

**EARLY LITERACY
RESEARCH PROJECT**

**REPORT TO THE NEW ZEALAND
MINISTRY OF EDUCATION**
Operational Milestone Report
June 2017

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Proactively Released

Executive Summary

The purpose of this operational milestone report is to provide an update on the progress of the Early Literacy Project over the previous 6 months, but will also attempt to clarify aspects of the design arising from the end of Year 2 Milestone Report.

The report provides an overview of:

- the current sample size (pages 5-8);
- where the data collection has progressed to for both children and teacher participants (pages 9-10);
- the different analyses in progress (page 11);
- the overall progress of all project children at the end of one year at school (pages 11-17);
- current presentations and publications that are completed or in progress (page 18);
- teachers' implementation of the Intervention Workshop programme strategies (page 19).

The next step is to analyse the final 2017 data collection and conduct more in-depth analysis on the specific nature of children's errors in reading and spelling to examine patterns based on the ways they have been taught. We have a specific focus on the nature of teaching strategies and the implementation of them, both to understand how teachers teach and to examine fidelity of the strategies covered in the workshops. This is fundamental to our understanding of how well the project is working through teachers' implementation of strategies.

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Introduction

This report will provide an overview of the operational progress of The Early Literacy Project up until June 2017. It will provide the current numbers of teacher and child participants, with a brief discussion of the benefits of participating in the project. The report will provide an update on the current testing, and what is being tested. This is followed by an outline of ongoing data analysis for the comparisons between groups, but will also provide summary data for the end of Year 1 and the relationship to National Standards. The report ends with a summary of the workshops and clarification of how teachers were able to implement the Intervention Workshop programme approaches to their classroom practice.

The sample of teacher and child participants: An update

Teacher sample

Teacher overview

- Total number of teachers who received Intervention Workshop programme - 81
 - Intervention teachers in 2015 cohort – 47
 - Continued into Intervention Plus cohort 2016 - 40
 - Intervention teachers in 2016 cohort - 34
- Total number of comparison teachers - 41
 - Comparison teachers in 2015 cohort – 32
 - Comparison teachers in 2016 cohort – 10

Thirty-eight schools¹ continued with the project between the start of the project in January 2015 through to June 2017. Only one school withdrew at the start of the project in 2015. Within the schools 40 of 47 teachers continued from the Intervention Cohort 2015 to the Intervention Plus Cohort 2016. Of the seven missing teachers, three left the school they were at, one was on sabbatical, one was on maternity leave and the remaining two moved within their school to teach a different year level.

Of the 32 teachers in Comparison Cohort 2015, 27 joined Intervention Cohort 2016. Of the remaining 5 teachers, one chose to continue as a comparison teacher (there is one teacher participant in the school) and the other four left the school. An additional seven teachers joined those schools as replacements and became part of the Intervention Cohort 2016.

Finally, there were an additional nine teachers who became Comparison Cohort 2016 teachers as they were new to Intervention 2015 schools but had not had the Intervention programme.

New entrant and Year 1 teachers at all 37 schools were offered a workshop in March 2017. An additional 22 teachers from 14 schools attended this workshop. This workshop was offered free, but as this was not officially part of the intervention itself release time for teachers was not paid.

Teachers from across the representative regions (Taranaki, Taranaki, Wellington, Horowhenua, Manawatu) attended this 1-day workshop in Palmerston North.

¹ See Appendix A for a list of schools

Benefits of participation

There are benefits for schools and teachers in participating in this research. For many schools this provided the opportunity for teachers in junior classrooms to spend time together discussing the teaching of literacy to children. In many cases they talked about how to work with children who are just beginning to read as well as children who are having difficulty in reading. Participating teachers were encouraged to bring their own data to workshops and to ask questions of the facilitators, and each other, in the approaches to support children.

Additionally, the teachers benefited by upskilling on their knowledge of literacy development and how to integrate that knowledge into the existing programmes, approaches, and resources.

Sustainability of the workshop programme knowledge

In the following section data will be presented to illustrate the improving outcomes of the Intervention+ cohort of children compared to the Intervention 2015 children, at the end of year 1. At the end of year 1 the children in the Intervention+ cohort were significantly better on the process skills required for decoding (pseudoword reading attempts) and using decoding attempts with vocabulary knowledge (mispronunciation task) for accurately reading unknown words. This suggests that the knowledge teachers in the Intervention 2015 workshop programme gained, is being passed on to future classrooms of children.

The more rapid learning gains of the children in the Intervention 2016 cohort suggest that sustainability is supported by having specific guides to instructional decisions for explicit and phonic-orientated instruction. It could be assumed, therefore, that the children in the classrooms of teachers who participated in the 2016 Intervention programme will make even more rapid gains, as the teachers are able to implement the type of teaching emphasised from the start of the year.

This will be further examined with a teacher questionnaire and final teacher video in Term 3.

Child sample

Child overview

- Total number of children starting in Intervention groups - 488
 - Intervention 2015 cohort – 208
 - Intervention Plus 2016 cohort - 150
 - Intervention 2016 cohort - 130
- Total number of children starting in comparison groups - 231
 - Comparison 2015 cohort – 166
 - Comparison 2016 cohort – 65

Intervention cohort 2016² began with 130 children in February 2016. The Intervention Plus cohort 3 began the project with 150 children. Combined with the children from the Intervention 2015 cohort, a total of 488 children started the project in Intervention classrooms. The Comparison cohort 2016 began the year with 65 children. Combined with the Comparison 2015 cohort 231 children began the study as comparison cohort children. Table 1 provides a breakdown of the sample numbers for each cohort and the attrition rates for each cohort.

Table 1: Numbers of children in each cohort from entry into the project to the start of year 2 and year 3.

	2015 Cohorts		2016 Cohorts			Totals
	I	C	I	I+	C	
School entry	208	166	130	150	65	719
Start of year 2	173	127	104	132	58	594
Attrition rate Yr1-Yr2	15.9%	22.9% ^a	20.0%	12.0%	9.2%	16.8%
End of year 2	161	113	-	-	-	
Attrition rate Yr1-Y3	19.2%	28.5% ^a	-	-	-	

^a13.3% of this attrition rate was due to a school withdrawing from the project

There is an average attrition rate of 16.8% across groups up until the start of year 2. The greater attrition was in the 2015 control group due to the withdrawal of a school. At each time point there is

² Refer to Appendix B for a table outlining the cohort design.

approximately 1% of missing data due to children being unavailable during the testing period. Within measures there is also some missing data due to testing difficulties, absences once testing started within the school, or a child not completing all tests. There are also two cases where children have moved from one intervention project school to another, and have continued in the project at their new school.

Comparisons were made of School entry information for children who left schools during the project and children who remained. The children who left were, on average, from slightly lower decile schools and had slightly lower letter name knowledge at school entry. There were no other differences indicating there is no undue effect of attrition on the sample.

Benefits of participating

Although not all of the control children will have received direct benefit from participating there are potential indirect benefits from their participation. Some of the indirect benefits include the teacher increasing their focus on literacy while the child was in the teacher's class. This particularly occurred when we were conducting the video observations. A second indirect benefit is the large amount of objective assessment data collected on individual children over a 2-3 year period. This data has been provided back to schools to use in whatever way they find useful.

The data illustrates that children from the Intervention + group are making more progress than the Intervention 2015 group, particularly on the process variables for decoding unfamiliar words. This suggests that although there is little evidence that literacy outcomes have improved specifically for the Intervention 2015 group, the teachers have begun to provide benefits for children in future classes.

Data Collection to June 2017

With children

Data collection has continued with children across all cohorts. The 2015 Cohort groups were tested in June 2017 (Time 7). The 2016 cohorts were assessed in both February (Time 4) and again in June (Time 5). These are the final assessment points for all groups.

The 2016 cohorts of children are participating in assessments (see Table 3) that are both progression (e.g., phonological awareness, sight word reading, spelling) and outcome (reading comprehension). We are also endeavouring to collect reading book levels at each Time for all cohorts of children. The Time 5 and Time 7 data collection is underway during the writing of this report so total numbers and preliminary results cannot yet be reported.

Table 2: Assessments carried out on 2016 cohorts

Time 4 measures (February 2017)	Time 5 measures (June 2017)
<ul style="list-style-type: none">• Burt word reading test• Wide-range achievement test spelling• Pseudoword reading• CTOPP<ul style="list-style-type: none">○ Elision○ Nonword repetition• Mispronunciation correction task• Sentence completion task	<ul style="list-style-type: none">• Burt word reading test• Wide-range achievement test spelling• Pseudoword reading• CTOPP<ul style="list-style-type: none">○ Elision○ Nonword repetition• Listening comprehension• Reading comprehension• Receptive vocabulary• Understanding morphemes• Reading book levels requested

Table 3: Assessments carried out on 2015 cohort

Time 7 measures (June 2017)
<ul style="list-style-type: none">• Burt word reading test• Wide-range achievement test spelling• Receptive vocabulary• Understanding morphemes• Listening comprehension• Reading comprehension• Mispronunciation• Self-efficacy• Word strategy• CTOPP<ul style="list-style-type: none">○ Rapid naming○ Phoneme isolation• Reading levels requested

With teachers

We will be ending the teacher participation in the project with a final survey of teaching practices, knowledge, and implementation of strategies from the project. We will also request a final round of video observation collection of the teachers in the project who are still teaching in New Entrant or Year 1 classrooms. These video observations are collected and copies sent back to teachers in the schools. These videos are used to code practice and fidelity of practice in implementing strategies from the project.

Data analysis progress

Data analysis to date is taking several different forms. With the child data we have a research assistant reliability checking the scoring and data entry of every assessment. In a small number of cases data has been removed from any further analyses as it is unclear whether the assessment was given in the standardised manner, or was ended earlier than it should have been and the resulting score from the assessment does not represent the ability or knowledge of the child.

This 'cleaned' data informed the analysis in the most recent full Milestone Report. We are beginning to look at the data in a variety of ways using Masters thesis students and our own individual analysis. Some of this will result in Masters theses and published papers, as well as conference papers. All of our students are teachers in primary school or early childhood or are involved in supporting teachers in other ways as well. We will also be looking at the different rates of growth trajectories for children from different SES backgrounds and experiences. In 2015 and 2016 we have collected family literacy environment survey data that will give a more precise measure of background experiences and individual SES levels.

We are also analysing the teacher videos and have developed a coding system that investigates the use of explicit instruction that is child-centred and based on child needs and current ability level. We discussed the initial analysis of this in the End of Year 2 Milestone Report (Arrow, Chapman, Braid, & Tunmer, 2017). From this data we are able to examine fidelity of strategy implementation and will enable us to identify differential patterns of implementation across and within schools. We will also be able to map child change across teacher knowledge and practice change. We are also developing a small number of case studies that will provide deeper understanding of these aspects of implementation. These were briefly introduced in the End of Year 2 Milestone Report. The case study schools have been selected as they are examples of high, medium and low levels of fidelity from the 2016 Intervention cohort of teachers.

