The effectiveness of a small group intervention for struggling readers in Year 4

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Abstract

The purpose of the current study was to examine the effectiveness of a small group literacy intervention for low-achieving readers in Year 4. The present study set out to determine if an explicit and systematic reading programme will show accelerated gains in word reading skills that is superior to the conventional school approach to reading instruction based on the multiple-cues method. The teacher delivered this intervention as part of the group's weekly reading instruction over a ten-week school term. The study employed a modified version of a five-step instructional programme originally designed by Blachman et al. (2004) during their intensive reading remediation study with second and third graders with a one year follow up. The intervention programme focused on the phonological and orthographic connections in words and text-based reading.

The design of the study involved a whole class screening process using the Dynamic Indicators of Basic Early Literacy Skills 6th Edition (Good & Kaminski, 2007). The intention of the screening process was to select the ten participants with the highest requirements for strategic teacher support. A pre-test-intervention-post-test design was used to compare the effects of the intervention programme using a set of word reading skills. Due to the small sample size of the present study a non-parametric test (The Mann-Whitney –U Test) and sets of pre-test and post-test difference scores were used to report statistically significant gains made by the intervention group.

The key findings from the present study suggest that the intervention group gained significantly better results in terms of word reading measures in addition to some generalised word reading skills not included in the programme. The findings highlight the importance of differentiating reading instruction and using explicit teaching in word reading skills for older struggling readers.

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Chapter 1

Introduction

Making a good start in reading during the first few years of formal schooling is vital to future academic and vocational success (Adams, 1998; Goffreda, Diperna & Pedersen, 2009). The current literature indicates that the effects of poor literacy acquisition can be linked to disengagement from secondary education, numerous social problems and ultimate incarceration (Juel, 1995, as cited in Goffreda, Diperna & Pedersen, 2009). Therefore achieving literacy skills that are well grounded within the majority of the school going population is of the utmost importance to any modern society. Evidence collected on reading achievement directs our attention to the fact that our instructional strategies are not as effective as they could or ought to be in terms of our underachieving readers in New Zealand (Ministry of Education, 2015c). The problem might be that our reading instruction lacks diversity, so that children who have not acquired a good grounding in the alphabetic principle and in particular in regard to effective word recognition skills. These students often continue on into higher year levels with low skill levels in reading which in succession affects all aspects of their academic development. Recent reviews and commentaries on New Zealand's troubled literacy strategy recommend that fundamental changes to classroom instruction, assessments and the national Reading Recovery programme be made by adding a greater emphasis in regard to explicit and systematic instruction in terms of phonological awareness (Tunmer, Chapman, Greaney, Prochnow & Arrow, 2013).

Rationale

The ability to respond effectively to varying student needs and provide equitable outcomes for students is one of the greatest challenges teachers face in diverse classrooms (Ministry of Education, 2011). To meet this challenge in early reading development, it will be necessary for teachers to make a shift in their instructional methodology and to make a basic change in their fundamental reading pedagogy. The

change that is required by teachers is the willingness to be open to current learning theory and to be aware of practices endorsed by the international scientific community. A great need for diversification in regard to the instructional methodology classroom teachers follow is necessary. Tunmer and Nicholson (2011) propose that neither whole language or phonics on its own is an apt solution to the problem, instead a new model that will allow teachers to draw from the strengths and key elements of both instructional models as dictated by the specific learning needs to young readers is necessary. The key element in effective reading instruction for struggling readers appears to be the provision of a more explicit teaching model (Daly, Neugebauer, Chafouleas & Skinner, 2015). Yet what exactly is meant by the term ‘explicit’ instruction in reading?

The emphasis on explicit instruction refers to the clarity and precision in terms of the identification of skills required to help the readers who are struggling and the readers from diverse backgrounds. Explicit instruction further points to ‘hands-on’ instruction which helps students master smaller and more controllable skill increments before moving on to the more complex levels of fluency and generalization (Daly et al., 2015). The focus of explicit and systematic instruction is more about being precise with respect to selecting and presenting materials for students who will be reading them to help them develop and improve their skills. The current study used the principles of the instructional hierarchy (Haring, Lovitt, Eaton & Hansen, 1978), by refining instructional components to increase accurate responses through modelling, demonstration, prompting and drill reinforcement. This is in sharp contrast to the tenets of a whole language or constructivist philosophy in terms of reading acquisition where the teacher’s focus is on the provision of naturalistic reading materials that will stimulate student directed learning and not so much on directing the responses of the students (Daly, Lentz & Boyer, 1996). This approach to reading instruction has been severely criticised by the international scientific community as ineffective in teaching students who struggle with reading and especially students who come from disadvantaged backgrounds who lack the necessary vocabulary and naturalistic life experiences for self-directed learning (Tunmer & Nicholson, 2011; Tunmer et al., 2013; Daly et al., 1996).

The Problem

The current study investigates a problem situation that teachers in many primary school classrooms encounter, especially teachers in schools in low socio-economic areas. This problem is that many students from Year 4 and beyond have not acquired sufficient command over the alphabetic principle to enable them to progress from learning to read to reading to learn. It originates from the somewhat low literacy levels that are part of a larger issue that affects future educational achievement. Despite two decades of improvements to reduce the large disparity in reading achievement, a lower than expected success rate has been accomplished in improving literacy related outcomes for, in particular, at-risk Maori, Pasifika students in low socio-economic communities (Tunmer et al., 2013). We may remark and conclude that our current efforts are not providing us with the answers and solutions to effectively respond to our literacy dilemma. So this common sense prompts us to find other solutions in order to help the students improve and achieve better results. The literature suggests that Year 4 represents a critical remediation point for children who have not been able to acquire satisfactory reading skills. If left unresolved it is not clear if these students will be able to develop competent reading skills (Wren, 2000). To address this matter the current study employed a modified version of the Blachman et al (2004) intensive reading remediation for second and third graders. The five-step programme developed by the same authors was used as the instructional programme for the intervention group (Blachman et al., 2004; Blanchman & Tangel, 2008).

Within the context of an inclusive classroom, the focus of this study includes practical implications and effective methods to manage small group interventions for readers who are learning to read. With the assistance of a teacher aide organizing individual connected text readings for each student in the intervention group, the classroom teacher administered the intervention as part of the regular classroom programme. The selection of participants for the intervention group and control group was completed using the Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS) (Good & Kaminski, 2007). The purpose was to select students with similar early literacy challenges. This was to enable a comparison to be made between a

small group receiving the intervention programme and a similar group receiving the regular classroom reading programme. It was based on the multiple-cues method as prescribed in the school and ministry of education reading guidelines. Assessments based on phonological awareness are not the traditional practice in most schools and this has been identified as a potential weakness in the New Zealand literacy strategy (Tunmer, et al., 2013). So, as a secondary objective, DIBELS (Good & Kaminski, 2007) were utilized to describe the early literacy skills of the participants as a way to illustrate the necessity for using assessment in constrained skills. This is in order to refine the instructional targets for readers who are struggling. The results of the screening procedures using DIBELS pointed out that the skills of the participants were weak in terms of phonemic awareness, word level decoding ability and that the participants had relatively low fluency in overall oral reading ability.

This study presented two hypotheses.

Hypothesis 1

The implementation of a programme aimed at phonological and orthographic connections in words and connected-text reading will improve word recognition skills for students who are achieving in an at-risk category in a Year 4 classroom.

Hypothesis 2

Whether an instructional programme that applies, direct instructional components at the acquisition level of the instructional hierarchy will promote accurate and fluent word reading skills and generalization of skills to decode words in novel contexts.

Organisation of subsequent chapters

Chapter 2 includes a review of the literature on reading acquisition and examines the factors that have an influence based on current New Zealand policies and literacy instruction practices. In general, the chapter also discusses the instructional hierarchy and how the direct instructional components can provide alternative methods to assist teachers who are teach readers who are struggling to learn how to read.

Chapter 3 explains the methodology used in the current study. The chapter describes the participants, based on the study. The selections of the intervention and control

group are specified with a discussion of the sampling methods. A description of the pre and post testing procedures is included.

Chapter 4 describes the results of the whole class screening procedure and the intervention phase in relation to the two hypotheses of the study.

Chapter 5 concludes with a discussion of the findings. It describes the limitations of the study and possibilities for future research.

Chapter 2

Literature Review

Introduction

This chapter outlines the theoretical foundations of reading acquisition by relating them to a knowledge base that advocates the instructional approaches for struggling readers should be more closely aligned with the reader's skill proficiency. The chapter firstly looks at how reading skills are developed by discussing the simple view of reading and how it aligns with a cognitive framework for understanding reading acquisition. This is followed by a critical discussion of current policies and practices and the way in which they impact children with low literate cultural capital. It concludes by describing a problem-solving framework to address literacy needs within a small group instructional context.

How do children develop reading skills?

Reading is a language-based skill and is encompassed by complex cognitive processes (Kamhi & Catts, 2012). While thinking about reading acquisition, it helps to look at the cognitive processes underpinning the development of word reading skills. The biological and neuropsychological foundations underlying the human ability to translate symbols on paper into speech have intrigued scientists for many decades. For example, in 1886, William MacKeen Cattell and Edmond Huey discovered that letters and words can be named faster than other symbolic categories such as colours or pictured objects and this created the foundation for studies in automaticity and reading fluency (Wolf & Katzir-Cohen, 2001; Chall, 1983).

Attempting to understand how humans acquire the ability to decode text and how they master these skills beyond a level of simple accuracy to a point where the processing of symbols becomes automatic has led to many scientific investigations.

Over succeeding decades various models describing how reading skills are acquired and how they should be taught were developed. Although various conceptual models that explain reading acquisition exist, one central theme connecting them is that reading is a language based skill different from oral or spoken language, which has a biological foundation predisposing its acquisition hence reading is not a naturally acquired skill (Kamhi & Catts, 2012; Tunmer & Nicholson, 2011). Therefore learning to read is a skill acquired through some form of instruction or practical engagement where the letters represent the spoken language. In this process of learning there is a combined interaction between the input from the learner and the input from the environment. Byrne (2005) describes a framework for understanding acquisition as a division of labour between what the learner brings to the instruction in the form of known skills and strategies necessary for the act of learning and how the instructional environment can vary to support the learning process. So, in other words, if a learner has little known skills or strategies to read, the teacher can provide an explicit and systematic instructional programme. On the other hand, if the learner has sufficient known skills and strategies the instructional programme can be less explicit and systematic. Arrow and Tunmer (2012) point out that this framework enables a theory of "learning to read that can be applied, so that what is required for each learning act -from the teacher and the learner - can be identified" (p. 242). The internal and external factors that have an impact on the learner's contribution in regard to the act of learning to read can be complex and multidimensional. Aaron, Joshi, Gooden and Bentum (2008, as cited in Tunmer & Chapman, 2012) reduced the complexity of factors influencing reading acquisition by designing a component model for sub-dividing reading acquisition factors. The model includes the psychological domain, the ecological domain and the cognitive domain.

The psychological domain has to do with the motivational factors that have an impact on a child's willingness to engage in reading related matters. The ecological domain addresses factors from the home and classroom that have an influence on a child's immediate and anticipated ability to develop reading skills. Certain aspects that relate to socioeconomic factors that have an influence on literacy acquisition and

achievement are also included in the ecological domain. Young children who have a limited exposure to school-like early literacy experiences as a result of economic disadvantages and other family stressors arrive at school with lower levels of vocabulary, oral language proficiency, language play activities and letter-sound knowledge (Tunmer, Chapman & Prochnow, 2006). Tunmer, Chapman and Prochnow (2006) define these reading related variables perpetuated, supported and sustained by ecological factors as literate cultural capital. It is therefore postulated that ecologically disadvantaged children will not benefit as much from a constructivist, whole language approach to teaching literacy acquisition as their middle class peers who have experienced more exposure to pre-literacy skills (Tunmer, Chapman & Prochnow, 2006; Tunmer & Nicolson; 2011; Tunmer et al., 2013). The cognitive domain addresses the process of constructing meaning from text and provides a framework to understand they way in which printed text maps onto a child's existing spoken language (Tunmer & Chapman, 2012). The cognitive domain provides a framework to understand the sub-components required for reading acquisition, such as phonological awareness, word recognition, word-level sub skills and information processing theories (Wren, 2000; Wolf & Katzir-Cohen, 2001).

The component model of reading therefore divides reading acquisition into two overarching cognitive components including those that are associated with the direct causes, also referred to as proximal causes, and other factors that are maintained by the psychological domain or the ecological domain.

The simple view of reading

The complexity of the cognitive domain can be reduced into two components, firstly that language can be recognised within the printed text and secondly that it can be comprehended (Hoover & Tunmer, 1993). This conceptual model for understanding reading is known as the simple view of reading (SVR) and is also referred to as the narrow view of reading (Tunmer and Chapman, 2012; Kamhi & Catts, 2012). In contrast to the broader view of reading, which views reading predominantly from a meta-cognitive basis, the SVR holds favourable implications for understanding and answering the question, how do children learn to read? Kamhi and Catts (2012) assert that the narrow view may provide a solution to the reading

crisis in the United States. These authors state that it might be possible to eliminate reading failure if reading is narrowly defined within its decoding component.

The SVR consists of the formula: R= D x C. This formula hypothesizes that reading (R) is comprised of two components, decoding (D) and linguistic comprehension (C) (Kamhi & Catts, 2012; Hoover & Tunmer, 1993; Tunmer & Chapman, 2012). The values of each of the variables (reading or linguistic comprehension) are placed on intersecting continuums ranging from zero (0) to perfection (1). Tunmer and Greaney (2010) conclude that both SVR components are required to become a successful reader, so a good reader requires decoding abilities and the ability to orally comprehend the significance of the decoded letters in the context of the text or word. Consequently, if the value in one variable turns out to be zero, the whole formula equates to zero and stated differently, if C = 0; then 0 x R= O or if R=O; then 0 x C = 0. The SVR also refer to the model of proximal causes in regard to reading disabilities and can be used as a model to conceptualise the three broad categories of reading difficulties, these include specific reading comprehension difficulties, mixed reading disability and reading disability (Dyslexia) (Tunmer & Hoover, 1992, as cited in Tunmer & Greaney, 2010). Moreover, the SVR is a practical framework to help understand reading difficulties.

A cognitive framework for reading acquisition

Wren (2000) designed a cognitive framework to expand decoding and linguistic comprehension, two components of the SVR, into further elements. They are indispensable to understand the reading acquisition process. Figure 1 below is an illustration of the Southwest Educational Research Laboratory's (SEDL's) cognitive foundation framework related to learning to read (Wren, 2000).

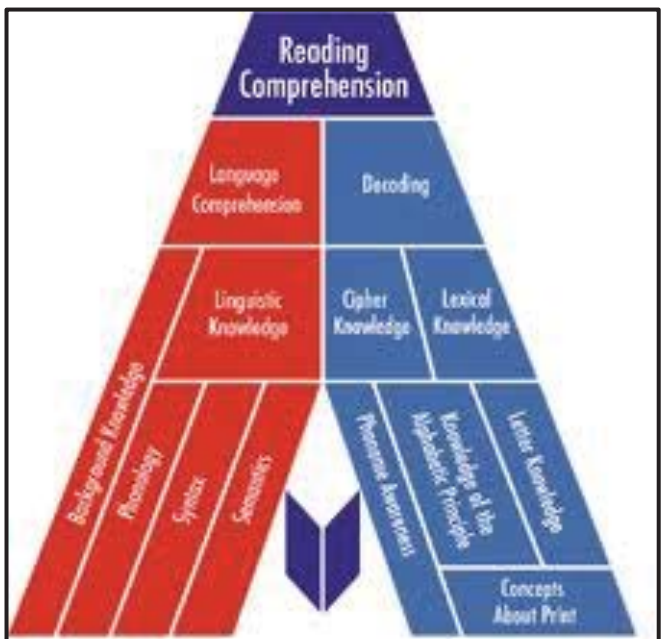

Figure 1. The Southwest Educational Research Laboratory's (SEDL's) cognitive foundation framework related to learning to read (Wren, 2000)

The SEDL describes the cognitive elements that are essential for reading development and supports the components of the SVR, specifically, decoding and language comprehension. The SEDL framework sub divides each component into more distinct constructs. Language comprehension is directly affected by a child's background. In other words, a child needs a certain level of competency to process formal language, decontextualized language and metalinguistic concepts to initiate reading comprehension. Yet since many children lack the natural schemas and scripts that they develop about the world they live in (Wren, 2000), this adversely affects their phonological ability and impairs their ability to hear and distinguish the sounds that make up language all of which diminishes their syntactic and semantic skills.

