The general reading status of struggling Year 9 students and their teachers'

perceptions of their needs in New Zealand secondary schools.

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Abstract

Literacy skills are critical to academic, economic, and social success from an individual to a state level. It is in the interest of New Zealand society that literacy education meets the needs of all students. The purpose of this study was to investigate the reading-related difficulties experienced by students entering secondary education and to evaluate the preparedness of secondary teachers to meet the literacy-related needs of their students. In this study, Year 9 students at two secondary schools in central-north New Zealand completed tests of reading comprehension, reading vocabulary, listening comprehension, word-reading skills, knowledge of heuristic decoding rules, and reading self-efficacy. Additionally, teachers of Year 9 students at these schools completed a questionnaire regarding their literacy-related classroom practices. The results showed that 16% of Year 9 students experience significant difficulties with reading comprehension, indicating that these students are not able to engage with secondary-level texts. These students have difficulties with varying combinations of reading vocabulary, word-reading, decoding, language comprehension and low reading self-efficacy. Secondary teachers are responsible for selecting and implementing appropriate instruction to advance the literacy skills of all their students, from those with basic reading difficulties to those who are developing disciplinary-specific literacy skills required for academic success at upper-secondary and tertiary levels. The results of this study showed that teachers of Year 9 students hold sparse and inconsistent levels of literacy-related knowledge and that literacy-related assessment and instructional practices are insufficient. It can be inferred from the results of the questionnaire that teachers of Year 9 students do not regard literacy-related practices

as an important responsibility of a subject area teacher. It is suggested that secondary schools require comprehensive literacy plans that coordinate literacy-related teaching and learning practices across subject areas so that students can receive appropriate and effective literacy support in all their classes. Secondary schools require appropriately qualified, on-site literacy specialists with sufficient allocated time to support the literacy-related teaching and learning needs of teachers and students.

Acknowledgements

Table of Contents

List of Figures

List of Tables

Chapter One: Introduction

"PISA[1] 2009 defines reading literacy as: understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society." (OECD, 2010). The New Zealand Ministry of Education states: "Literacy in English is critical in enabling students to engage successfully with all aspects of the curriculum" (Sewell, 2010).

Literacy proficiency has been empirically associated with greater social cohesion and participation, better health, greater political participation by women, better communication and informed decision-making, citizenship, a sense of belonging, increased employability, reduced unemployment, and increased earnings (OECD Statistics Canada, 2000). Literacy competency is important for the economic and social wellbeing of a society and its peoples (Walker, Udy, & Pole, 1996; Druine & Wildemeersch, 2000; OECD, 1995; OECD, 2000; OECD, 2010; OECD, 2011; Shanahan & Shanahan, 2008; Lee & Spratley, 2010; National Joint Committee on Learning Disabilities, 2008).

According to New Zealand Statistics: Tatauranga Aotearoa, "Each year up to 10,000 young people in New Zealand leave school with little or no formal qualifications. This is of major concern to a nation focusing on developing a knowledge economy" (New Zealand Government, 2013). In 2011, 14.2% of Year 11 students enrolled in the National Certificate of Educational Achievement (NCEA) did not achieve Literacy Level 1 (New Zealand Qualifications Authority, 2012) and another 22.7% did not enroll in NCEA or other New Zealand Qualifications Framework qualifications (Secondary school statistics - Report Criteria: NCEA and other NQF Qualifications - Participation , 2013).

The 2009 PISA[1] results showed that 14% of New Zealand students aged 15 years did not achieve the "baseline level of proficiency, at which students begin to demonstrate the reading skills that will enable them to participate effectively and productively in life. [They] have difficulties locating basic information that meets several conditions, making comparisons or contrasts around a single feature, working out what a well-defined part of a text means when the information is not prominent, or making connections between the text and outside knowledge by drawing on personal experience and attitudes" (OECD, 2010, p. 13). The "proportion of New Zealand's weaker readers was larger than in the majority of the top- or high-performing countries" (Telford & May, 2010, p. 11).

Because of difficulties with reading-literacy, many adolescents cannot engage with secondary-level texts and become frustrated with failure, leading to behaviour problems and often to abandonment of formal education, and those who battle-on with sub-par literacy skills find that they lack the necessary literacy skills to be successful in their chosen tertiary or employment endeavours (Deshler, Palincsar, Biancarosa, & Nair, 2007; National Joint Committee on Learning Disabilities, 2008; Thornley & McDonald, 2002; Wheldall, Beaman, & Langstaff, 2010; Wise, 2009). The current New Zealand government has set a target that by 2017 "85% of 18 year olds will have achieved NCEA Level Two or equivalent qualification" (Ministry of Education: Te Tāhuhu o te Mātauranga, 2012). This task is made difficult by the fact that many students arrive at secondary school without adequate literacy skills to engage with

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[1] The Programme for International Student Assessment (PISA) is a triennial study that assesses and compares the literacy abilities of 15-year-old school students across 65 countries or economies (OECD, 2010).

secondary-level texts hindering their success in education (Flynn, Zheng, & Swanson, 2012; Wise, 2009).

All teachers have the responsibility to identify individual literacy needs of students and to provide remediation, maintenance, and extension according to those individual needs (New Zealand Teachers Council: Te Pouherenga Kaiako o Aotearoa, 2009). A teacher's evaluation and understanding of the literacy needs of students depends on the teacher's knowledge of literacy development, use of assessment tools, interpretation of assessment data, and selection and implementation of appropriate instructional methods (Education Review Office, 2012; Moats, 1994). Within secondary schools there is little understanding of the range of needs of students with reading difficulties (Wilson et al., 2012). Very few secondary teachers are taught how to analyse and/or interpret literacy-related test results, and are often given inadequate support to implement and evaluate the efficacy of programmes that are introduced (Goldman, 2012; Strickland & Alvermann, 2004 cited in National Institute for Literacy, 2007).

There is currently no national database available in New Zealand which illustrates the true literacy needs of students entering secondary school (i.e. Year 9 students) (Wilson, Jesson, Rosedale, & Cockle, 2012). New Zealand's National Education Monitoring Project 1995-2012 (Educational Assessment Research Unit, 2011) provides snap-shot comparisons of average reading abilities of Year 4 and Year 8 students, comparing the two year groups within and across years, but this project does not provide detailed data on what specific reading skills or specific needs within these years groups.

1.1 Rationale of the Study

This study comprised two aims: firstly, to assess the status of reading skills of Year 9 students in two secondary schools in New Zealand, and secondly, to evaluate the knowledge of literacy-related assessment and teaching practices, and related beliefs, held by teachers of Year 9 students. The purpose of this study was to illustrate the reading-related difficulties that students encounter in the first year of secondary school and the level of preparedness of secondary teachers to assess, diagnose and remediate literacy-related difficulties.

1.2 The Study

This study involved Year 9 students (*n=268*) and teachers of Year 9 students (*n=33*) from two schools in north-central New Zealand. The students completed a series of literacy-related assessments and the teachers completed a questionnaire to determine their methods of identification, measurement, analysis and remedial instruction of literacy-related difficulties in their Year 9 classes.

1.3 Overview

This thesis is comprised of five chapters. Chapter Two reviews the literature on which this study is founded. It defines reading-literacy and explains the predominant theories of reading, describing the reading-related skills that contribute to the development of proficient reading. Factors that contribute to reading difficulties are explored, and the influence of instructional approaches and remediation on reading development are discussed. The reading-literacy needs of secondary students are examined with reference to the literacy-related beliefs of their teachers and current literacy instruction and assessment in secondary schools. The specific issues as they relate to New Zealand secondary schools highlights the relevance of the literature

reviewed. Chapter Three describes the research design and methodologies used in both parts of this study. Chapter Four presents the results of this study. Chapter Five discusses the findings of the current study in relationship to the existing research base. Limitations of this study are outlined and implications for practice in New Zealand secondary schools and further research are recommended. Conclusions are drawn about the current status of literacy-related teaching and learning in New Zealand secondary schools and future needs in this area.

Chapter Two: Literature review

2.1 Introduction

The International Reading Association defines adolescent literacy as "the ability to read, write, understand and interpret, and discuss multiple texts across multiple contexts" (International Reading Association, 2012, p. 2). Proficient reading-literacy involves the ability to utilise basic decoding skills, vocabulary knowledge, linguistic and textual structural understanding, and metacognitive processing strategies (OECD, 2010). According to Wise (2009, p. 373), "most students in middle and high schools [in the USA] read below grade level and are unable to comprehend their increasingly complex texts and course materials. Thus, they fall behind and struggle to advance through the grades, in every subject". Although many students entering secondary schooling have already developed basic reading skills, they all need further development to improve their skills to become proficient readers of the increasingly complex texts they encounter and to develop core academic skills (Flynn, Zheng, & Swanson, 2012; Shanahan & Shanahan, 2008).

Between 2000 and 2009, reading-literacy in OECD countries improved, and variance between top and bottom reading abilities decreased (International Reading Association, 2012). However, New Zealand still had "the widest range of scores (335) between the bottom five percent (5th percentile) and top five percent (95th percentile) of students" compared with the eight highest performing countries (Telford & May, 2010, p. 14). The range of reading-literacy needs of secondary students in New Zealand is vast; results of the National Assessment of Educational Progress show that adolescent reading difficulties range from the development of the most basic reading

skills to the extension of disciplinary-specific reading comprehension strategies (National Centre for Education Statistics, 2009, cited in Lee & Spratley, 2010).

Just as it is inadequate for a doctor to diagnose a patient merely as "sick", it is unacceptable for a teacher simply to identify that a student "can't read". For a doctor to prescribe effective treatment, s/he first must make an accurate, cause-specific diagnosis. Equally, before a teacher can implement an effective instructional intervention, s/he first must identify the specific deficit to be remediated. To make an accurate diagnosis of reading difficulty, teachers must first understand the components that contribute to proficient reading.

2.2 Defining reading-literacy

2.2.1 Theories of reading

Understanding theories of reading development enables teachers to identify difficulties experienced by students and to help them gain the necessary skills to improve their reading.

The Simple View of Reading (SVR) theory (Gough & Tunmer, 1986) states that reading comprehension comprises two components, decoding (word-reading) and language comprehension (interpretation of lexical, syntactic and discourse information, independent of word-reading, measured as listening comprehension). Each component is essential for an individual to become a proficient reader, but neither component is sufficient by itself (Hoover & Tunmer, 1993). Inefficient skill development in either component contributes to reading difficulty, and therefore needs to be identified and remediated for reading ability to improve.

The SEDL organisation has developed a research-based framework, *The Cognitive Foundations of Learning to Read: A Framework* (SEDL, 2000) [Figure 1], which is based on the SVR. Proficient decoding depends on the development of: concepts about print; knowledge of letter names and forms, individually and within words; awareness of the sounds within words (phonemes); the understanding that letters and letter patterns graphically represent phonemes (the alphabetic principle); and the ability to read and pronounce regular and irregular words (cipher and lexical knowledge). Language comprehension depends on the knowledge of: linguistics (the mechanics of English) including semantics (meanings of and relationships between words and sentences), syntax (the internal structures of phrases and sentences) and phonology (the ability "to hear, distinguish and categorize the sounds of speech"); and relevant background world knowledge (SEDL, 2000, p. Cognitive Elements of Reading). A deficit in understanding any of these elements will cause reading difficulty.
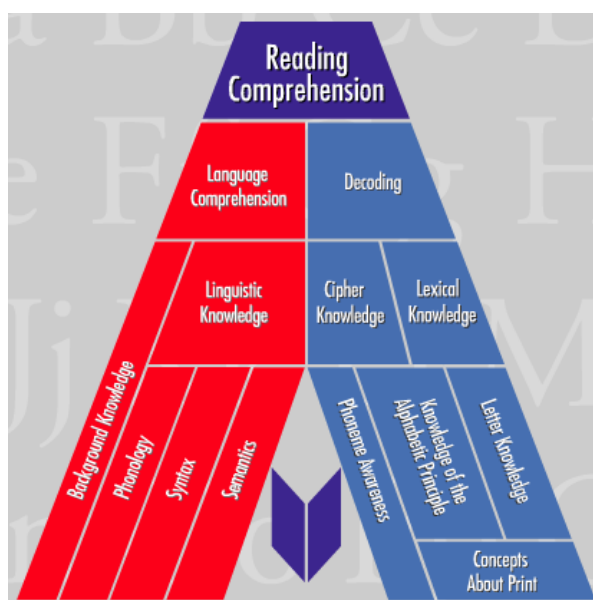
Figure 1: *The Cognitive Foundations of Learning to Read: A Framework* (SEDL, 2000).

Shanahan and Shanahan (2008) describe three levels of reading-literacy skills: basic, intermediate and disciplinary. Each level requires the development of some word-reading and some language comprehension skills. The *Basic Literacy* level consists of developing skills that are necessary for all reading tasks, including word-level reading skills such as decoding and sight-word reading, print and literacy conventions such as directionality, responding to punctuation, and understanding story organization. *Intermediate Literacy* involves development of strategies that aid comprehension, such as further development of word-reading skills including increased automaticity and improved understanding of morphology, metacognitive comprehension strategies, vocabulary knowledge, and reading fluency. The final level, *Disciplinary Literacy*, includes the development of skills that are particular to specific areas of academic study such as specialized background, textual and procedural knowledge associated with subjects (e.g. mathematics, science, literature). As students progress through school, they should develop the skills and routines at each level of reading-literacy, ideally mastering the first two levels in primary school in preparation for the development of *Disciplinary Literacy* in intermediate and secondary school and beyond. If a student has areas of weakness in the lower levels of reading-literacy development, the student will have enormous difficulty reading and engaging in secondary education.