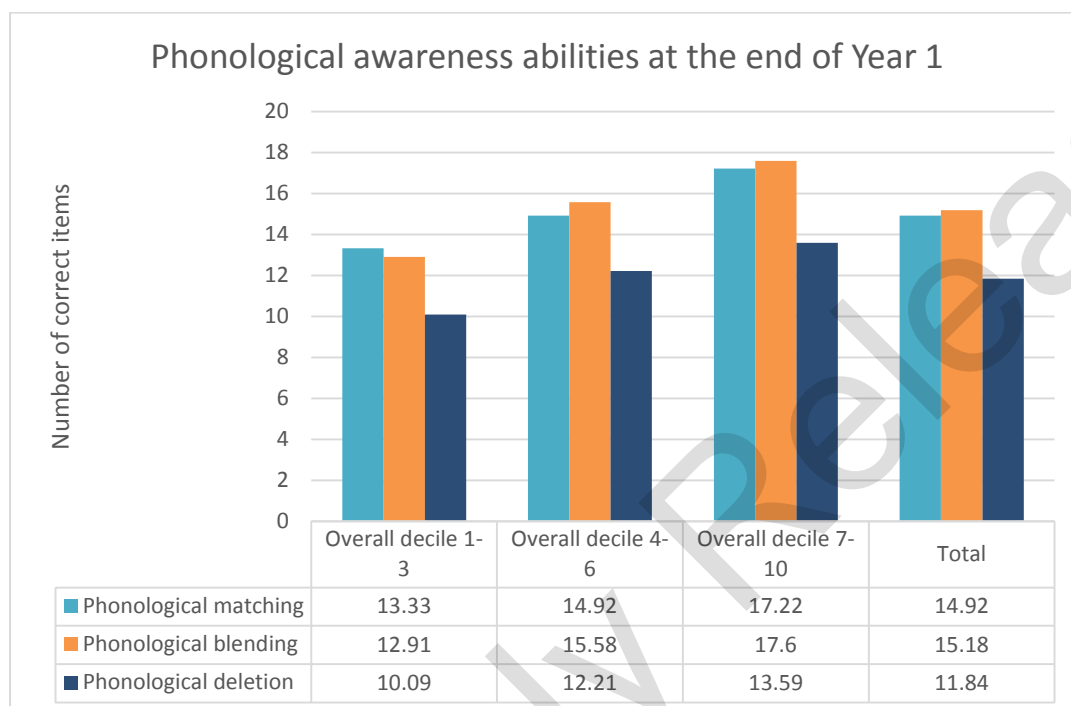
Time 3 data summary

To illustrate the relationship to National Standards (Ministry of Education, 2009) and Literacy Learning Progressions (Ministry of Education, 2010), we provide sample results for the end of year 1, including reading level. We are not clearly able to link our objective data to National Standards as we do not measure the reading levels that the Standards are based on. However, many of the measures do test aspects of required knowledge, as listed in the Literacy Learning Progressions (Ministry of Education, 2010).

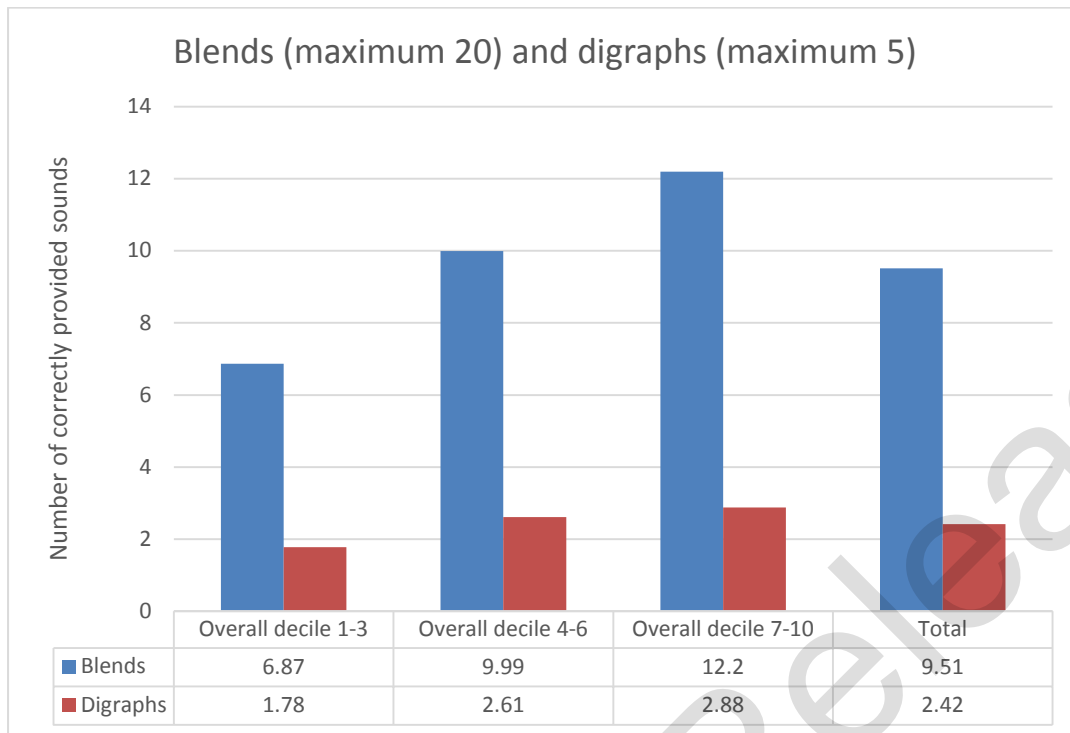
In contrast to our year end Milestone Reports we have combined all groups to provide an illustration of the levels of knowledge children have at the end of Year 1, particularly the striking differences between deciles. It should be noted that this does not adequately reflect the gains made in the lower decile schools in the Intervention groups, relative to the controls. When there have been unusual patterns we have also examined them further.

The first set of graphs are the foundational skills that reading theory and research has identified as necessary in learning to read. These include phonological awareness, knowing the sounds of blends and digraphs, and being able to read nonwords. All except nonwords are specifically identified as required skills in the End of Year 1 Literacy Learning Progressions (Ministry of Education, 2010).

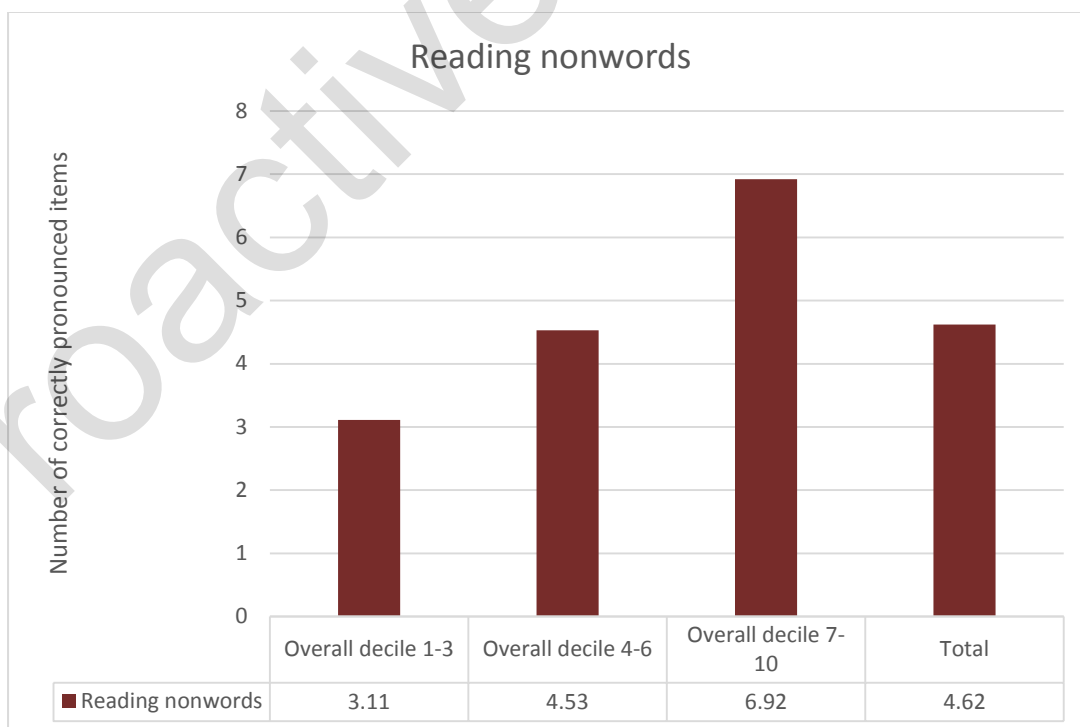
Nonwords are the words that are used in Phonics Check tests in England, and about to be trialled in Australia. The test is an indication of how well children can attempt to read words they have not seen before, without the potential confound of knowing the word already, as is the case in single word reading tests like the Burt. This is noted as being a necessary skill by the End of Year 1 (Ministry of Education, 2010).



The phonological awareness measures have a maximum of 30-34 depending on the test, and this illustrates that phonological knowledge is still developing. Phonological blending is necessary for attempting to blend sounds into a word. Phonological deletion is generally developed once children have an understanding of how words work phonemically. In the following chart knowledge of blends (bl, st, cr) is illustrated along with knowledge of digraphs, where two letters together make one sound (th, sh). Children were asked to provide the sounds of the letter groupings. Low levels of this knowledge indicate that children will have difficulty trying to decode unfamiliar words as they don't have the grapheme-phoneme correspondence knowledge required to do so.

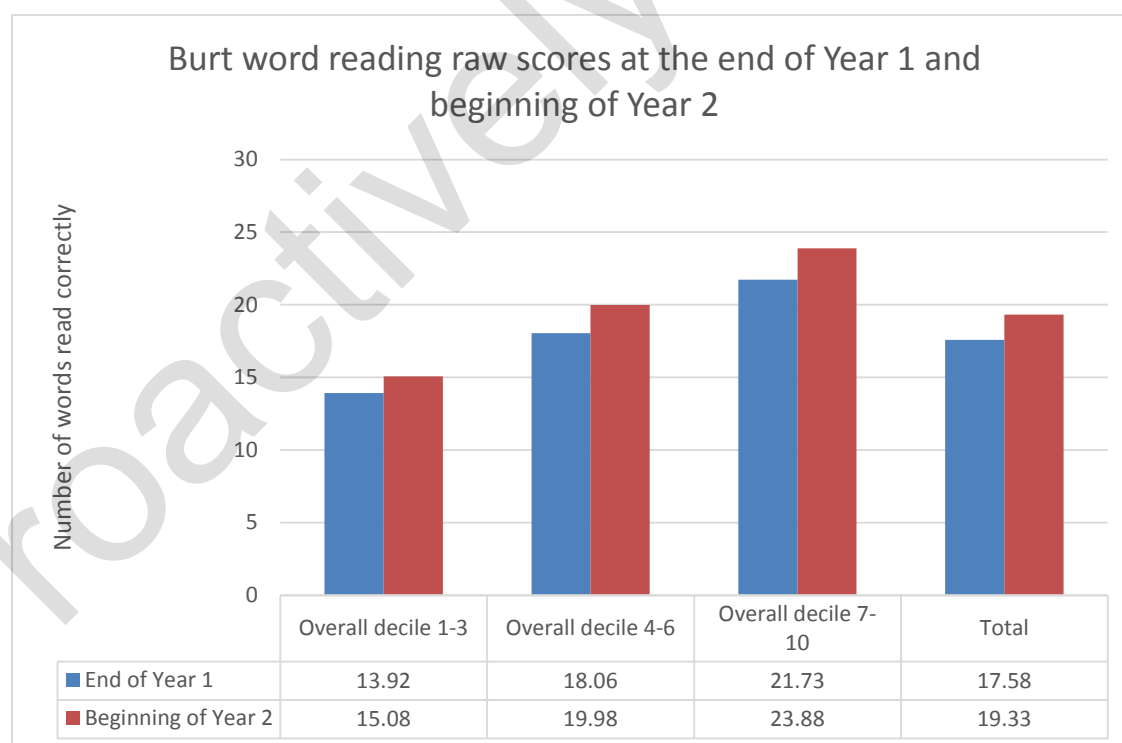


The ability to read nonwords, illustrated below, is low overall. This suggests that overall, children are not generally able to decode unfamiliar words. This is in line with the low levels of knowledge of blend and digraph sounds.

