to practice.

Teachers had had some preliminary discussion with their Senior Teacher about the focus of their review and had divided the review tasks between the team. At each meeting they would discuss what data they had collected and how this was helping to shape the review. The need for a 'literacy audit' was identified to examine whether the kindergarten was literacy rich, which was designed by the principal researcher



and trialled. The audit document enabled evaluation of a range of aspects of literacy in the curriculum, based on previous writing about literacy in the curriculum (McLachlan et al., 2013). It was agreed that the principal researcher should also photograph children at literacy play and share this information with teachers and parents.

The literacy audit revealed that there were some simple ways that literacy could be enriched, such as increasing the number of literacy resources both inside and outside, and that there were missed opportunities for literacy interaction. Teachers reconsidered the format and content of the whole group mat sessions and increased the focus on alphabet, phonemes and vocabulary. A return to the use of whānau (family) groupings for literacy was debated, but rejected. Teachers considered the place of te reo Māori in the curriculum and literacy acquisition, and how to strengthen their bicultural literacy practice. The team spent time at meetings exploring the difference between promoting phonological awareness and running a phonics programme and decided to focus on phonological awareness. They also decided they should increase their engagement with parents about home literacy practices.

In terms of changing practices, teachers reconsidered their use of an iPad and downloaded a number of interactive literacy games and stories, particularly those that would appeal to boys. They increased the amount of textual and writing material available to the children inside and outside the kindergarten, as both were a bit lacking. They reported that they were making much more conscious choices about what books to read to children and what literacy knowledge and skills might be enhanced through the stories they read. They considered the notion of ‘noticing, recognising and responding’ (Ministry of Education, 2005) to literacy and more actively looked for literacy learning. However, team dynamics and possibly weaker relationships with families in this kindergarten made the planned review quite disjointed and it was difficult to maintain momentum across the period of the study.

## Teachers’ Reflections on Their Reviews

It proved impossible to arrange a time to post interview teachers from Kindergarten 2, despite six attempts by phone and by email to arrange a time and a request to answer questions by email, but this may be attributable to the timing in December, when the kindergarten was winding up for Christmas. Accordingly, the reflections on planned review reported here belong to Kindergarten 1, who all completed interviews.

All teachers said they were more confident about how to promote literacy in different ways and were much more intentional in their teaching of literacy within the free play environment. They had thought deeply about how to support and extend children’s literacy and how to use literacy resources more purposefully in the kindergarten. They all considered they were supporting foundational skills like fine motor skills for writing and supporting knowledge of alphabet and awareness of sounds. They discussed using resources to promote specific skills, such as puppets

for phonological awareness and letter name resources for alphabet and writing and they could see that children's knowledge and skills were growing in response to their teaching. All commented that they were looking more explicitly at the link between teaching and children's outcomes and discussed issues related to assessment and how to track literacy progression using narrative and other forms of assessment. The kindergarten teachers commented on the importance of the teaching team "*being on the same page*", which was problematic in K2. They also commented favourably on the importance of having a 'critical friend' in the form of the research team and their PD facilitator. Further evidence of the success of this review is seen in the comment from the new entrant teacher from a local primary school at a lunch meeting at Kindergarten 1:

*I can tell the children that come from this Kindergarten this year: they are ready, willing and able to give it a go.*

Descriptive results from both kindergartens show changes in children's literacy knowledge and skills. As Table 11.3 shows, there were generally greater gains in Kindergarten 1, where teachers maintained a strong focus on supporting children's literacy. These can be contrasted with the results from the control kindergarten, in particular, in which children show no real changes over the pre – post test period. Greater gains are particularly evident in own name reading, rhyme awareness and standardised vocabulary scores.

## Reflections on Methodology

Although the sample from the kindergartens was not large, the findings do suggest that collaborative planned reviews can lead to changes in teachers' practices and also to children's literacy learning outcomes. These findings support those of Cunningham et al. (2009), Philips et al. (2008) and Justice et al. (2009) who similarly found that working alongside teachers can change literacy practices for the benefit of children. This is certainly an area of literacy research worthy of further investigation with a larger sample.

Collecting complete data sets was a challenge in both studies and the sample size for children was small in study 2, but the data collection methods were fundamentally sound. Further studies should include a longitudinal element, in which children's literacy on school entry is also evaluated. Teachers' reflections on practice might also be enhanced by use of video recording.

## Conclusions

The evidence from these two studies suggest that both event and process forms of professional learning create some degree of change in teachers' practices, although the ongoing collaborative method used in Study 2 had richer results in terms of

**Table 11.3** Pretest and posttest means and range for child emergent literacy measures

Literacy measures	K 1 Pretest (n = 16)		K 2 pretest (n = 8)		Control pretest (n = 10)		K 1 Posttest		K 2 Posttest		Control posttest	
	Avg	Range	Avg	Range	Avg	Range	Avg	Range	Avg	Range	Avg	Range
Letter names	5.5	0-24	7.6	2-22	2.4	0-18	8.7	0-26	10.3	1-23	4.3	0-21
Letter sounds	8.7 <sup>a</sup>	2-13	.5 <sup>b</sup>	0-1	15 <sup>c</sup>	-	11.4 <sup>a</sup>	0-21	9.3 <sup>b</sup>	4-13	12 <sup>c</sup>	-
Name reading	8 yes	-	8 yes	-	4 yes	-	12 yes	-	8 yes	-	7 yes	-
Name writing	4 yes	-	4 yes	-	3 yes	-	7 yes	-	5 yes	-	7 yes	-
Rhyme (max 8)	2.9	0-8	3.6	1-6	3.5	1-8	3.9	0-8	3.9	1-8	4.6	2-8
Onset (max 8)	2.3	0-6	2.4	1-4	1.6	0-4	2.8	0-8	3.6	2-6	3.3	0-8
BPVS	96.2	55-124	103.6	91-111	99.8	81-120	99.3	76-117	102.4	88-113	99.8	82-115

<sup>a</sup>n = 2 at pretest and 4 at posttest ; <sup>b</sup>n = 2 at pretest and 3 at posttest; <sup>c</sup>n = 1 at pretest and posttest

pedagogy. Teachers' knowledge was enhanced by regular and provocative conversations about theory, research and pedagogy, which increased teachers' literacy practices, to varying degrees. This finding supports Cunningham and colleagues' (2004) contention that increasing teacher knowledge can increase knowledge calibration for literacy practice. Collaborative planned reviews with teachers can change practice, but it is time consuming and a costly model of professional learning.

What is significant in both studies is that teachers articulated that they can incorporate intentional teaching of literacy into their curriculum without compromising children's opportunities to participate in a free play environment, supporting the arguments of Neuman (2007) and Casbergue et al. (2008). Results from both studies show it is possible to integrate teaching of phonological awareness, alphabet knowledge and vocabulary into free play early childhood settings in meaningful and authentic ways, without resorting to skill and drill activities. There is some evidence in these studies that changes in knowledge and pedagogies in teachers relates to changes in children's literacy knowledge, skills and abilities, although further research is needed with children from low SES communities in rural, satellite and urban communities who are bilingual or multilingual, who are at even greater risk of reading failure in the New Zealand education system.

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