Spear-Swerling and Sternberg (1996) developed a "Road Map" for understanding reading disability along which "normally achieving readers" develop reading skills (p. 120). The model illustrates the developmental stages on the path towards reading proficiency, which include: visual-cue word recognition, alphabetic insight, phonetic-cue word recognition, automatic word-recognition, strategic reading and, finally, highly

proficient reading. The model also describes the difficulties faced by an individual who fails to acquire skills at any stage on the path, including lowered motivation, practice and expectations. The longer the individual remains unremediated, the more difficult it is to get back on track. Poor readers find it extremely difficult to unlearn ineffective reading strategies that continue to hinder their reading development.

2.3 Factors that contribute to reading difficulties

Before a teacher can select and implement appropriate remedial instruction, specific reading skill difficulties must be identified. If a student has difficulty understanding what they read they are said to have difficulty with reading comprehension. Research shows that reading comprehension difficulties can be caused by a variety of factors, both reading-specific and non-reading-specific. Reading-specific difficulties that have been shown to contribute to reading comprehension difficulties include problems with word-recognition (including decoding) and language comprehension (Catts & Kamhi, 2005), vocabulary knowledge (Nation, Clarke, Marshall & Durand, 2004; Nation & Snowling, 1998), use of reading comprehension strategies (Harvey & Goudvis, 2007; Keene, 2007), and reading self-efficacy (Marzano & Pickering, 2011; Mullis, Martin, Kennedy, & Foy, 2007; Solheim, 2011). Additionally, research has shown that reading comprehension test scores can be affected by inappropriate use of strategies students use to respond to test items (test-item response strategies) (Greaney, 2004; Nicholson, 1988). Non-reading-specific factors that can contribute to reading comprehension difficulties include demographic features (Lyon & Moats, 1997; Tunmer & Greaney, 2008) and the literacy-related knowledge that students have when they first start school (Tunmer, Chapman, & Prochnow, 2006).

2.3.1 Component reading skills and strategies

2.3.1.1 Word-recognition and language comprehension

Identification of difficulties with word recognition and listening comprehension, in line with the SVR (decoding and language comprehension), enables categorisation into one of four subtypes of reading disability (Catts & Kamhi, 2005) [Figure 2].

Word Recognition

	Poor	**Good**
Good	Dyslexia	Non-specified
Poor	Mixed	Specific Comprehension Deficit

(Listening Comprehension — row axis label)

Figure 2: *Subtypes Based on Word Recognition and Listening Comprehension* (Catts & Kamhi, 2005, p. 74).

[Catts, Hugh W.; Kamhi, Alan G., *Language and Reading Disabilities*, 2nd Edition, © 2005, p. 74. Reprinted by permission of Pearson Education, Inc., Upper Saddle River, NJ.]

Students with difficulty in the decoding component of reading comprehension – specifically phonological processing difficulties such as a phonological awareness or a phonological recoding deficit, but who are proficient in language comprehension, are categorised as *dyslexic*. Students who demonstrate the ability to decode proficiently, but who have difficulty with language comprehension, specifically oral language difficulties such as a vocabulary deficit or discourse-processing issues, are categorised as *specific comprehension deficit*. Students who demonstrate difficulty with both components of reading comprehension are categorised as *mixed reading disability*, and those who demonstrate poor reading comprehension, but who demonstrate no

particular deficit in either component, are classed as having a *non-specified* reading disability. The benefit of such categorisation is that teachers can differentiate instruction according to the needs of students who demonstrate each subtype of reading difficulty.

2.3.1.2 Vocabulary knowledge

Impoverished vocabulary knowledge has been shown to have a "clear and consistent relationship" with reading comprehension difficulties, especially when word recognition required "a significant level of semantic support" (Nation & Snowling, 1998, p. 90). A study by Nation, Clarke, Marshall and Durand (2004) found that poor comprehenders demonstrate a range of language skill impediments, including difficulties understanding individual word meanings and figurative expressions.

2.3.1.3 Use of reading comprehension strategies

Although word-reading skills are necessary for reading comprehension, comprehension is not a natural product of fluent word-reading (Deshler, Palincsar, Biancarosa, & Nair, 2007; Hoover & Tunmer, 1993). "Many struggling adolescent readers do not have difficulty reading words accurately; they have difficulty making sense of the information and ideas conveyed by the text" (National Institute for Literacy, 2007, p. 18). Reading comprehension requires active cognitive interaction with the text to construct meaning, connecting what is read with existing personal conceptual understandings (Jackson & Cooper, 2007; National Institute for Literacy, 2007).

Good readers make deliberate use of cognitive strategies to make sense of what they read. These strategies include: knowledge of vocabulary, language and text structures, and genre; predicting; connecting ideas within the text, between texts and between

the text and the reader's existing experience/knowledge; generating questions;

inference; visualisation; clarifying misunderstandings; use of graphic and semantic

organizers. Good readers monitor their comprehension and implement strategies to

correct misunderstandings. They are able to synthesize and summarize ideas in a text,

both explicit and implicit, and construct appropriate responses to questions about the

text (Harvey & Goudvis, 2007; National Institute for Literacy, 2007). Additionally,

"Critical readers analyse how writers, illustrators, and others involved represent

people and their ideas. To be fully literate, adolescents must develop critical

awareness of how all texts position them as readers and must consider such factors as

how authors' backgrounds and cultures influence their writing" (National Institute for

Literacy, 2007, p. 19).

2.3.1.4 Use of test-item response strategies

There are many factors other than the use of reading comprehension strategies that

contribute to success on a reading comprehension assessment, such as text difficulty,

genre, subject/topic knowledge, attitudes and level of interest, question types, and

vocabulary (Dewitz & Dewitz, 2003; Greaney & Arrow, 2011; Nicholson, 1988). Only

further analysis of test responses will help a teacher understand which factors affect

each individual's test scores and what instruction is required to improve reading

comprehension and test performance.

Greaney (2004) performed a retrospective analysis of test-item responses on a *New

Zealand Progressive Achievement Test* (*PAT*) of reading comprehension to investigate

the reasons why students (Years 4-6) performed poorly on this test. Students, who

had completed the test two months prior to the study, were asked to read aloud from

the texts, and the corresponding test items and multiple-choice responses. To

ascertain whether poor decoding skills contributed to poor reading comprehension test scores, running records were taken while students read the texts, and students' abilities to read the test items and responses were analysed. Subsequently, those for whom poor decoding was not a significant factor were asked to explain how they had selected their responses. The results showed that problems with reading comprehension were sometimes caused by use of inefficient reading comprehension test response strategies, such as the over-reliance on *key word search and destroy techniques* and references to illustrations, an inability to link key ideas in sentences, inappropriate use of prior knowledge, and a lack of vocabulary knowledge, as well as difficulties when the terminology and expressions varied between the text and the response options. This study demonstrated the importance of talking to students to establish the reasons why particular responses were chosen and, consequently, which reading comprehension and test-response strategies need to be taught. Additionally, Nicholson's (1988) investigation of junior secondary school reading reported that creative inferring, in which the student made an incorrect interpretation based on a misunderstanding of one word in the task, can only be discovered and rectified if the teacher has a discussion with the student about how the answer was reached.

Assessment responses, either verbal or written, may demonstrate correct use of a skill or strategy, but teachers must understand that students may provide a correct answer incidentally (Dewitz & Dewitz, 2003; Greaney & Arrow, 2011; Nicholson, 1988). For example, a correct answer may imply that the student has understood the text whereas in reality the student has not read the text but used prior knowledge instead. Therefore, it is important to gather information from a number of sources – including

discussion with the student – to build an accurate picture of a student's skill and strategy acquisition and application.

The development of component reading skills and strategies can be influenced by a reader's perception of him-/herself as a reader.

2.3.2 Reading self-efficacy

Reading self-efficacy contributes to poor reading. The self-efficacy (or self-concept) is a reader's perception of his/her "capabilities for learning or performing actions at designated levels" (Schunk & Pajares, 2009, p. 35, cited in Marzano & Pickering, 2011, p. 16). The report from the 2006 Progress in International Reading Literacy Study (PIRLS) (Mullis, Martin, Kennedy, & Foy, 2007) found a correlation between reading achievement and their self-concept as good or poor readers. "The level of self-efficacy affects how much students understand of the texts they read but probably also the degree to which they are able to demonstrate what they have actually understood" (Solheim, 2011, p. 23).

According to Marzano and Pickering (2011), students develop theories about learning: fixed or growth theories. Fixed theorists hold the belief that intelligence is innate and cannot be altered, regardless of how hard one works. These students work well when they are succeeding, but when learning becomes difficult, they become despondent and often give up, attributing the difficulty to a limit of their intelligence. Growth theorists hold the belief that hard work is essential to success. If they are faced with difficulties in learning, they will be more optimistic and be more inclined to persevere until they succeed. Students who develop a fixed theory of learning in primary school

and who have experienced reading difficulties will be reluctant to engage in reading activities or remedial interventions.

The development of component reading skills and strategies, and reading self-concept, is dependent on a number of factors that may seem unrelated to literacy development.

2.3.3 Demographic features and literate cultural capital

Demographic features such as socioeconomic status [SES], race, ethnicity, linguistic background, family details, as well as behaviour-related factors such as attentional, behavioural, motivational, attitudinal and cognitive abilities can contribute to the reading development of any individual (Lyon & Moats, 1997; Tunmer & Greaney, 2008). However, none of these is an adequate predictor of poor reading (Deshler et al., 2007). Rather, it is the literacy knowledge and skills (e.g. understanding that words on a page have some meaning, or knowing that a book is read front to back) determined by the students home environment (e.g. number of books in the home, whether the child is read to, value placed on literacy) , known as *literate cultural capital*, that students have when they first start school that is the strongest predictor of reading achievement (Tunmer, Chapman, & Prochnow, 2006). Tunmer and colleagues (2006) found that, after seven years of primary education in New Zealand, students who had entered school with low levels of literate cultural capital were more than two years below their age-group peers on reading measures. They concluded that these children must be "provided with adequate supplementary instruction to overcome their weaknesses… especially in phonological awareness" (p.35). To do this, assessment of component reading skills is essential to enable teachers to identify

weaknesses, which will inform the selection of appropriate remedial instruction throughout each child's education.

All the factors contribute to the development of fundamental reading skills, but they are dependent on the methods of instruction and remediation provided in schools.

2.3.4 The influence of approaches to reading instruction and remediation in primary schools

To understand how some students reach secondary school level without having developed adequate reading abilities to deal with secondary level texts, it is important to understand that reading instruction and remediation in primary schools can contribute to poor reading-skill development (Tunmer, Chapman, & Prochnow, 2003; Tunmer & Nicholson, 2011).

2.3.4.1 The whole-language approach to reading instruction

The underlying theory of the whole-language approach to reading instruction is that readers make meaning by experiencing authentic reading and attending to multiple cues including illustrations, individual words, syntax, semantics, story grammar, prior knowledge and even help from other readers (Smith & Elley, 1994). Although the whole-language approach contributes to a general understanding of literacy, it is not "particularly effective in developing word recognition skills" (Pressley, 2006, p. 29). Extensive focus on word-level strategies such as phonics, especially when taught out of context, is discouraged in the belief that such attention is robbed from the true purpose of reading which is to make meaning from what is read. Instead, students are taught to use context to guess unknown words, a skill that is often difficult for a skilled reader and impossible for a reader unfamiliar with the topic or relevant vocabulary (Pressley, 2006) and which is detrimental to the development of word-level reading

skills, vocabulary and general knowledge (Share & Stanovich, 1995). Although most children develop decoding skills regardless of the method of instruction, 20-25% of students do not discover spelling-to-sound patterns in the whole-language classroom (Liberman & Liberman, 1992). Research shows that "learning spelling-to-sound correspondences is an 'unnatural' act for young children" (Share & Stanovich, 1995, p. 32), which illustrates the importance of explicit instruction to master this skill. Pressley (2006) states, "when all learning is left to the children's natural discovery of letter-sound associations and development of knowledge of word chunks… reading development is slower and less certain" (p. 150).

Research has demonstrated that without adequate decoding skills poor readers will develop inefficient reading strategies and continue along the path of reading failure (Spear-Swerling & Sternberg, 1996). Additionally, many poor readers not only have difficulties developing essential reading skills early on, but may also develop ineffective compensatory strategies such as referring to illustrations, partial word cues, and contextual guessing (Pressley, 2006). Stanovich (1986, p. 364) described the "causal chain of escalating side effects" if a child does not develop phonological and phonemic skills early on. These include a reduced exposure to text and therefore less reading practice, delays in development of automatic word recognition and reduced fluency, limited cognitive attention needed for comprehension processes, and unrewarding reading experiences that generate negative reading-related attitudes and behaviours such as avoidance that further reduces exposure to text. These negative Matthew effects, where the poor readers get poorer, continue to exacerbate reading difficulties in the absence of intensive training in word decoding strategies.

Many students (perhaps up to 25% - Liberman & Liberman, 1992) who do not discover spelling-to-sound patterns early in primary school, fail to develop adequate word-reading skills, vocabulary and general knowledge, and develop significant reading-related and behavioural difficulties, before reaching secondary school. However, research has shown that, for these students, reading difficulties can be remediated with targeted instruction including explicit, systematic phonics instruction (Ehri, Nunes, Stahl, & Willows, 2001).

2.3.4.2 *The phonics-based approach to reading instruction*

An alternative approach to reading-instruction is the phonics-based or code-based model, which focuses on explicit teaching of word-reading skills. The phonics-based approach to reading instruction teaches students to identify unknown words by attending first and foremost to word-level cues, translating print to sound, mapping pronunciations with vocabulary stored in the mental lexicon, and finally, to use contextual cues to confirm what the word is (Tunmer & Chapman, 2002). Attention to the word-level cues enables the student to improve orthographic understanding (Share & Stanovich, 1995) as well as intensifying memory and overall comprehension of the text (Conelly, Johnson, & Thompson, 2001). However, this approach to reading instruction is not without criticism. Gough (1996, cited in Tunmer & Nicholson, 2011) criticised this approach for its inflexible structure, being "rigid, fixed and lockstep, with the same lesson given to every child" (Tunmer & Nicholson, 2011, p. 417). Additionally, traditional phonics approaches teach word-identification skills largely in isolation and students may not develop strategies to transfer their phonics knowledge to connected text.