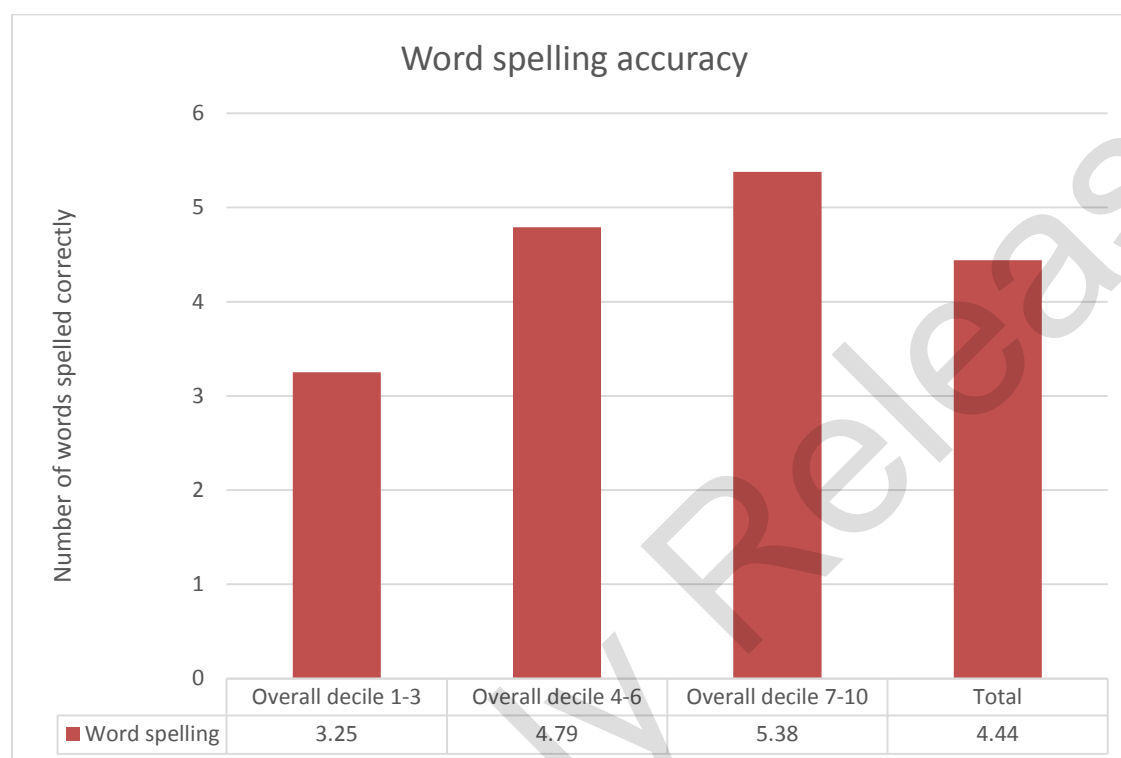


These foundational skill charts illustrate that children in low decile schools have lower levels of skills and abilities than children in higher decile schools. This is a continuation of the lower school entry skills that they have come in with (as identified in previous milestone reports). Although the Early Literacy Project has accelerated learning for learners, particularly in the Intervention 2016 cohort, this is not sufficient to show overall acceleration for the lower deciles when the groups are combined. Given that there is accelerated learning with some of the sample above, the level of decoding and phonological knowledge is concerning, and will contribute to difficulties in reading texts that allow children to reach expectation in the National Standards.

The next set of graphs illustrate the overall abilities in the main outcome measures used at the end of Year 1. These are spelling of 18 simple words, Burt word reading raw scores and reading book level supplied by schools. We provide Burt word reading scores for both the end of year 1 and the beginning of year 2 as it was between these two testing periods that children turned 6. It is the age of six when the norms can be used, with a score of 20 representing the average score of children in the month they turn 6. The Burt word reading test is primarily a measure of sight word reading ability although children may use decoding strategies as the test progresses. The first ten words are high-frequency words. The book levels are those provided by schools so we cannot be sure of the objectivity of the levels provided, or when they were assessed to be at that level. We have also had some difficulty obtaining book levels from schools so while we present this here, the number of children from whom it represents is less than those participating.

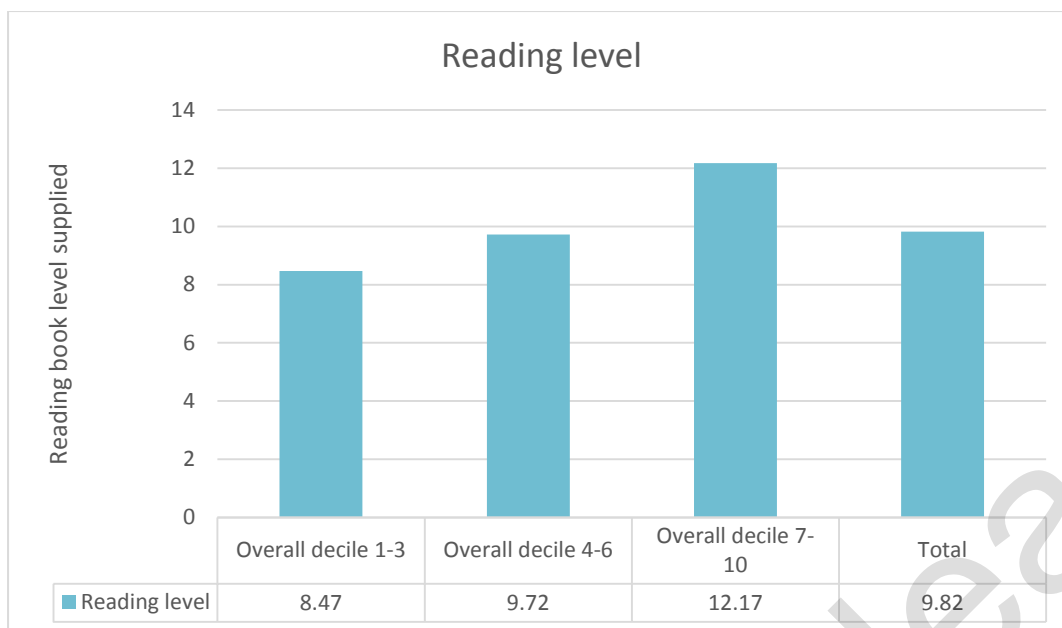


One of the interesting findings was that children did not show evidence of a summer-slide in their Burt word reading abilities. Instead, between late November and February they improved in their single word reading abilities. Children are generally able to read a number of high frequency sight words, as identified in the Literacy Learning Progressions (Ministry of Education, 2010).

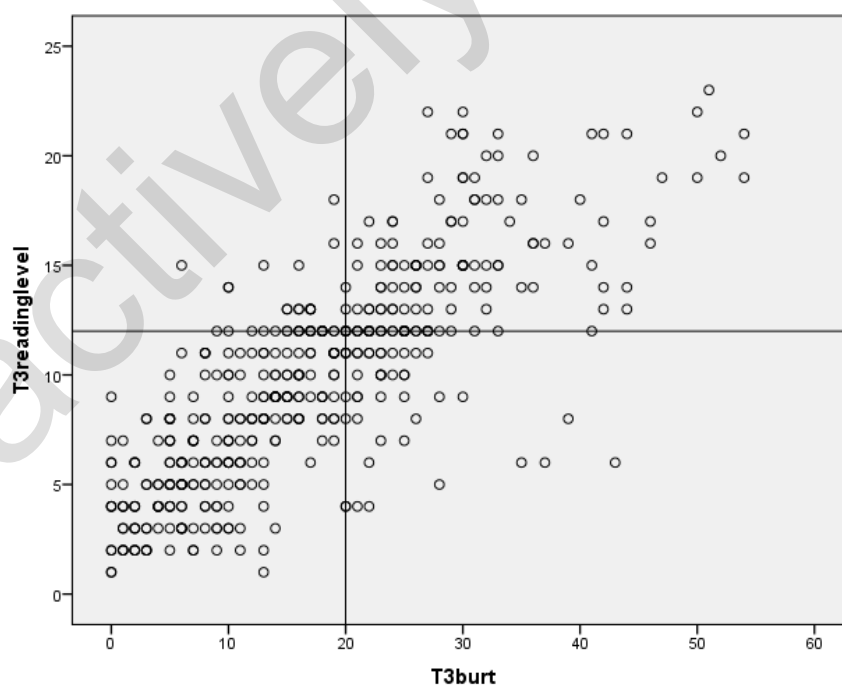


Spelling requires the ability to use phoneme-grapheme correspondences and this particular test assesses children's ability to accurately spell up to 18 regular spellings (e.g., hot, pop, side, kick). There were fine words that fit the simple CVC (hot, pop) pattern, and this summary data suggests children are able to spell those simple CVC words but find using other sound-spelling patterns more difficult. This is in line with the summary data for blends and digraphs, and in being able to decode nonwords.

Reading book level is slightly below National Standards expectations, with an average reading book level of approximately 10 at the end of one year at school. Based on the summary data it would appear that children are able to read the high-frequency sight words in the texts, but they would be having difficulty in decoding unfamiliar words. It will be difficult for children to self-correct their own reading using the print cues as they don't have the decoding knowledge available to use. They are likely to be making use of prior readings of the text, context cues and illustrations as prompts to attempt words, rather than the print.



The use of alternative strategies children must be using to read texts when reading level and Burt word reading abilities are compared. A scatter-plot illustrates this whereby the reference lines indicate an average of 20 on the Burt and the book level of 12, both as expectations for the end of 1 year of schooling, or turning 6 years of age.



The bottom left quadrant represents a reasonably accurate spread of word reading ability and book levels. However, this also represents a large number of children who are below and well-below expectation. The top right quadrant is less linear but represents good readers on the Burt who are reading higher book levels. The top left quadrant, however, represents children who are said to be reading book levels that would seem, based on their single word reading ability, too difficult. It is these children who will be making use of a range of strategies that would not be print based, as expected by Green (12) level (Ministry of Education, 2009). In contrast, a large number of children appear to be reading book levels that, based on their single word reading ability, are too easy for them (bottom right quadrant).

In summary, children appear to be achieving around expectation for National Standards, if not slightly below. However, many children do not have the skills or knowledge required to independently read unfamiliar text. These skills and knowledge include blending phonemes and using blend and digraph knowledge to decode. As identified in the End of Year 2 Milestone Report (Arrow et al., 2017) there is accelerated progress in these skills, particularly for low-decile schools. Given that accelerated progress has been made for a number of the children, the still low overall knowledge remains a concern.

Presentations and publications

Several publications are being considered for publication at the current time. Below are conference presentations based on aspects of data collected to date (see Appendix C). The attached papers are each in draft and form the basis of the presentations, but are not the presentations themselves. The presentations are constructed as powerpoint presentations. Also listed are Masters thesis students using elements of the data for their thesis. Masters students investigate some aspect of the data set collected that has been previously planned. Any data they use is stripped of all identifying features.

Conference presentations:

Arrow, A. W., Braid, C., & Chapman, J.W. (2017, July). *Teacher knowledge and the effect on instructional practices in New Zealand*. Presented at the 24th Annual Meeting of the Society for the Scientific Study of Reading, Halifax, Canada, 13-15 July.

Chapman, J.W, Greaney, K., Arrow, A.W & Tunmer, W.E. (2017, July). *Phonics Use, Teachers' Knowledge of Language Constructs, and Teachers' Literacy Teaching Practices in New Zealand: Prospects for Struggling Readers in a Predominantly Whole Language Instructional System*. Presented at the Annual Meeting of the International Academy for Research in Learning Disabilities, University of Queensland, Brisbane, Australia, July 3-5, 2017.

Current Masters theses:

Cheryl MacKay, MEd thesis, *How vocabulary influences word recognition skills through set for variability*, 2016

Current doctoral thesis:

Christine Braid, PhD thesis, *Effective PD practices for early literacy teachers*, 2014-2017

Completed Masters thesis

Athena London, MEd (Literacy Education) thesis, *Student selection for Reading Recovery: are we selecting the right students?* 2016

Intervention workshops for 2017

In April 2017 we offered a final one-off workshop for teachers in participating schools who had not been part of either intervention cohort but taught New Entrant or Year 1 students. Twenty-four teachers attended this workshop. Teacher release costs were not provided for this workshop. The workshop was held in Palmerston North and included teachers from as far as Wellington and New Plymouth. That schools were willing to cover the costs of this workshop indicates that the schools involved in the project see the value in the material being covered and for the children in their schools.

In the previous milestone report it was noted that there was some unwillingness to change. We would like to clarify that this is true for a small number of teachers and not true of all teachers. Teachers have found the implementation of the explicit instruction of phonic content in research informed ways is difficult in the New Zealand context. The main challenge reported to us is the use of running records as the main form of assessment in junior classrooms. One teacher noted that she "... had to revert back to old methods as the school says we must use Ready to Read to assess ..." before going on to explain that she needed to spend time reading the Ready to Read texts with children before they be assessed with a running record using those texts.