The subcomponents of the framework hold particular value in New Zealand's predominantly whole language context, where children from low socio-economic backgrounds start formal schooling with varying degrees of literate cultural capital. Therefore it might be erroneous to assume that children can use their knowledge of the world when attempting to decode new words (Clay, 1985). Although organizing and preparing rich classroom learning environments can provide background knowledge to some degree however, it might be unrealistic, to presume that all school beginners will acquire a high level of language comprehension after a year of 'roaming around the known' as Clay (1985) describes this process.

According to Wren (2000), the second leg of the SEDL framework addresses "the cognitive elements that research has shown to be crucial to the process of

developing decoding skills" (p. 36). This subcomponent of the SEDL consists of cipher and lexical knowledge, phonemic awareness, the alphabetic principle and concepts about print. Unlike language comprehension the elements of this sub component provide opportunities for assessing a child's ability in the decoding skills and then providing explicit instruction in the skills that are deficient. Prospects for assessing the cognitive components of this framework (i.e. phonological awareness, alphabetic coding, automaticity in word recognition) in New Zealand have been restricted by ministerial policy stemming from Reading Recovery and other views on culturally responsive instruction (Tunmer et al., 2013). This derives from traditional constructivist views that consider word-level skills to be less important in regard to the young reader and that literacy learning is mainly a by-product of cognitive engagement with a text (Tunmer et al., 2013).

With respect to the concept that involves the initial screening of reading related skills, it is contrary to Clay's (2005) supposition. Clay writes that " a check around the sixth birthday maximises the opportunities, minimises pressure on the child, and does not leave the child for too long creating habits of responding that might handicap him and be hard to unlearn" (p.12). Clay's position on maintaining a hands-off approach to phonemic awareness instruction stands in stark contrast to the findings of Juel, Griffith & Gough's (1986) longitudinal study on the acquisition of literacy by first and second graders. These authors concluded with the thought that children "will not acquire spelling-sound correspondence knowledge until a prerequisite amount of phonemic awareness has been attained" (p.254). In addition to this, the distinctive literacy skills that young children bring to the formal educational process have been overlooked by the whole language philosophy of Clay (2005).

Current policies and practices in literacy instruction

Restrictive policies and the avoidance of the involvement of clear assessments in terms of early literacy ability have led to a growing concern about New Zealand's decreasing standards within the international reading community. New Zealand has developed what is commonly referred to as a 'gap' or 'long tail' of underachievers in literacy (Tunmer et al., 2013). The 'gap' refers to a considerable disparity between lower and higher achieving readers across all age groups. This developmental lag has

been attributed to a combination of philosophical, cultural and political opinions based on misunderstanding the theories of constructivism maintained by a wait- to -fail approach (Foorman, Francis, Shaywitz, Shaywitz, & Fletcher, 1997). This developmental lag between high and low performing students in the area of literacy is the broadest and most wide ranging in the Organization of Economic Cooperation and Development (OECD) (Ministry of Education, 2011). This problem has led to numerous academic debates and policy initiatives over the past fifteen years, since the publication of the Ministry of Education's Report from the Literacy Taskforce (1999).

The causes of the problem are not singular and persist in deeply rooted social and political contexts within educational policy structures (Nicholson, 2002, as cited in Adams & Ryan, 2002). Implementing fundamental changes to classroom instruction and national intervention programmes, based mainly on a constructivist and whole language approach, has been offered as a possible solution for decreasing disparities in reading achievement (Tunmer et al., 2013). The appeal for change to a more explicit and systematic instruction for disadvantaged students appears to be unnoticed by the Ministry of Education. The reasons for this appear to be threefold, first, the wait-to-fail approach perpetuated by the national Reading Recovery intervention, promotes a hands-off approach with struggling readers in the first year of schooling. Second, the avoidance of including explicit teaching and assessment of early literacy skills and finally the resistance imposed by those who fear that early assessments in literacy skills will lead to a deficit model that will label underachieving minority children (Tunmer et al., 2013).

Positive developments toward reforming instructional processes have been gradually phased in through expensive professional development programmes, estimated at $200 million per year (Tunmer et al., 2013). In addition, the Ministry of Education gradually influenced teacher's professional development with ministerial publications such as Effective Literacy Practice in Years 1-4 (2003) and Sound Sense: Phonics and phonological awareness (2003). Even so, most of the developments are positioned in the area of meta-cognition and reading comprehension. The Literacy Learning Progressions (Ministry of Education, 2010) is a good example of this uneven approach. This research study does not explicitly recommend supporting

teachers of struggling students by providing them with tools to develop a wider range of instructional methods. This document focuses exclusively on comprehension strategies, with no reference to progressions in teaching phonological awareness, the alphabetic principle and oral reading fluency. The Ministry of Education publications on professional development in reading instruction, do not reveal a number of equally valid international findings, that demonstrate that explicit phonological skills training in reading programmes have a place and that teachers should be required to have a much higher level of instructional expertise in phonics teaching (Greaney, 2004).

In a critical discussion document discussing New Zealand's ranking in terms of international literacy results, Greaney (2004) lists various reasons for New Zealand's falling literacy scores as offered by the New Zealand Reading Association and a major University responsible for teacher training. He concluded that all of the possible reasons for literacy related problems in schools were located "outside the context of the school" (p. 57). Although it is important to acknowledge such factors as poor school attendance, a high number of foreign teachers, demanding classrooms, inadequate classroom support for teachers, family problems and competitive non-print media, it is worth noting the obvious exclusion of explicit and systematic teaching as a reason for falling literacy achievement in general education (Greaney, 2004). For example, even though Effective Literacy Practice in Year 1 to 4 acknowledges the importance of phonemic awareness in early literacy instruction, it does not offer clear guidelines to novice teachers on how to teach this crucial early literacy component (Ministry of Education, 2003a). Tunmer and Greaney (2010) argue that the whole language approach to teaching children to read is the main factor causing New Zealand's plummeting achievement results in international studies.

Why do many children still struggle to read?

The answer to the question regarding the reason some children still struggle to read is not an easy undertaking. The cognitive domain offers many explanations for reading failure, based on factors residing within the child (Kamhi & Catts, 2012). The ecological domain advocates that the child's ability to acquire reading skills is influenced by the home as well as the instructional environment. Engelmann, Granzin

and Severson (1979, as cited in Daly, Chafouleas & Skinner, 2005) suggest that we first determine the degree to which the struggling reader's performance is controlled by instruction, before we draw conclusions about reading deficiencies. New Zealand's predominantly whole language philosophy presents particular difficulties for students with environmental deficits maintained by low socio economic conditions. These environmental deficits are also referred to as literate cultural capital (Tunmer et al., 2013).

Tunmer, Chapman and Prochnow (2006) define literate cultural capital as "a generic term referring to reading related variables at school entry that are strongly linked to activities in the home environment that support literacy development" (p. 197). Literate cultural capital signifies the quantity and quality of print rich experiences obtained during early childhood and how this impacts on a child's interest and motivation to engage in "book experiences" (Kamhi & Catts, 2012; Tunmer, et al., 2013). There appears to be a correlation between literate cultural capital and socio-economic status (Byrne, Fielding-Barnsley, & Larsen, 1997).

This correlation between emergent literacy occurrences at home and its effect on future literacy acquisition has been thoroughly investigated by researchers. In a longitudinal study of 54 children from the first to the fourth grade, Juel (1988) writes that children who come from homes where language is primarily used for direct communication have difficulty in making the abstract deduction that letters and books carry a communicative message. In the same study Juel (1988) found that children who were used to hearing language from books being read to them were better prepared for the abstract demands involved in learning to read. In Gunn, Simmons and Kameenui's (1995) synthesis of research of emergent literacy it is noted that literacy acquisition is influenced by cultural expectations in becoming literate.

Maclean, Bryant and Bradley (1987, as cited in Juel, 1988), illustrate the importance of early childhood immersion in word play, nursery rhymes and general print exposure after conducting a 15-month longitudinal study of 3-year-old children. Copeland and Edwards (1990) suggest that parental outlook on education and the modelling of reading and writing at home is a significant factor in preparing young

children for future literacy acquisition. Gunn et al. (1995) apply Clay's (1990) observations of oral language development in New Zealand Maori and Samoan children at the age of seven. Although Maori and Samoan children's oral language development at that age appeared to be equal, Samoan children progressed quicker in reading. Clay concluded that this had to be the result of higher parental interest in literacy and a shared cultural emphasis on reading strengthened by regular church attendance, where the act of reading is held in high regard.

There are many who contest suggestions of low literate cultural capital or any such suggestion as contentious stereotyping of Maori children. As an example, Shannon (1985) quotes the controversial study of Rist, (1970, as cited by Shannon, 1985) who conducted a study with a group of African American students who were instinctively placed in low ability groups based on the teacher's perception of their social class in the absence of test scores. Acknowledging low literate cultural capital as an instructional barrier can allow educators to adapt their instruction by differentiating their teaching to suit the needs of such learners. Educators should however be cautious not to make the assumption that parents and families are solely responsible for their children's low reading abilities (McGill-Franzen & Allington, 1991). It is important not to confuse literate cultural capital with deficit theories as mentioned previously (Shannon, 1985; Harris, 2009). Tunmer et al. (2006) explain that we should guard against exploiting literate cultural capital and cultural origin and instead view this as an opportunity to apply differentiated instruction to match the student's literacy ability at school entry, notwithstanding their cultural background.

Differentiated instruction

O'Meara (2011) defines differentiated instruction as follows: "to differentiate instruction refers to "the systematic planning and implementation process for creating educational experiences tailored to meet the needs of each individual, honoring and celebrating differences by capitalizing on strengths and supporting needs" (p.26). Hall (2002) provides another comprehensive definition of differentiated instruction:

> "To differentiate instruction is to recognize students varying background knowledge, readiness, language, preferences in learning, interests, and to react

> responsively. Differentiated instruction is a process to approach teaching and learning for students of differing abilities in the same class. The intent of differentiating instruction is to maximize each student's growth and individual success by meeting each student where he or she is, and assisting in the learning process" (Hall, 2002, p. 1).

Whereas when differentiated instruction is implemented with integrity, it will meet the needs of all culturally diverse school communities and it has been suggested that a new system change that will allow educators to make differentiated instruction come to life by using scientific and evidence-based methods that includes applying what works best for students from low socio-economic backgrounds (Tunmer et al., 2013; Tunmer & Nicholson, 2011).

While implementing and making greater use of research-based assessment and differentiated instructional strategies, teachers can minimize the negative effects associated with low literate cultural capital. Research has established a link between school entry reading skills and the methods selected for instruction (Greaney, 2004; Tunmer et al., 2013; Tunmer et al., 2006; Tunmer & Chapman, 2002). Byrne et al. (1997) found that children from typically low socio-economic backgrounds require a higher code- emphasis approach to reading instruction. Consequently using a generic, one-size-fits-all instructional approach to reading instruction can disadvantage students who do not come from rich literate backgrounds.

International research verifies the importance of differentiated small group instruction, which includes explicit instruction in the alphabetic principle, to aid struggling readers to develop word recognition (Foorman, Francis, Fletcher, Schatschneider & Mehta, 1998; Foorman, Francis, Shaywitz, Shaywitz & Fletcher, 1997; Feifer & Della Toffalo, 2007; Daly et al., 2005; Blachman & Tangel, 2008, Snow, Burns, & Griffin, 1998; National Institute of Child Health and Human Development, 2000). Tunmer and Nicholson (2011) support phonics as a good instructional pathway for students who are environment dependent due to low literate cultural capital. The same authors caution educators by adding that neither whole language nor phonics holds the answer to the problem. Differentiated instruction can provide a way for some students to receive a more environment-dependent reading

instruction that can be balanced with some elements of whole language. The answer seems to be not so much in either whole language or phonics, but a balanced approach targeted at where the young reader is functioning on the developmental continuum.

Jeynes (2007) conducted a meta-analysis of 22 studies that examined the relationship between phonics and urban minority groups. The overall results of his investigation, which included 5000 students, found that phonics instruction provides the best conditions to progress the achievement of minority groups. Moreover, differentiated instruction can reduce the overrepresentation of culturally and linguistically diverse students who struggle to acquire reading skills (Walker-Dalhouse et al., 2009).

RTI: A problem-solving framework

Having many different groups in a single classroom can create problems for the classroom teacher and the use of a problem-solving framework to manage diversity becomes a necessity. Since RTI provides a system for matching the best intervention with the specific learning needs of a student, it offers differentiated instruction targeted to the student's skills proficiency. Riley-Tillman and Burns (2009) state that, Response To Intervention (RTI) was created as an educational problem-solving model "with the primary goal of providing the most effective instruction and intervention to each student through efficient allocation of educational resources" (p.3). RTI began in the United States after the 2004 Individuals with Disabilities Education Improvement Act (IDEA) was passed in congress.

RTI is a multi-tiered instructional framework that usually consists of three tiers that become more intensive as the need for more instructional input is required (Fuchs & Fuchs, 2006). The first tier focuses on quality core instruction, universal screening and on-going progress monitoring that allows for the identification of students who require additional assistance. In New Zealand classrooms, tier one instructional practices might include, shared reading of books, reading activity centres, shared news and current event books and shared poetry (Eggleton, 2010). Tier 2 interventions are targeted or strategic interventions. They are usually delivered

in a small group setting and focus on teaching pre-requisite skills. In the New Zealand context, tier two interventions are usually referred to as a guided reading with students grouped according to a reading book level. Students who fail to respond to this level of intervention are usually referred to tier 3 assistance that includes higher, individual support (Rathvon, 2008). In a New Zealand context this refers to Reading Recovery or other school-based one-to-one interventions. Students who still fail to respond after this level of intervention are usually referred to specialist support delivered by resource teachers of literacy (Greaney, 2002).

The use of a problem–solving approach that is based on the systematic use of data collection and monitoring can provide more accurate intervention as opposed to standard whole language assessment that mostly relies on teacher judgement.

The predominantly constructivist approach to literacy instruction in New Zealand does not support accurate matching of interventions to student's skill proficiency as literacy learning is largely seen as a by-product of active mental engagement (Tunmer et al., 2013). In many instances judgements are based on ineffective whole-language based assessments such as running records of oral reading behaviour, concepts about print or assessments of handwriting (Ministry of Education, 2003a). The current policy does not support explicit and systematic teaching of early literacy skills (Tunmer et al., 2013). Furthermore, there is very little emphasis on teaching "phonemic awareness and alphabetic coding, the ability to translate letters and letter patterns into phonological forms" (p. 3). With this difficulty in mind Tunmer et al. (2013) recommend that schools consider the use of screening tools for the purpose of intervention planning and on-going progress monitoring.

RTI systems can make decisions on each student's individual skills by using standardised measurement tools, such as the Dynamic Indicators of Basic Early Literacy Skills 6th Edition that was used in the present study (Good & Kaminski, 2007). In order to plan for the delivery of a more explicit and systematic reading curriculum, it is essential to use reliable and valid early literacy assessment procedures. As noted earlier, Tunmer et al. (2013) identifies the lack of assessment of

constrained skills in the early years of schooling as one of the factors causing a developmental lag in reading achievement.

The Instructional Hierarchy

The learning of any skill progresses through a predictable sequence, as described in the instructional hierarchy, as proposed by Haring, Eaton and Hansen (1978, as cited in Daly, Lentz, Boyer, 1996; Daly, Chafouleas & Skinner, 2005; Burns, Riley-Tillman & VanDerHeyden, 2012). The instructional hierarchy is a model used in many educational contexts to describe how a student progresses through a hierarchical growth process from acquisition to adaptation (generalisation) of a skill. The model as illustrated in figure 1, progresses from the acquisition phase to the fluency phase, then to generalisation and ends in adaptation.

Daly, Lentz and Boyer, 1996) used the instructional hierarchy as a conceptual model for understanding the effective components of reading interventions. Their work was based on the pioneering efforts of Haring, Eaton and Hansen (1978). Daly et al. (1996) describe the significance of the model in that it "calls for refining intervention targets as a means of developing instructional treatments" (p. 370). They describe it as follows:

> "As a learner is gaining a new skill, he or she will first acquire it. The learner then becomes fluent in skill use. Next, he or she learns to generalize its use to novel contexts. Finally, he or she adapts its use to modify the response as necessary according to novel demands" (Daly, Lentz & Boyer, 1996, p.370).