Implementing this approach in primary schools does not guarantee that poor readers will develop all the reading skills needed to comprehend texts at the secondary school level. Nor will it enable students who are not in need of word-level remediation to benefit from the exposure to print provided in a whole-language learning environment.

2.3.4.3 The balanced approach to reading instruction

Rather than supporting a purely whole-language or phonics approach, some researchers believe a more balanced approach, combining the positive features of both, is the key to effective reading instruction (Pressley, 2006). Just as sports skills are learnt in isolation and then practised beyond and within the context of a game before mastery is achieved, so too should word-reading skills be explicitly taught out of context and practised within context to consolidate learning (Hatcher et al., 2006; Mathes et al.; 2005; both cited in Tunmer & Nicholson, 2011). A balanced approach to reading instruction would include explicit, systematic skills instruction (e.g. word-level skill-building activities, such as phonics instruction) combined with and supported by elements of whole-language instruction (e.g. practice of skills in authentic reading and writing experiences) to ensure transference of strategies in context (Pressley, 2006).

Classroom instruction is the first tier of reading instruction. Students who continue to demonstrate difficulties with reading, in spite of quality classroom instruction, are sometimes referred on for remedial intervention.

2.3.5 Ineffective reading remediation in primary schools

Many students who are identified as having reading difficulties in primary school in New Zealand, are not provided with supplementary instruction that is suitable to their needs. For example, the *Reading Recovery* program is a whole-language based

intervention for struggling readers after a year of formal schooling. An increasing body

of research highlights issues with this program, such as the student selection process,

inconsistent effects on poor readers, effect maintenance, poor data collection

procedures and the cost. Between 20 and 25% of six-year olds receive *Reading*

Recovery intervention because of poor reading skills, however, most of these students

make little or no sustainable improvements to reading abilities (Tunmer, Chapman, &

Prochnow, 2003). Research has demonstrated that the program could be improved

with the inclusion of a phonemic training component (Iversen & Tunmer, 1993), but

changes to the program have not been made. There are students with significant

reading problems who arrive at secondary school having not received remedial help

tailored to their needs and so secondary teachers need to have the knowledge and

skills to identify these students and help them to progress.

2.4 The general reading-literacy needs of adolescent students and their teachers

Secondary school students face a number of challenges when reading secondary-level

texts. They are expected to read fluently and to employ reading comprehension

strategies and appropriate background knowledge to understand texts in a number of

different subject domains. Expository texts become the dominant text structure, but

have had less exposure to expository text than narrative previously (National Institute

for Literacy, 2007). Secondary school students meet challenges associated with

reading disciplinary texts. For example, they may read texts with "high levels of

abstraction, ambiguity, and subtlety, or from content that differs from, or even

contradicts, students' life experiences" that require "more sophisticated but less

generalizable skills and routines" (Shanahan & Shanahan, 2008, p. 45).

A significant difficulty for a secondary teacher is catering to students over a wider spectrum of abilities than experienced in primary schools, sometimes across different classes, but sometimes within a single class. A single secondary teacher can be faced with not only remediating readers who have basic reading-literacy deficits, but also extending those with adequate and good reading-literacy abilities to achieve advanced academic reading levels needed for university entry (Deshler, Palincsar, Biancarosa, & Nair, 2007). Basic reading skills such as decoding still need to be taught at secondary level because some students have deficiencies in their understanding at this word-reading level and require explicit teaching (Brent & Milgate-Smith, 2008). A growing body of research clearly demonstrates that whole-language learning environments contribute to the prevalence of poor readers (Gough, 1983; Graham, 2000; Jaynes & Littell, 2000; Miller, 1989; Swanborn & De Glopper, 1999, all cited Pressley, 2006, p. 29; Share and Stanovich, 1995).

At the secondary level, students need to have developed not only the fundamental reading components of decoding and language comprehension, but also sophisticated reading-related skills such as "locating, evaluating, and extracting information from a wide range of sources and stimulus material [and] bringing seemingly disparate pieces of that information together for explanation, justification, analysis, and comparison" (McDonald & Thornley, 2005, p. 10). The American National Institute for Literacy (2007) published a manual to help secondary teachers understand the critical skills to help adolescents become proficient readers and to advance their literacy levels. Secondary teachers need to teach students how to utilise reading comprehension strategies to read and use subject area texts effectively, and to provide sufficient

opportunities to read a wide range of text types and styles in a variety of contexts (Meltzer, Cook Smith, & Clark, 2002; Thornley & McDonald, 2002).

Even though all students "deserve differentiated literacy instruction specific to their individual needs" (International Reading Association, 2012, p. 2), in secondary school reading instruction is often non-existent or severely lacking (Shanahan & Shanahan, 2008). Secondary teachers tend to select literacy teaching and learning strategies arbitrarily or fail to provide deliberate literacy support at all because they need guidance on which strategies would work for their students in their specific teaching environments (Meltzer, Cook Smith, & Clark, 2002).

Secondary schools provide less-optimal environments for adolescent literacy instruction than primary school systems. For example, primary classrooms "permit intensive and extensive literacy instruction" (Shanahan & Shanahan, 2008) whereas the departmentalized secondary classrooms limit the possibility of consistent and systematic literacy instruction. In subject classrooms, content is too often the singular focus of instruction. Students with vastly different reading abilities are taught together with little allowance made for different literacy needs (Pohl, 1983).

Even for students who are keen to engage with texts at secondary school, when faced with texts beyond their reading capacities and inadequate literacy instruction or support, motivation to engage with written material wanes (Thornley & McDonald, 2002, p. 21). Competent readers find reading activities fun, whereas students with reading difficulties find reading difficult and/or long pieces of text boring and tiring and will often avoid reading (Thornley & McDonald, 2002).

There is a need for literacy instruction across all subject areas at secondary school that empowers all students to become independent readers of texts (McDonald & Thornley, 2005, p. 13), and so there is also a need for subject-studies teachers to be better trained to fulfil this need.

2.4.1 Teacher beliefs about secondary school literacy teaching

It is commonly believed that reading difficulties are experienced by only a few students and, therefore, "improving the literacy abilities of students is remedial in nature and should not be part of the "normal" classroom, and that improving literacy levels should be the responsibility of English teachers who, ironically, are rarely trained to teach literacy" (Wise, 2009, p. 373). However, it is the responsibility of every teacher to use assessment information to identify the on-going learning needs of all students and to select appropriate, effective instruction to meet the needs of all students (New Zealand Teachers Council: Te Pouherenga Kaiako o Aotearoa, 2009). Literacy instruction is the responsibility of all teachers (National Institute for Literacy, 2007; Thornley & McDonald, 2002, p. 22).

Very few secondary teachers have the understanding, strategies or resources to assess and identify reading difficulties let alone remediate these difficulties. They have inadequate preparation for teaching literacy skills (Strickland & Alvermann, 2004, cited in National Institute for Literacy, 2007) and often have not had the benefit of learning appropriate instructional strategies or literacy skills themselves that they need to teach their students effectively (Goldman, 2012).

2.4.2 Current literacy instruction in secondary schools

There are a number of remedial reading programs available for secondary teachers to help meet the needs of their students. However, with the lack of knowledge of literacy

development theories, or assessment and remediation programmes, combined with the professional demands on secondary teachers, few teachers within secondary schools are adequately able to select and implement the appropriate programmes to meet student needs.

The common response of many teachers is to make the literacy-related tasks easier for struggling students, enabling them to avoid experiencing reading difficulties and often reading altogether. Teachers creatively develop methods of communicating content-information to students that require little or no reading. For example, teachers have been shown to "simplify texts, provide abbreviated notes, read texts aloud, or explain content" (McDonald, Thornley, & Fitzpatrick, 2005, cited in McDonald, et al., 2008) enabling students to avoid reading. Such strategies might be useful for ensuring students can access important subject-specific information and are undoubtedly valuable as supplementary support for content-learning, but they do not enable students to develop the skills required to become independently literate individuals.

2.4.3 Literacy-related resources for secondary teachers

A meta-analysis of studies on interventions targeting adolescent struggling readers (Scammacca, et al., 2007) provides evidence that it is not too late to help these students if the appropriate program is implemented according to specific literacy needs. There are many literacy instruction programmes available. However, most are designed for primary students and the effectiveness of such programmes with secondary students is supported by a weak research base (Flynn, Zheng, & Swanson, 2012). Programmes that have been designed or modified for secondary students, such as *Lexia Reading* and *AVAILLL*, also have limited empirical support for their

effectiveness (see Lexia Learning Systems New Zealand, n.d.; and The AVAILLL

Institute, n.d.).

Thousands of books are available to teachers on the subject of adolescent literacy

(Fishpond Ltd., 2004-2013), some of which are based on sound scientific research (e.g.

Strategies That Work 2, Harvey & Gourdvis, 2007), and there are innumerable websites

which offer advice and resources to support adolescent literacy assessment and

instruction (e.g. SEDL, 2013). Additionally, there are literacy assessments available

that are appropriate for assessing adolescents, such as those recommended on the *Te*

Kete Ipurangi Assessment Tool Selector website (Ministry of Education: Te Tāhuhu o te

Mātauranga, 2013). However, a secondary teacher must understand literacy-related

difficulties and assessment and instructional processes sufficiently, firstly, to decide

which assessment tool or instructional program best fits not only the needs of the

students in his/her classrooms, but also the constraints of the subject curriculum and

secondary school timetable, and, subsequently, to ensure that a chosen resource is

being implemented appropriately and effectively.

One-size-fits-all literacy instruction fails to cater to the needs of all students regardless

of teaching level. For example, reading comprehension strategies instruction,

although effective at improving the literacy of many students (i.e. those who are non-

reading-disabled students and those classified as *Specific Comprehension Deficit*), fails

to remediate students with *Dyslexia* and *Mixed Reading Disability* who require

instruction that includes intensive word-level skills instruction (Catts & Kamhi, 2005, p.

87).

Every student's reading-related needs should be identified and catered to. Adolescents with reading disabilities often have difficulties in one or more of the component reading skills (Catts & Kamhi, 2005; Gough & Tunmer, 1986; Hoover & Tunmer, 1993; National Institute for Literacy, 2007; SEDL, 2013). Adolescents without reading disabilities may have needs associated with extending their reading-related skills to reach their full academic potential (McDonald & Thornley, 2005, p. 10). For all students, it is important that an accurate diagnosis is made so that the best instruction can be selected.

To be effective, instruction should be linked to assessment that is a comprehensive, team-based, diagnostic process of data collection that includes standardized tests, qualitative analysis of tests and classroom tasks, observation of students and their work, and measures of self-concept (National Joint Committee on Learning Disabilities, 2008). In order for teachers to build and accelerate the abilities of all students, teachers must gather, analyse, interpret and use assessment information so that they can select and implement appropriate programmes that meet students' needs, strengths and interests (Education Review Office, 2012).

Successful selection and implementation of appropriate instruction for an individual depends on accurate assessment of each individual's reading difficulties; it is ineffective to provide a student with instruction that fails to target specific needs. Therefore, it is necessary for teachers to understand how to assess reading ability and disability to enable them to select or design appropriate remediation.

2.4.4 Assessments of reading ability in secondary schools

To ensure students reading difficulties are accurately identified and appropriately

addressed, assessment processes should include three types of assessment: diagnostic,

formative and summative. Diagnostic assessment should be used to identify skill

difficulties and strengths, formative assessment is important to monitor student

progress and to guide next learning steps, and summative assessment enables

evaluation of each student's development and the success of instructional strategies

(National Institute for Literacy, 2007).

2.4.4.1 Diagnostic assessments

Diagnostic assessments are carried out prior to instruction. The purpose of these

assessments is to ascertain the abilities and difficulties of individual students, which

aids in the selection of appropriate instruction that will facilitate each student's

reading development.

The process of diagnostic assessment requires the following steps: "(1) assess a

student's reading performance, strategies, and skills; (2) evaluate the student's

performance, strategies, and skills in relation to academic expectations; (3) evaluate

texts in relation to the student's literacy and content learning needs; (4) assess and

evaluate the student's ability to learn and the optimal conditions for that learning to

occur; and (5) design instruction that integrates information learned in steps one

through four and that results in content and literacy development" (Klassen, 2002,

cited in National Institute for Literacy, 2007, p. 30).

Effective diagnosis of reading difficulties depends on the use of assessment tools that

are reliable and valid and which provide precise information about skills and deficits. A

series of assessments of increasing sensitivity may be required. For example, a general

measure of reading comprehension will enable a teacher to identify students with low

scores, but only with subsequent assessments of language comprehension and

decoding skills, and of reading comprehension test-item response strategies, can the

teacher begin to uncover the specific reasons for low scores.

It is important that assessment responses are analysed to identify both the skills that

require development and those that have already been mastered. Vygotsky (1978,

cited in Daniels, 2001) theorised that development takes place within the Zone of

Proximal Development (ZPD), which lies just beyond the individual's current

developmental level of achievement and in which s/he can practice new skills under

the guidance of or in collaboration with a teacher or more-skilled peer (Daniels, 2001).

It is important for teachers at all levels to identify their students' current skills so they

can select and implement instruction that extends students into their ZPDs and so

optimise the progress of their students' literacy development.

2.4.4.2 *Formative assessments*

Once instruction has been selected and implemented, it is important for teachers to be

responsive to students' literacy needs as they develop or falter. Formative assessment

enables teachers to monitor progress. Teachers can use a variety of approaches

including observation, discussion and analysis of student work. Sometimes teachers

use published assessment tools that are designed for regular formative assessment.

Observing the application of skills or strategies can inform the teacher as to whether a

student has understood the skill/strategy and can use it. For example, the *think aloud*

method (Davey, 1983, cited in Harvey and Gourd 2007) involves the reader speaking

thoughts aloud to demonstrate the thought processes that skilful readers use to

construct meaning from what is read, such as questioning, inferring, predicting, or linking ideas. When students use this method, it provides teachers with insight into the thought processes used by students when reading or carrying out reading-related tasks, and enables teachers to discover which strategies are used well and which need to be taught and/or encouraged.