There is also a challenge in using the existing reading book schemes. The most common reading book scheme used is the PM book range, followed by Ready to Read. These texts are not levelled based on word structure complexity, and thus teaching explicit phonic patterns with practice is difficult. This meant that when teachers tried to use what we provided they found it too difficult to integrate the content knowledge back into reading. As a result, many reverted to teaching isolated phonics applications rather than integrate with text reading practice and reinforcement. Decodable texts, when we provided them, did support teachers better, as did our provision of magnetic letters.

We also note that there is a myriad of 'rules' about how children should move through reading book levels. In some cases, teachers reported that children had to 'read' Magenta level texts for the first four weeks of school and then they had to move onto the next level. In other cases, children were not allowed to 'read' Red level texts beyond their first term of school.

Finally, we note that implementation and fidelity of the strategies and approaches from the intervention programme are stronger for those in the second intervention cohort. We take from this, and other recent intervention work (implementing Joy Alcock's programme in schools; implementing the Quick 60 programme in schools), that interventions that include related reading resources and programme manuals, curriculum, or a scope-and-sequence are easier for teachers to implement into their classrooms while also building their own content knowledge that they can build on in the future.

The two conference presentations (Appendix C) listed in the previous section support this conclusion, whereby even teachers with strong linguistic knowledge have difficulty teaching word-level knowledge and don't they can teach word-level knowledge. These findings are taken from teachers prior to their participation in the Intervention Workshop programme, and we are currently analysing the same relationships following their participation in the Intervention Workshop programme.

Summary

This report has summarised the current state of the Early Literacy Project. We are currently finishing the last round of data collection with all cohorts of children and will then go on to complete data analyses for the final Milestone Report.

The current sample includes five cohort groups from two year groups. This includes two comparison groups, a 2015 Intervention group, a 2016 Intervention group, and a 2016 Intervention + group of children in the classrooms of teachers who attended the Intervention workshop programme in 2015. Overall there is an attrition rate of 16.8% between the first year and second year of child participation. Current figures suggest this will be 20% at the end of the project. Across the course of the project 103 teachers attended at least 1 workshop, including the 22 who attended the one-off workshop in April 2017.

The final data collection is being completed up until the end of Term 2, 2017. This will include all outcome measures for all cohorts of children. There will also be a final teacher survey sent out to all 103 teachers who participated in the workshop programmes, as well as any comparison teachers who did not attend any workshop programme.

We have presented summary data of the combined group of children to illustrate the relationship to National Standards. The children overall are typically moving towards the end of one year of school expectation, based on supplied book level and sight word reading abilities. However, there seems to be overall low levels on all of the skills and knowledge required, and as identified in the Literacy Learning Progressions. This suggests that children are using strategies for reading that will not be sufficient for independent reading of unfamiliar material in the future. Although we have illustrated accelerated progress in these skills for the 2016 Intervention cohort, it is not enough to bring the average abilities of the overall sample to a high level.

We have also clarified the nature of the issues with regards to teacher fidelity in the implementation of the strategies from the Intervention Workshop programme. These issues are primarily related to the difficulty of implementing the strategies into the classroom when the resources available don't directly match the strategies being addressed. We made attempts to support teachers further by providing some of the resources, such as decodable texts and magnetic letters. The fidelity of the strategies is also stronger in the second cohort, and we suggest that this is due to the addition of a scope-and-sequence curriculum document. This provided a programmatic element to the implementation that enabled teachers to focus on the *how* of teaching beginning readers, instead of the *what*.

To conclude, this operational milestone report provides information on the current progress of the Early Literacy Project. This includes the sample size and current rates of attrition. We report on the progress of data analysis and presentations and publications to date. We also provide overall sample data to illustrate the relationship to National Standards and the Literacy Learning Progressions. Finally, we provide clarification around some of the issues of teacher fidelity to the Intervention Workshop programme strategies.

References

- Arrow, A. W., Chapman, J. W., Braid, C., & Tunmer, W. E. (2017). *The Early Literacy Project: Milestone Report for the end of Year 2*. Palmerston North, NZ: Massey University.
- Ministry of Education. (2009). *Reading and Writing Standards for years 1-8*. Wellington: Ministry of Education.
- Ministry of Education. (2010). *The Literacy Learning Progressions: Meeting the reading and writing demands of the curriculum*. Wellington: Ministry of Education.

Appendix A

Schools in each cohort

2015

2015 Intervention Schools (n=47)	2015 Control Schools (n=32)
<p>9(2)(ba)(i)</p>	<p>9(2)(ba)(i)</p>

2016

Intervention Plus 2016 (n=40)	Intervention School 2016 (n=34)	Control School 2016 (n=10)
s 9(2)(ba)		s 9(2)(ba)
		Also included are: Schools with 1+ control teacher and 1+ intervention 2016 s 9(2)(ba)

2017

Schools that attended the workshop in March 2017 (n=22)	
s 9(2)(ba)(i)	

Note: Numbers of teachers are in parentheses.

Appendix B

Research design outlining the different cohorts

	2015	2016	2017
Intervention			
Cohort 2015			
1 st Group Intervention Teachers	X	X	X
1 st Group Intervention Students			
Cohort 2016			
1 st Group Intervention Teachers		X	X
2 nd Group Intervention Students			
Int Plus 2016 Cohort			
1 st Group Comparison Teachers		X	X
3 rd Group Intervention Students			
Comparison			
Cohort 2015			
1 st Group Comparison Teachers	X	X	X
1 st Group Comparison Students			
Cohort 2016			
2 nd Group Comparison Teachers		X	X
2 nd Group Comparison Students			

¹ "X" denotes years in which students' assessments are done.

Appendix C

Phonics Use, Teachers' Knowledge of Language Constructs, and Teachers' Literacy Teaching Practices in New Zealand: Prospects for Struggling Readers in a Predominantly Whole Language Instructional System³

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Presentation at the annual meeting of the International Academy for Research in Learning Disabilities, University of Queensland, Brisbane, Australia, July 3-5, 2017.

³ Some aspects of the research reported in this paper formed part of a project on Early Literacy Learning funded by the New Zealand Ministry of Education. The information and views presented in this paper are those of the authors and as such do not imply acceptance or agreement by the Ministry of Education.

Proactively Released

Introduction

Many children in New Zealand encounter difficulties with learning to read, as reflected in the “long tail” of literacy underachievement that is a characteristic of literacy learning outcomes in that country (Tunmer & Chapman, 2015). The degree of literacy underachievement exists despite the nationally implemented Reading Recovery (RR) programme. This programme was designed to help children identified as making only limited progress in reading after one year of formal reading instruction. Each year 15%-20% of the enrolment cohort in any given school offering RR is admitted into the programme, and close to 25% of 6 year-old children in schools that offer RR are in the programme during the year (Chapman, Greaney, & Tunmer, 2015).

If the RR programme had been successful in achieving its primary goal of substantially reducing the number of children who develop ongoing reading difficulties (viz., Clay, 1987; Reading Recovery New Zealand website, www.readingrecovery.ac.nz), the relatively large numbers of struggling beginning readers should have steadily decreased following the introduction of RR during the 1980s. This has not been the case (Chapman et al., 2015).

A significant contributor to the relatively large disparity between good and poor readers in New Zealand is the strongly constructivist nature of literacy instruction that has been the cornerstone of teaching practice for over 30 years. This approach has overlooked the overwhelming amount of scientific research on how children learn to read. The importance of phonemic awareness and development of the alphabetic principle (National Reading Panel, 2000), for example, do not form part of the systematic approach to teaching beginning readers (Tunmer, Greaney, & Prochnow, 2015). Consistent with this approach, phonics instruction involving explicit teaching of specific knowledge and skills that underpin

reading acquisition has not been favoured in New Zealand (Wilkinson, Freebody, & Elkins, 2000). Instead, publications on reading instruction that are included in teacher education programmes and made available to schools throughout New Zealand continue to emphasize the constructivist approach to literacy teaching (Tunmer et al., 2015).

Despite the constructivist approach to literacy instruction being ingrained in New Zealand, anecdotal observations suggest that in recent years, many schools have included phonics instruction in junior primary school literacy programmes. Consistent with these observations are the views of some politicians and government officials verbally expressed to the authors of this paper over the past decade. Their comments express the belief that: “of course schools include phonics as part of a balanced approach to literacy teaching”.

There are no data, however, regarding the extent to which phonics instruction is included in New Zealand schools. Further, it is unclear whether New Zealand teachers are sufficiently knowledgeable to effectively include phonics instruction in their programmes for beginning readers, given the strong emphasis on the whole language constructivist approach in teacher training and teaching practice over the last three decades (Tunmer et al., 2015; Wilkinson et al., 2000). It is also not known to what extent New Zealand teachers have adopted more explicit approaches to teaching word-level identification skills, following more than two decades of public and professional debate about the role and nature of phonics instruction. The purpose of this paper is to examine these three issues, and to address the following questions:

1. To what extent do New Zealand schools use phonics programmes as part of normal literacy instruction?
2. What knowledge and self-beliefs do New Zealand teachers have of the language foundations that underpin reading acquisition?

3. To what extent do teachers appear to implement systematic and explicit word-level approaches when providing instruction on word identification strategies?

New Zealand's Constructivist (Whole Language) Approach to Reading Instruction

Although it is claimed by some government officials and numerous teachers that phonics instruction is included as part of a balanced approach to literacy instruction, New Zealand has followed a strongly constructivist approach to the teaching of reading since the 1980s. This approach eschews explicit, direct instruction in word analysis skills, including the use of phonics. As Wilkinson et al. (2000) noted, "New Zealand's literacy practices have a long history of association with a developmental constructivist bias in teaching and learning" in which "direct instruction of specific knowledge and skills according to prespecified routines finds little favour" (p. 12).

New Zealand's "pedagogical constructivism" (Tunmer et al., 2015) is underpinned by the belief that learning to read is essentially like learning to speak: both abilities are thought to occur "naturally" (Smith & Elley, 1994, p. 81); "children learn to read themselves; direct teaching plays only a minor role" (Smith & Elley, 1994, p.87. According to Smith and Elley (1994), two influential proponents of the whole language approach to reading acquisition, explicit instruction in word-level skills and strategies should be discouraged, or at the very least, downplayed. Any word analysis activities that might be required should arise mainly from the child's oral reading errors and focus mainly on initial letter sounds. The focus of literacy instruction should be on meaning construction, not on the abstract structural units (i.e., phonemes) that provide the basis for linking print with spoken language.

Clay (1991), another very influential proponent of the constructivist approach and developer of the Reading Recovery programme, claimed that children identify unfamiliar words in text by relying on the sentence context and developing meaning of the text.

Children are encouraged to use sentence-context cues (e.g., illustrations, preceding passage content, prior knowledge activated by the text) as the main source of information for identifying unfamiliar words. Letter-sound information should be used only very sparingly and mainly to confirm word predictions based on the context. As Clay (1998) asserted, beginning readers need to use prior knowledge, the possible meaning of the text, sentence structure, visual cues such as the size of words or letters, “special features of sound, shape and layout; and special knowledge from past literary experiences *before* they resort to left to right sounding out of chunks or letter clusters or, in the last resort, single letters” (p. 9, emphasis added).

These views about the nature of skilled reading, reading acquisition, and the role of pedagogical constructivism in literacy education evolved in New Zealand during the 1980s (Tunmer et al., 2015). They were strongly promoted in the various publications that have served as guidebooks for teachers of reading and teacher educators in colleges of education. *Reading in Junior Classes* (New Zealand Department of Education, 1985), the instructional text used by teachers of beginning readers in New Zealand until it was replaced in 2003, explicitly stated that “[i]t is better that children predict meaning from other cues at the outset and use their knowledge of letters and sounds for confirmation” (p. 48). Similarly, *The Learner as a Reader* (New Zealand Ministry of Education, 1996), advised that the first strategy children should be taught to use when they come across an unfamiliar word in text is to “try reading from the beginning of the sentence again and think what would fit” (p. 50).