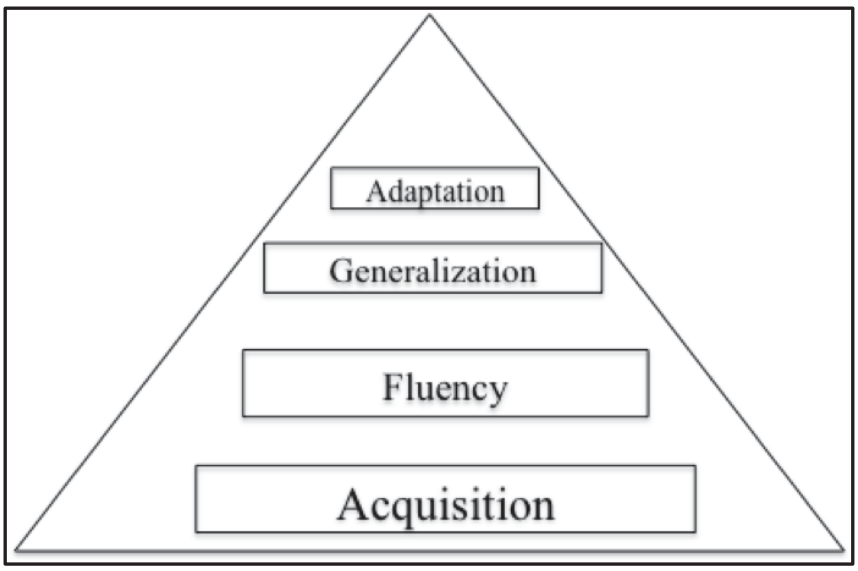

Figure 2. The Instructional Hierarchy (Daly et al., 2015)

The importance of including considerations regarding the instructional hierarchy rests on the core understanding that the type of student response required during the instructional process is dictated by the student's position on the instructional hierarchy (Daly et al., 1996; Daly et al., 2005). According to Daly et al. (1996) whole language approaches in relation to reading instruction require predominantly generalised responses from students. Daly et al. (1996) suggest that teachers provide students with "opportunities to apply skills across contexts, but does not explicitly intervene to promote accuracy and fluency" (p. 373). This is clearly illustrated by the level of attention given to metacognition and comprehension strategies in the Ministry of Education's (2003a) publication, Effective Literacy Practice in Years 1-4 and the Literacy Learning Progressions (Ministry of Education, 2010). For instance, Greaney (2002a) notes that the overriding drive for meaning in reading appears to ignore that specific word recognition skills are equally important.

There is a functional relationship between the stage on the instructional hierarchy and the choice of student response. This is a significantly different philosophy from the multiple cues method, wherein a student will be guided to self-discover the meaning or decoding of a word by drawing on predictions from prior knowledge, syntax, visual input, illustrations or story grammar (Ministry of Education, 2003a). Daly et al. (1996) conclude, by writing the following about linking what we know about the instructional hierarchy to reading interventions, "these procedures can be linked to the extensive knowledge base that exists for effective

reading instruction, improving our ability to make good instructional decisions for students on an individual basis" (p.383) by considering that prerequisite skills within the instructional hierarchy will enable the teachers to select intervention programmes that will make some fundamental changes to the regular way of responding to intervention. Hattie (2009) found that learning within an instructional hierarchy model indicates a moderate to strong effect size. What appears to emerge from the research is that struggling readers perform better in programmes wherein the amount of active student responding in decoding skills and oral reading of connected text are increased (Daly et al., 2005; Blachman et al., 2004). The connection between the use of the instructional hierarchy and the level of the student responding becomes of particular interest when one considers the implications of neglecting to instruct the alphabetic principle. Students who are disadvantaged by inadequate reading acquisition will find it very difficult to understand that written words represent spoken words, which in turn, will add to poor comprehension due to inaccurate word recognition (Snow et al., 1998 as cited in Blachman et al., 2004).

Delivering Small Group Interventions

By merging what is known about contemporary learning theories and simultaneously considering the impact of low literate cultural capital, more explicitly focused reading instruction can occur (Byrne, 2005 as cited in Tunmer et al., 2013; Tunmer & Nicholson, 2011, Daly et al., 1996). An important consideration will be to determine who will be implementing the intervention? The fact that interventions for struggling readers are most often given to teacher aides, who have limited educational backgrounds, is a contributing factor to problem readers falling further behind (Greaney, 2004). Elbaum Vaughn, Hughes and Moody (2000) found that one-on-one deliveries of interventions are not necessarily the most effective method of service delivery. Evidence from several meta-analyses found that small-group instruction could, in fact, be as effective as individual interventions (Burns, Riley-Tillman & VanDenHeyden, 2012, Foorman & Torgesen, 2001, National Reading Panel, 2000). Trained teacher aides or other specialist teachers generally administer tier 2 interventions. Denton et al. (2011) advises that tier 2 interventions be administered 2 to 5 times per week for 20 to 40 minutes, in addition to the regular classroom

programme. The recommended duration of interventions vary across the literature. What Works Clearing house (2014) recommends that tier 2 interventions be taken for a reasonable time before more intensive one-on-one support is considered (Denton et al., 2011).

Principles of effective early literacy interventions

Although a variety of intervention programmes are commercially available, it is important to know which elements should be included in an effective intervention package. Some programmes focus on individual support and others on small group instruction (Jennings, Schudt Caldwell & Lerner, 2010). It is important to select intervention programmes that observe the basic principles of good early literacy instruction (Daly et al., 2005). Stahl et al. (1998) recommend that a good early literacy programme should contain as many of the following principles as possible:

1. Be based on the alphabetic principle
2. Develop phonological awareness
3. Provide good pacing to avoid boredom
4. Develop a thorough grounding in letters
5. Provide sufficient practice in word reading
6. Development of automatic word recognition

Evidence informing small group interventions

The main response beyond the classroom programme in New Zealand is Reading Recovery (RR) and as a tier 3 RR delivers a targeted individual intervention. A trained teacher administers RR over a 12 to 20 week period. RR is also heavily based on a constructivist/ multiple cues philosophy. RR has strong international support as an effective evidence-based intervention for remediating reading problems (What Works Clearinghouse, 2014). Most often either RR teachers or other specialists or support staff provide tier 2 interventions. According to Burns et al. (2012), there are many existing models for delivering effective tier 2 supports in a small group format within the classroom context.

Evidence from studies using various intervention programmes at tier 2 seem to agree on the inclusion of phonemic awareness, letter-sound correspondences, blending sounds to read 'decodable' words, fluency word reading and high frequency word recognition (Denton et al., 2011). The Read Well programme (Santoro et al. (2006), was used by to supply additional tier 2 supports to a group of four English learners. This programme consists of 38 instructional units focusing on phonological awareness, phonics, fluency, vocabulary and comprehension. Santoro et al. (2011) employed a single case design to measure growth in oral reading fluency and phoneme segmentation fluency over an 11-week intervention. All four students indicated favourable increases in reading performance.

Similar evidence was obtained from an analogy-based phonics programme using phonics elements in a systematic way by employing spelling patterns, initial sounds and reading comprehension skills (White, 2005).

Blachman et al. (2004) developed a five-step intervention programme that attempted to alter the negative growth trajectory of a group of struggling second and third graders. Their treatment focused on an intensive, systematic and explicit programme "that emphasized the phonologic and orthographic connections in words and text-based reading" (p.454). The study consisted of a treatment group (n=37) who received the five-step programme over a period of one year with an additional one-year post intervention follow-up. The control group (n=32) received normal classroom instruction or any other additional programmes offered by the school. The treatment group indicated significant growth in word reading, non-word reading, reading fluency, passage reading and spelling. It was notable that the treatment group maintained all the gains made after one year. The control group showed slower growth over all measured categories (Blachman et al., 2004). Their study supported the literature highlighting the importance of providing more intensive instruction to older students, by incorporating explicit instruction in word recognition skills and repeated chances for text-based reading (Rashotte, MacPhee, & Torgesen., 2001; Torgesen et al., 2001).

Their experimental programme is divided into six levels and allows children to progress through the programme based on their decoding skills. Each level includes a

set of goals focusing on developing letter - sound correspondence as well as the reading and spelling of words with similar rhyme patterns. The entry level, for example, focuses on closed syllable words with selected digraphs and the sixth level concentrates on consonant +/-le/ rhyming patterns (e.g., candle or apple). Each session includes the five-step plan, which increases in complexity while building on the previous level. An outline of the steps includes:

1. Reviewing sound-symbol correspondence (2 to 3 minutes)
2. Teaching or review new decoding skills by manipulation of letter cards on a sound board (5 to 7 minutes)
3. Reviewing phonetically regular words and high frequency words (4 minutes)
4. Reading orally in context using trade books (10 minutes)
5. Writing and spelling words from earlier steps in the lesson (4 to 5 minutes)
6.

In response to this successful study, Blachman & Tangel (2008) developed the commercially available programme, The Road to Reading – a programme for preventing and remediating reading difficulties (2008). The programme's flexibility allows teachers "to provide scientifically based reading instruction to all students" (p.4). Blachman & Tangel (2008) point out that their programme has been "used with groups of varying sizes in a variety of settings, such as general education classrooms, remedial reading programmes, resource rooms and one-on-one tutoring" (p.4). The Road to Reading (Blachman & Tangel, 2008) incorporates several empirically validated components required in early literacy interventions. The focus is on explicit instruction in mastering letter-sound correspondences, blending and segmenting sounds, while developing accurate and fluent word recognition.

Summary

Children who fail to acquire reading skills beyond Year 4 will have difficulty coping with the demands of the curriculum as they move into higher year levels. Lyon (2001, as cited in Blachman et al., 2004) reminds us of the negative economic and emotional consequences many adults suffer due to poor literacy skills. The adverse effects of low literate cultural capital and other adverse environmental conditions in society might require a change in our philosophy of reading instruction.

Children who are disadvantaged by low literate cultural capital require a more environment- dependent method of instruction, due to their lack of exposure to literacy rich experiences through early childhood (Gunn et al., 1995; Byrne et al., 1997; Byrne, 2005 as cited in Tunmer et al., 2013). These students require a more explicit approach to early literacy instruction (Tunmer et al., 2013, Greaney, 2011). A greater need for diversification around the instructional methods followed by classroom teachers is necessary to improve outcomes for students from minority backgrounds. Differentiating instructional components according to the skills a student brings to the reading lesson appears to be a way forward. Tunmer and Nicholson (2011) assert that neither whole language nor phonics will solve the problem, rather a model is required that will allow teachers to draw from the key elements of both instructional models as indicated by the specific learning needs of young readers.

The current study

In the present study a modified version of the five-step intervention programme designed by Blachman et al. (2004) was introduced with a small group of Year 4 students in an urban primary school in South Auckland. The classroom teacher delivered the core intervention programme with the support of a trained teacher aide who administered 10-minutes of connected text reading with each participant in the intervention group three times per week. The intervention programme focused on phonological and orthographic connections in words and text-based reading. There is a strong research base supporting the use of programmes emphasising a link between phonological structure in words and the alphabetic principle to assist struggling readers (Vellutino, 1991). A secondary aim was to consider the feasibility of having the classroom teacher administer the intervention programme instead of a paraprofessional. The study consisted of making changes to the assessment and instructional practices used to identify and instruct a small group of students who are struggling to develop effective word reading skills.

The study was comprised of the following stages. First of all it utilized class wide-screening procedures to determine the extent of the early literacy skills with the objective of selecting participants requiring additional support in the form of a small group intervention. Participants were selected on the basis of the performance on the screening assessment. The ten lowest achieving students on the screening assessment were randomly assigned to either intervention group or control group. The class wide screening assessment was taken from the Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS) (Good & Kaminski, 2007). The second stage was the training of the classroom teacher by the researcher and the subsequent implementation of the five-step intervention programme over a 10-week period in the second term of the school year. A teacher aide was also trained by the researcher to administer the individual oral reading session as part of the five-step intervention programme. The study posed two hypotheses.

Hypothesis 1

The implementation of a programme focusing on the phonological and orthographic connections in words and connected-text reading will improve word recognition skills in students who are achieving in an at-risk category in a Year 4 classroom.

Hypothesis 2

Whether an instructional programme that applies direct instructional components at the acquisition level of the instructional hierarchy will promote accurate and fluent word reading skills and generalization of skills to decoding words in novel contexts.

Chapter 3

Methodology

Research Design

In the current study, a pre-test-intervention-post-test design was used to compare the gains made by a small group of struggling readers (intervention group), against an age and ability matched control group in the same classroom. The intervention group and control group were selected from the whole class based on their need for support, based on the Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS) (Good & Kaminski, 2007). The intervention group participated in an instructional programme following a modified version of a framework developed by Blachman et al (2004). The intervention programme focused on the explicit and systematic instruction in phonological and orthographic connections in words, combined with an additional 10-minute daily reading of connected text. The additional readings were administered by a trained teacher aide using, decodable (phonetically controlled) and regular texts (narrative and expository texts from trade books).

Consent was given by the school to allow the treatment programme to be taught in place of the regular classroom-reading programme. The intervention consisted of three- 25- minute sessions per week over a 10-week period. The classroom teacher administered the teaching sessions (25 minutes), while the teacher aide administered an additional 10-minute tutoring session with each student in the intervention group in addition to the teacher led small group session. The total time devoted to intervention programme per week was 2 hours and 15 minutes. This enabled the researcher to observe and measure the effects of introducing a differentiated instructional programme on a weekly basis across the 10-week intervention period.

The researcher provided the teacher with a 3-hour on-site training session prior to the start of the teaching sessions. The researcher modelled the use of the teaching materials and intervention procedures. In addition, the teacher was supplied with a copy of the intervention programme (Blachman & Tangel, 2008) and was asked to view a set of online video blogs demonstrating the five-step instructional

framework (Road to Reading Tips, 2011). It was expected that all five steps were included in each of the three weekly sessions.

The teacher aide was given three in-class training sessions by the researcher. These consisted of direct modelling and a demonstration of the reading materials and procedures during the first week of the intervention programme. Session one consisted of direct modelling with one student from the intervention group, session two followed with direct modelling with a different student from the intervention group. During session three the researcher observed the teacher aide administering the tutoring component to the intervention group. The monitoring of the treatment fidelity was achieved by keeping a daily evaluation and attendance logbook that was completed by the teacher and teacher aide on completion of each session. The researcher provided on-site supervision to the teacher and teacher aide on a weekly basis.

Setting and Participants

Setting

The study was undertaken in a decile 2, urban primary school in South Auckland with a roll of 398 students. The school has 49% Maori, 40% Pasifika, 3% Indian, 3% European and 3% South East Asian students. Schools in New Zealand are ranked on a scale from one to ten, according to their socio-economic location. Schools in the lowest socio-economic areas are rated decile one. Informed consent to conduct this study was received from the principal, teacher, teacher aide, parents and students. (Appendix B)

Participants

One Year 4 class was selected out of a group of four Year 3 and 4 classrooms. None of the students had any significant behavioural or sensory difficulties. There was no attrition in this study and the analyses are based on the original number of participants in the class-wide screening procedure. The intervention and control group consisted of five students. The students in both intervention and control group were native English speakers. The students in the control group received the core reading

instruction as prescribed in the literacy teaching policy of the school.

Table 1

Description of participants according to year level, age, gender and ethnic identity.

		Year level	*Age*	*Gender*	*Ethnicity*
Intervention	Student A	4	8 .9	Female	European
Group	Student B	4	8.3	Female	Maori
	Student C	4	8.7	Male	Samoan
	Student D	4	8.4	Male	Māori
	Student E	4	8.5	Male	Māori
Control	Student F	4	8.7	Female	Māori
group	Student G	4	8.7	Female	Māori
	Student H	4	8.9	Male	Māori
	Student I	4	8.4	Male	Māori
	Student J	4	9.0	Male	Māori

Materials and Intervention Procedures

Screening and selection of participants

The process of selecting participants consisted of administering the DIBELS tasks to all 22 students in the class. DIBELS (Good & Kaminski, 2007), Benchmark-Assessment and Progress Monitoring materials are empirically derived, criterion-referenced target scores that represent adequate reading progress (DIBELS Next Benchmark Goals and Composite Score (2010). DIBELS Benchmark Assessment tools can be used to determine the level of skill a student should have at a certain point in time within a specific grade level, as well as the time point by which a certain skill level should be attained (Galletly & Knight, 2006). Although the benchmark goals were derived from United States normative data, the small scale field trail of Schaughency and Suggate (2008) found significant statistical correlations in a Year 1

group with 178 participants from a diverse socio-economic community in three New Zealand primary schools in the lower South Island.