Discussion about reading is not only a valuable teaching and learning practice (Allington & Johnson, 2002, cited in Harvey & Goudvis, 2007), but also a useful method of formative assessment.   Discussion can include students sharing ideas in pairs, small groups or with the whole class, with or without the input of the teacher. As teachers listen to conversations, they can discover students' levels of understanding, which can guide further discussion and/or other instructional activities to correct or extend understanding.

Analysis of student work can provide information about a student's understanding of what is read. Written work could include answers to questions, explanations, summaries, or essays, to demonstrate understanding of language use, content and structure. Additionally, analysing direct interactions by students with the text, such as coding or annotating text, can provide specific information about how the student interprets specific sections of text. Teachers can discover a student's depth of comprehension and can tailor subsequent instruction to correct or extend the student's understanding and their strategies for making meaning from texts.

Some secondary schools use computer-based assessment tools, such as *e-asTTle* for the purposes of formative assessment in Years 9 and 10. *e-asTTle* enables teachers to set tests that focus on the skills and levels of ability specific to the students in their

class. The program is designed to be used on a regular basis to provide teachers with information about specific skill strengths and weaknesses (e.g. the student's ability to "Find, select and retrieve information", "Make inference", "Make use of prior knowledge" (Visible Learning Lab, 2010, p. 95)) and to track progress of students and success of an intervention by comparing test results before and after units of teaching and learning.

Some published literacy programmes include built-in formative assessment abilities. For example, *Lexia Reading – Strategies for Older Students*, which is a computer assisted learning program modified for adolescents that provides explicit, systematic instruction in reading skills from basic skills (e.g. phonemic awareness) through to reading comprehension, includes *Assessment Without Testing* (Lexia Learning Systems New Zealand, n.d.). This assessment method measures student responses to the computer-based skill-practice activities and presents the data in reports that provide specific details of student difficulties (e.g. short-vowel sounds, consonant sound, b/d/p confusion). These reports enable teachers to select appropriate *Lexia Lessons* and *Lexia Skill Builders* – mini-lessons and practice worksheets provided within the *Lexia* program – that target the specific needs of each student.

Formative assessment occurs during the course of teaching and learning. It is important that knowledge gleaned from formative assessment activities, whatever the approach, is used to inform the next steps of or modifications to teaching and learning programs to ensure that all students' needs are met.

2.4.4.3 Summative assessments

Summative assessments are implemented at the end-point of a unit of instruction.

The purpose of summative assessments is to evaluate the impact of the instruction on

the students' abilities and understanding. However, such assessments are often driven

by the need to report on each student's stage of development to parents and school

management, especially in comparison with others in the same school or nationally,

but they do not provide a complete picture of an individual student's progress

(National Institute for Literacy, 2007). Summative assessments include nationally

normed tests such as *Progressive Achievement Tests* (*PAT*) and *National Certificate of*

Educational Achievement (*NCEA*).   Teachers will also create assessments that replicate

these types of assessments such as reading comprehension tests and essay-writing

assignments.

2.4.4.4 Analysis and dissemination of assessment data in secondary schools

Close analysis of assessment data is essential if teachers are to identify specific reading

difficulties. When formal assessments are implemented, results are often recorded as

scores or levels, which provide a snap-shot indication of a student's ability compared

with others who complete the same assessment. For example, a low stanine on a

Progressive Achievement Test will indicate that a student is below average compared

with year-level peers, and the "Equivalent Age Band" associated with a student's score

on the *Burt Word Reading Test* will indicate ability compared with nationally normed

age-level expectation. However, such numerical results do little to inform teachers of

the specific difficulties experienced by individual students.

Close analysis of assessments of decoding skill, such as the *Burt Word Reading Test* and

the *Bryant Test of Basic Decoding Skills*, can provide specific information about word-

reading strategies that students employ when faced with an unfamiliar word, and heuristic decoding skill deficits. Such specific information can be used to provide targeted instruction to students according to their individual needs (National Institute for Literacy, 2007).

Sharing of literacy data between teachers in secondary schools is important if all teachers are to support and accelerate the literacy development of each student in every subject (Education Review Office, 2012). Electronic Student Management Systems (SMS) have the capacity to generate reports of literacy data such as assessment scores and achievement levels and are useful for monitoring student progress over time and for identifying students at risk of not achieving. For example, SMS programmes are used to track literacy credits for NCEA (Wylie, 2013, p. 26) and to allocate students to achievement-level classes. However, SMS programmes do not provide a detailed picture of specific literacy needs of students. Collection, analysis and dissemination of comprehensive literacy data must be coordinated effectively so that all teachers have the information needed to plan and implement appropriate, differentiated instruction across all subject areas.

Secondary teachers need to acknowledge their responsibilities as teachers of literacy in their subject-area classes. They need to understand the literacy-related skills and strategies that are required by each of their students to access texts at the secondary level and beyond, and to understand how to select, administer, analyse and interpret literacy-related assessments so that they can recognise their students' strengths and weaknesses. They need to have sound knowledge of the literacy resources that are

available, and know how to select and implement those appropriate to the needs of their students.

2.5 Reading-literacy in New Zealand secondary schools

New Zealand has an extensive gap between the top and bottom readers at 15 years of age (Telford & May, 2010). Therefore, secondary teachers in New Zealand encounter an extensive range of literacy difficulties experienced by their students and need to be competent teachers of all reading skills from basic reading skills through to disciplinary literacy skills.

Reading instruction and remediation at the primary school level contributes to the incidence of reading difficulties experienced by secondary students. Whole-language is the predominant approach to reading instruction in New Zealand primary schools (Tunmer & Nicholson, 2011) and has been for more than three decades. The main method of remediation in New Zealand primary schools is the Ministry funded Reading Recovery (RR) program despite the fact that literacy failure rates have not reduced within New Zealand or United States education systems since the program was first implemented (Reynolds & Wheldall, 2007). It is no wonder, then, that some students arrive at secondary school in New Zealand lacking basic reading skills.

Eighty-three per cent of secondary teachers in New Zealand reportedly regard the integration of active literacy learning opportunities in their classes as important or very important (Wylie, 2013). However, only 64% claim to provide such opportunities regularly because of the increased workload associated with increased assessment (Wylie, 2013). Additionally, principals reportedly see the value of integrating literacy across the curriculum, but have difficulty implementing this (Wylie, 2013).

Acknowledging responsibility is not going far enough; effective literacy instruction needs to be implemented.

Because few secondary teachers are trained in literacy assessment or instruction (Strickland & Alvermann, 2004, cited in National Institute for Literacy, 2007), students who appear to struggle with reading will be referred to a special education teacher or Resource Teacher of Learning and Behaviour (RTLB). However, it is the responsibility of every classroom teacher to support the literacy needs of every student in every class and these needs range from basic reading skill development to discipline-specific extension.

The Registered Teacher Criteria states that it is the responsibility of every teacher to use assessment information to identify the on-going learning needs of all students and to select appropriate, effective instruction to meet the needs of all students (New Zealand Teachers Council: Te Pouherenga Kaiako o Aotearoa, 2009). The Education Review Office (2012) described the current literacy assessment-instruction situation for students entering secondary education in New Zealand as "somewhat bleak" (p. 2). The ERO report found that inadequate assessment processes in many secondary schools resulted in a lack of "responsive and focused education" (p. 2).

Many literacy assessment tools are available for New Zealand teachers (Education Review Office, 2012). The *Te Kete Ipurangi Assessment Tool Selector*, which is available online (Ministry of Education: Te Tāhuhu o te Mātauranga, 2013), enables New Zealand teachers to search for tools appropriate to year level, subject area, receptive and productive process (e.g. reading, writing, listening, etc.), country of origin, standardisation, and administration method (i.e. group or individual). This site

provides details of 13 assessment tools suitable for testing Year 9 English reading skills [see a summary in Appendix A], including information about reliability and validity, cost, training, and administration procedures. However, the Education Review Office recently reported that only "seven percent of schools had highly effective processes for knowing about students' achievement and progress" (Education Review Office, 2012, p. 18) and that sharing of literacy data between teachers in most New Zealand secondary schools is inadequate (Education Review Office, 2012). This shows that simply carrying out literacy assessment and collecting data is not sufficient.

It is important for New Zealand secondary schools to ensure that secondary teachers are able to carry out literacy assessment, to analyse literacy assessment data, to identify specific reading difficulties, and subsequently, to select or design appropriate instruction to remediate these difficulties, and that literacy-related knowledge and data is shared across teachers in all subject areas to ensure a comprehensive approach to reading instruction is employed to meet individual student needs.

2.6 Conclusion

Secondary students have a vast spectrum of literacy needs from basic reading skill development to discipline-specific literacy needs, particularly in New Zealand, but there is little evidence of the actual array of reading difficulties experienced by students entering secondary school. Every secondary teacher is responsible for identifying the specific literacy needs of their students, selecting and implementing appropriate instruction, monitoring student progress, and sharing assessment and instructional information with their colleagues to support the literacy learning of their students. Few secondary teachers are believed to have the expertise to do this. The purpose of this study is to provide evidence of the reading-literacy needs of Year 9

students and the preparedness of secondary teachers to cater to their students' literacy needs.

2.6.1 Research questions and hypotheses

This study sought to answer three research questions.

- What is the prevalence of reading comprehension difficulties in Year 9 students and what are the contributors to these difficulties?

- Does reading self-efficacy decline as a function of reading comprehension ability?

- What literacy related beliefs and literacy-specific knowledge are held by teachers of mainstream Year 9 students?

From these questions, four hypotheses were developed. The first two hypotheses seek to address the first research question. The first hypothesis was that there is no specific hypothesis regarding the prevalence of comprehension difficulties in mainstream Year 9 students. The second hypothesis was that decoding, language comprehension, vocabulary and ineffective reading comprehension strategy use all contribute to comprehension difficulties experienced by mainstream Year 9 students. The third hypothesis was that there is a significant correlation between reading self-efficacy and reading comprehension ability. The fourth hypothesis stated that teachers of mainstream Year 9 students lack literacy-specific knowledge and believe it is not their role to teach literacy.

Chapter Three: Methodology

3.1 Introduction

This chapter describes the methodology that was employed in the current study. The research design is described, followed by descriptions of the participants and selection procedures. This study consisted of two parts, assessment of reading-related difficulties experienced by Year 9 students, and assessment of literacy-related practices and beliefs of teachers of Year 9 students. The materials and procedures are explained in two separate sections. This study received Massey University Ethics Committee approval [see Appendix B].

3.2 Design

This investigation included collection of qualitative and quantitative data to illustrate both the types and magnitude of reading difficulties experienced by Year 9 students, as well as collection of quantitative data from which to identify the existing knowledge base and current needs of teachers of Year 9 students with regard to teaching literacy-related skills to these students. Data collection consisted of two independent processes, the collection of test-data from Year 9 students and collection of survey-data from teachers of Year 9 students.

Seven schools in the north-central New Zealand region were invited to take part in the study and two accepted the invitation. The total 368 Year 9 students and 82 teachers of Year 9 students from these schools were then invited to take part.

3.3 Participants

Every Year 9 student in the two participating schools was tested in the first phase of the data collection as the tests being carried out are standard tests commonly used in

New Zealand classroom to gather literacy data. Only the results of those who gave consent and whose parents/caregivers did not object to participation were kept by the researcher. Tests completed by the non-participating students were marked by the researcher and those results were given to the English teachers of those students. This also aided in the scheduling of the initial testing as students were able to be tested in their regular core-classes avoiding significant disruption to the regular school timetables. Both student and parent/caregiver consent was sought.

For teachers, questionnaires were made available electronically as a link in an email. Teachers were offered the choice to request a hardcopy of the questionnaire if they preferred. As declared in both the information sheet and on the questionnaire itself, completion – in part or in full – and submission of the questionnaire implied consent for the anonymous data to be used in the study, and teachers had the right to decline to respond to any of the questionnaire items. Thirty-three teachers submitted the questionnaire online; 6 teachers at School A and 27 teachers at School B. The subjects teachers taught are given in Table 1.

School A

School A is a small, low-decile co-educational state secondary school in a semi-rural area. Students' ages ranged from 13years 0months to 14years 11months (*M = 13y7m, SD = 4.6m*). Fifty-six percent of students described their ethnicity as NZ European, 5% as Māori and 9% as other.

School B

School B is a large, high-decile co-educational state secondary school in a small urban area. Students' ages ranged from 12years 11months to 14years 7months; (*M = 13y7m,*

SD = 3.8m). Seventy-two percent of students described their ethnicity as NZ European, 6% as Māori, 2% as Asian and 15% as other or a mix of ethnicities.

Table 1: Subject areas taught to Year 9 students by teachers

Subject(s)	School A	School B	Total
English	1	3	4
English & Drama	1	0	1
Fabric Technology	0	1	1
Food Technology	1	0	1
French	0	1	1
Literacy	0	1	1
Maths	1	4	5
Maths, Social Science & Science	0	1	1
Music	0	1	1
Physical Education & Health	0	6	6
Practical Art	0	1	1
Science	2	4	6
Social Science	0	2	2
Visual Art	0	1	1
Unspecified	0	1	1
TOTAL	6	27	33

3.4 Materials and Procedure

3.4.1 Student Assessment

Three tests, the *PAT:RC*, *PAT:RV* and the Reading self-efficacy measure, were administered over two sessions during the students regular classroom times in their classrooms. These three tests took place in the students' regular classrooms during regular class times. The researcher ran the tests and the class teacher was not required to be present. In some circumstances, the class teacher remained in the room for some or all of the assessment time but was not involved in the administration of the tests. The lowest scoring students across the *PAT* tests then completed the

subsequent assessments of the *BWRT: NZ*, *Bryant test,* the *PAT:LC* and *PAT:RC* item response process task. Owing to absences and time-constraints, only eight students from School A and 21 students from School B were tested using *PAT:LC* and only nine students from School A and 12 students from School B completed the *PAT:RC* response strategy task. These four tests took place in one-on-one sessions in a break-out area in each school.