Despite the findings of the National Reading Panel in the United States that were released in 2000, the guidebook *Effective Literacy Practice in Years 1 to 4* (New Zealand Ministry of Education, 2003a) that replaced *Reading in Junior Classes* in 2003, continued to endorse the importance on contextual cues and the role of prediction in identifying

unfamiliar words. Disregarding the overwhelming evidence regarding the instructional importance of explicitly teaching children word-level cues and strategies, this new guidebook reiterated the view that “fluent readers...draw on their prior knowledge and use all available sources of information *simultaneously and usually unconsciously*” (p.30, emphasis added).

Effective Literacy Practice emphasised the importance of teachers showing beginning readers how to *predict* unfamiliar words based on what fits in terms of the meaning of the story or the sentence. Although reference is made to the use of explicit systematic instruction on the use of word-level cues, the examples provided in the text are related more to meaning-based cues than to word-level cues. The emphasis in the text remains on the use of meaning; sections on strategies for developing word-level strategies are somewhat inconsistent with the rest of the text. Unfortunately, what may have been a well-meaning attempt to include some research-based advice about the importance of explicit instruction on the use of word-level information, the lack of “internal consistency” in the text undoes this attempt. Perhaps not surprisingly, evidence from classroom observations and teacher surveys indicated that the advice presented in various official publications regarding the paramount importance of contextual and other “meaning-based” cues has been widely implemented in New Zealand classrooms (Greaney, 2001; Tunmer et al., 2015).

Although a supplementary guidebook, *Sound Sense: Phonics and Phonological Awareness* (Ministry of Education, 2003b), was released in the same year as *Effective Literacy Practice*, the role of explicit instruction was dismissed: “children are more likely to make connections between phonics and their reading and writing of texts if they are engaged and involved in making discoveries for themselves” (Ministry of Education, 2003b, p. 7).

We have argued elsewhere (e.g., Greaney, 2011; Tunmer & Chapman, 2015) that the inability in New Zealand to significantly reduce the number of children experiencing initial and ongoing literacy learning difficulties is largely related to the fairly rigid adherence to the constructivist view of reading. The scientific community has firmly rejected this approach to teaching reading because it fails to recognise that skills and strategies involving phonological information are of primary importance in beginning literacy development (Tunmer et al., 2015).

The Role of Phonics Instruction in Reading Acquisition

Extensive scientific research over the past 30 years has provided convergent evidence regarding the importance of five “big ideas” in beginning reading: phonemic awareness, the alphabetic principle, fluency with text, vocabulary and comprehension (National Reading Panel, 2000). The first two of the five big ideas are especially important for beginning readers. Initial progress in learning to read requires development of the cognitive ability to translate letters and letter patterns into phonological forms. This ability is referred to as “alphabetic coding skill”, or “phonological decoding skill” (Shankweiler & Fowler, 2004).

Making use of letter-sound relationships to read unknown words is the basic process for developing word-specific knowledge, including knowledge of irregularly spelled words (Ehri, 2005; 2014; Snow & Juel, 2005; Tunmer & Nicholson, 2011). Using the systematic mappings between the sub-parts of written and spoken words facilitates for beginning readers the identification of unknown words. In turn, this contributes to the formation of word-specific sublexical connections between the specific letter sequences of written words and their corresponding sound sequences (phonological representations) in lexical memory (Tunmer et al., 2015). This process provides the basis for developing sight word knowledge

(Ehri, 2005, 2014), which is essential for releasing cognitive resources to focus on sentence comprehension and text integration.

Understanding the alphabetic principle requires the development of phonemic awareness, which is the ability to reflect on and use the phonemic units of spoken language (Shankweiler & Fowler, 2004). Children who have ongoing difficulties in identifying the phonemic units in spoken words will be unable to fully comprehend the alphabetic principle and discover the spelling-to-sound relationships that are key to developing word recognition skills (Shankweiler & Fowler, 2004; Stanovich, 1986).

Given the widespread research on the importance of phonemic awareness and knowledge of the alphabetic principle (including letter knowledge) (Tunmer et al., 2015), considerable attention has been given to identifying the most effective teaching strategies for facilitating the development of alphabetic coding skill in beginning readers. Traditional phonics programmes were intended to achieve this objective. However, such programmes have some major shortcomings, including the assumption that children are only able to develop knowledge of letter-sound patterns through direct instruction. The problem with this assumption is that there are too many letter-sound relationships in English orthography for children to learn through direct instruction. Gough and Hillinger (1980) estimated that there are around 300 to 400 such relationships (Tunmer et al., 2015).

Rather than attempting to explicitly teach all letter-sound relationships, one of the main functions of phonics instruction should be to help activate the process by which beginning readers learn untaught spelling-sound patterns through *implicit* learning. In this sense then, phonics instruction is a means to an end rather than an end in itself (Tunmer et al., 2015; Venezky, 1999). Phonics, therefore, can be defined as “an approach to, or type of, reading instruction that is intended to promote the discovery of the alphabetic principle, the

correspondences between phonemes and graphemes, and phonological encoding” (Scarborough & Brady, 2002, p. 20).

Because of the large number of spelling-sound relationships in English, one of the main functions of phonics instruction should be to give beginning readers a strategy for generating close phonological representations of unfamiliar words that gets them near enough to the correct phonological form that combined with context, they can correctly figure out unknown words. These approximate letter-sound relationships help beginning readers to go through some mispronunciations of an unfamiliar word until they identify the correct pronunciation based on their word knowledge and the context in which the word appears in text. Additional spelling-sound relationships, especially those that are sensitive to specific contexts, can then be induced from the memory bank of spelling representations of words that children already know. We have referred to this process as involving the “set for variability” (Greaney, 2015; Tunmer & Chapman, 2012).

There is considerable evidence to support these claims. Numerous studies indicate that explicit, systematic instruction in the code relating spellings to pronunciations has a positive influence on reading achievement, especially during the early stages of learning to read (Brady, 2011; Hattie, 2009; National Reading Panel, 2000; Snow & Juel, 2005; Tunmer & Arrow, 2013). Based on their examination of research findings from a wide range of sources, Snow and Juel (2005) reported that explicit attention to alphabetic coding skills in early reading instruction is helpful for all children and crucial for some. Such instruction is especially important for children who struggle with learning to read (Prochnow, Tunmer, & Arrow, 2015; Ryder, Tunmer, & Greaney, 2008; Tunmer et al., 2015).

Teachers' Knowledge and Literacy Instruction

We mentioned earlier that many teachers of beginning readers in New Zealand are believed to include phonics instruction as part of their literacy teaching practice. If that is the case, an important question follows: do teachers have sufficient knowledge of the language foundations considered crucial for effectively teaching phonics-type skills to beginning readers?

To effectively teach reading skills to children requires that teachers have a high level of understanding of the basic structure of the English language, including an understanding of the sound-symbol correspondences of written English and how these influence reading development (Arrow, Chapman, & Greaney, 2015). Piasta, Connor, Fishman and Morrison (2009), for example, reported that explicit decoding instruction was effective for student word-learning growth only when teachers' knowledge of phonology, orthography, morphology, literacy-acquisition, and instruction was high. Spending time on explicit decoding instruction is relatively ineffective in promoting reading development when teachers' research-based knowledge is low (e.g., Piasta et al., 2009).

Numerous studies suggest that many teachers lack sufficient knowledge about the role and importance of phonological skills, including the importance of teaching the alphabetic principle and the role of phonics instruction in beginning reading (Arrow, McLachlan, & Greaney, 2015). New Zealand studies investigating the knowledge of basic language constructs among primary school teachers have shown that many attain low scores on such measures (e.g., Carroll, 2006; Carroll, Gillon, & McNeill, 2012; Nicholson, 2007).

Following from research on the importance of literacy-related teacher knowledge that is based on contemporary research about effective literacy acquisition and instruction,

we included in our study a survey of teacher knowledge of basic language constructs. In addition, we were interested in teachers' *perceptions* of their language knowledge for teaching beginning readers. Cunningham, Perry, K. Stanovich, and P. Stanovich (2004) reported that teachers generally hold higher self-perceptions of their phonic knowledge or knowledge of phonological awareness, but have low actual knowledge of these domains when they were assessed. Unrealistic self-perceptions will tend to hinder effective teaching practices because holders of such beliefs are unlikely to seek the necessary knowledge to improve their teaching effectiveness. As Arrow et al. (2015) noted, many teachers appear to lack awareness of what they do not know. While they may have an understanding of what constitutes good practice, such as the inclusion of phonics instruction, they may have insufficient knowledge to provide that practice. Accordingly, we examined the extent to which teacher self-evaluations of their knowledge of literacy knowledge were consistent with their actual knowledge as assessed in the survey.

Teacher Prompts to Assist Word Identification

Teacher knowledge and self-evaluations of their knowledge provide information on the likely effectiveness of teachers' ability to include phonics instruction in literacy lessons. In addition, some information about actual teaching practices is important. To provide one indicator of teacher practice, we included in this study an examination of prompts teachers say they use when students encounter unfamiliar words in text, or when they make word reading errors. The use of word identification prompts provides insights into teachers' approaches to the teaching of reading, and the extent to which they engage in systematic and explicit code-orientated instruction.

Greaney (2001) presented six reading error scenarios to a group of teachers and asked them to record the typical prompts they would use to help the reader identify each error. In this study, we included a teacher prompt task adopted from Greaney (2001).

Method

Phonics Survey

Two similar versions of a teacher survey of phonics use were developed for completion via the *Survey Monkey* online platform. The first survey had a total of 20 questions. Of these, seven questions sought background and demographic information from the responding teacher. The final question asked respondents if they wanted a copy of a research report on the project to be sent to them. The remaining 12 questions focused on a range of literacy teaching practices, including whether or not phonics instruction was incorporated into literacy teaching, and if so, how phonics was used and what phonics programme (if any) was adopted.

A revised survey was developed for use with different schools following analyses of responses. Some additional questions and reformulation of questions were included in the second survey to help clarify findings obtained in the first survey.

Survey 1.

The *Survey Monkey* link to the first survey was emailed to 1,476 New Zealand primary schools in the Upper North Island and in the South Island early in August, 2016. School email addresses were obtained from publicly available information on the Ministry of Education website. The survey was open for 10 days. No personal or school identifying data were required.

Survey 2.

Following revisions to the first survey, the second *Survey Monkey* link was sent to 422 New Zealand primary schools in the lower North Island later in August, 2016. As with the first survey, no personal or school identifying information were required.

Teacher Knowledge Survey

As part of a larger study of early literacy development, we used a survey based on a measure of teachers' knowledge of basic language constructs developed by Binks-Cantrell, Joshi and Washburn (2012). Basic language constructs considered essential for early reading success include phonological and phonemic awareness, the alphabetic principle (phonics), and morphology (Binks-Cantrell et al., 2012). Based on extensive research during the late 1980s and 1990s (e.g., Adams, 1990; Moats, 1999), the United States National Reading Panel (2000) stressed the importance of teachers having an explicit knowledge of such concepts for the effective teaching of decoding skills in a direct, systematic way to enable the successful acquisition of early reading skills for all beginning readers (Binks-Cantrell et al., 2012).

The Binks-Cantrell et al. (2012) scale included 38 questions that examined teachers' understanding of basic language constructs in terms of knowledge and skills in relation to phonological and decoding elements. In addition, we included eight items designed to assess teacher's *perceived* teaching ability, such as "evaluate your knowledge of teaching phonemic awareness and comprehension". Binks-Cantrell et al. (2012) reported that the teacher knowledge measure has a Cronbach's alpha coefficient of 0.90 and good construct validity.

Thirty-eight items were categorised into phonemic, phonic, phonological, and morphological knowledge. An additional eight items involved teacher self-evaluation of their perceived literacy-related teaching ability.

Participants in the survey were 55 teachers participating in the early stages of a series of professional learning and development workshops, as part of a larger project on early literacy teaching and learning.