Galletly and Knight (2006), on the other hand, explored the use of DIBELS in an Australian context and found that the mid year and end of year cut points did not match with the Australian Year 1 scores. They suggested that this inconsistent alignment of cut points was attributed to the fact that Australian students started school one year later that their United States counterparts (Galletly & Knight, 2006). In the current study the DIBELS First Grade Benchmark Mid-Year assessment was used to administer the class wide screening. The mean age of United States first graders is usually between the age of six and seven years and second graders are usually between the age of seven and eight years. The mean age in the current classroom was 8.76 years with a standard deviation of 0.35. The classroom teacher expressed concern over the complexity of the DIBELS second grade Benchmark goals. The decision to use the DIBELS First Grade Benchmark Mid-Year assessment was based on the concern that an age equivalent assessment benchmark might increase the confounding effect of culturally unfamiliar material that might be unknown to the students in the study. The assessment tasks in the DIBELS Benchmark Mid-Year assessment were reviewed to detect potentially difficult words or concepts created by the differences between New Zealand and American English. Words that were considered to be problematic for the students were replaced by words considered to be more familiar to New Zealand children.

The results of the screening assessment were used to select an intervention group and a similar ability control group based on DIBELS screening data. Each of the participant's results on the DIBELS Benchmark Mid-Year assessment were compared with the expected levels of performance at the mid year point, according to the United States mid year benchmark goals and cut points. DIBELS benchmarks are goals representing a series of conditional probabilities for meeting future grade reading outcomes. Cut points are scores indicating the level of skill below which a student is unlikely to meet future grade reading outcomes. Students scoring at or above the benchmark goals have an 80 -90% chance of achieving later important reading outcomes. Students scoring below the cut points are unlikely to

(approximately 10-20 %) achieve subsequent goals without receiving additional support. And students who achieve below the cut points are considered well below the benchmark require intensive support.

Students with a score between the cut points and benchmark goal are regarded as requiring strategic support. A list of aggregated results, reflecting the three likely levels of support required in the classroom, was produced from the initial DIBELS Benchmark Mid-Year assessment. Students were randomly assigned to either intervention group or control group. The classroom teacher and the researcher allocated five students for the intervention group and five students for the control group based on the needs analysis derived from the list of aggregated DIBELS scores. Students indicating a need for strategic or intensive support were selected. The need for support was categorised into the following categories based on First Grade Benchmark Mid-Year Goals and Cut Points for Risk (DIBELS Next Benchmark Goals and Composite Score (2010):

At or above benchmark	=	likely to need core support
Below benchmark	=	likely to need strategic support
Well below benchmark	=	likely to need intensive support

The DIBELS measures that were used to calculate a DIBELS Composite Score for each student in the classroom culminated in a list that indicated the students with the highest need for support in early literacy. The DIBELS Composite Scores is a blend of multiple DIBELS scores and provides the best overall estimate of the early literacy skills and reading proficiency of a student (DIBELS Next Benchmark Goals and Composite Score (2010).

The screening assessments were administered by the researcher at the school, in a quiet location away from the classroom. Assessments took place over two successive days at the end of the first term. A further afternoon session was reserved to assess any students who were absent during the screening assessments. The researcher followed the assessment protocols as described in the DIBELS Administration and Scoring Guide (Good & Kaminski, 2007). To ensure assessment fidelity, the school gave consent for the researcher to use the classroom teacher’s release time to observe the assessment of two students using the DIBELS Assessment

Integrity Checklist for each DIBELS task as contained in the DIBELS Administration and Scoring Guide (Good & Kaminski, 2007). The researcher (examiner) and the classroom teacher (checker) discussed any potential inconsistencies or deviations from the standardised directions and scoring guidelines.

DIBELS First Grade Benchmark Mid-Year assessment consists of three sub-tests (a) Phoneme Segmentation Fluency (PSF), Nonsense Word Fluency (NWF) and DIBELS Oral Reading Fluency (DORF). The nonsense word fluency subtest further distinguishes between correct letter sounds in the nonsense word (CLS) and whole nonsense words read correctly (WRC).

Screening materials

DIBELS Phoneme Segmentation Fluency (PSF)

DIBELS Phoneme Segmentation Fluency (PSF) is a test of phonological awareness (Good & Kaminski, 2007). There is a reciprocal relationship between phonological awareness and early reading ability (Daly et al., 2005). Poor phonological awareness has also been sighted as common in children entering school from socially disadvantaged communities (Phillips & Lonigan, 2005 as cited in Hatcher et al., 2006). The researcher administered the PSF subtest orally. Words containing three and four phonemes were presented to each student using the standardised directions from the DIBELS Administration and Scoring Guide (Good & Kaminski, 2007). This subtest requires the student to produce the individual phonemes in each word verbally for one minute so as an example if the researcher said, “cat”, the student was required to repeat the phonemes in the word “cat”, /c/ /a/ /t/ and the number of phonemes correctly produced were added together to produce a final score.

In the context of the United States, PSF is administered from Mid Kindergarten to the beginning of First Grade (DIBELS Next Benchmark Goals and Composite Score, 2010). This agrees with studies suggesting that phonological awareness tasks are usually mastered by the age of seven years (Chafouleas et al., 1997 as cited in Daly et al., 2015). Assessing phonological awareness is not

considered general practice in New Zealand schools (Tunmer et al., 2013; Schaughency & Suggate, 2008). PSF is reported to have a .54 concurrent, criterion reliability with the Woodcock-Johnson Psycho-Educational Battery- Revised Readiness Cluster score (Good & Kaminski, 2002). The United States benchmark goal by the mid kindergarten to mid first grade is 35 to 45 and students scoring below this may require intensive or strategic support. Knight and Galletly (2006) developed interim local Queensland benchmark goals in their study of DIBELS subtests in an Australian context as part of a study on reading achievement. Their revised benchmark goal for PSF at mid Year 1 for at risk students was between 10 and 16 correct phonemes per minute, 16 to 22 for the some risk category and 22 and higher for the low risk category.

DIBELS Nonsense Word Fluency (NWF)

The use of nonsense words have been recognised as an effective strategy to assess the alphabetic principle, letter-sound correspondence and sound blending skills required for decoding words (Good & Kaminski, 2007; Schaughency & Suggate, 2008). Nonsense words cannot be read from memory and provide a good opportunity to assess a student's, decoding skills (Jennings et al., 2010). In the DIBELS Benchmark Mid-Year assessment for NWF the students were presented with a page containing 50 randomly ordered vowel consonant (VC) and consonant-vowel-consonant (CVC) words in large bold print. The students were asked to verbally read the individual letter sounds in each word or to simply read the whole nonsense word for a period of one minute. The researcher recorded the student's responses on the administration sheet, noting all correctly pronounced letter sounds (CLS) and correctly read whole nonsense words (WWR). The concurrent criterion-validity of the DIBELS NWF with the Woodcock-Johnson Psycho-Educational Battery-Revised Cluster score was .36 in January and .59 in February of the first grade (Good & Kaminski, 2007). The United States benchmark goal for NWF is 50 correct letter sounds per minutes by mid first grade. Good and Kaminski (2007) suggested that students scoring below 30 correct letter sounds per minutes by mid first grade will require intensive support. Knight and Galletly's (2006) interim local Queensland

benchmark goals for mid Year 1 NWF were between 32 and 45 correct letter sounds per minute.

DIBELS Oral Reading fluency (DORF)

Good and Kaminski (2002) describes DORF as a "standardised set of passages and administration procedures designed to (a) identify children who may need additional instructional support, and (b) monitor progress toward instructional goals" (p.30). Students are required to read a passage orally for one minute. Words that are incorrectly read, omitted, or substituted are scored as errors. Words that are self-corrected are not counted as errors. If a student hesitates on a word for more that three seconds the word is scored as an error. The number of words read correctly in the one-minute period constitutes the oral reading fluency rate. Good and Kiminski (2007) reported a high level of criterion-related validity for this procedure. Good and Jefferson, 1998 as cited in Good & Kaminski, 2007) reported that the criterion-related validity for oral reading fluency measures range from .52 to .92. DORF is administered from mid first grade through to third grade. The United States benchmark goal for mid first grade is 40 correctly read words per minute and 90 by end of first grade. Galletly and Knight's (2006) revised Australian oral reading fluency benchmark goals for Year 3 students, found students scoring between 48 and 63 correctly read words per minute to be in the at-risk category.

Intervention Materials and Procedures

The study was conducted over a 10-week instructional period during term two of the school year. Pre testing and the selection of participants was accomplished in the final two weeks of the first term. The intervention group consisted of five students, who were instructed by their classroom teacher for three consecutive small group sessions per week in the classroom as part of the teachers reading programme. The duration of each session was 25 minutes followed by a further ten minutes individual tutoring in oral reading fluency by a trained teacher aide. The control group

consisted of five students who were instructed by their classroom teacher using the core-reading programme.

Pre and Post Tests

Further pre-testing and post-testing measures were undertaken with each student selected for the intervention and control group. All pre and post testing was completed on a one-to-one basis in the same area used for administering the DIBELS Benchmark Mid Year assessment. The pre testing procedures took place in the first week of the second term. Some of the testing took place over more than one session due to a school trip and students absences. The following assessments were used to obtain pre and post testing data: The Road to Reading: Levels Assessment (Blachman & Tangel, 2008) and the Burt Word Reading Test (Gilmore, Croft & Reid, 1981).

Decoding Skills Assessment

The Road to Reading (Blachman & Tangel, 2008) programme includes a set of assessments consisting of seven levels designed to determine a specific set of decoding skills. This assessment was undertaken with each student on an individual basis. The assessment consisted of six student reading pages containing 20 words. Each individual page contains a specific set of phonics skills that aligns with the six instructional levels in the programme and the student was required to read the words from left to right. The assessment also had seven levels of assessment-recording forms. This was so the examiner could record notes regarding the progress of the student or to note any decoding errors. The levels in Blachman and Tangel's (2008) programme follow a progression of skills that advance from reading closed syllable words to more complex phonological and orthographic patterns (Appendix D). The progressions align with a continuum of difficulty for teaching letter sounds and simple regular words in most phonics instructional guidelines (Daly et al., 2015). An analysis of student prerequisite skills in word reading based on the levels assessments enabled

the researcher and classroom teacher to select an entry level for instructional planning. The raw scores of correctly read words on each of the six levels were recorded. The researcher and classroom teacher set 80% or 16 correct words out of the possible 20 words on each level assessment as the required benchmark

Word Reading

The Burt Word Reading Test (Gilmore, Croft, & Reid, 1981) was designed to measure word recognition skills. The test consists of 110 words printed on a test card in different font sizes. The words are graded in approximate order of difficulty. The current test is based on revised New Zealand age norms ranging from age 6.0 years to 12.11 years. The norms for the current test were revised in 1981 based on the original normative data published by the Scottish Council for Educational Research (Gilmore, Croft & Reid, 1981). Participants were asked to read the words on the test card from left to right. Testing was discontinued after ten consecutive errors. Students were asked if there were any other words on the test card that they could read before final discontinuation. Based on the norms for boys and girls, totalling correctly pronounced words enabled raw scores to be converted to an equivalent age band. The Burt Word Reading Test had a test-retest reliability of 0.97. The results provide an estimation of reading age in comparison the chronological age (for example, a raw score of 24 words falls within the 6.02 years to 6.08 years equivalent age band).

Control group

The control group received the core reading programme throughout the intervention period. A typical weekly reading programme for this group consisted of three guided reading sessions with the classroom teacher. The teacher used the Ready to Read book series that are supplied to each school by the Ministry of Education. The books are graded according nine levels arranged on a colour wheel. Each level increases in difficulty and is accompanied by a specific set of reading behaviours (Ministry of Education, 2015). Lessons focused on text introduction, discussions

about the text and some attention to text features. Students read the books in pairs followed by independent bookwork using teacher prepared book response type questions. During the guided reading sessions for the control group the teacher placed very little emphasis on directly instructing students in using or recognising the phonological or orthographic patterns in unfamiliar words. Student responses were made up of generalised literature based questions made by the classroom teacher. The use visual cues or making predictions from contextual sources, generally directed the course the reading sessions. Resorting to phonics knowledge was usually a last resort or totally incidental as dictated by a specific word at the point in time. Instructional settings consisted mostly of asking what the book is going to be about, or what do you think the difficult word might mean by looking at contextual cues or visual prompts.

Intervention group

The classroom teacher taught the intervention group for 10 weeks during the second term of the year. Sessions were organized over three successive days per week. Each teaching session followed the five-step plan in The Road to Reading (Blachman & Tangel, 2008). The steps in the teaching plan included (a) reviewing sound-symbol correspondences, (b) blending and segmenting sounds to develop decoding skills by using sound boards, (c) reviewing phonetically regular words and high frequency words (d) spelling words and writing a short sentence using earlier steps of the lesson (e) reading orally in context with the teacher aide. The duration of each session was approximately 25 minutes. Each student spent an additional 10 minutes reading orally in context with a teacher aide after the teacher session. The total instructional time was 17.5 hours. The programme consists of seven levels with specific teaching goals (Appendix C).

Teaching sessions were paced according to the student's skill level and rate of learning. Lesson planning and the number of words used during the word reading tasks were continuously adjusted to enable the students to become accustomed to the five step teaching sequence and the routines. To ensure a high level of engagement and interaction, the lessons were kept stimulating by focusing on vocabulary and using the multisensory features of the soundboards. The soundboards were used for

phoneme analysis and blending by manipulating the letters to form new words (Blachman & Tangel, 2008). Word cards, measuring 110mm x75mm with phonetically regular words and high frequency words were mixed and presented in various animated ways to ensure good pacing. In the beginning stages of the teaching sequence, particular note was taken to blend well-known words with less known words to ensure a higher level of success to counteract the tedium and possible boredom created by the constant repetition of difficult words. The teachings of the sessions was made part of the weekly reading rotation for the intervention group. An important aspect of the intervention included generating the sustainability of the teaching task in a regular classroom. Lessons were planned using a weekly planner following the five step teaching sequence (Appendix E). The time spent on each step was closely monitored and adjusted according to the particular needs of the students. The following section provides an overview of the five step teaching sequence. The classroom teacher taught steps one through four. And the teacher aide allocated a 10-minute oral reading practise selecting a variety of phonetically controlled texts and trade books suitable for the reading level of the particular student in step five.

The instructional sequence

Step 1. Reviewing sound-symbol correspondences:

Each session started with a quick review of sound symbol associations learned in previous lessons or the introduction of new sound-symbol correspondences (Blachman et al., 2004). The letters on the white index cards (110mm x 70mm) represented the sound the student was learning. The short vowels and other vowel combinations were printed in red. The consonants and consonant digraphs were printed in black.

Step 2. Teach and review new decoding skill

In this step each student was given a soundboard to put together letters, vowels groups and digraphs to create new words that follow a specific pattern. Letters printed on laminated plastic strips were fitted into the soundboards (see Figure 3). Each

lesson followed a sequence and routine, which was established before starting each session. The teacher made sure that the student knew the meaning of the new words and using her own soundboard, the teacher modelled the first word. In addition, the teacher continuously monitored the students as they added to their vocabulary and developed their knowledge of the sounds of the letters and words. Figure 1 shows an example of the soundboard that was used in the current study. The board (300 x 250 mm) consists of three horizontal sections. Consonants cards, in black are kept on the top section, while vowels and digraphs, in red are placed in the middle section. Newly formed words that are created are encoded on the bottom section. Phoneme sounding and blending are encouraged and modelled by the teacher.

Step 3. Reviewing phonetically regular words and high frequency words

Words were printed on white flash cards (110mmx70mm) and the goal in this step was to develop fluency in reading individual words. In step two, vowels were printed in red and consonants in black to enhance the practise of previously learned syllable patterns. A set of high frequency words were printed on a blue card with black printing were intermixed with the phonetically regular words on the same size flash cards. And the students were encouraged to be able to ‘instantly recall’ these words.

Step 4. Dictation

In this step students were expected to spell up to five words and write one dictated sentence containing words that were used in the previous steps (Blachman et al., 2004). The words were selected from the ones they had practised on the soundboard and from the high frequency word list. This step gave the teacher an opportunity to evaluate the progress of the students and make the necessary adjustments during the lessons over the next days of teaching.