Progressive Achievement Test: Reading Comprehension. The **PAT:RC** "assesses students' ability to construct meaning from text" (Darr et al., 2008, p.8). *PAT: RC Test 6* is designed for Year 9 students. It consists of eight texts of different types (three narrative, one explanation, one poem, one, report, one recount and one persuasive), difficulties (ranging from 9.5-10.5 years to 15+ years) and lengths (ranging from 116 to 416 words). The test required responses to 42 test items, six of which involved retrieval, 33 involved local inference, and 6 involved global inference. "Retrieval" test items required comprehension without inference, "Local Inference" test items required the reader to "comprehend implied information from within relatively small sections of text", and "Global Inference" test items involved "comprehend[ing] implied information from relatively larger sections of text" (Darr et al., 2008, p. 8-9).   Students were required to read each text, read four, five or six test items and multiple-choice responses relating to each text, and select and record their responses on *PAT:RC* Test 6 Answer Sheets.

Standardised testing procedures were followed. Students were then given 45 minutes to complete the test. Students at School A had already completed *PAT:RC* testing in the first term of the school year. To avoid test-retest complications, the researcher

was granted access to the consenting students' raw score results from that earlier test. Scoring involved two steps: firstly, counting the number of correct responses recorded by the participant which produced a raw score, and secondly, converting the raw score into a stanine using the appropriate "Score conversion table" for *PAT:RC Test 6* (Darr et al., 2008, p. 60).

Reading Comprehension test response process task. This activity enabled the researcher to investigate closely the strategies students used when responding to *PAT:RC* test items. The student was required to read silently the fifth written text in the *PAT:RC* test section of the *PAT: Reading Test 6* booklet (NZCER, 2008, p. 10). The text, entitled "Salt", is a 252 word report about the different methods of salt production [See Appendix C]. The noun count readability (NCR) is stated to be 12-14 years (Darr et al., 2008, p. 10). This text was chosen by the researcher because it was the shortest of the eight test texts that had a NCR spanning the chronological ages of most of the study participants (i.e. 12-14 years) [refer to Table 2].

Table 2: *PAT: RC Test 6* Content Structure (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 10)

Text Title	Text Type	Noun Count Readability	Word Count	Number of Questions and Sequence of Question Types
What's the Problem?	Narrative	13-16 yrs	269	6: LI; LI; LI; LI; LI; LI
Know Your Brain	Explanation	15+ yrs	391	4: R; LI; LI; GI
Storm at Sea	Narrative	9.5-10.5 yrs	271	5: LI; LI; LI; LI; LI
Uniform	Poem	15+ yrs	116	5: GI; LI; LI; LI; LI
Salt	Report	12-14 yrs	252	5: LI; LI; LI; LI; GI
The Tarawera Eruption	Recount	15+ yrs	332	5: LI; LI; R; LI; LI
An Afternoon's Work	Narrative	10-12 yrs	416	6: LI; LI; LI; LI; LI; GI
Youth Parliament Speech: Factory Farming	Persuasive	15+ yrs	373	6: R; LI; LI; LI; GI; LI

R = Recall; LI = Local Inference; GI = Global Inference

The student was then required to read aloud the text to the researcher. This enabled the researcher to observe the student's reading fluency and to discover which words the student found difficult and the strategies used to read difficult words. These measures were not formalised, but rather casual observation of the range of difficulties students encountered when reading this age-appropriate, non-fiction text unaided.

The researcher then read the corresponding test items and the multiple-choice responses to the student and asked the student to demonstrate and explain how s/he would decide which response was correct. The researcher recorded the student's explanations and test responses, but did not tell the student if s/he had reached the correct response or not, responding only with an encouraging statement before moving on to the next test item.

The responses to test items for the *PAT: RC* text "Salt" were categorised according to the response strategies used by the students. Initially, the researcher looked for evidence of strategies that were outlined by Greaney (2004), including a reliance on a *key word search and destroy technique*, an inability to link main ideas together, poor or inappropriate use of prior knowledge, and poor vocabulary. (One strategy identified by Greaney was not relevant to this study as the *PAT:RC Test 6* contains no illustrations and so students were not able to rely on these to assist comprehension.) It became clear that some strategies reported by students did not fit these categories so they were grouped according to procedural similarities to create additional categories. The additional strategy categories were: Misunderstanding, Guessing, Using memory of content, Re-reading for meaning, and A complex use of strategies. A complex use of strategies involved students employing more than one of the other strategies.

Progressive Achievement Test: Reading Vocabulary. The **PAT:RV** "is designed to assess students' ability to understand the words they read" (Darr et al., 2008, p.11). *PAT: RV Test 6* is designed for Year 9 students. It test consists of 40 short statements containing a words that is highlighted in bold typeface. Students were required to read each statement, read acorresponding list of five words, select the word "that has

the same or nearly the same meaning as the word in bold" (NZCER, 2008, p. 19) and record their responses on *PAT:RV Test 6 Answer Sheets.* Standardised testing procedures were followed and students were given 25 minutes to complete the test. Scoring involved two steps: firstly, counting the number of correct responses recorded by the participant which produced a raw score, and secondly, converting the raw score into a stanine using the appropriate "Score conversion table" for *PAT:RV Test 6* (Darr et al., 2008, p. 74).

Reading Self-efficacy Measure. A measure of reading self-efficacy was created by the researcher to investigate Year 9 students' attitudes to reading [see Appendix D]. The measure was based on the self-efficacy task from PIRLS 2006 (Mullis, Martin, Kennedy, & Foy, 2007). The measure was a 10-item, Likert-like scale. Each item consisted of a statement followed by a four response categories – Very True, True, False, Very False. Half of the statements expressed a positive attitude to reading and half expressed a negative attitude to reading; the statements were ordered randomly. Response categories were assigned numeric values that were dependant on the positive or negative attitude expressed (e.g. +2, +1, -1, -2 for a positive statement, and -2, -1, +1, +1 for a negative statement), and the sum of these values provided an indication of the overall attitude of the student to reading. Reliablity and validity have not been calculated for this measure.

A total of 248 students – 38 from School A and 210 from School B – submitted completed reading self-efficacy forms.

Burt Word Reading Test. The ***BWRT: NZ*** (Gilmore, Croft, & Reid, 1981) provides an estimate of a child's ability to read words in isolation (i.e. not in the context of continuous text) as well as providing the opportunity for examination of

pronunciation/reading patterns. The test consists of 110 words printed in decreasing type-sizes on the *BWRT: NZ Test Card* in "approximate order of difficulty" (Gilmore et al., 1981, p. 3). Students were required to read each word beginning at the top left corner, moving across each line and down the page. Standardised instructions were given before the test commenced. Scoring involved counting the number of words read correctly by the participant which produced a raw score.

Bryant Test of Basic Decoding Skills. The ***Bryant Test of Basic Decoding Skills*** (1975, reproduced in Nicholson, 2005) assesses a student's basic phonics skills. The test consists of 50 pseudo-words printed on a page (see, Nicholson, 2005, p. 25). Students were required to read each word beginning at the top left corner, moving down the column continuing across each of the three columns. The pseudo-words progress from relatively easy, three-letter, consonant-vowel-consonant words through to three-syllable words containing different syllable types and common affixes.

Before the test commenced, the student was told that the words were not English words, but made-up words that have standard English orthographic representations. The researcher explained to the student that this was a test of his/her ability to read made-up words and that it would help the researcher understand what English reading rules the student knows and uses when reading unfamiliar words. The student was encouraged to try to read all the words as the researcher was interested in hearing what students do to figure out how to read unfamiliar words. The researcher also explained that she would be ticking the words read correctly on the record sheet (see Nicholson, 2005, p. 26) and writing down what the student says when s/he attempts a difficult word. The test was ended either when the student finished reading the final pseudo-word on the page or if the student stopped reading and expressed the inability

to read any more of the words on the page. Scoring involved counting the number of

pseudo-words read correctly by the participant which produced a raw score.

Progressive Achievement Test: Listening Comprehension. The **PAT:LC** (Twist, Ferral,

Watson, McNaughton, Robertson, & Lin, 2010) assesses students' listening

comprehension abilities when listening to texts read to them, measuring their ability to

make meaning from text independent of their ability to decode written text. In this

study, students completed *PAT:LC Test 7* (NZCER, 2010) which is designed for Year 9

students. The test consists of seven unseen texts of different types (two novel

extracts, two poems, one argument, one information report and one factual recount),

and lengths (ranging from 150 to 620 words, 1 min 30 sec to 4 min 33 sec), that were

read aloud by adult voice actors with a variety of New Zealand accents recorded on the

PAT:LC Test 7 compact disc [refer to Table 3]. Students were required to listen to each

unseen text through headphones attached to a laptop, listen to three to six test items

and multiple-choice responses relating to each text that were visible (able to be read

by the student) in the *PAT:LC Test 7* booklet, and select and record their responses on

PAT:LC Test 7 Answer Sheets. The test required responses to 34 test items, three of

which involved retrieval, 26 involved local inference, and five involved global

inference. "Retrieval" test items required comprehension with minimal inference

(Twist, Ferral, Watson, McNaughton, Robertson, & Lin, 2010, p. 9), "Local Inference"

test items required the reader to "infer by drawing on pieces of information at the

sentence and paragraph level" (p. 10), and "Global Inference" test items involved

"infer overarching ideas by drawing on pieces of information situated across the text

as a whole" (p. 11). Four test items were categorised as "prosodic" and required

students to "pay attention to the sound of the reader's voice in order to comprehend

emotions" (p. 11). One test item required the reader "to appreciate that text can be interpreted in more than one way" and was categorised as a "multiple perspective" item (p. 12).

Text Title	Text Type	Number of Questions and Sequence of Question Types
Caught Out	Extract from a novel	6: LI; LI P; LI; LI P; LI; GI
Japanese Whaling	Argument	6: LI P; LI; LI; LI; GI; GI
Freya	Extract from a novel	5: LI; LI; LI; LI; GI
Milking Before Dawn	Poem	3: LI; LI; LI
A Talking Ape	Information Report	5: GI P; R; LI; R; LI
Farmhand	Poem	4: LI; LI; LI; LI
Fighting Prejudice	Factual report	5: R; LI; LI; LI; LI MP

R = Recall; LI = Local Inference; GI = Global Inference

P = Prosodic; MP = Multiple Perspectives

Standard testing procedures were followed. The test lasted 40 minutes. Scoring involved two steps: firstly, counting the number of correct responses recorded by the participant which produced a raw score, and secondly, converting the raw score into a stanine using the appropriate "Score conversion table" for *PAT:LC Test 7* (Twist et al., 2010, p. 60).

3.4.2 Teacher Questionnaire

The questionnaire for teachers of Year 9 students was created using *Google Form*. An email was sent to all teachers of Year 9 students at each school with instructions about how to access the questionnaire. Subsequently, an email containing the link to the *Google Form* questionnaire was generated by the researcher's *Google* account and sent to all teachers of Year 9 students at each school. Two reminder email requests containing the link to the questionnaire were sent to teachers at both schools. The questionnaire remained open for six weeks. The questionnaire consisted of seven

questions [see Appendix E]. Teachers were asked to indicate the subjects taught at

Year 9 level in the current year (see *Participant Demographics*, above). They were also

asked to identify students in their classes from a list of students who had been

identified in this study as having reading comprehension difficulties according to their

PAT:RC scores. Four questions asked teachers what literacy-related problems they had

identified in the Year 9 students in their classes in the current year, how they

measured literacy skills in their classes, how they analysed literacy-assessment data

that was gathered, and whether they had any particular strategies that they used to

help students overcome their literacy-related problems in their classes. Teachers were

also given the opportunity to indicate if they were happy to be contacted by the

researcher to discuss these issues further.

Literacy problems. Literacy-related problems as identified by the teachers were

categorised as: reading-related, writing-related, both reading- and writing-related,

thinking-related, or self-concept issues.

Assessment of literacy. Measurement of literacy skills was coded as: observational,

use of formal literacy assessment tools by the teacher, use of literacy

scores/information provided by a second party, no literacy assessment undertaken.

Analysis of literacy-assessment data was categorised as: close-reading of data displays

(e.g. e-asTTle console reports), ranking of students' abilities, identify and track low-

achieving students, comparison of data across time, data is not analysed (e.g. not

applicable in this subject, no time to do this).

Teaching strategies. Strategies used to help students overcome their literacy-related

problems were categorised as: guiding the student, explicit skill or strategy instruction,

enabling skill practice, assessment of skills, modification of task or instructions to make the task easier for the student, and use of evidence-based pedagogies to improve general learning.

3.5 Summary

This study involved collection of quantitative and qualitative data to investigate the reading-related difficulties experienced by Year 9 students in two New Zealand secondary schools and the literacy-related practices and beliefs of the teachers of Year 9 students. The students underwent a series of six assessments, firstly to evaluate the prevalence of difficulties with reading comprehension and, secondly, to investigate difficulties with decoding, word-reading, reading vocabulary, language comprehension, reading self-efficacy, and reading comprehension test-item response strategies, experienced by students with reading comprehension problems. The teachers completed a questionnaire to investigate what literacy-related problems they had identified in the Year 9 students in their classes in the current year, how they measured literacy skills in their classes, how they analysed literacy-assessment data that was gathered, and whether they had any particular strategies that they used to help students overcome their literacy-related problems in their classes.