Word Identification Teacher Prompt Scenarios

The word identification prompt task was in addition to the teacher knowledge survey previously discussed. The task was based on six scenarios used by Greaney (2001). These scenarios were selected from two series of publications commonly used in New Zealand primary schools; the *Ready to Read* series, which is used in most junior classes, and the school journals. The scenarios were selected to exemplify three main types of reading errors (Greaney, 2001). Type A reading errors include a non-verbal response from a reader when she/he comes across an unfamiliar word, or a minimal response such as the initial letter only. Three scenarios involved Type A errors. One scenario involved a Type B error, in which the reader gave a non-word response for the target word (e.g., “brost” for “breakfast”). Type C errors involved the reader providing a real-word substitution that makes grammatical sense, but which is nonetheless incorrect (e.g., “rabbits” instead of “robins”). Two scenarios exemplified Type C errors.

Survey respondents were asked to provide brief narratives for up to three prompts for each of the six reading error scenarios. The prompts were categorised into word-level prompts (e.g., initial letter blends, letter-sound patterns), context-based cues (e.g., what makes sense in the story; look at the picture), and neutral prompts which included

instructions by the teacher that did not relate specifically to any particular sources of information (e.g., “Are you sure?”; “Keep trying”; “Have a go”).

Teachers participating in the Early Literacy Research Project were invited by email to participate in the teacher knowledge and word identification prompts survey. The Survey Monkey link was open for six weeks during May and June 2015.

Results

Phonics Survey 1

Responses to this survey were received from 666 teachers, which represents a response rate of 45%. Not all questions were answered by those teachers who opened the survey.

Survey respondents were located in a range of schools of varying enrolment sizes; in cities, towns and small rural communities; and, across the full range of socio-economic neighbourhoods. Most teachers (68%) had been teaching for more than 10 years. A small number (8%) had less than two years teaching experience, and the remainder (24%) had taught for between two and 10 years.

Over 90% of respondents indicated that a phonics-type programme was used in their literacy teaching. At least 51 named phonics programmes were rated or mentioned as being used. The most popular programmes were Yolanda Soryl and Jolly Phonics. In an open-ended section, comments were made about teachers using combinations of programmes, teacher-made materials, and YouTube video clips.

In response to the question about how the phonics instruction carried out, most (65%) indicated that phonics was tightly integrated with the regular literacy programme. A further 29% responded that phonics was used in addition to the regular literacy programme,

but separate from it. Time spent focusing on phonics in each literacy session ranged from 5 minutes or less to more than 20 minutes.

In response to the question about how often a phonics programme is used, 68% indicated that phonics is included every day as part of each literacy lesson. A further 22% responded that phonics is used more than once a week but not every day, suggesting that not every literacy lesson includes a phonics component. Six teachers responded that phonics was used once a week and five indicated that phonics was used in literacy teaching less than once a week.

Regarding the question about how students are organised for phonics instruction, 39% of the respondents who use phonics indicated that phonics are taught to the whole class, and 27% responded that phonics were taught in small groups.

We included a question about whether or not phonics teaching is used to develop phonemic awareness: 77% of respondents who use phonics indicated that phonics is used to develop phonemic awareness, “through explicit instruction”. A further 20% responded that phonics was used through indirect instruction, “as the need arises”.

Most teachers responded that they and/or their school had been using phonics in literacy instruction for more than two years; roughly equal percentages reported having used phonics for between 2 and 5 years (27%); between 5 and 10 years (27%); and, for more than 10 years (28%).

The final part of the survey included two open-ended questions. Participants were invited to comment on what they saw as the main value of teaching phonics, as well as any disadvantages. An impressive 558 out of 666 total respondents in the survey contributed comments. Almost all referred to the importance and value of teaching children decoding skills through a phonics approach. Frequent reference was made to phonics being a better

way for children to gain phonological and phonemic awareness, for understanding the relationships between letters and the sounds in spoken language they represent, and ultimately for improved reading.

The following comments are typical of the vast majority of those responded in this section: “Learning the sounds that letter/letter combinations make as a tool to assist with decoding words”; “It helps our ESOL students”; “Fundamental to developing early phonological awareness for literacy success”; “I just feel that children that know the sounds are better readers with more confidence than the children that don't. Readers with sound phonic knowledge are aware and confident”; “Developing phonemic awareness to support our reading & writing programme”; “Teaching phonics explicitly increases the literacy achievement of the students in my class as a whole”; “I have found that teaching phonics helps 90%+ of the children to very quickly grasp the concept of letter and sound... children with a sound phonological knowledge find it easier to sound words and read”; “Teaching phonics empowers children to read and write.”

Respondents to the survey were also invited to comment on disadvantages of phonics. Out of 666 people who accessed the survey, 486 made comments in this section. The majority of respondents took the opportunity to say there were no disadvantages, or to reiterate the positive aspects of phonics instruction. A large number of comments stated that phonics in isolation was a problem and that phonics needed to be fully integrated with a range of reading strategies. Some respondents referred to the time it took to teach phonics. Relatively few dismissed the value of phonics outright, though some wrote that the use of phonics is disadvantageous if it is not balanced with whole language strategies.

Examples of comments in this section are as follows: “The only disadvantage is if the programme that is used isn't applied consistently and teachers haven't had training”; “Only

disadvantage when taught in isolation. Needs to be talked about during reading and writing”; “It can be time consuming and another thing to add to the already busy day”; “Sometimes children get confused and mixed up”; “It is difficult to take small groups for phonics”; “It can become too prescriptive and boring”; “Only if it is over emphasized to the detriment [*sic*] of whole language”; “I think that English is such an irregular language that over-emphasis on letter sounds rather than meaning and structure can be ineffectual”; “Our English language is so complex that there are no easy to remember rules”.

Phonics Survey 2

The second survey included many questions from the first survey, as well as additional questions that were designed to seek greater clarity about the use of phonics instruction. Responses were received from 308 teachers, which represents a response rate of 73%.

As in the first survey, respondents in the second survey came from a wide range of schools in terms of size, location, and socio-economic neighbourhoods. A large majority of teachers (63%) had more than 10 years teaching experience. Nearly 10% had less than 2 years teaching experience, and the remainder (27%) had taught for between 2 and 10 years.

To assess the emphasis used in assisting students to identify unfamiliar words when reading text, we included a question that offered four broad, typical approaches: 52% indicated that they focused the child on word-level information (letters & sounds in the word), supplemented by the meaning and context of the sentence/story if necessary and picture support when available; 41% indicated that they focused the child on the meaning and context of the sentence/story, using picture support when available and supplemented by word-level information if necessary; around 3% responded that they typically focused the

child on the meaning and context of the sentence/story, using picture support when available; and, just over 3% indicated focusing the child on word-level information.

Around 85% of respondents indicated that phonics instruction was used in their literacy programme (see Figure 1). A range of programmes was identified (19), but fewer than in the first survey. However, in line with the first survey results, Yolanda Soryl (45%) and Jolly Phonics (32%) were mentioned most frequently.

Asked about how phonics teaching was conducted in relation to “regular” literacy instruction, 43% indicated that phonics was “integrated with the regular literacy programme with a specific phonics focus when needed”. A further 21% indicated that phonics instruction was “tightly integrated as a major part of the literacy programme”. Around 20%

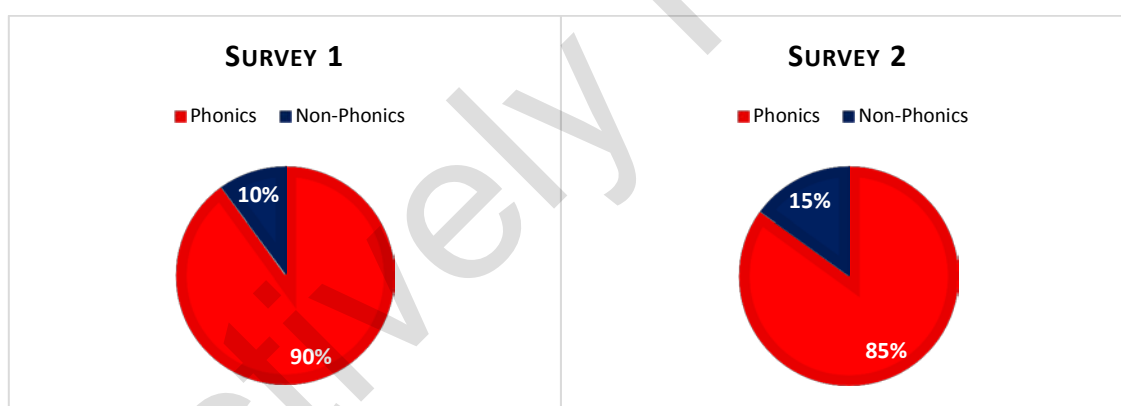


Figure 1. Percentage of schools in Surveys 1 and 2 reporting use of phonics.

of respondents answered that phonics was taught in addition to the regular literacy programme but at a separate time.

An additional 11 comments were made in the “Other” option for this question, for example: “program taught in literacy time as a separate program”; “Only with new starters when there is a need”; “1-1 with a teacher aide daily”; “Focus on phonics and then that

becomes our handwriting focus. Also use it with smaller groups on a needs basis in reading sessions”.

We also presented a question to seek information about how often a phonics programme is used. Most (40%) indicated daily use, with 37% indicating using phonics three to four times a week.

Regarding the question about how students are organised for phonics instruction, 55% indicated that the programme was used with the whole class, 43% replied that they used phonics with small groups, and 16% responded that phonics was used with individuals based on specific needs.

As in the first survey, there were two open-ended questions in the final section. Participants were asked to comment on what they saw as the main value of phonics teaching, and also about any disadvantages. The first of these questions drew 228 responses (74%).

Almost all of the respondents to this question referred to the use of phonics being an effective and better way for children to develop phonological and phonemic awareness, for understanding the links between sounds in spoken language and the letters that represent those sounds in print, and ultimately for improving reading, spelling, and writing.

The following comments typify the majority of responses received in this question: “Largely successful...benefits reading & writing, and phonological awareness”; “Children spelling improves. Helps aid reading”; “Sets a firm foundation for initial word attack strategy giving, especially less able decoders, confidence at being able to read and an understanding that reading (segmenting and blending) is a process that does not require remembering words but rather an understanding of how many words work”; “Speeds up sound and letter knowledge as well as word recognition and spelling skills”; “All of my New Entrants are

receiving the same information BEFORE they have developed bad habits or attitudes to reading”; “it's evidence based. It forms the basis of their letter sound relationship when attempting new words in early reading”; “Learning to read involves matching sounds and letters, the easier this is the quicker they learn to read. It just provides a solid foundation to our language system for both reading and writing. Children who can use phonics successfully become more independent”; “It may reach some children who don't learn by reading for meaning”; “Provides a way of learning which caters for children who especially do not learn through a whole language approach”; “explicit instruction in phonics helps early readers understand how the written code works and encourages using word level skills as a first attack in solving unfamiliar words (and using the other sources to confirm attempts) hence builds word recognition development”; “Phonological awareness development”.

In response to the second open-ended question regarding disadvantages of phonics, 70 people responded, which is around 23% of respondents. A large number of the responses were presented as “NA” (not applicable) or were reiterations of positive comments made in the previous open-ended question. Some comments in this section referred to time constraints and also lack of professional development to properly use phonics in literacy instruction. Only a small number of comments actually addressed disadvantages (6 of 70 responses). These responses were as follows: “I don't believe it should be taught to everyone, but some students need it”; “I do not have any formal phonics training and I have not done PD on phonics while employed at my current school”; “It takes away from the individual needs of children to put a programme in place for all of my students. If I need to, I use bits and pieces from a variety of phonics based resources”; “limits print to isolated visual recognition tasks, becomes an exercise in decoding not reading”; “reading and writing

are all about meaning and communication. Solely focusing on sounds does not help to get meaning from text. Students need to be thinking about the story and predict tricky words, then check through the sounds”; “We prefer whole language approach but phonics [is] taught in pre school.”

Teacher Knowledge

Fifty-five responses were received on the teacher knowledge and word identification prompts survey. The respondents were teachers participating in the early stages of a year-long series of professional development workshops on teaching strategies for beginning readers. Not all respondents completed all questions.

One male participated in the survey; 2 respondents skipped this question about gender. Most respondents (44%) had been teaching for 21 or more years. Around 21% had been teaching for between 11 and 15 years, and nearly 20% were in the first 5 years of their teaching.