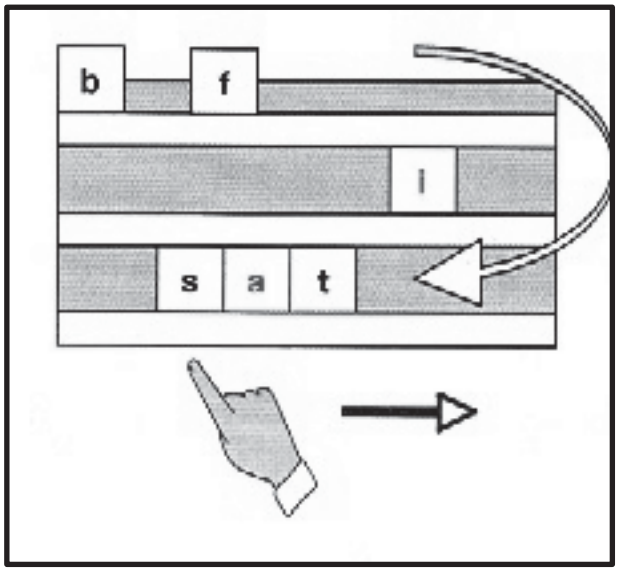

Figure 3. *Illustration of a soundboard used to practise phoneme analysis and blending by manipulating letter cards to make new words representing a syllable pattern (Blachman et al., 2004; Blachman & Tangel, 2008)*

Step 5. Read orally from connected text

This step was taught directly after the teacher lead session in the first four steps. Each student was rostered to have a 10-minute one-on-one reading practise session with the teacher aide. The teacher aide used an electronic timer on her iPhone to ensure that an equitable distribution of time was available for each student. The students read from various trade books that had words similar to words they had reviewed in previous steps. Each intervention week followed the same sequence. On day one the teacher aide introduced the text and spent a few minutes using a pre-reading strategy named, TELLS (Title, Examine-Look-Look – Setting). The student then read the text from the book with support from the teacher aide. On day two the teacher aide asked the student to read the same text, while the teacher aide provided necessary performance feedback to the reader. This involved giving feedback and asking the student to read the sentences again where they had errors. Day three involved the student reading the texts from an oral reading fluency probe generated by the researcher using a web based reading passage generator (Intervention Central, 2015). The texts were presented to the student and it was explained that feedback will be given on how accurately and quickly the text is read (See Appendix F). The teacher

aide used a one-minute countdown time on her iPhone to administer the reading fluency probe. After the reading the student received feedback. The teacher aide showed the amount of words read and asked the student to reread each sentence that contained an error or hesitation (Daly et al., 2015). Table 2 illustrates the five step teaching sequence Blachman et al (2004) developed.

Summary

This chapter described the research design for the current study. The study aim was to explain the implementation of a programme focusing on phonological and orthographic connections in words and connected reading to improve word recognition skills for students achieving in an at-risk category. The intervention was delivered inclusively. The classroom teacher and a teacher aide taught sessions based on explicit and systematic instructional methods in relation to the alphabetic principle using a five-step intervention plan. A class wide screening tool with criterion-referenced measures was utilized to select students to participate who required the most intensive support and the students who participated in the intervention group received 30 lessons with a total instructional time of 17.5 hours. Chapter 4 indicates the results of the study.

Table 2

Instructional activities include in weekly teaching sessions for the intervention group

	Session 1	Session 2	Session 3
Step 1 2/ 3 minutes	Review sound-symbol associations. Using a pack that contains sound cards. Introduce new sounds	Review sound-symbol associations. Using a pack that contains sound cards. Review new sounds	Review sound-symbol associations. Using a pack that contains sound cards. Review new sounds

Step 2 5 – 6 minutes	Each student uses individual soundboard (figure 1) to practise making words. Words vary depending on level being instructed (e.g. building words with final "e" pattern as in gate, mate or late. New word sequences selected for each day.	Each student uses individual soundboard (figure 1) to practise making words.	Each student uses individual soundboard (figure 1) to practise making words.
Step 3 5 minutes	Review Phonetically regular words and high frequency words – emphasis on fluency and extending vocabulary	Review Phonetically regular words and high frequency words – emphasis on fluency and extending vocabulary	Review Phonetically regular words and high frequency words – emphasis on fluency and extending vocabulary
Step 4 5 minutes	Dictation activity including 4/5 words and one short sentence (four to five words) that uses same phonetic pattern used in previous steps	Dictation activity including 4/5 words and one short sentence (four to five words) that uses same phonetic pattern used in previous steps	Dictation activity including 4/5 words and one short sentence (four to five words) that uses same phonetic pattern used in previous steps
Step 5 10 minutes with teacher aide	Read orally in context using narrative and expository text for fluency and comprehension using trade book	Read orally in context using narrative and expository text for fluency and comprehension using trade books	Read orally in context using narrative and expository text for fluency and comprehension using trade books

Chapter 4

Results

The purpose of this study was to investigate the effectiveness of a small group intervention for struggling readers in a Year 4 classroom. The intervention group and control group were selected from the whole class based on their performance on the Dynamic Indicators of Basic Early Literacy Skills 6th Edition (DIBELS) (Good & Kaminski, 2007). A pre-test-intervention-post-test design was established to compare the effects of the intervention programme over a 10-week period.

This chapter presents the results of the analysis initiated in answer to the two-fold hypotheses. First, that the implementation of a programme focusing on phonological and orthographic connections in words with connected-text reading will improve word recognition skills of struggling Year 4 students. Second, that an instructional programme, applying direct instructional components at the acquisition level will promote accurate and fluent word reading skills and additional generalization of word decoding in novel contexts.

The first section of this chapter describes the outcomes of the initial screening and selection process using the DIBELS First Grade Mid Year Benchmark assessment (Good & Kaminski, 2007). The second section of the chapter describes the analysis of the pre-test and post-test scores using non-parametric measures. The Mann-Whitney U test was selected to test for differences between the intervention and the control group at pre-test and post-test level.

Screening Procedures

Elliot, Lee and Tollefson (2001) point out that DIBELS "evaluate a set of early literacy skills identified in literature as directly related to later reading competence" (p.34). With this in mind the objective for the whole class screening involved selecting the participants for both the intervention and the control group who displayed the greatest need for support as indicated by the DIBELS First Grade benchmarks. The motivation to include students who are still struggling to acquire alphabetic coding skills at Year 4 was since they would be able to benefit more from the explicit and systematic instruction by learning skills based on phonics. The present study attempted to replicate some of the techniques Blachman et al. (2004) introduced in their intensive reading remediation study with a one-year follow up for second and third graders. The innovation in the present research study called for the intervention programme to be taught as part of the teachers' classroom reading programme and not as a withdrawal programme. The secondary aim called for the specific learning needs of the intervention group to be provided in an inclusive setting using a systematic and explicit approach rather than an instructional approach without

phonics that was used for the control group during the 10-week intervention period (Tunmer et al., 2013).

The skills measured were derived from the Dynamic Indicators of Basic Early Literacy Skills 6th Edition (Good & Kaminski, 2007). DIBELS First Grade measures were administered and compared with the DIBELS benchmarks and cut points for First Grade at a mid year point to establish the probable levels of instructional support across the whole class. The DIBELS Composite Score was applied to select the ten lowest achieving students. And by dividing the group equally, the participants were randomly assigned to either the intervention group or the control group. The DIBELS Composite Score is a blend of multiple DIBELS scores and provides the best overall estimate of a student's early literacy skills and reading proficiency (DIBELS Next Benchmark Goals and Composite Score (2010). Students who are at or above the DIBELS benchmark goal on the DIBELS Composite Score are most likely to achieve later important reading outcomes.

Table 3 shows the results for the DIBELS First Grade Mid Year assessment and Composite Scores for the 22 students in the Year 4 class. This illustrates the participant's scores on the DIBELS measures as well as the Composite Scores that were evaluated to determine the selection of the ten lowest performing students in the class. The names of the students were substituted with alphabet letters to safeguard their privacy and anonymity. Table 3 indicates the ten students achieving the lowest overall DIBELS Composite Scores. Table 4 shows the performance of the whole class, intervention group and control group in relation to the benchmarks goals and cut points.

The Composite Scores were calculated using a combination of DIBELS scores. The computation consists of adding DIBELS Nonsense Word Fluency (NWF), Whole Words Read (WWR) and DIBELS Oral Reading Fluency (DORF), consisting of Words Correct (WC), Accuracy (AC). The First Grade DIBELS Next Composite Score Worksheet was used to support easy computation guidelines (See Appendix G). The mean age in both intervention and control groups was 8.6 years (SD 0.24).

Table 3

Results for the DIBELS First Grade Mid Year measures and Composite Scores.

			NWF			DORF					
Student	PSF	NFS	CLS	WWR	NFS	WC	NFS	AC	NFS	CS	NFS
A (In)	42	S	34	9	S	49	S	74	S	142	S
B (In)	17	I	33	13	C	58	C	82	C	166	C
C (In)	36	S	33	11	S	48	C	92	C	178	C
D (In)	40	S	35	10	S	39	S	62	S	110	S
E (In)	33	S	23	1	I	43	S	86	C	141	S
F (Co)	38	S	46	11	S	49	S	86	C	180	C
G (Co)	45	C	49	11	S	35	S	69	S	133	S
H (Co)	51	C	40	14	C	44	C	93	C	184	C
I (Co)	27	S	27	11	S	43	S	86	C	155	S
J (Co)	38	C	25	15	S	28	S	82	C	130	S
K	71	C	17	20	S	122	C	98	C	257	C
L	51	C	54	1	C	99	C	95	C	246	C
M	57	C	25	24	C	114	C	98	C	261	C
N	50	C	41	3	S	95	C	98	C	237	C
O	57	C	46	8	C	65	C	90	C	199	C
P	73	C	6	46	S	93	C	90	C	225	C
Q	53	C	58	21	C	34	S	93	C	199	C
R	56	C	101	38	C	120	C	98	C	357	C
S	44	C	38	0	S	104	C	86	C	216	C
T	69	C	43	17	S	56	C	86	C	190	C
U	48	C	42	14	S	112	C	98	C	266	C
V	50	C	59	0	S	49	S	87	C	182	C

Note NFS = Need for support. PSF= Phoneme segmentation fluency. NWF = Nonsense word fluency. CLS, Correct letter sounds. WWR, Whole words correct. DORF = DIBELS oral reading fluency. WC = Words correct. AC = Accuracy. CS = Composite score. C= Core Support at or above benchmark. S = Strategic support below benchmark. (In) = Intervention group, (Co) = Control group.

Table 4 indicates the DIBELS Benchmark Goals and Cut Points in relation to the scores obtained by the intervention and control groups accordingly. DIBELS Phoneme Segmentation Fluency (PSF), while not a First Grade Mid Year assessment component, was added to illustrate the intervention group and control group's proficiency in phonological awareness (Good & Kaminski, 2001). Daly et al. (2005) mentioned that the National Reading Panel (2000) states that the skills of isolating sounds in words and then blending them together to form words are indispensable for future reading competence. Tunmer et al. (2013) also added that teachers in New Zealand are normally not required to measure phonological awareness, because the main focus in schools is on comprehension-enhancing strategies reinforced by the Literacy Learning Progressions (Ministry of Education, 2010). The class-wide screening found that the performance related to PSF was slightly above the

benchmark across the whole class. The First Grade PSF benchmark was 40 correctly named phonemes per minute with an at-risk cut point of 25 correctly named phonemes per minute. The mean class score for PSF was 47. 54, the intervention group mean score was 33.60 and 38.80 in the control group. Since the benchmark goals were measured at First Grade Mid Year point, this highlights the level of phonological awareness in a Year 4 classroom.The mean score for the DIBELS Nonsense Word Fluency (NWF) also falls between the DIBELS Benchmark Goal of 43 nonsense words read correctly in one minute and the Cut Point set at 33 nonsense words read correctly in one minute for the risk category. The DIBELS Oral Reading Fluency (DORF) as demonstrated in Table 4 indicates a lesser need for support as well as the Composite Scores.

Table 4

DIBELS Benchmark Goals and Cut Points for Risk in relation to the intervention and control groups

DIBELS Measures		DIBELS First Grade Mid-Year Benchmarks Goals and Cut Points for risk		Intervention Group n=5		Control Group n=5	
		Benchmark Goals	Cut Points	Mean	SD	Mean	SD
PSF		40	25	33.60	9.91	39.80	8.98
NWF	CLS	43	33	31.60	4.87	39.20	12.13
	WWR	8	3	8.80	4.60	12.4	1.94
DORF	WC	23	16	47.40	7.16	39.80	8.28
	AC	78	68	79.20	11.60	83.20	8.87
CS		130	100	147.0	26.2	156.40	25.32

Note: PSF = Phoneme segmentation fluency. NWF= Nonsense word fluency. CLS = Correct letter sounds. WWR, Whole words correct. DORF = DIBELS oral reading fluency. WC = Words correct. A = Accuracy. CS = Composite score.

A possible reason for this variance might be that the oral reading fluency passages were not as challenging as initially anticipated by the classroom teacher. Even so, the Composite Score provided a clear guideline for selecting the participants indicating the greatest need for support based on the DIBELS measures. The purpose of the class-wide screening procedure was to serve as the basis for differentiated instruction by identifying students who had a greater need for early literacy support. Table 5 illustrates the differences in means and standard deviations for DIBELS measures across the whole class, intervention group and control group.

Students in the intervention group as indicated by Table 5, performed noticeably lower on the selected DIBELS measures, falling within the need for strategic instructional support as indicated in Table 4.

Table 5

Means and standard deviations for DIBELS First Grade Mid Year assessment

DIBELS First Grade Mid Year Variables		Classroom n =22		Intervention Group n=5		Control Group n=5	
		Mean	SD	Mean	SD	Mean	SD
PSF		47.54	13.73	33.60	9.91	39.80	8.98
NWF	CLS	40.18	19.03	31.60	4.87	39.2	12.13
	WWR	13.54	11.45	8.80	4.60	12.4	1.94
DORF	WC	68.10	32.0	47.40	7.16	39.8	8.28
	AC	87.68	9.63	79.20	11.62	83.20	8.87
CS		197.90	57.45	147.40	26.20	156.40	25.32

Note. PSF = Phoneme segmentation fluency. NWF = Nonsense word fluency. CLS = Correct letter sounds. WWR = Whole words correct. DORF = DIBELS oral reading fluency. WC =Words correct. AC= Accuracy. CS =Composite score.

Organisation and analysis pre-test and post-test results

This section represents the results of the analysis carried out in response to the two research hypotheses. Measures were obtained from a set of word reading assessments adapted for use in the intervention programme (Blachman & Tangel, 2008). The Levels Assessments (LA) consisted of seven sub tests each containing 20 words for recording specific decoding skills (See Appendix E). The Levels Assessments are categorised according to common spelling patterns, each consisting of five words organised into rows of four, in bold font size. The words are generally arranged in random order with the exception of list one which starts with the first fifteen closed syllable words (sat, lip, hot, pet, fun) followed by five closed syllable words with the digraphs, /sh/, /ch/ and /-ck/ (back, shop, duck). The Levels Assessments (LA) served as both pre-test and post-test measures. Oral word reading errors were recorded on the assessment sheets for comparison at post test point for both intervention and control groups. The results of the Levels Assessments (LA) were processed by totalling raw scores out of a possible 20 words on each of the

seven Levels Assessments and noting any errors or non-words (mule read as “mile or mole” chime read as “chim”). A score of sixteen out of possible 20 words read correctly was accepted as the benchmark for each Levels Assessment (LA).

The Burt Word Reading Test (Gilmore et al., 1981) was also administered prior to the intervention programme.

Table 6 shows the means and standard deviations for the intervention group and control group at pre- and post test points. The pre-test and post-test raw score differences between all participants were calculated (See table 6). The comparisons between pre-test and post-test scores indicate significant development in several Levels Assessments over the 10-week intervention programme. The differences between pre-and post-test scores in Levels Assessments (LA) one and two display a negligible difference. This can be ascribed to the fact the intervention group achieved close to the prerequisite score of sixteen out of 20 correctly read words on Levels Assessment one and two. For example, the intervention groups mean score for Levels Assessment one was 16.20 (SD 4.55) and at the post-test point the same group recorded a mean of 18.80 (SD 1.64). The control group recorded a mean of 10.00 (SD 3.94) at the pre-test point with a mean score of 13.20 (SD 6.20) at the post-test position. The subsequent Levels Assessments indicated a more significant difference between pre- and post-test points, which could be related to the improved decoding abilities of the students and some noteworthy generalisations in terms of their decoding skills to other words that were not part of the intervention programme. The difference between the raw score for the Burt Word Reading Test for all participants was 9.80 at the pre-test point and 14.40 at the post-test point. For example, participants who scored inconsistently on phonetically regular words that were included in the Burt Word Reading Test in the intervention group recorded a more consistent gain in their decoding ability of such words at the post-test position.