Chapter Four: Results

4.1 Introduction

The purpose of this study was to illustrate the reading-related difficulties that students encounter in the first year of secondary school and the level of preparedness of secondary teachers to assess, diagnose and remediate literacy-related difficulties. The first part of this study investigated the prevalence of reading-related difficulties in Year 9 students and the prevalence of difficulties with the associated components. The Simple View of Reading theory states that decoding and language comprehension abilities contribute to reading comprehension ability. It is expected that successful reading comprehension is dependent on good word reading ability, knowledge of heuristic decoding rules, vocabulary knowledge, and language comprehension. It is suspected that low reading self-efficacy and inefficient reading comprehension strategy use also contribute to reading-related difficulties. The second part of this study investigated how prepared secondary teachers are to assess, diagnose and remediate literacy-related difficulties of Year 9 students. It is expected that the teachers of mainstream Year 9 students will demonstrate lack literacy-specific knowledge and a belief it is not their role to teach literacy within their subject areas.

This chapter presents the results and analysis that were carried out to explore four hypotheses; the first three relate to the reading abilities of Year 9 students, and the fourth to the knowledge and beliefs of teachers of Year 9 students. The first hypothesis stated that there is no specific hypothesis regarding the prevalence of comprehension difficulties in mainstream Year 9 students. The proportion of students with below-average reading comprehension abilities was calculated to illustrate the

degree to which reading comprehension difficulties are demonstrated by Year 9 students. The second hypothesis stated that decoding skills, language comprehension abilities, vocabulary knowledge and ineffective reading comprehension strategy use all contribute to comprehension difficulties experienced by mainstream Year 9 students. A series of correlation and multiple-regression studies were carried out to investigate this hypothesis. Additionally, a qualitative analysis of reading comprehension strategy use was performed to identify which strategies students used to answer reading comprehension test items and to investigate which strategies were successful and which were inefficient. The third hypothesis stated that there is a significant correlation between reading self-efficacy and reading comprehension ability and so a the correlation of test scores was performed.

Students who were present at each of the first two testing sessions completed tests of reading comprehension (*PAT:RC, n = 257*), reading vocabulary (*PAT:RV, n = 255*) and reading self-efficacy (*n = 248*). From these results, the students with the lowest-ranked reading comprehension and vocabulary test scores were selected for the subsequent tests of language comprehension (*PAT:LC, n = 30*), word-reading ability (*BWRT:NZ, n = 33*) and knowledge of heuristic decoding rules (*Bryant, n = 32*).

The forth hypothesis stated that teachers of mainstream Year 9 students lack literacy-specific knowledge and believe it is not their role to teach literacy. A qualitative analysis was performed to investigate the literacy-related problems that the Year 9 teachers identified, how they measured literacy skills and analysed literacy-assessment data, and the instructional strategies they used to help Year 9 students with literacy-related difficulties. From the teachers' responses we can infer the attitudes and beliefs

held by these teachers about literacy-related difficulties and their roles in assessment

and remediation of literacy-related difficulties.

Table 4: Descriptive statistics of the reading-literacy measures used to investigate hypotheses 2 and 3

Construct Measured	Measurement Tool	N	Minimum	Maximum	M	SD
Reading Comprehension	PAT: Reading Comprehension	257	3	42	24.63	9.703
Vocabulary	PAT: Reading Vocabulary	255	0	40	24.75	8.296
Self-efficacy	Self-efficacy questionnaire	248	-17	20	6.55	8.502
Language comprehension	PAT: Listening Comprehension	30	7	26	15.00	4.457
Word-reading	Burt Word Reading Test (BWRT:NZ)	33	47	99	77.18	15.382
Decoding	Bryant Test of Basic Decoding Skills	32	0	47	32.22	12.125
Reading comprehension strategy use	PAT: Reading Comprehension text "Salt" (p.10)	20	-	-	-	-

4.2 Representativeness of sample

To determine how well the sample of students represents the New Zealand population

of Year 9 students with regard to reading ability, a one-sample t-test was carried out to

compare the sample mean reading comprehension raw scores with the population

mean using *PAT:RC – Test 6* as the measure. The population mean was taken as 24.9

which is the "Mean Test Score" provided in the *Progressive Achievement Test: Reading*

– Teacher Manual (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 37).

Analysis of the sample *PAT:RC* raw score data indicates that the sample is

representative of reading comprehension abilities of Year 9 students in New Zealand.

There is no significant difference between the sample mean and the population mean

($t(257) = -0.48, p > 0.5$) and, therefore, there is no evidence to suggest that the sample

differs in reading comprehension abilities from the national norm. Investigation of normality of the sample *PAT:RC* raw score data indicates that it is normally distributed which is as expected for a representative population and is comparable to the national *PAT:RC* data.

4.3 Prevalence of reading comprehension difficulties

A "Below Average" result on *PAT:RC - Test 6* for a Year 9 student is a stanine 2 or 3 which equates to a raw score of 7 to 14, and a "Low" result is a stanine 1 which is a raw score of six or below (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 36). Of the 256 students who completed the test of reading comprehension, 35 (13.67%) achieved a below average result and five (1.95%) a low result. This indicates that 16% of Year 9 students experience significant difficulties with reading comprehension.

An "Average" reading comprehension ability is equated to a stanine of 4-6 (raw score 15-31) on *PAT:RC - Test 6* and "Above average" and "Outstanding" reading comprehension abilities are indicated by stanines 7-8 (raw scores 32-37) and 9 (raw scores 38-42), respectively . On this assessment, 56% (144) of students achieved an average result, 17% (44) were rated as above average, and 11% (28) as outstanding. These results demonstrate the range of reading comprehension abilities of Year 9 students and are consistent with nationally normed statistics presented in the *PAT:Reading - Teacher Manual* (Darr, McDowall, Ferral, Twist, & Watson, 2008).

4.4 The contribution of decoding, language comprehension, vocabulary skills and reading self-efficacy to reading comprehension difficulties

To determine the relative contribution of decoding, language comprehension, vocabulary skills and reading self-efficacy to reading comprehension difficulties, correlation and multiple-regression studies were carried out.

Table 5: Correlations between reading comprehension and component reading skills

	Reading Comprehension	Vocabulary	Language comprehension	Word-reading	Decoding
Vocabulary	.799[**] $n = 244$				
Language comprehension	.059 $n = 30$	.269 $n = 28$			
Word-reading	.410[*] $n = 33$	.630[**] $n = 31$	.072 $n = 29$		
Decoding	.300 $n = 32$	.466[**] $n = 30$	.090 $n = 28$	.872[**] $n = 32$	
Self-efficacy	.572[**] $n = 237$	.609[**] $n = 248$	.188 $n = 27$	.633[**] $n = 30$	.516[**] $n = 29$

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The results indicate that reading vocabulary is strongly correlated with reading comprehension ($n = 244, r = 0.80, p < 0.001$) and that reading comprehension is significantly correlated with reading self-efficacy ($n = 237, r = 0.57, p < 0.001$), which provides support for the third hypothesis.

As expected, there is evidence for significant correlation between reading comprehension difficulties and word-reading skills ($n = 33, r = 0.41, p < 0.05$) for Year 9 students with below-average reading comprehension abilities. It makes sense that students must be able to read words before they can create meaning from text so the level of ability of the former will influence proficiency in the latter. Additionally, word-reading skills are correlated with reading vocabulary ($n = 31, r = 0.63, p < 0.001$) and decoding skills ($n = 32, r = 0.87, p < 0.001$) and decoding skills are correlated with vocabulary ($n = 30, r = 0.47, p < 0.05$) suggesting that all three are inter-related.
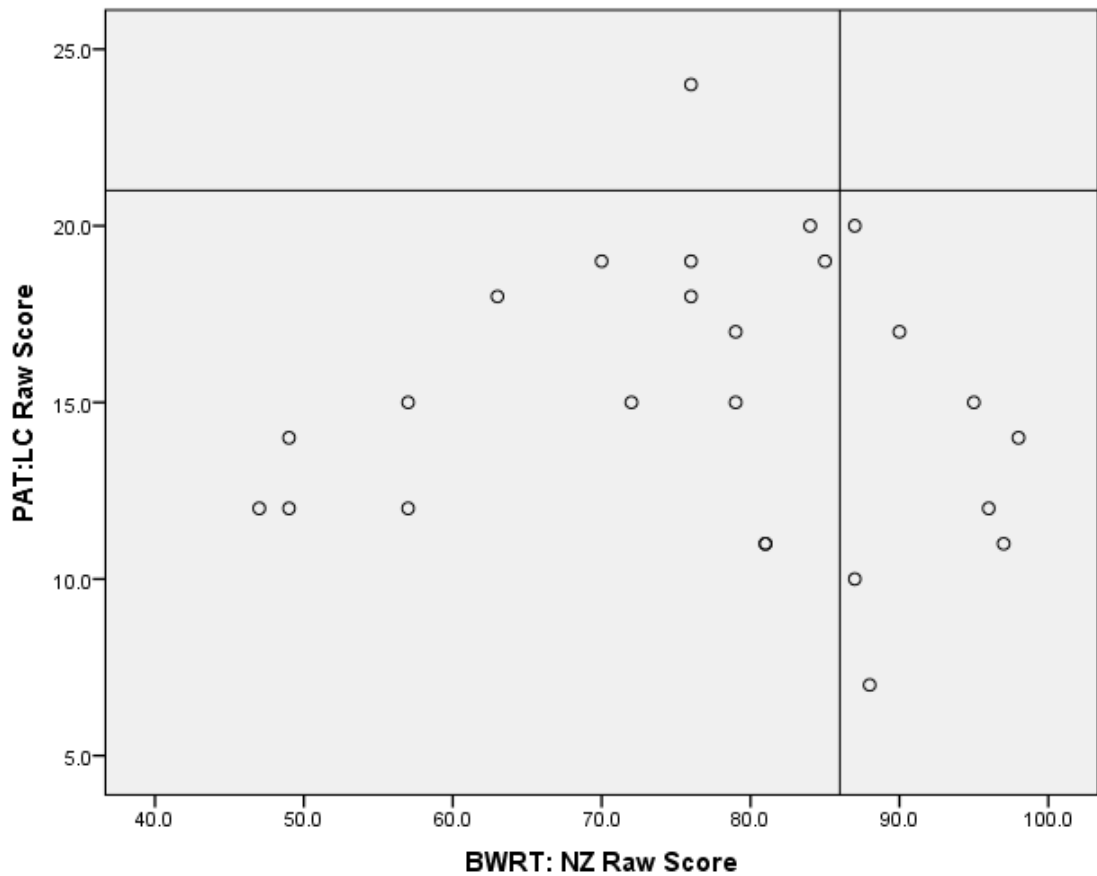
Figure 3: Correlation of word reading ability and listening comprehension for students with below-average reading comprehension ($n = 25$, $r = -0.03$, $p > 0.05$).

This scatter-plot (Figure 3) illustrates the relationship between word-reading skills and language comprehension for students with poor reading comprehension skills. The mean age of the students in this group who completed both tests was 13 years 7 months and so the average *BWRT:NZ* raw score is set at 86 which corresponds to the Equivalent Age Band of 13y3m-13y9m. The average *PAT:LC* raw score for Year 9 is 21.

The figure shows that most ($n = 16$) Year 9 students with reading comprehension difficulties also have below-average word-reading and below-average language comprehension skills. Eight of these students demonstrated below-average listening comprehension abilities and above-average word-reading skills. One student demonstrated above average listening comprehension ability and below-average word-reading skills. This is meaningful as it shows that students with poor reading

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comprehension have varying reading-related needs and require different types of reading-related remediation.

Surprisingly, however, for students with reading comprehension difficulties, neither language comprehension knowledge measured by listening comprehension (*n = 30, r =0.06, p > 0.05*), nor knowledge of the heuristic decoding rules assessed in the *Bryant Test of Basic Decoding Skills* (*n = 32, r = 0.30, p > 0.05*), were shown to correlate significantly with reading comprehension ability.

Multiple regression analysis was performed to calculate the relative effects of the independent variables (reading vocabulary, language comprehension, word-reading and decoding) on the dependant variable (reading comprehension). The Adjusted R Square values suggest that 12% of the total variability in reading comprehension is explained by vocabulary knowledge, 11% by language comprehension, 7% by decoding skills, and 8% by knowledge of heuristic decoding rules, providing some support for the second hypothesis that decoding skills, language comprehension abilities, and vocabulary knowledge contribute to comprehension difficulties experienced by mainstream Year 9 students.

The large discrepancies between the R Square and Adjusted R Square values for *BWRT:NZ* (*0.185* and *0.074*) and *Bryant* (*0.228* and *0.081*) scores suggests that these independent variables – word-reading and decoding – are redundant, which aligns with the high correlation between vocabulary reading ability and word-reading and decoding skills. Correspondingly, ANOVA analysis suggests that only vocabulary knowledge (*PAT:RV scores, F = 4.46, p < 0.05*) and language comprehension skills

(*PAT:LC* scores, *F = 2.57, p < 0.05*) help predict reading comprehension ability (*PAT:RC* scores).

Analysis of the coefficients suggests that, when vocabulary knowledge is held constant, an increase in reading comprehension corresponds with a decrease in language comprehension (*B = -0.13*) and, when vocabulary knowledge, language comprehension and word-reading skills are held constant, an increase in reading comprehension corresponds with a decrease in decoding skills (*B = -0.12*). These results are unexpected given the theory that language comprehension and knowledge of heuristic decoding rules should both contribute positively to reading comprehension.

The results outlined above suggest that language comprehension abilities and vocabulary knowledge, but not decoding strategies, contribute to comprehension difficulties experienced by mainstream Year 9 students. One element affecting these results could be the inefficient use of reading comprehension test-answering strategies used by the students, which might negatively influence their reading comprehension test scores and give an inaccurate measure of reading comprehension skills.

4.5 The contribution of test item answering strategies to reading comprehension difficulties

Analysis of test-item response strategies was carried out to identify which strategies are ineffective and which are effective in selecting a correct response. This assessment required students who had been identified as having below average reading comprehension abilities to re-read a text from the reading comprehension test (*PAT:RC*), to select responses to five test items associated with the text, "Salt" (NZCER, 2008, p. 10), and to explain to the researcher the methods used to select the test-item response.