We asked respondents if they had a “specialized qualification relating to literacy”. The majority (63%) indicated they did not; 30% indicated that they were Reading Recovery trained; none responded that they had received training in the Resource Teacher: Literacy programme; 7% (n = 4) indicated that they had received “other” specialized training.

Respondents were from schools across a full range of socio-economic neighbourhoods. Most teachers were from schools that had between 101 and 400 pupils (82%).

For the self-evaluation of literacy teaching knowledge, in which teachers were asked to rate their perceptions of how effective they were in aspects of literacy teaching, 54 valid responses were analysed. Mean scores for each of the eight literacy teaching-related scores were mainly in the “moderate” to “very good” categories (over 90% of responses). The only

area in which there was less perceived skills related to teaching English language learners: 23% thought they had “minimal” knowledge for working with such students. With the exception of the English Language Learners, the mean scores on the four-point scale (1 = low; 4 = very good) for the other seven categories ranged from 2.75 (using assessment) to 2.51 (teaching fluency).

Turning to the knowledge survey, mean percentages of correct answers for the domains of language constructs are as follows: phonemic knowledge/skills = 70%; phonic knowledge/skills = 54%; phonological knowledge/skills = 89%; and morphological knowledge/skills = 53%. These data indicate that teachers showed generally good levels of understanding of the phonological and phonemic domains, but relatively weak understanding of phonic and morphological domains. Overall, knowledge of the basic language constructs associated with reading acquisition was variable. Figure 2 presents percentages of correct responses for each of the four language construct domains.

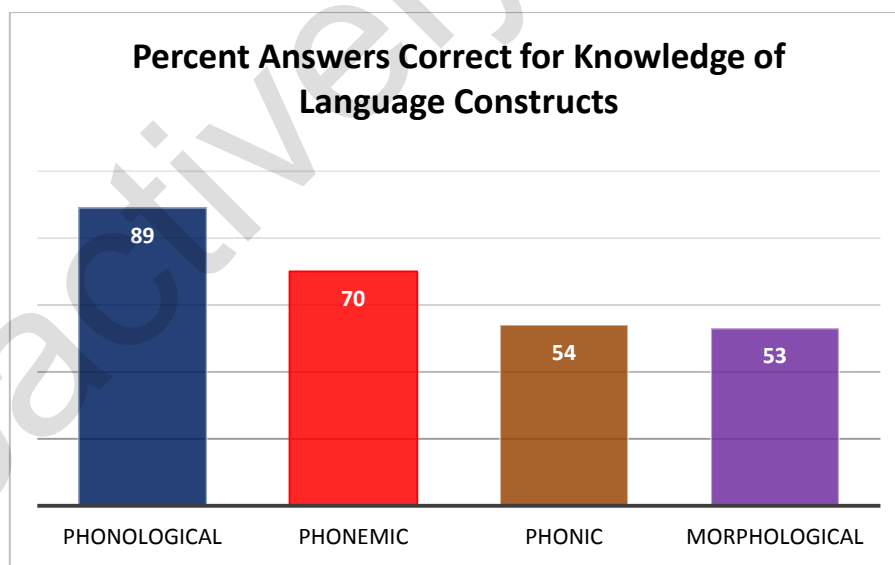


Figure 2. Percentage of correct answers for each language construct domain.

Word Identification Teacher Prompt Scenarios

Teacher prompts for each of the six reading error scenarios were scored following Greaney's (2001) approach. We report response type (word-level; context; neutral) for the first of three prompts in terms of percentages of prompts. Overall, 40% of the first prompts were word-level. These included such cues as "Let's sound that word again"; "can you see two words?"; "hear and say all the sounds you see"; "what comes after p...a then d...that rhymes with dad?"; "look at the blend at the start and try again"; "Let's see if looking at the chunks in the word can help".

On average, 45% of the first prompts were based on context. Examples included "Try that again and think what would make sense"; "Look at the picture then try again"; "Go back to the start of the sentence and think what will fit"; "Think about the story, what would make sense"; "Does the word you read match the picture?"

Neutral prompts accounted for an average of 15% of the cues teachers reported for dealing first with a reading error across the scenarios. These cues were generally lacking in useful information for helping the reader: "try that again"; "That was lovely, but I wonder if you can find your mistake?"; "You made a mistake. Can you find it? Fix it?"; "Have a go"; "Good job. Good reading"; "Check it"; "Get your mouth ready". Percentage of prompt types are illustrated in Figure 3.

Discussion

Use of Phonics Programmes

The vast majority of schools in both surveys (85%; 90%) reported using phonics in literacy instruction with students in the junior primary school. Most indicated using phonics in an integrated manner, as part of their literacy programme. Across the two studies, a fairly large range of programmes or combination of programmes appears to be in use in New

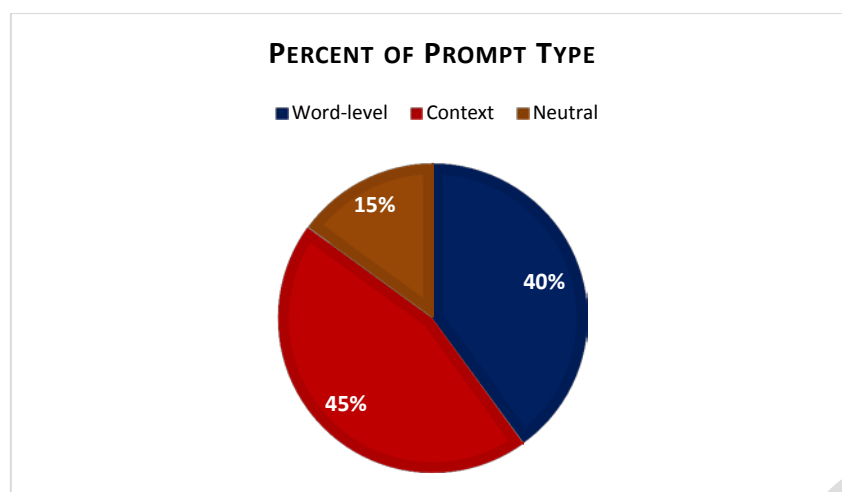


Figure 3. Percentage of prompt types.

Zealand schools. The vast majority of teachers who participated in the two surveys commented on the benefits of phonics, with relatively few identifying disadvantages

These results are generally positive, given the very well documented importance of phonics in literacy instruction for beginning readers (Brady, 2011; Hattie, 2009; National Reading Panel, 2000; Snow & Juel, 2005; Tunmer & Arrow, 2013). All children benefit from systematic, explicit instruction in phonemic awareness and phonics as a part of their literacy learning journey. Some children especially benefit from such instruction if they start school with limited phonemic and phonological awareness, and little or no alphabet knowledge (Connor et al., 2004; Juel & Minden-Cupp, 2000; Snow & Juel, 2005; Tunmer & Nicholson, 2011). For children who experience difficulties in word-level decoding, explicit instruction in alphabetic coding skills is likely to be crucial, especially those children who enter school with limited reading-related knowledge, skills, and experiences (Ryder et al., 2008; Tunmer et al., 2003).

There are some disconcerting aspects of the findings from these two surveys. A wide range of phonics programmes appear to be in use in New Zealand schools. While this might

be good insofar as schools can exercise choice about literacy teaching and the programmes they use, not all phonics programmes are equally effective. Relatively few published phonics programmes have good research evidence to support them. And while a number of teachers use their initiative and experience to develop their own phonics approaches to literacy instruction, evidence-based approaches are preferable.

Teacher Knowledge

Regarding teachers' self-evaluation of their literacy teaching skills, the overall responses indicated that teachers felt they had moderate to very good levels of literacy teaching skills. The results for the self-evaluation section are reasonably consistent with those reported by Washburn et al. (2011) for pre-service teachers.

In terms of knowledge of language constructs, there was more variability. There were high levels of understanding of phonological skills/knowledge, medium levels of phonemic skills/knowledge, but lower levels of phonic and morphological skills/knowledge. Interestingly, although the scores revealed strengths in the area of phonological awareness, only 58% of teachers were able to provide an accurate definition of phonological awareness. The strengths in this area were largely due to reasonably accurate syllable counting. This finding is similar to that reported by Washburn et al. (2011), and suggests that phonological knowledge is incomplete. This view is supported by the weaker knowledge in regard to phonemic awareness. Although 85% of respondents in the survey correctly defined *phoneme*, only 57% were able to define *phonemic awareness*. In addition, there was a discrepancy between syllable and phoneme counting, which is likely due to the accepted view that phoneme counting is more difficult than syllable counting. Further, errors in phoneme counting could be due to teachers operating at an orthographic level when attempting to dissect words into individual phonemes (Washburn et al., 2011).

The items associated with the alphabetic principle/phonics knowledge were more difficult for teachers in this survey. The accuracy rate for this section of the teacher knowledge survey was only 54%. Effective literacy instruction has been consistently shown to include systematic teaching of phonics (e.g., Adams, 1990; National Research Panel, 2000). Accordingly, explicit knowledge of phonics principles is required for teaching decoding and spelling (Washburn et al., 2011). It is concerning that only around half of the teachers in this survey were able to correctly identify when to use key reliable phonics principles.

Aspects of morphology were the most challenging for teachers who responded to this survey, with an overall accuracy rate of 53%. These findings are somewhat consistent with those reported by Moats (1994), who found that graduate level teachers had considerable difficulty with various aspects of morphology.

In general, teachers revealed a mixed understanding of the literacy-related language structures required for effective teaching. As Mather et al. (2001) commented, teachers with insufficient grasp of such crucial language structures are unlikely to effectively teach reading skills explicitly to those children who show early signs of developing reading difficulties, which in New Zealand includes at least 20% of the junior primary school population. The evidence from this study strongly suggests that teachers would benefit from systematic professional learning and development workshops to improve their understanding of key language constructs involved in literacy acquisition, and how to effectively use this knowledge in literacy instruction.

Teacher Word Identification Prompts

The data on teacher prompts from the six reading error scenarios showed that overall, fewer than 50% of the first prompts were word-level cues. In general, context and

neutral cues were together used more frequently by teachers. This preference probably reflects the advice presented in publications on literacy teaching for beginning readers (e.g., *Reading in Junior Classes, The Learner as a Reader, Effective Literacy Practices in Years 1 to 4*.) A stronger weighting of word-level cues is considered essential for most children, and especially for those children who commence school with more limited literate cultural capital (Arrow & Tunmer, 2012).

General Conclusions

Considered together, the results from these studies indicate that many New Zealand teachers use phonics programmes and approaches in their literacy lessons. This is a positive finding given the predominance of constructivist (whole language) approaches to literacy education that has characterised literacy instruction since the 1980s (Tunmer et al., 2015; Wilkinson et al., 2000). However, data regarding teacher knowledge of the basic language constructs associated with literacy teaching suggest that many teachers may have insufficient knowledge of how to effectively use phonics instruction. The inadequate understanding of phonemic awareness likely leads many teachers to hold the view that phonics instruction is used to promote phonemic awareness. That is not the case. Rather, instruction in phonemic awareness (understanding and hearing/manipulating the sounds in spoken words) prior to or at the very least, concurrently with phonics instruction, is crucial for children to obtain the most benefit from phonics instruction. In other words, phonics instruction in and of itself is not used to promote phonemic awareness; rather, phonemic awareness training is used to help children develop alphabetic coding skills from phonics instruction (Tunmer & Hoover, 2015).

Teachers demonstrated relatively low levels of understanding of the alphabetic principle, phonological awareness, and phonic knowledge. Effective literacy instruction has

been consistently shown to include systematic teaching of phonics (e.g., Adams, 1990; National Research Panel, 2000) in combination with teaching phonemic and phonological awareness. It is concerning that only around half of the teachers in this survey were able to correctly identify when to use key reliable phonics principles.