Table 6 also shows the differences in scores on the Levels Assessment and Burt Word Reading Test within the intervention group and control group at the pre-test and post-test points. The difference between the pre-test and post-test on the Burt Word Reading Test for the intervention group was 10.2, whereas the control group showed a difference of 5.60. The means and standard deviations for the Burt Word Reading Test also confirmed some basic gains suggesting the students showed

improvement in their word decoding abilities. The mean raw score on the Burt Word Reading Test for the intervention group was 32.60 (SD 9.84) at the pre-test level and 42.80 (SD 11.26) after the 10-week intervention. The control group on the other hand obtained a mean raw score of 22.80 (SD 6.72) at the pre-test level and advanced to 28.40 (SD 5.03) over the same period in time (See Table 6).

Table 6

Means and Standard Deviations with Pre-and Post-test Differences

Variables	Intervention Group (n=5)		Control Group (n=5)		Intervention Pre-Post Test Group difference	Control Pre-Post Test Group Difference
	M	SD	M	SD		
LA 1 Pre-test	16.20	4.55	10.00	3.94		
LA 1 Post-test	18.80	1.64	13.20	3.56	2.60	3.2
LA 2 Pre-test	13.60	5.81	6.20	3.56		
LA 2 Post-test	16.40	3.65	9.80	2.68	2.80	3.6
LA 3 Pre-test	8.60	6.49	4.80	2.59		
LA 3 Post-test	16.60	3.43	7.40	1.52	8.00	2.6
LA 4 Pre-test	10.40	8.44	4.60	3.13		
LA 4 Post-test	18.80	1.15	9.00	4.23	8.4	4.4
LA 5 Pre-test	9.20	5.27	5.00	2.35		
LA 5 Post-test	16.40	3.21	6.40	3.46	7.2	1.4
LA 6 Pre-test	8.60	8.05	3.80	4.96		
LA 6 Post-test	13.60	7.25	4.20	3.63	5.00	-0.40
LA 7 Pre-test	8.80	7.05	2.00	1.87		
LA 7 Post-test	13.20	5.77	4.40	2.30	4.40	2.40
Burt Pre-test	32.60	9.84	22.80	6.72		
Burt Post-test	42.80	11.26	28.40	5.03	10.2	5.6

Note: LA = Levels Assessments. Burt = Burt Word Readings Test

Additional analyses of the results were conducted using the Mann-Whitney-U Test (Mann-Whitney, 1947 as cited in Nachar, 2008). Nachar (2008) states that the Mann-Whitney U test is " a non-parametric equivalent of the independent group *t* test, the test is used for testing the significance of difference between the scores of related two measurement sets" (p. 619). Since the distribution of data in the current study was not obtained from a homogeneous group, it required the use of a non-parametric equivalent of the independent group *t* test due to the small number of participants (Ozdemir & Altintas, 2015; Nachar, 2008).

The results of the Mann-Whitney- U Test on the pre-test and post-test scores for all of the variables are shown in Table 7 below. Variables are displayed in the seven Levels Assessments (LA's) as well as in the Burt Word Reading Test. The seven Levels Assessments (LA) are numerically listed from one through seven. The analyses of the *p* values indicate no significant difference between the intervention and control groups before the implementation of the intervention (See Table 7).

Table 7

Mann-Whitney U Test and ranking for all pre and post-test variables

	Intervention Group		Control Group			
Variables	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Mann-Whitney *U* value	*p* value
			Pre-test			
LA 1	7.10	35.50	3.90	19.50	4.50	.095
LA 2	7.30	36.50	3.70	18.50	3.50	.056
LA 3	6.40	32.00	4.60	23.00	8.00	.421
LA 4	6.60	33.00	4.40	22.00	7.00	.310
LA 5	6.50	32.50	4.50	22.50	7.50	.310
LA 6	6.40	32.00	4.60	23.00	8.00	.421
LA 7	7.20	36.00	3.80	19.00	4.00	.095
Burt	7.20	36.00	3.80	19.00	4.00	.095
			Post-test			
LA 1	7.70	38.50	3.30	16.50	1.50	.016
LA 2	7.60	38.00	3.40	17.00	2.00	.032
LA 3	8.00	40.00	3.00	15.00	0.00	.008
LA 4	8.00	40.00	3.00	15.00	0.00	.008
LA 5	8.00	40.00	3.00	15.00	0.00	.008
LA 6	7.20	36.00	3.80	19.00	4.00	.095
LA 7	7.60	38.00	3.40	17.00	2.00	.032
Burt	7.80	39.00	3.20	16.00	1.00	.016

*Note: * p<0 .05 LA = Levels Assessment. Burt = Burt Word Readings Test*

The results of the analysis of post-test levels indicate a significant difference in the Levels Assessments and the Burt Word Reading Test, in favour of the intervention group. These results demonstrate that there were significant gains in the Levels Assessments and Burt Word Reading Test following the implementation of the intervention programme.

The Mann-Whitney U Test results indicate that the decoding abilities of the intervention group were greater for six of the seven Levels Assessments (LA) compared to the control group. This suggests that the first hypothesis involving the

implementation of a programme focussing on phonological and orthographic connections in words and connected-text reading did help the students in the intervention group to improve their word recognition skills. The *p* values on Levels Assessments at the post-test position were significant in all Levels Assessments, except for Levels Assessment six. This assessment focused mainly on testing the student's skill level in terms of the decoding of vowels plus "r" words (car, far, horn, turn or fern). This was not included in the instructional objectives for the intervention group during the 10-week intervention programme. A visual inspection of the raw scores and student responses across the ten participants indicated small gains in general skills to decode the words used in Levels Assessment (LA) six. It is also worth noting that the post-test differences for the control group on Levels Assessment six were less that the pre-test score (See Table 6).

All participants scored close to the predetermined benchmark of sixteen out of 20 correctly read words on Levels Assessments one and two at the pre-test point, therefore they did not require the inclusion of their specific decoding skills during the 10-week intervention stage. The significant gains the students made in Levels Assessments one and two can possibly be attributed to the fact that the lower scoring outliers in both Levels Assessments at pre-test point scored higher at the post-test point as a result of the generalised gains the students made as a result of their participation in the intervention programme. In terms of Levels Assessment seven the intervention group also displayed significant gains although it was not directly part of their instructional goals. The Mann-Whitney U Test for Levels Assessment seven indicated that the decoding ability of the consonants plus "le" (little, puzzle, or simple) words were greater for the intervention group than the control group, $U = 2.000$, $p = .03$.

The majority of skills that formed part of the instructional learning goals during the intervention stage were in Levels Assessments three, four and five. The results show that the decoding abilities in Levels Assessments three, four, and five were greater with the intervention group than with the control group. There is a significant difference between the scores on these Levels Assessments in favour of the

intervention group (*See Table 7)*. A *U* value of 0.000 on the Mann-Whitney *U* Test indicates that all values in one group are higher than all the values in the other group.

Participant feedback

The classroom teacher working with the intervention group reported that she was very satisfied with the increasing word reading and decoding strategies that she observed in the participants. Once the group routines and the four-step procedure with the classroom teacher became more familiar to the students it also became easier for the teacher to focus on making sure that the students were performing the task more accurately. The classroom teacher also reported that she had no previous training in the use of more explicit and systematic reading instructional methods. She felt that her professional capacity to use the new format was limited, as she never received any professional development in phonics prior to the intervention.

Although she agreed to work with the researcher of the present study she felt rather skeptical after the initial training and modeling sessions. The early responses of five students to the introduction of the lesson structure were variable. One particular student's initial behavioral response to the using the soundboard proved rather challenging, but as the intervention reached the third week his outlook changed to such a level that he daily asked his teacher, "when are we going to do the words in the Road to Reading box?" The classroom teacher and the researcher witnessed increasing levels of enthusiasm in the intervention group. Observations showed that more and more successful attempts to reading difficult words were mastered by the participants. Skills acquired in using the soundboards in step two were readily transferred to decoding similar words in isolation and again in connected text with the teacher aides use of repeated reading. Good lesson pacing to prevented boredom as well as using opportunities to extend vocabulary ensured quality-learning time. One student remarked, " I like the sound boards and word cards, nobody showed me how to do this before". Another student commented on how she liked reading the word cards "faster and faster each day".

The teacher aide taking the 10-minute oral reading sessions with each student individually found that all five participants eagerly participated. The predictable routines and frequent opportunities to read and reread texts with the teacher aide provided a feeling of success for students who already showed early signs of becoming discouraged readers. The novelty created by using the oral reading fluency probes and one minute electronic countdown timer allowed the participants to attempt a rereading of the same text in order to achieve a higher number of correctly read words. This form of repeated readings are also well documented in literature as being effective with a large range of students. Daly et al, (2005) add that repeated reading "is perhaps the purest form of 'practice make perfect' model of enhancing reading fluency" (p.89). The teacher aide remarked that she found presenting the fluency probes to the participants using a one-minute timed reading procedure as extremely motivating for the students. Her comment to the researcher was " I can't see why this method is not used in more classroom". She described the process as adding structure and clarity to her sessions. The teacher aide added that the "students were motivated to read texts that was not filled up with difficult names and totally unknown vocabulary".

The overall feedback from participants appear to endorse current literature supporting a move to making reading instruction more differentiated and accessible for students disadvantaged by factors created by low literate cultural capital or cognitive constraints that can be bridged by providing clear and targeted reading instruction, freed from the archaic grip of constructivism. Feldora (2014) eloquently states that the teachers ability "to provide explicit, systematic and appropriately sequenced instruction in phonics is necessary for meeting the needs of struggling readers" (p.28). This is similarly echoed by New Zealand advocates calling for a stop to using methods that have been rejected by the international scientific community for several decades (Greaney, 2011).

Summary

On six of the seven Levels Assessments, the results indicate that the intervention group gained significantly better results compared with the control group in response to the first hypothesis. In terms of the second hypothesis, it is supported by the gain in results and improved performance of the intervention group on the Burt Word Reading Test (Gilmore et al., 1981). The intervention group outperformed the control group in their ability to decode unknown words, which suggests that the intervention programme's focus on phonological and orthographic connections in words proved to be a successful instructional method for Year 4 students who were still struggling to acquire accurate and fluent word reading skills.

Chapter 5

Discussion

General Discussion

The purpose of this study was to investigate the effectiveness of a small group intervention for struggling readers in a Year 4 classroom. Research confirms that students who have not acquired sufficient word-level skills by second and third grade risk struggling with reading skills for the remainder of their schooling years and beyond (Blachman et al., 2004, Wren, 2000). The prominence of explicit instruction in accurate and fluent word reading skills is complicated in schools in New Zealand. This is due to certain complexities and contradictions that exist between the national reading policies and the findings of current international research (Greaney, 2011; Tunmer et al., 2013; Tunmer & Nicholson, 2011).

The study set out to determine if an explicit and systematic reading programme will show accelerated gains in word reading skills compared with the conventional school approach to reading instruction based on the multiple-cues method. This chapter presents a discussion of the results in relation to previous studies and the literature supporting the findings. The limitations of the present study are considered along with implications for future practice. The findings indicate that the intervention group outperformed the control group on a set of curriculum-based measures that constituted the learning goals of the intervention programme.

The present study centers around two hypotheses, first, the implementation of a programme highlighting the phonological and orthographic connections of words and connected-text reading will help readers in Year 4 who are struggling learning to read improve their word recognition skills. And second an instructional programme that applies direct instructional components at the acquisition level will promote accurate and fluent word reading and generalisation of skills in terms of decoding words in novel contexts. The findings suggest that the intervention group that participated in the five-step instructional framework that was originally designed by

Blachman et al. (2004) showed significant gains in word reading skills over the age and ability matched control group in the same classroom. The results further indicate some generalisation effects in word recognition in favour of the intervention group. This is based on the results of the Burt Word Reading Test. It suggests that there is a significant difference between the participants in favour of the intervention group (Gilmore et al., 1981).

There are many factors that can influence the acquisition of word reading skills. The component model of reading proposed by Aaron, Joshi and Bentum (2008, as cited in Tunmer & Chapman, 2012) provides the theoretical basis to understand the reading problems of the participants. The component model of reading proposes that reading is influenced by two overarching cognitive components, those associated with direct causes, also referred to as proximal causes, and other factors that correspond with psychological and ecological dimensions. Underlying this theoretical basis is the assumption that the acquisition of reading skills is reliant upon acquiring phonemic awareness that will allow spelling-sound correspondences to be formed (Juel et al., 1986). So in regard to the component model of reading it was surmised that the participants indicated skill deficits in two domains. The first domain indicated the low level of phonological awareness of the participants, as described in the DIBELS Phoneme segmentation fluency and DIBELS nonsense word reading fluency assessments (Good & Kaminski, 2007). Secondly, the ecological influences that affected the participants related to their low literate cultural capital, which in turn affected their low general reading achievements and DIBELS First Grade screening assessments that were reviewed and evaluated during the selection process. This was however not a main focus in the present study

To find a possible solution, the present study investigated an alternative instructional approach to assist with the challenge associated with students who have low reading capability and achievement, which most teachers who teach in the lower decile schools across New Zealand encounter every day. Moreover it is not uncommon to teach students in Year 4 and beyond, who are still struggling to acquire fundamental word reading skills. The origins of the current reading achievement dilemma are deeply rooted in social and political contexts within educational policy

structures (Nicholson, 2002, as cited in Adams & Ryan, 2002). Greaney (2004) subsequently reports the consequences of archaic psycholinguistic and pure constructivist frameworks that are still sustaining the New Zealand reading instruction philosophy. This philosophy confirms the notion that learning to read can occur merely in print rich environments where there is not a need for "explicitly teaching skills (like phonics) and certainly not outside the context of real reading" (p.53).

An abundance of evidence and debate in the literature exists regarding New Zealand's 'gap' between high and low performing students in the area of literacy (Chapman, Tunmer & Prochnow, 2001; Greaney, 2004; Ministry of Education, 2011; Tunmer et al., 2013; Tunmer, Chapman & Prochnow, 2006). Evidence also suggests that the developmental gridlock seems to exist mostly in Maori and Pasifika populations. The reasons for this concentration of low reading performance have been well documented. In their emergent literacy research synthesis, Gunn et al, (1995) showed how parental attitudes can have a negative impact in terms of the development of early literacy. Social expectations and the amount of worth assigned to becoming literate does have an influence on the future prospects of young children in terms of becoming proficient readers. Even so, Lindo (2014), in a study on family background as a predictor for reading comprehension performance, cautions the over emphasis on viewing reading acquisition failures in low socio-economic populations as the only contributing factor. It could be more practical and realistic to focus attention on differentiated instruction taking the individual differences of the students into account and adjusting their instruction accordingly.

The control group in the present study resembled a typical New Zealand reading instructional environment, with existing reading acquisition concerns as outlined previously. The results of the whole class screening using DIBELS (Good & Kaminski, 2007) indicated that the students in the current classroom only performed marginally better, above the United States first grade benchmark goals. The significance here in the present study is that the students' mean age of 8.6 years was well above the average age of a typical United States first grader of approximately six years of age.

The school where the present study was conducted followed a reading policy grounded in a predominantly constructive approach. The reading instruction for the control group was from a book experience perspective. Learning intentions and weekly reading plans concentrated on generalised discussions about the text. Attention to word level skills occurred only incidentally as it occurred in the text. Although this approach is sufficient for a large majority of children, children who are more dependent on direct instruction, due to their limited life experience, do not get the best out of a mainly book experience driven instruction (Tunmer et al., 2013).

Tunmer et al. (2013) state the identification of specific learning requires acknowledgement of the "amount of reading related knowledge, skills and experiences of the literate cultural capital children bring to the classroom" and should be taken into consideration to teach children from diverse backgrounds. To counter the effects of reading related variables, Tunmer et al, (2013) proposed two strategies. First, they recommended that fundamental changes should be initiated to increase the level of regular classroom literacy and secondly to provide assessment in constrained skills to enable more accurate differentiation based on specific learning needs. Word recognition is a developmental process continuing through a series of phases (Ehri, 2005, as cited in Bursuck & Damer, 2011; Spear-Swerling, 2011; Wren, 2000). As a reader progresses through various developmental phases, word recognition becomes automatic and secures words in long-term memory (Bursuck & Damer, 2011). This requires a more explicit approach to planning and delivering direct instruction in word reading skills. For example, assessing phonological awareness skills and using the results as a basis for planning to deliver direct instructional strategies, as in the present study as opposed to following more generalised techniques as dictated by a whole language approach (Tunmer et al., 2013; Daly et al., 1996). So, in order to make fundamental changes to improve classroom literacy, the first principle is to distinguish between the literacy related skills students possess before the reading instruction is planned and delivered. This is grounded in the conceptual models for theories of learning to read (Byrne et al., 1997; Byrne, 2005 as cited in Tunmer et al., 2013).