The text was a short report about the different methods of salt production. The first four test item types for this text are categorised as "Local Inference" which require the reader to "comprehend implied information from within relatively small sections of text", and the final test item is categorised as "Global Inference" which involves "comprehend[ing] implied information from relatively larger sections of text" (Darr et al., 2008, p. 9).

Table 6 illustrates the number of students who answered each test item and how many selected each of the multiple-choices responses. The correct response for each test item is highlighted in the table.

Table 6: Comparison of ineffective and effective strategies used to answer test items for *PAT:RC* text, "Salt".

Item number	A	B	C	D	Total number of responses
21	9	7	3	0	19
22	1	1	10	5	17
23	1	9	2	4	16
24	8	4	1	3	16
25	5	8	4	1	18

An analysis of the students' test item answering strategies revealed eight strategies that produced incorrect responses and six strategies that produced correct responses.

Ineffective strategies that produced incorrect responses included:

- Keyword 'search and destroy'
- Guessing
- Memory of content
- Failure to link main ideas together
- Use of prior knowledge
- Poor vocabulary

- Misunderstanding

- Complex use of strategies above

Coincidental strategies that produced correct responses included:

- Keyword 'search and destroy'

- Guessing

- Memory of content

Effective strategies that produced correct responses included:

- Linking main ideas

- Re-reading for meaning

- Complex use of strategies above

4.5.1 Test Item 21

This test item required the student-participant to select the appropriate phrase to complete the following sentence.

"Solar salt gets its name because its grains are

- A. used in preserving foods.
- B. obtained from dried-up ancient seas.
- C. processed by natural evaporation.
- D. found in deep salt mines."[2]

To select the correct response, the reader must refer to the last sentence in the second paragraph, "Much of the salt used for preserving foods is called solar salt because the moisture is dried off by the sun". The reader needs to understand, firstly, that the reason for the name "solar salt" is provided after the subordinating conjunction "because", and secondly, that "processed by natural evaporation" in response C is an alternate way of expressing that "moisture is dried of by the sun". This process requires the reader to search for keyword "Solar" from the test item, use syntactic knowledge to understand that the reason for the name is provided in the

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[2] (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 11)

subordinate clause, and vocabulary knowledge to equate the meanings of words in the text with a semantically similar expression in the responses.

The correct response is C. Of 18 students who answered this item, nine (47%) selected A, seven (37%) selected B and three (16%) selected C. None selected D.

Sixteen participants (84%) selected an incorrect response to this item. The most common strategy used was the "key word search and destroy technique" (Greaney, 2004) . Students using this strategy frequently read the first phrase response A, "used in preserving foods", and scanned the text for the word "preserving". Finding this word in the last line of the second paragraph, "Much of the salt used for preserving foods is called solar salt because the moisture is dried off by the sun", was taken as confirmation that this was the correct response to select. Other students reported that they attempted to use memory from reading through the text prior to reading the test items. One student used a combination of memory of the test and keyword search to select B, "obtained from dried-up ancient seas".

Three participants selected the correct response to this item. Two students used a combination of keyword search and reading for meaning, searching first for keywords in the first half of the statement ("Solar salt" and "grains", respectively) and on finding these words in the text read the sentence in which they occurred and matched the meaning of the sentence with the correct response phrase C, "processed by natural evaporation". One student claimed to have guessed the correct answer and was unable to identify any strategies used to assist this guess.

4.5.2 Test Item 22

This test item required the students to select the correct answer to a text-based question:

"Where does most of the table salt we use come from?

    A. Salt springs.
    B. Rock formations.
    C. Ancient sea beds.
    D. Salt lakes."[3]

To select the correct response, the reader must understand that the question, "Where does most of the table salt come from?", implies the question, From what is most table salt made and where is the source found? A keyword search of the phrase "most of the table salt" will enable to find the sentence that contains the answer, "Most table salt is made from rock salt, which is found in great sea beds in many parts of the world where ancient seas have dried away". On reading the four response choices, the reader can match the words of the third response, "Ancient seas beds", with words in the text sentence, "beds" and "ancient seas". To be sure the answer is correct, the reader would have to understand the vocabulary "beds" when relating to seas.

The correct response is C. Of 17 students who answered this item, one (6%) selected A, one (6%) selected B and 10 (59%) selected C, and five (29%) selected D.

Seven participants (41%) selected an incorrect response to this item. Again, the most common strategy used by students who responded incorrectly was the keyword "search and destroy technique". The three students using this strategy all selected different incorrect responses, searching for "springs", "table salt" and "Rock", and "Salt lakes", respectively . All of these keywords can be found in the text, and finding

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[3] (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 11)

these words confirmed for each student – incorrectly – that the response was the correct selection.

Prior knowledge, misunderstanding and memory also contributed to incorrect response selections. One student referred to incorrect prior knowledge of where table salt comes from without referring to the text, selecting response D, "Salt lakes", saying that they had learnt in Science that salt comes from a lake near Taranaki. Another student also selected "Salt lakes" because she misunderstood an ambiguity in the item question thinking "we" denoted New Zealanders specifically, and referred to the final paragraph of the text which states that "Most of New Zealand's salt requirements are obtained from Lake Grassmere…".

Two students reported that they attempted to use memory from reading through the text prior to reading the test items.

Ten participants selected the correct response to this item. Four students used keyword search, searching for keywords in response C, "Ancient sea beds", to enable selection of the correct response. However, the success of this strategy does suggest that this strategy is an appropriate strategy to use on its own. Three of these students found "ancient seas" and "beds" in the third paragraph and took this as confirmation that this was the correct response to select. These students did not read the sentence to confirm their choice against the meaning of these words in context so it is somewhat coincidental that this strategy was successful. Another student linked this phrase with words in Item 21, response B, rather than searching the text, which can be considered an inappropriate use of keyword search as a strategy despite the outcome being successful.

One student claimed to use memory of the text to select the correct response. Another re-read the text considering the meaning of what was read to help select the correct response; a strategy that took a lot of time. Three more used a combination of keyword search, memory of the text and re-reading for meaning, which enabled these students to select the correct response with confidence that it was correct.

4.5.3 Test Item 23

This test item required the students to select the correct answer to a text-based question:

"According to this text, why is salt iodised?

A. To improve the quality for use as a preservative.
B. To balance the calcium phosphate content.
C. To further refine the product for commercial use.
D. To make up for the lack of iodine in our diet."[4]

To select the correct response, the reader must read the sentence in paragraph four that contains the answer, "Because much of the world's food is raised in areas where iodine is lacking, saltmakers add a small quantity of iodine to the table salt to make a product known as iodised salt". If the reader searches for the question keyword "iodised" in the text, they must understand that the answer to the question is in the first half of the sentence. The inverted sentence structure could cause difficulties if the student does not recognise the significance of the subordinating conjunction "Because" at the beginning of the sentence. Additionally, the reader must infer from the sentence that food raised in areas where iodine is lacking creates a "lack of iodine

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[4] (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 11)

in our diet" as stated in response D. The word "diet" refers here to foods consumed rather than the popular meaning of food restrictions for health reasons.

The correct response is D. Of 16 students who answered this item, one (6%) selected A, nine (56%) selected B and two (13%) selected C, and four (25%) selected D.

Twelve participants (75%) selected an incorrect response to this item. Again, the most common strategy used by students who responded incorrectly was the keyword "search and destroy technique", mostly searching for the words in response B, "calcium phosphate", which they recalled having read in the text. This chemical name will be unfamiliar to most Year 9 students as it is not part of the Science curriculum at this level. Unfamiliar vocabulary may be more salient to students, especially if they spend time decoding it while reading the text. Once again, this strategy was ineffective because students believed erroneously that finding these words in the text was confirmation that B was the correct response and used no further strategies to check for meaning in context.

One student claimed to guess the answer and could not articulate how this guess was made or checked. One student-participant claimed to use memory to select response A because she thought she recalled having read the word "preservative"; "preserving" is in paragraph two and relates to a use of salt. She did not use any further strategy to check her selection.

Four participants selected the correct response to this item. Two students used keyword search successfully, searching for a keyword in the item question, "iodised". Finding it in the fourth paragraph they took this as confirmation that this was the correct response to select. These students did not read the sentence to confirm their

choice against the meaning of these words in context and so, again, it is somewhat coincidental that this strategy was successful.   One student-participant used a combination of keyword processes, reportedly scanning for the word "quality" in response A, seeing the word "iodised" in paragraph four and scanning that paragraph closely, then seeing the word "lacking" in the same paragraph and finally choosing response D because it contained the word "lack". This student did not read for meaning in context to confirm this selection so, even though the process was more complex, it was still coincidental that the correct response was selected. One student-participant claimed to re-read the whole text to find the correct response; a very time-consuming process that is inefficient even if effective.

4.5.4 Test Item 24

This test item required the students to select the correct answer to a text-based question:

"Why is calcium phosphate added to table salt?

    A. To make it pour easily.
    B. To make it more healthy.
    C. To refine it further.
    D. To make it whiter by bleaching the grains."[5]

To select the correct response, the reader must read the last sentence of paragraph four, "A little calcium phosphate is added to make the salt freeflowing", which contains the answer to this question. The reader must understand the meaning of the word "freeflowing" and connect it with the phrase "To pour more easily".

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[5] (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 11)

The correct response is A. Of 16 students who answered this item, eight (50%) selected A, four (25%) selected B and one (6%) selected C, and three (19%)selected D.

Eight participants (50%) selected an incorrect response to this item. One student used keyword search, searching for "bleaching" in response D and, finding it in paragraph three, erroneously believed this to confirm this was the correct response. One student attempted to use a process of elimination, narrowing the choices to A and D, but finally incorrectly guessed D. Two students attempted to rely on memory of the text to answer this question: the one who selected B claimed to have read something about being healthy, whereas on further discussion it became clear that the word "diet" in Item 23 had created this idea; the other claimed to remember reading something about bleaching.   The three students who claimed to use prior knowledge - that salt was unhealthy - all selected response B.

Eight participants selected the correct response to this item. For this item, the only method used to select the correct response was a complex combination of strategies. All eight students carried out an almost identical process of keyword search for the words "calcium phosphate" from the question, followed by reading the last sentence of paragraph four or the phrase following the words "calcium phosphate", understanding the meaning of the vocabulary at the end of that sentence - "freeflowing", and recognising that the meaning of this word matched the meaning of the words "pour easily" in response A.

4.5.5 Test Item 25

This test item required the students to select the correct answer to a text-based question:

"What is the main purpose of this text?

    A. To explain the use of hydraulic mining to produce salt.

    B. To explain the different methods of producing salt.

    C. To explain the importance of salt in our diet.

    D. To describe the different uses of salt."[6]

To select the correct response, the reader must understand the meaning of the phrase "main purpose". The reader needs to identify and link the main ideas across the text (e.g. how solar salt and table salt are made, and how and why iodised salt is produced) to discover the main purpose of the text is to explain different methods of producing salt.

The correct response is B. Of 18 students who answered this item, five (28%) selected A, eight (44%) selected B and four (22%) selected C, and one (6%) selected D.

Ten participants (56%) selected an incorrect response to this item. The most common strategy used by students who responded incorrectly was the keyword search, mostly searching for the words "hydraulic mining" which they recalled having read in the text. Similar to the selection of "calcium phosphate" in Item 23, this phrase is likely to be unfamiliar to Year 9 students, and the salience of this unfamiliar vocabulary influenced the students selection of response A. One student did not appear to understand the concept of the question and selected the response C by linking the word "diet" with the selection made in the previous test item (B), which referred to the term "healthy". Two students simply failed to link the main ideas in the text: one found it difficult to select a response, attempting to use keyword search, but in the end guessing D; the other stated that it must be C because the text was "all about salt", but she could

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[6] (Darr, McDowall, Ferral, Twist, & Watson, 2008, p. 11)

elaborate no further. Three students guessed the answer, but could not articulate how their guesses were made or checked.

Eight participants selected the correct response to this item. Only one used keyword search, looking for the word "producing" in response B and finding "produced" in the final line of the text "About 70,000 tonnes of salt it produced there annually". This student could not explain why a word from B was selected to start the search. One student claimed to use memory to select the correct response but could not articulate how this guess was made or checked. The other six explained how ideas across the text linked together to explain ways that salt was made and how they used this understanding to select B with an accurate understanding of the vocabulary "methods" and "produced".

4.5.5 Summary of item-response strategies

The most common strategy used by students who selected an incorrect response was the "key word search and destroy technique" by which a student-participant would select a word in the item response and scan the text until the word, or a variation of the word, was found. Finding the word or variation in the text was regarded by the student-participant as confirmation that the response was the correct selection. The keyword 'search and destroy technique' was also used by some students who selected a correct response, and the process was the same as above, but somewhat accidentally resulted in a correct selection.

Some other strategies used by students seemed to enable a correct response inadvertently. For example, guessing and relying on memory of the text were hit-or-

miss strategies which resulted in some correct response selections, but more often in incorrect response selections.

Poor vocabulary understanding, inappropriate use of prior knowledge, an inability to link ideas across the text and even misunderstanding the item caused students to select incorrect responses and are defective strategies for use in this assessment.

Sophisticated strategies were required to select reliably a correct response. For example, students who re-read sections to find meaning that matched a response were successful. Some students combined the keyword search with other strategies, such as re-reading for meaning, to confirm that the response was correct. The final item (25) required students to link ideas across the text to correctly identify the main purpose of the text. All of these reliable strategies required students to understand the vocabulary used in the items, such as "natural evaporation", "Ancient sea beds", "diet", "free flowing", and "purpose", "methods" and "producing", without being side-tracked by potentially unfamiliar, topic-specific vocabulary, such as "preserving", "calcium phosphate", "bleaching" and "hydraulic mining".