Before teachers are able to teach children to read or to develop the foundation skills for learning to read, it is important they are not only knowledgeable about the code of written and spoken English, but also have knowledge of research-based instructional procedures (Gersten et al., 2008; Spear-Swerling & Zibulsky, 2014). The importance of teacher knowledge student development has been highlighted by Piasta et al. (2009), who found that time spent on explicit decoding instruction was only effective for student word-learning growth when teacher knowledge of phonology, orthography, morphology, literacy acquisition, and instruction was high. Spending more time on explicit decoding instruction was not effective in promoting reading development if the teachers' research-based knowledge was low.

We contend that part of a strategy for improving the literacy learning outcomes of all New Zealand children, especially those who encounter initial and then ongoing difficulties, should include updated guidelines to replace *Effective Literacy Strategies*. These guidelines should fully include the recent two decades of scientific research on effective literacy teaching and learning.

In addition, both pre-service and in-service teachers should be provided with knowledge and skills for effective literacy teaching and learning, based on contemporary scientific research. It would also be useful for the Ministry of Education to commission a review of phonics programmes and provide information about those that have research evidence to support them. Such a step would be worthwhile for teachers, who generally

have favourable attitudes towards the role of phonics instruction, and would indicate a serious effort in encouraging teachers to adopt literacy teaching approaches that are evidence-based, rather than based on habit.

Proactively Released

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Title

Explicit early reading instruction and the linguistic knowledge of teachers: Necessary but not enough

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Abstract

Teacher knowledge can influence the act of teaching and effect children's learning outcomes with linguistic and language knowledge of teachers plays an important role in supporting learners at the beginning to read stage. This study examines the language and linguistic knowledge of teachers of beginning readers in New Zealand, how these teachers perceive their own practices in teaching reading, and the relationship with the nature of observed instructional practices. The teachers in the study used predominantly implicit approaches to early reading instruction, with word-level instruction and prompting used only after context. Even teachers with high linguistic knowledge used implicit approaches, suggesting that teacher knowledge is not sufficient, on its own, to ensure effective, explicit, word-level instruction to beginning readers.

Introduction

Teacher knowledge can influence the act of teaching and effect children's learning outcomes. The linguistic and language knowledge of teachers plays an important role in supporting learners at the beginning to read stage. This study examines the language and linguistic knowledge of teachers of beginning readers in New Zealand, how these teachers perceive their own practices in teaching reading, and the relationship with the nature of observed instructional practices.

Method

Teachers ($n=27$) of beginning school children were recruited as part of a larger longitudinal study on teacher practices and child outcomes in New Zealand. Due to missing data across the measures the number of participants in each measure varies.

Teacher knowledge. Teacher knowledge and self-efficacy was measured using a survey based on a measure of teachers' knowledge of basic language constructs developed by Binks-Cantrell, Joshi and Washburn (2012). Basic language constructs considered essential for early reading success include phonological and phonemic awareness, the alphabetic principle (phonics), and morphology (Binks-Cantrell et al., 2012). Based on extensive research during the late 1980s and 1990s (e.g., Adams, 1990; Moats, 1999), the United States National Reading Panel (2000) stressed the importance of teachers having an explicit knowledge of such concepts for the effective teaching of decoding skills in a direct, systematic way to enable the successful acquisition of early reading skills for all beginning readers (Binks-Cantrell et al., 2012).

The Binks-Cantrell et al. (2012) scale included 38 questions that examined teachers' understanding of basic language constructs in terms of knowledge and skills in relation to phonological and

decoding elements. Implicit knowledge included questions that required teachers to identify examples of elements (e.g., a phoneme), but not be able to define a phoneme. In addition, we included eight items designed to assess teacher's *perceived* teaching ability, such as "evaluate your knowledge of teaching phonemic awareness". Binks-Cantrell et al. (2012) reported that the teacher knowledge measure has a Cronbach's alpha coefficient of 0.90 and good construct validity.

Teacher practice. There were measures of teacher practice. The first form of teacher practice was how teachers prompt children when they make errors, using a written response task. The second form of teacher practice was measured through observational coding of teaching practices on a scale from all implicit to all explicit instruction.

Prompts. The prompt task was made up of five examples, across different text levels (magenta to green) common for the first year at school, and with different types of error (See Table 2). The teacher responses were first scored as being productive or non-productive (Greaney, 2001). A prompt was scored as productive when it would lead the child towards successful correction of the error. Productive teacher prompts involved three aspects. These three aspects were:

1. Word cue: The prompt had to guide the child to use information inherent in the word on which they made the error.
2. Timely: The prompt had to be timely not follow unproductive prompts, such as, "what did Dad do?"
3. Teacher support: The prompt had to provide support for the child's level of reading without assuming they knew more than their reading level would suggest (Brown, 2003).

Video observations. During the course of the year all teachers were videoed up to three times during reading instruction time. The videoed sessions range from 10 minutes to 1 hour in length. Only those parts of the recording that captured instruction with a small group of children (often called a guided reading group) were used for coding.

Six elements of small-group instructional practice were coded on a continuum of very implicit to very explicit. These six aspects are the learning focus, use of instructional strategies, how code knowledge is addressed, choice of text, promotion of reading strategies, and materials used. Each element was coded on a scale of 1-4; a mean score was calculated for each teacher. The type of practice promoted for success in early reading, particularly for any students likely to experience difficulty, is teacher-child managed and explicit teaching (Byrne, 2005; Connor, Morrison, & Katch, 2004; Hattie, 2009; Prochnow, Tunmer, & Arrow, 2015). In this case, scores of 1 to 4 generally reflect patterns of practice outlined here:

1. Implicit teaching, based on needs arising from text
2. Mixed implicit and explicit teaching, based on needs arising from text
3. Explicit teaching, planned, based on text selection
4. Explicit teaching, planned, needs based with text to support

Results

The results are presented with the descriptions of teacher knowledge and practice provided first.

This is followed up by correlational analysis of the relationship between teacher knowledge and the level of explicit instruction in which they engage.

Teacher knowledge. The teachers in the study had a high phonological knowledge. Phonemic knowledge was much lower, followed by phonic knowledge and morphological knowledge. In all areas implicit knowledge was higher than explicit knowledge. When the questions were analysed in

terms of questions that tapped into explicit articulation of teacher knowledge (maximum score of 12) there was a mean score of 4.92 ($sd = 2.50$; 49.26% accuracy), and for teacher ability but which could be answered without explicit understanding (maximum score of 26) the mean was 16.93 ($sd = 3.95$; 67.72% accuracy). These differences suggest that the New Zealand teachers were generally able to complete linguistic tasks, but did not necessarily know why they answered the way they did.

Across the combined knowledge and ability questions for the four language constructs phonological knowledge/ability ($m = 7.00$, $sd = 0.74$, $max = 8$; 87.50% accuracy) was the highest based on maximum score. This was followed by phonemic knowledge which also tapped into oral sound units ($m = 8.70$, $sd = 2.91$, $max = 13$; 66.95% accuracy). In contrast, the two constructs that relate to the orthographic representation, phonic knowledge ($m = 4.11$, $sd = 1.85$, $max = 8$; 58.71% accuracy) and morphological knowledge ($m = 2.11$, $sd = 2.58$, $max = 8$; 26.39% accuracy) were the most difficult language constructs for teachers for both knowledge and ability.

Teacher self-belief in teaching these components, and others, found that these teachers of beginning readers were more most confident in teaching meaning-based teaching elements. The aspect of teaching reading they felt most confident in was the teaching of comprehension ($m=2.50$, $sd = 0.58$), followed by teaching literature ($m=2.35$, $sd=0.56$) and teaching vocabulary ($m=2.31$, $sd=0.62$). Teachers felt less confident in teaching phonological and orthographic elements of instruction, such as phonemic awareness ($m=2.04$, $sd=0.72$), fluency ($m=2.15$, $sd = 0.73$) and phonics ($m=2.23$, $sd=0.65$).

To test if there were any differences between the distributions of these variables, one-sample t-tests were conducted, testing each self-belief aspects distribution against the mid-response of 2. These t-tests provided further evidence of the different distributions, with confidence in teaching vocabulary, literature and comprehension, as well as assessing literacy, all being significantly higher than the mid-score of 2. The word-level teaching elements of teaching phonemic awareness, phonics

or fluency, and the teaching of ELL students were not significantly higher than the mid-score of 2, suggesting that these were the most challenging teaching aspects for these teachers.

Correlations between self-belief and linguistic knowledge found only one significant relationship between self-belief in teaching phonemic awareness and the linguistic knowledge sub-scale for explicit knowledge. Teachers felt more confident in teaching phonemic awareness if they had explicit linguistic knowledge, but this had no relationship with any other aspect of their teaching. There were significant correlations between the self-belief measures themselves, suggesting there was internal reliability within the measure. The same was true for the linguistic knowledge measure.

To summarise, teacher knowledge and self-belief, teachers generally have low knowledge of how print and speech relate at the orthographic level. Accordingly, they feel more confident in teaching other aspects of reading that are related to meaning. Teachers did feel confident in assessing literacy; which would typically mean they feel confident in carrying out a Running Record assessment, which is the primary assessment tool used in New Zealand classrooms.

Teacher practice: Prompts. To illustrate how teachers would direct attention to word-level cues, and provide explicit instruction in the use of the word-cues the nature of the responses are analysed. Overall, teachers identified at least one word-level prompt for an average of 3.52 ($sd = 1.09$) reading errors items (70% of the items). However, giving a word-level prompt as the first cue only occurred for an average of 1.30 ($sd = 1.03$) reading errors items (25% of the items). In addition, this prompt was paired with explicit teaching on only 1.11 ($sd = 1.09$) reading error items. Explicit teaching occurred on 1.26 ($sd = 1.06$) reading errors items, with the majority of teachers (70%) doing this on one or no reading error items.

Teacher practice: Video observations. Video observations are analysed from 25 teachers. Not all teachers had a video filmed for reasons including not consenting to being videoed, not being available due to other school commitments, and issues with video quality. The mean implicit-explicit score was 1.95 ($sd = 0.83$), ranging from .40 to 3.50. This means that much of the small-group instruction was based on the text as it was read, with any phonic or word-based instruction occurring as the need arose during the reading lesson. Children are supported to read new words in context, but they are not often able to generalise the reading of those supported words to the same words in different contexts (including across pages of the same book) or to other books or materials.

To examine the relationship between the levels of explicit or implicit knowledge and teacher practice, correlations were carried out. There was no correlation between teacher knowledge, either implicit or explicit, and the explicitness of their teaching. This suggests that even the teachers with good linguistic knowledge did not engage in explicit instruction, even if they had sufficient knowledge to do so. The lack of correlation between phonic knowledge and self-belief in phonic knowledge furthermore suggests that the teachers did not think they knew enough to teach that knowledge explicitly. Additionally, the lack of correlation with the explicit response to the prompt task suggests that they didn't use this knowledge even to theoretically support a child having trouble reading a word.

For self-belief in teaching, there were low, but significant negative correlations between teachers' self-belief in teaching comprehension and vocabulary and the explicitness of their teaching. There was also a low, but significant positive correlation between teacher self-belief in teaching literature and explicit instruction. There were no significant correlations in self-belief in teaching orthographic elements of reading with explicit practice.

Discussion

This study illustrates that New Zealand teachers have unrealised low levels of teacher knowledge in the basic reading-related language skills, especially phonic knowledge. It was also found that teachers are consistently implicit in the teaching of reading. As the practices are implicit for all teachers there is little correlation between explicit knowledge and explicit practice. This finding suggests that there is a disjunction between the ideological context in which the teachers work and the knowledge needed for effective practice. Good, explicit teacher knowledge is not sufficient for good explicit instruction when embedded in a whole-language teaching environment.

High knowledge teachers do not appear to even use their knowledge when provided with a hypothetical child who has made a reading error in decoding. The teachers with that knowledge didn't feel that they were able to teach it and didn't teach it.

The implications are that having high levels of linguistic knowledge are not enough for teachers to teach effectively. The reasons for this are not able to be identified in the current paper, but previous research on beginning teachers have found that they are influenced by the nature of the teaching approach that they see in schools rather than by the knowledge that they have about linguistic elements. Perhaps these same teachers need specific programmes to scaffold them towards effective independent teaching decision making and practice.

Although the total number of participants with a complete data set was low, the findings correspond with similar studies.

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