To this end the current study experimented by implementing two fundamentally distinctive strategies in the context of a mainstream Year 4 classroom

in New Zealand. DIBELS (Good & Kaminski, 2007) was elected to assess and identify struggling readers due to the predictive validity it has in establishing early reading problems (Gofferda & Diperna, 2009). DIBELS was administered as a class-wide screening tool to determine achievement on a set of constrained skills (phonological awareness, alphabetic coding skills and fluency in word recognition) identified in the literature as essential prerequisites in terms of acquiring basic word recognition skills. So the hypothesis in the present study is that students who have not been able to acquire sufficient word reading skills also live in home environments where they are likely to experience low literate cultural capital, and will benefit from a reading programme that emphasises explicit teaching in phonological and orthographic connections in words.

Many students who still struggle to read by Year 4 and onwards and who are not eligible for Reading Recovery due to their age or who were discontinued from Reading Recovery in earlier year levels pose a severe problem for classroom teachers. Customarily in this situation, the most typical approach is to refer the student to Resource Teachers of Literacy (Greaney, 2002b). Another choice is to refer the student to Resource Teachers of Learning and Behaviour (RTLB) who provide one on one or targeted small group interventions with a RTLB trained teacher aide. Usually, teacher aides do not have any professional training in reading instruction. There is growing evidence based reporting that the amount of teacher knowledge in relation to evidence based reading instruction does make a positive difference in helping struggling readers (Piasta et al., 2009). Hence the motivation in the present study is to have the classroom teacher administer the reading intervention with the intervention group. Unfortunately, the teaching of phonological-based instruction is either discouraged or undervalued as many of the professionals employed to support teachers base their interventions on mainly whole language or constructivist approaches (Greaney, 2002a). RTLB interventions tend to promote more generalist or whole language strategies, such as reciprocal reading, cooperative learning strategies or the Hei Awhiawhi Tamariki ki to Panui Pukapuka (HPP) (Ministry of Education 2015d). Daly et al, (1996) explain that such interventions focus on applying “skills across contexts, but does not explicitly intervene to promote accuracy or fluency” (p.273). One could argue that whole language interventions do not focus on the source

of the problem, namely that struggling readers do not have good connections between phonological structures and the alphabetic principles (Blachman et al., 2004, Hatcher et al., 2006). The present study emphasizes the direct instructional components, wherein skills are directly instructed through modelling, prompting and demonstrating. This re-established the opportunity for students with low phonological awareness skills and poor decoding skills to improve their skills, the ones that they could have been acquired in the first three years of formal schooling.

The results of the analysis indicated that the instructional components of modelling, demonstrating, prompting and cueing used in the five step instructional sequence enabled the intervention group to demonstrate and show more generalised skill transfers in the Burt Word Reading Test and Levels Assessments that were not part of the instructional goals during the 10–week intervention programme. Daly et al, (1997) emphasise and reiterate that, “academic skills require a sequence of instructional activities that build upon one another to increase response rates in the presence of curricular materials” (p. 556). The intervention group received an instructional programme that increased the rate of opportunities for students to orally respond and receive feedback across all five instructional steps. Steps one to four provide multiple opportunities for each student to respond to word level skills. If a student misread or misspelt a phonetically regular word or high frequency word after modelling and demonstrating, further possibilities are provided during the connected text reading and dictation where words and texts are selected that include the same words as in the preceding instructional steps. The instructional steps for the intervention group corresponded to the acquisition stage of the instructional hierarchy (Haring et al., as cited in Daly et al., 1996). Although it was possible for some participants to read some of the phonetically regular words in the various instructional steps, responses were generally slow with frequent error patterns. Daly et al. (2015) point out that words like these are not in the student’s response repertoire and that extra teacher effort to facilitate more opportunities for accurate responses will lead to the skill becoming more fluent. This was observable in the five participants and it soon became necessary to increase the number of words spanning the same phonological and orthographic pattern. Although the Levels Assessments were not time-bound it was noticeable that students attempted reading the words in the Levels

Assessment at a more fluent pace at the post-test point. For instance, the instructional sessions on reading silent “e” words (like, date, chime, cute, mute) had frequent mispronunciations or guessing by the students due to a lack of skill to read words with similar orthographic and sound patterns. Words that posed particular problems were included over the next two to three days of instruction with frequent demonstrations by the teacher in terms of reading them correctly. This phenomenon is defined by Haring et al., 1978, as cited in Daly et al., 1996) as “the period between the first appearance of the desired behaviour and the reasonably accurate performance of the behaviour” (p. 375). Daly et al. (1996) also refer to this as the inability to accurately decode a word with a newly acquired sound pattern within a curriculum context. The preferred strategies recommended to improve accuracy are modelling, demonstrating, prompting and cueing (Daly et al., 1996).

The control group’s instruction on the other hand was constructed according to the expected school policy prescribing reading instructional expectations. Texts were selected from the ‘Ready to Read’ series and other Ministry of Education resources already in the school. Guided reading sessions with the classroom teacher consisted of strategies from the Language Learning Progressions (Ministry of Education, 2010) and the Effective Literacy Practice in Years 1 – 4 (Ministry of Education, 2003a). Lesson planning as supported by the school policy requires teachers to use the strategies from the multiple cues model for the construction of meaning as illustrated in Figure 5 below.

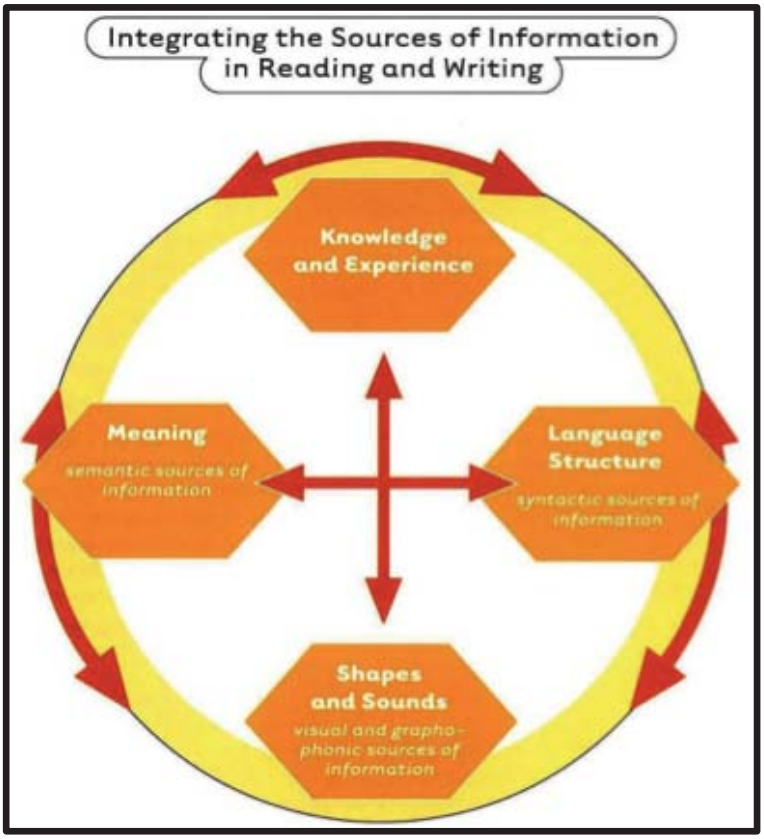

Figure 4. *Integrating the sources of information in reading and writing (Ministry of Education, 2003a)*

The multiple cues model as illustrated in Figure 5, has been subject to strong criticism in the international scientific community due to its over-focus on using information from many sources to gain word level meaning instead of using phonological information as primary source for early readers (Pressley, 2006, as cited in Tunmer et al., 2013). These instructional techniques do not supply sufficient explicit word level decoding skills for students with low skill levels in early literacy as illustrated by the results obtained from the DIBLES (Good & Kaminski, 2007) screening assessments.

Lessons for the control group focussed on environmental prior knowledge that was sometimes assumed or not wilfully factored into teacher planning. This created an additional problem for most of the control group as their lack of prior knowledge of the selected texts limited their ability to use many of the multiple cues strategies centred on knowledge and experience. In reality many of the participants in the control group did come from low-socio economic backgrounds where reading related knowledge, skills and experiences were in all probability limited. Instructional sessions that focus on demonstrating reading skills across multiple settings as done during a core programme using a multiple cues or mainly constructivist approach tends to loose students who are functioning lower on the instructional hierarchy (Daly et al., 2005; Daly et al., 1996). This is supported by findings of Juel and Midden-Cupp (2000, as cited in Tunmer et al., 2013). They propose that a multiple cues approach is not suitable for students who are environmentally dependent due to the effects of low literate cultural capital.

The intervention group in the present study received an instructional programme with a higher emphasis on explicitly teaching some phonological and orthographic patterns in words. Vocabulary and comprehension was expended by

introducing new words in insolation and at time within carefully selected texts. The results of the present study show that the intervention group made more gains in their ability to decode unfamiliar words using the phonological patterns taught during the intervention.

Limitations

Although the results support the two-fold hypotheses, there are several limitations to the present study. The primary limitation was the small sample size, which potentially affected the statistical power of the results. The use of non-parametric tools did however help to provide some degree statistical power to the outcomes. The small sample size did affect the validity and generalised effects of the study and the measures obtained from the Burt Word Reading Test has to be interpreted with caution. The reality of conducting this type of investigation in a single classroom with a busy classroom teacher has to be considered when interpreting the results. The objective was to research an alternative approach for a classroom teacher to work within a small group context with struggling readers inside their own classroom. The standard procedure in the current school would have been to either use paraprofessionals or referrals to outside agencies to work with the classroom teacher to build a viable intervention.

Although the intervention was conducted with relatively high intervention fidelity, the classroom teacher did experience normal distractions and classroom management aspects during the 25 minutes teaching time. While the collaborative management of the instructional delivery between the classroom teacher and the researcher was beneficial for the classroom teacher’s planning it limited the effectiveness of the study. This limitation was indirectly created by the additional focus time the intervention group received in terms of time and intensity of instruction. The additional time and resourcing provided thus appear to affect the gains made by the intervention group over the control group. It is also important to recognize that the intervention group obtained higher mean scores on many of the

levels assessments (LA) as well as the Burt Word Reading test at pretest position. This inadvertently suggests that he intervention group were already achieving higher results prior to the intervention and would subsequently end with enhanced result over the control group at posttest position. A resolution to this challenge could have been addressed by subjecting the control group to the same intervention over a 10-week period and thereafter compare gains. This was unfortunately not possible within the scope of the present study. A strengthening component to the study would have been a longer intervention period of 25 weeks or a follow up study to track the growth in the intervention group over time. The classroom teacher's feedback indicates that the intervention had a high level of acceptability. This was supported by the remarks of the teacher aide and willingness of the students to continue with the programme in the following term.

Implications for future practice

The present study accelerated the word reading skills of a small group of participants using an evidence-based framework incorporating several effective principles identified in literature. Developing phonological awareness, building on the alphabetic principle and providing thorough practice in word reading are principles imploring to be integrated in reading programmes. With some minor modifications the five-step programme can be included in a classroom and be taught by the classroom teacher. Although the programme is not a complete reading programme it can be used alongside current programmes. A noted restriction in many New Zealand schools are the lack of decodable books or basal readers that can be used to assist fluency and comprehension in students from disadvantaged backgrounds who do not have the required life experiences to fully benefit from all text while they are developing early literacy skills at higher year levels. The programme provides a practical solution to including children with learning difficulties or who have missed out on essential developmental phases in word reading skills.

Conclusion

This study considered an alternative approach to a longstanding and problematic issue regarding the fundamental way in which teachers teach reading in

primary schools. Although the study briefly affected a micro reading environment in a single Year 4 classroom with some successful results it is not the complete answer to the current concerns with New Zealand's literacy strategy. The Ministry of Education (2011) in many ways provided the opening line for future researchers by declaring that the only way we can respond effectively to varying student needs is to provide equitable outcomes for all students. Lifting restrictive policies endured for many decades will pave a way forward. This study expresses the hope that further research and actions will be initiated to support a swifter move towards a balanced reading instruction for all students based on their specific needs.

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Appendix A

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

8 August 2014

Arthur Bisset
1 Sergeants Way
CLARKS BEACH 2122

Dear Arthur

Re: A Change in Instructional Philosophy: The Road to Effective Small Group Interventions for Struggling Readers

Thank you for your Low Risk Notification which was received on 8 August 2014.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

J. O'Neill

John G O'Neill (Professor)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Dr Hal Jackson
Institute of Education
PN500

Assoc Prof Sally Hansen, Director
Institute of Education
PN500

Dr Keith Greaney
Institute of Education
PN500

Mrs Roseanne MacGillivray
Institute of Education
PN500

Appendix B

Year 4 Literacy Project

SCHOOL INFORMATION SHEET

Researcher's Introduction

My name is Arthur Bisset and I am completing my Master of Educational Psychology degree with Massey University in 2015. My thesis research plan is to explore the value of introducing an alternative literacy teaching approach for 4 children who might normally be considered for referrals to other support services due to literacy learning difficulties.

Project description and Invitation

Students participating in this research project will be individually assessed using an assessment of early literacy skills considered to be essential for developing competence in reading. A small group of children will be selected in collaboration with the classroom teacher, using the results from the assessments.
The alternative teaching approach will consist of daily sessions administered by the classroom teacher and teacher aide. Daily sessions will be planned collaboratively between the classroom teacher and me based on important skills needed for early literacy acquisition. Weekly measures of word recognition skills, oral reading fluency and spelling will be taken to measure progress on the skills.

Participant Identification and Recruitment

The research will be conducted with children in Year 4, who have been identified as at risk according to their performance on the screening process. The classroom teacher and I will collaborate on making the most suitable selection for the intervention group. The intervention group will consist of up to 6 children. The project will last for the 10 weeks of Term 2. It is not anticipated that there will be any risk or discomfort for the participants. Participants may be withdrawn from the study at any stage.

Project Procedures

The classroom teacher will instruct the students in the intervention group for up to 20 minutes three times per week for 10 weeks. An assigned teacher aide will take up to three sessions concurrently with the intervention group to provide supplementary skill practice. The teacher aide will be trained by me and observed for the duration of the project.

Data Management

All identifying information, including that of participating children, teachers, teacher aides and the school will be kept strictly confidential. All data collected will be placed in a numerical system to eliminate participant identification. Data will be stored until such time as it is destroyed. The findings of the project will not identify any individual or school.

Participants' Rights

You are under no obligation to accept this invitation to participate in the study. If you decide to participate, you have the right to:

- Withdraw from the study
- Ask any question about the project at any time during your involvement.
- Be given access to a summary of the findings of the project upon conclusion

Project Contacts

If you have any questions about this project please feel free to contact my supervisors or myself.

Contact details below.

Student researcher: Arthur Bisset, phone 027 666 3206, email a.bisset@manurewaeast.school.nz

Primary Supervisor: Professor James Chapman
Instituted of Education
Massey University
Ph: 0800 MASSEY
j.chapman@massey.ac.nz

Committee Approval Statement

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of the research.

If you have any concerns about the conduct of this research that you wish to raise with someone other that the researcher, please contact Professor John O'Neill, Director (Research Ethics), telephone 06 350 5249, email humanethics@massey.ac.nz

Year 4 Literacy Project

Year 4 Literacy Project

TEACHER INFORMATION SHEET

Year 4 Literacy Project

SCHOOL INFORMATION SHEET

Researcher's Introduction

My name is Arthur Bisset and I am completing my Master of Educational Psychology degree with Massey University in 2015. My thesis research plan is to explore the value of introducing an alternative literacy teaching approach for 4 children who might normally be considered for referrals to other support services due to literacy learning difficulties.

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The alternative teaching approach will consist of daily sessions administered by the classroom teacher and teacher aide. Daily sessions will be planned collaboratively between the classroom teacher and me based on important skills needed for early literacy acquisition. Weekly measures of word recognition skills, oral reading fluency and spelling will be taken to measure progress on the skills.

Participant Identification and Recruitment

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Project Procedures

The classroom teacher will instruct the students in the intervention group for up to 20 minutes three times per week for 10 weeks. An assigned teacher aide will take up to

three sessions concurrently with the intervention group to provide supplementary skill practice. The teacher aide will be trained by me and observed for the duration of the project.

Data Management

All identifying information, including that of participating children, teachers, teacher aides and the school will be kept strictly confidential. All data collected will be placed in a numerical system to eliminate participant identification. Data will be stored until such time as it is destroyed. The findings of the project will not identify any individual or school.

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Contact details below.

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Primary Supervisor: Professor James Chapman
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Ph: 0800 MASSEY
j.chapman@massey.ac.nz

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Year 4 Literacy Project

TEACHER CONSENT

- I have read the Information Sheet and have had the details of the professional development project, and what is required of me, explained to me. Any questions have been answered to my satisfaction, and I understand that I may ask questions at any time.
- I give my consent to the graduate student Arthur Bisset (Massey University) to carry out the project requirements in my class.

Signed: _____

Full Name: _____

Date:_____

Year 4 Literacy Project
Intervention Group

PARENT INFORMATION SHEET

Researcher's Introduction
My name is Arthur Bisset and I am completing my Master of Educational Psychology degree with Massey University in 2015. My thesis research plan is to explore the value of introducing extra teaching activities shown by research to be beneficial for children who struggle with reading.

Project description and Invitation

We would like to invite your child to be part of this project. My initial assessment and collaboration with the classroom teacher has lead to your child's selection. Your child's participation in the project will help us to determine the value of using alternative methods to help students who require more intensive support in early literacy by their teachers. If you don't want your child to be part of this project there will be no effect on your child's teaching or learning.

Children in the intervention group will be taught by their classroom teacher for up to 20 minutes three times per week for the duration of the project in term 2 (i.e.10 weeks). An assigned teacher aide will take up to three sessions concurrently with the intervention group to provide supplementary skill practice. The teacher aide will be trained by the researcher and monitored by the researcher and classroom teacher for the duration of the project. In addition to this the researcher or assigned research assistant will take weekly assessment measures with each child to collect data on the effectiveness of the teaching programme. It is not anticipated that there will be any risk or discomfort for the participants. Participants may be withdrawn from the study at any stage

We would like you to talk to your child about this project and if you are both happy for your child to participate in the project, I would like you to sign the attached form and send it back to the school.

Data Management

All identifying information, including that of participating children, teachers, teacher aides and the school will be kept strictly confidential. All data collected will be placed in a numerical system to eliminate participant identification. Data will be stored until such time as it is destroyed. The findings of the project will not identify any individual or school.

Participants' Rights

You are under no obligation to accept this invitation to participate in the study. If you decide to participate, you have the right to:

- Withdraw from the study
- Ask any question about the project at any time during your involvement
- Be given access to a summary of the findings of the project upon conclusion

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Year 4 Literacy Project
INTERVENTION GROUP

CONSENT FORM FOR PARENTS

- I have read the Information Sheet and have had the details of the project explained to me. Any questions have been answered to my satisfaction, and I understand that I may ask questions at any time.
- I understand that my child might be selected to participate in the small group that will be taught by the classroom teacher under the supervision and guidance of the researcher during term 2.
- I agree / do not agree to my child participating in this project under the conditions set out in the Information Sheet. (Please circle choice)

Signature:	**Date:**
Full name (printed):	**Relationship to child:**
Child's name:	**Child's date of birth:**

Year 4 Literacy Project
Literacy Screening Assessments

PARENT INFORMATION SHEET

Researcher's Introduction
My name is Arthur Bisset and I am completing my Master of Educational Psychology degree with Massey University in 2015. My thesis research plan is to explore the value of introducing an alternative teaching approach for year 4 children who require more intensive support in acquiring early literacy skills

Project description and Invitation

The school has agreed to participate in this research and we now ask you to provide permission to allow your child to participate in the literacy screening assessments. The purpose of the assessments are to establish the range of literacy skills within the classroom to enable the teacher to more effectively deliver a targeted programme for children requiring instruction. The study will monitor the effectiveness of extra teaching activities shown by research to be beneficial for children who struggle with reading. I will carry out literacy assessments in collaboration with the classroom teacher on all students in this classroom. I will assess your child in a quiet place at the school and if your child doesn't want to do it I will take him/her back to class. I would like you to talk to your child about this project and if you are both happy for your child to participate in the project, I would like you to sign the attached form and send it back to the school.

Participant Identification and Recruitment

The results of the assessment will be used to select a small group of students who will be taught by the classroom teacher under my supervision and guidance during term 2. The selection of students will be done in collaboration with the classroom teacher. It is not anticipated that there will be any risk or discomfort for the participants. Participants may be withdrawn from the study at any stage. You will be notified if your child has been selected to participate in this group. I will contact the parents/caregivers of the children selected for the term 2 projects to further explain the outline of the programme.

Data Management
All identifying information, including that of participating children, teachers, teacher aides and the school will be kept strictly confidential. All data collected will be placed in a numerical system to eliminate participant identification. Data will be stored until such time as it is destroyed. The findings of the project will not identify any individual or school.

Participants Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- Withdraw from the study
- Ask any question about the project at any time during your involvement
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Year 4 Literacy Project

Literacy Screening Assessments

CONSENT FORM FOR PARENTS

- I have read the Information Sheet and have had the details of the project explained to me. Any questions have been answered to my satisfaction, and I understand that I may ask questions at any time.
- I understand that my child might be selected to participate in the small group that will be taught by the classroom teacher under the supervision and guidance of the researcher during term 2.
- I agree / do not agree to my child participating in this project under the conditions set out in the Information Sheet. (Please circle choice)
- I agree / do not agree to be contacted by the researcher if my child is selected for the term 2 project. (Please circle choice)

Signature:	**Date:**
Full name (printed):	**Relationship to child:**
Child's name:	**Child's date of birth:**
Contact Details (optional) **Address:**	**Mobile number:**

	Email contact:

Appendix C

Decoding Skills integrated in the Levels Assessments by level of as contained in The Road to Reading (Blanchman & Tangel, 2008)	
Level	Word Reading and Decoding Skills at each level.
1	Identify all consonant sounds Identify five short vowels sounds Read and spell closed syllable words (e.g. bat, sit, hot, run, fed) Identify digraphs th, ch, sh, -ck Read and spell closed syllable words with the digraphs th, ch, sh, -ck
2	Read and spell closed syllables with double final consonants –ll; -ss and –ff (e.g. fell, miss, puff) Read and spell closed syllables with initial blends (bl, cl, fl, gl, sl, pl), r blends (cr, dr, gr, br, fr, pr, tr), s blends (sk, sm, sn, sp, st, sw), and tw Read and spell closed syllables with final blends (-mp, -sk, -st, -ft, -lt, - nt, -lf, -lp, -nd, -and –nk) Read and spell closed syllable words with –s and –ing when there is no change to the spelling base word (e.g. hats, jumps, rocking, fishing)
3	Read and spell final “e” words with a-e (e.g. ape), i-e (e.g. kite), o-e (e.g. bone), u-e (e.g. mule, use), and e-e (e.g. eve with single consonants. Read and spell final “e” words with consonant digraphs (e.g. shade) and consonant

	blends (e.g. flame, stove). Read open, one-syllable words (e.g. he, so, me, go), including words ending in y (e.g. fly, cry). Read words with –ed and recognise that –ed can have three sounds: the –ed rested, the –ed that sounds like /d/ in filled and the –ed that sounds like the /t/ in wished Read compound words made up of previously learned syllable patterns (e.g. sunset, fishnet, cupcake, jumprope, backpack) and two-syllable words with two consonants between two vowels (e.g. rabbit) creating two syllables.
4 Group 1 Vowel Teams	Read words with Group 1 vowel teams – ee, oa, ea, oe, ie, ay, and ow – and single consonants (e.g. jeep, coat, nail, seal, to, pie, hay, low). Read words with Group I vowel teams – ee, oa, ea, oe, ie, ay, and ow – with digraphs and initial final blends (e.g. sheep, float, stain, clean, pray, snow).
Group 2 vowel Teams	Read words with Group II vowels – ou, oo, ow, aw, oi, oy, ew, and ea – with single consonants (e.g. out, moon, book, cow, paw, haul, coin; joy. new, head) Read words with Group II vowels - ou, oo, ow, aw, oi, oy, ew, and ea – with digraphs and initial and final blends (e.g., scout, school, brook, plow, crawl, August, spoil, chew, bread). Read selected contractions made up of simple closed syllables (didn't) and open and closed syllables (e.g. she become she's) Read –ight (t) pattern (e.g., sigh, night, flashlight) Read two-syllable words with a vowels between two consonants (e.g. robot , limit) Read tow-syllable words made up og closed final "e" open and vowel team syllables (e.g. napkin, pancake, invite, peanut)
5	Read vowel + r words (e.g. car, horn, bird, turn, fern). Read selected words with the suffix –ly (e.g. slowly)and inflected endings –es (e.g. teaches). Read words with –ink, and –unk (e.g. pink, bank, trunk). Read words with – all and –alk patterns (e.g. ball, talk). Read multisyllabic words made up of previously learned syllable patterns (e.g. pineapple, fantastic, misunderstood)
6	Read consonant -le syllables (e.g. apple, candle, needle, bugle). Read two syllable words with y as a vowel (e.g. funny, pony). Read one- and two syllable words with variant sounds of c and g (e.g. cent, gentle). Read one-syllable words with patterns –tch and –dge (e.g. catch, bridge). Read selected words in which the base word changes when –ed is added (e.g. nodded, likes). Read compound words and multisyllabic words made up of previously learner patterns (e.g. pineapple, noodle, lawnmower, raisin, equipment)

Appendix D

Appendix E

Levels Assessment Recording Form *(continued)*

Student: _____

Date: _____

Green Level: Group I Vowel Teams (Including Digraphs and Blends)

feed		toe		mow		road		play	
chain		beat		say		sheep		float	
rain		clean		row		pie		stay	
creep		team		stain		show		cheek	

_____ words read correctly

÷ 20 =

_____ percent words read correctly

Green Level: Group II Vowel Teams (Including Digraphs and Blends)

Date: _____

flew		out		coin		toy		draw	
haul		chow		broom		shook		bread	
spread		zoo		join		lawn		foot	
couch		broil		few		mouth		town	

_____ words read correctly

÷ 20 =

_____ percent words read correctly

Blue Level: Vowel + r Syllables (Including Digraphs and Blends)

Date: _____

far		sir		corn		turn		her	
scar		dirt		fork		hurt		perk	
bark		firm		storm		fur		clerk	
chart		twirl		short		curb		stern	

_____ words read correctly

÷ 20 =

_____ percent words read correctly

Purple Level: Consonant + *le* Words (Including Digraphs and Blends)

Date: _____

little		bubble		puzzle		apple		needle	
bugle		eagle		sparkle		turtle		handle	
table		sniffle		nibble		staple		shingle	
juggle		thimble		cradle		simple		hurdle	

_____ words read correctly

÷ 20 =

_____ percent words read correctly

WEEK 6

Weekly Lesson Plan

Teacher: K. [redacted] Group: Int Group Level: Green Date: 25-29 May

	Monday 25	Tuesday 26	Wednesday 27	Thursday 28	Friday 29
1. Review sound–symbol correspondences		a e i o u -ck -th -sh ie/ay/ea	a e i o u -ck -th -sh ay/oa/ea/ie	a e i o u b d m n ai/ee/ay/ie	
2. Teach or review new decoding skill (sound board)	Sound board words	Sound board words ray - tray - gray - clay - stay - stray	Sound board words best - beast - boast - roast - rest - test - toast	Sound board words creek - croak - oak - float - fleet - sleet - sheet	Sound board words
	Sound board letters	Sound board letters a r y g r s t ay	Sound board letters e b s t r ea oa	Sound board letters c r k f l (sh) ee oa	Sound board letters
3. Review phonetically regular words (PRWs) and high frequency words (HFWs)	PRWs	PRWs way lay seem read sea heat	PRWs boat coat road load goat road load soap way may	PRWs float croak chain chain stain peek week	PRWs
mat	HFWs	HFWs Important night quite idea	HFWs car enough grow face took	HFWs Important quite idea sometimes	HFWs
4. Read orally in context (decodable text or trade book)		Whaea Jacui	Whaea Jacui	Whaea Jacui	
5. Dictation (PRWs and sentences with PRWs and HFWs)		The gray dog went stray in the night.	The important roast was not enough for the beast.	The can croak under the gray creek.	

Road to Reading: A Program for Preventing and Remediating Reading Difficulties by Benita A. Blachman & Darlene M. Tangel
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Appendix F

Curriculum-Based Measurement: ***Oral Reading Fluency Passage: Examiner Copy***

Assessment Date:____/____/_____ Student:_____ Examiner:_____

Words Read Correctly (WRC): _____ Errors: _____ Notes: _____

Baking Bread

Quick 60 14.1 Short -ea Sound

Rachel bakes bread every day. She uses a bread maker to help her	13
make the bread. She uses her oven to help bake the bread.	25
Miriama helps her make the bread, too.	32
Rachel gets everything ready. She gets out her bread maker. She	43
gets out all the things she needs to make her bread. These things	56
are called ingredients.	59
She gets the flour and sugar. She gets the yeast and water. She	72
measures the flour. She measures flour. She measures the water.	82
She measures the yeast. Miriama helps her. She turns on the bread	94
maker. The bread maker will mix up all the ingredients. It mixes the	107
ingredients into dough. The bread maker beeps when the dough is	118
ready. Rachel turns on the oven.	124
Rachel takes the dough out when the bread maker beeps. She rolls	136
it out. Miriama helps. Rachel makes the dough into a shape she	148
wants. She brushes the top of with oil. She puts some herbs on the	162
top. Then she puts the dough into the oven. The oven will cook the	176
dough. It will turn the dough into bread. The oven beeps when the	189
bread is ready. Rachel takes the bread out of the oven. She lets it	203
cool down. She cuts up the bread. She makes a salad. Rachel and	216
Miriama eat the bread for lunch.	222

Appendix G

1 First Grade DIBELS® Next Composite Score Worksheet

The DIBELS Composite Score is used to interpret student results for DIBELS Next. Most data management services will calculate the composite score for you. If you do not use a data management service or if your data management service does not calculate it, you can use this worksheet to calculate the composite score.

Name: _____ **Class:** _____

Beginning of Year Benchmark

LNF Score = _____ [1]

PSF Score = _____ [2]

NWF CLS Score = _____ [3]

DIBELS Composite Score (add values 1–3) = ☐

Do not calculate the composite score if any of the values are missing.

Middle of Year	
DORF Accuracy Percent	Accuracy Value
0% – 49%	0
50% – 52%	2
53% – 55%	8
56% – 58%	14
59% – 61%	20
62% – 64%	26
65% – 67%	32
68% – 70%	38
71% – 73%	44
74% – 76%	50
77% – 79%	56
80% – 82%	62
83% – 85%	68
86% – 88%	74
89% – 91%	80
92% – 94%	86
95% – 97%	92
98% – 100%	98

Middle of Year Benchmark

NWF CLS Score = _____ [1]

NWF WWR Score = _____ [2]

DORF Words Correct = _____ [3]

DORF Accuracy Percent: _____ %

100 x (Words Correct / (Words Correct + Errors))

Accuracy Value from Table = _____ [4]

DIBELS Composite Score (add values 1–4) = ☐

Do not calculate the composite score if any of the values are missing.

End of Year	
DORF Accuracy Percent	Accuracy Value
0% – 64%	0
65% – 66%	3
67% – 68%	9
69% – 70%	15
71% – 72%	21
73% – 74%	27
75% – 76%	33
77% – 78%	39
79% – 80%	45
81% – 82%	51
83% – 84%	57
85% – 86%	63
87% – 88%	69
89% – 90%	75
91% – 92%	81
93% – 94%	87
95% – 96%	93
97% – 98%	99
99% – 100%	105

End of Year Benchmark

NWF WWR Score _____ **x 2** = _____ [1]

DORF Words Correct = _____ [2]

DORF Accuracy Percent: _____ %

100 x (Words Correct / (Words Correct + Errors))

Accuracy Value from Table = _____ [3]

DIBELS Composite Score (add values 1–3) = ☐

Do not calculate the composite score if any of the values are missing.