These results suggest that item response strategy certainly affects whether a reader can select the correct response in a multiple-choice reading comprehension test, in partial support of the second hypothesis. It is likely that poor item-response strategy use will affect reading comprehension test scores and perhaps provide an inaccurate measure of reading comprehension for Year 9s with reading difficulties.

4.6 Literacy-related practices and beliefs of teachers of Year 9 students

To investigate the literacy related beliefs and literacy-specific knowledge held by teachers of mainstream Year 9 students, questionnaire responses were analysed.

Thirty-three teachers completed the questionnaire. The questionnaire consisted of seven questions [see Appendix E]. Teachers were asked to indicate the subjects taught at Year 9 level in the current year and to identify students in their classes from a list of students.

Responses to the following four questions were categorised and analysed:

- What literacy-related problems have you identified in the Year 9 students in your class(es) this year?

- How do you measure literacy skills in your class(es)?

- How do you analyse literacy-assessment data that you gather?

- Do you have any particular strategies that you use to help these students overcome their literacy-related problems in your class?

4.6.1 Literacy-related problems as identified by the teachers
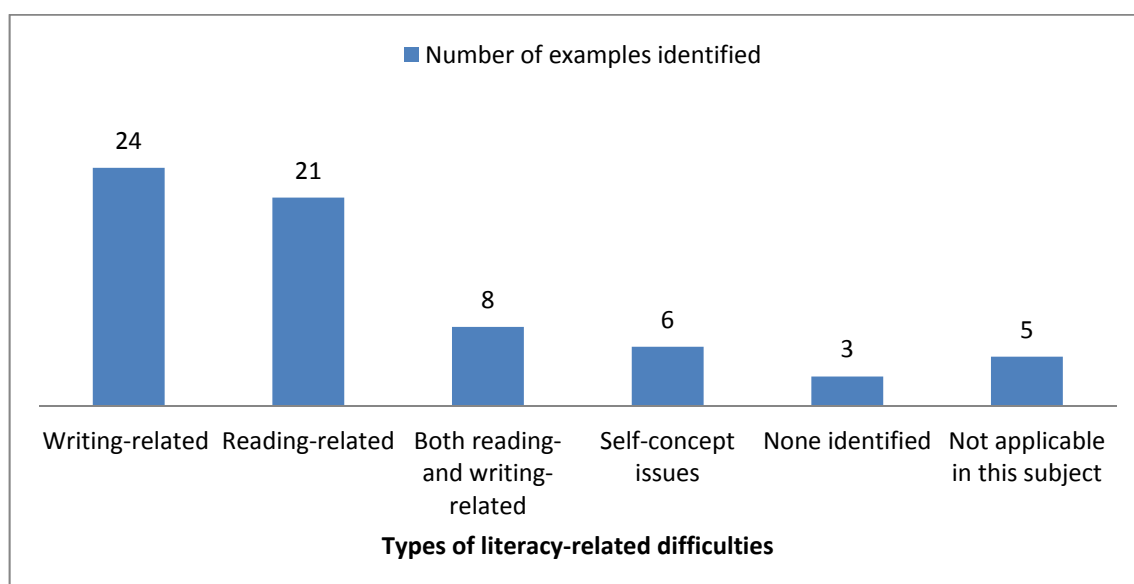
Figure 4: Teacher-participant identification of literacy-related problems in their current Year 9 classes

The literacy-related difficulties identified by the teachers were categorised as writing-related, reading-related, related to both reading and writing, and issues with self-concept. A wide range of writing-related difficulties identified by these participants. Sixteen teachers identified 24 examples of writing-related difficulties experienced by their Year 9 students. These included problems with the following: spelling, syntax, punctuation, grammar terms, verb tenses, transfer of editing skills from practice to own writing, copying instead of creating, accurate copying of simple text, writing fluency when copying, formulating structured answers in assessments, expressing thoughts in written form. One teacher simply identified "low writing ability" and another included "writing" in a list of problems.

Each of the problems listed was identified by an individual participant, except for "spelling" and "expressing thoughts in written form", which were identified by eight and four participants, respectively.

Teachers also identified a wide range of reading-related difficulties. Despite 28 of the 33 teachers indicating that they had students with reading difficulties in their classes (i.e. from the list of students identified in this study as having reading comprehension difficulties), only 13 teachers reported examples of reading-related difficulties. These included: following while text is read aloud, following written instructions, difficulty reading task instructions, understanding questions, reading "wordier" questions in maths, analysing assessment questions, comprehending written text, identifying key points in a text, inferring, reading fluently, and combining ideas across sentences. Again, one teacher simply identified "low reading ability".

Once again, most of the difficulties listed was identified by individual teachers. Difficulties with inference were identified by a Science teacher and a Social Science teacher. Two Maths teachers identified difficulties with reading "wordier" or "written" maths questions despite students understanding the maths concepts. Eight teachers from a variety of subject areas identified comprehending text as a problem. Literacy difficulties that affected both reading and writing included subject-specific vocabulary and prior understanding, morphemic knowledge, pronunciation, and general vocabulary. These difficulties were identified by only five teachers. A Science teacher provided four examples.

Four teachers identified six examples of issues of self-concept that they regarded as negatively affecting literacy. Two English teachers, a Science teacher and a teacher of a special literacy class reported students lacked confidence and demonstrated reluctance to read or to copy from the board. Eight teachers did not identify any literacy-related difficulties. Five teachers of Physical Education reported that they were unable to identify literacy difficulties because literacy was not used in their subject area teaching at this level. A Practical Art teacher, a Visual Art teacher and another Physical Education teacher did not report any literacy-related difficulties.

These results demonstrate a shot-gun-spray lack of consistency across teachers when identifying literacy-related difficulties. If all these teachers had similar levels of ability in identifying literacy-related difficulties, teachers of the same students would more-likely have reported the same difficulties.

4.6.2 Measurement of literacy skills in Year 9 classes
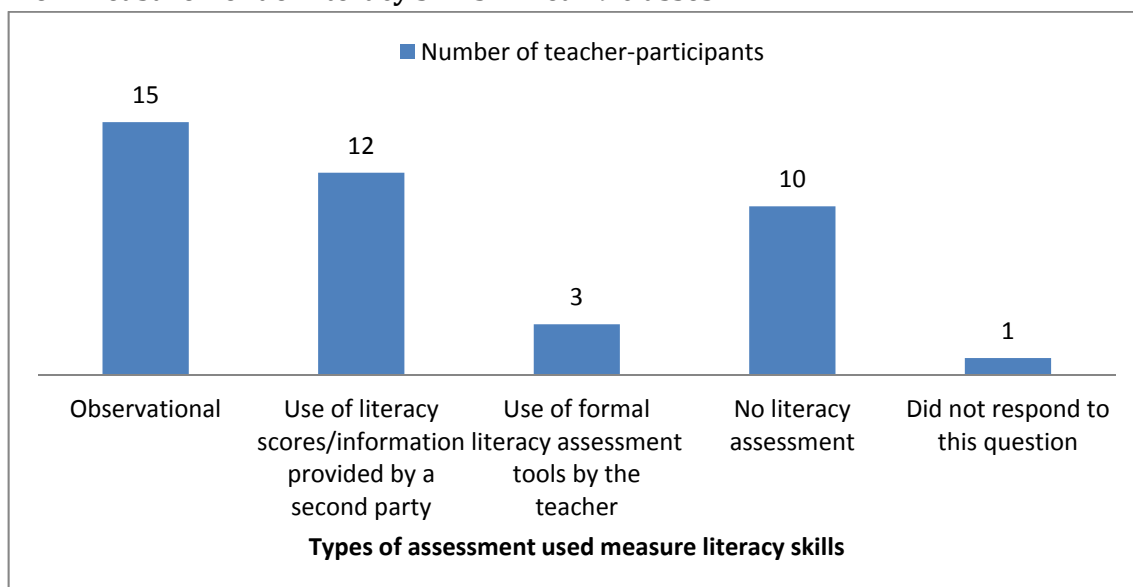
Figure 5: Teacher-participant measurement of literacy skills held by their current Year 9 students

Teachers were asked how they measure literacy skills in their Year 9 classes. Of the 32 teachers who responded to this question, 10 claimed not to perform or receive any English literacy assessment information; two referred to teaching only French-literacy and musical-literacy and implied no need for English literacy assessment in their subject classes. The literacy assessments identified by the teachers were categorised as observational assessment, use of literacy information from someone outside of the classroom, and use of formal literacy assessment tools in the classroom.

Fifteen teachers reportedly used observation of students and student work to assess literacy skills. Teachers reported observations of: verbal responses to teacher-asked questions, written answers to reading comprehension questions, answers given in topic tests, essay responses, homework exercises, and cloze activities. One teacher of English stated, "I have been teaching 41 years. I rely less on "measuring" than on observing and coming to a professional conclusion. e.g. *asTTle* makes large claims about skills sometimes based on as few as two questions," inferring a distrust in formal assessment tools, and confidence in her own abilities to identify literacy difficulties.

73

This teacher had seven of the poor readers from this study in her Year 9 classes and yet identified only writing-related difficulties (transference of editing skills from practice to own writing; paragraphing; general vocabulary) in her response to the previous question, suggesting a narrow understanding of literacy-related difficulties.

Twelve teachers reported receiving literacy scores or literacy-skill-related information provided by a second party, such as the Special Educational Needs Coordinator (SENCO) or testing carried out in another department (e.g. *e-asTTle* completed by students in their English classes). Only five of the 33 teachers reported using formal literacy assessment tools themselves with their Year 9 students. These literacy assessment tools were: cloze tests from the *Assessment Resource Bank*, *e-asTTle* tests, running records and *Success Maker*. An additional two teachers identified non-literacy-specific assessment tools that they use to assess student literacy: *Progressive Achievement Test: Mathematics* which one teacher reported "can show at what level students are thinking at", and *NZCER Thinking with Evidence in Science*.

These results suggest a lack of consistency of assessment of Year 9 literacy needs. In both schools, *e-asTTle* results were made available to all teachers by the SENCO or Literacy Coordinator, but only a third of teachers reported using this information. The most common method of literacy assessment was observation of students and student work, but such assessment requires that the teacher has knowledge of and is able to identify specific literacy difficulties.

4.6.3 Teacher analysis of literacy-assessment data
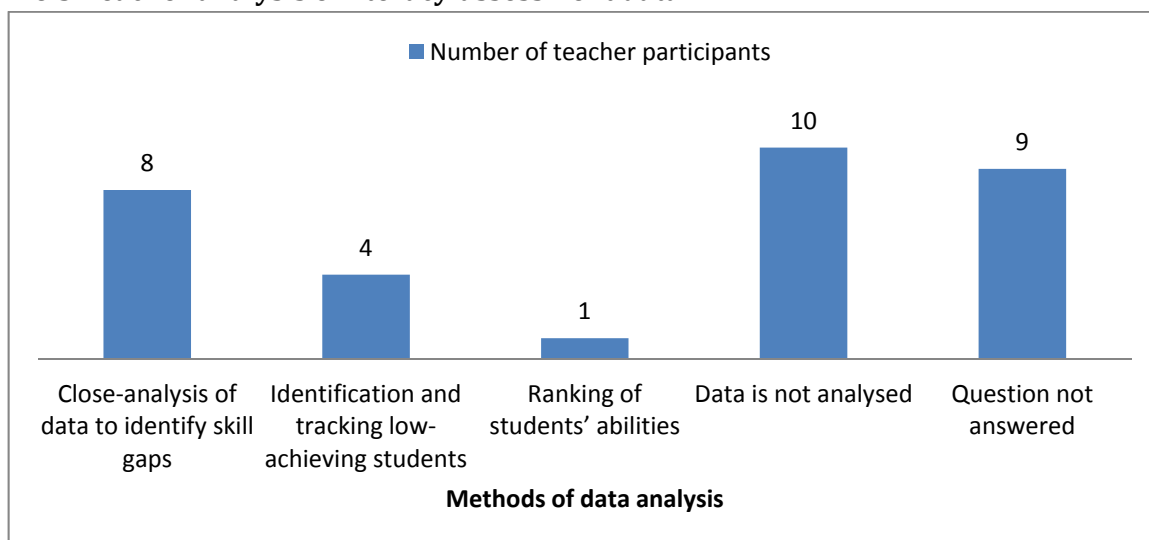
Figure 6: Teacher-participant analysis of literacy data regarding their Year 9 students

Teachers were asked how they analyse literacy-assessment data that they gather.

Only 24 teachers responded to this question. Ten teachers (from English, PE, Science, Social Studies, Practical Art and Maths) reported that they did not analyse literacy assessment data. Reasons given included: it was not their responsibility and was analysed by another staff member, there was no time to do this "on top of everything else", and it was not applicable to the subject (e.g. "you cannot measure success in Art on their literacy skills at this level at least"). A Social Studies teacher remarked, "I dont analyse it, i know that i should though" [*sic*].

A third of the teachers who responded (eight) reported that they analysed assessment results to identify their students' skill gaps. Seven of these teachers referred to *e-asTTle* reports[7] and the other referred to analysing homework results to set vocabulary targets for students. Four teachers claimed to use literacy assessment data to identify low-achieving students and to track their progress. One teacher used literacy

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[7] An *e-asTTle Learning Pathways Report* provides the teacher with statements about individual students indicating which of the skills that were tested are "Strengths", "Achieved", "To Be Achieved" and "Gaps" (Visible Learning Lab, 2010, p. 98).

assessment data to rank students in order of ability, but for no other reason. These

results show that few teachers analyse any literacy-assessment data. Those who do

report very limited analyses and use of assessment data. It seems from the responses

and the number who chose not to respond to this question that teachers of Year 9

students do not view literacy-assessment data analysis as an important responsibility

of theirs.

4.6.4 Strategies used to help students overcome their literacy-related problems

Instructional strategies

A. Modification of task or instructions to make it easier
B. Guiding the student
C. Enabling skill practice
D. Explicit skill or strategy instruction
E. Use of evidence-based pedagogies to improve general learning
F. Assessment of skills
G. Answer unclear
H. Question not answered
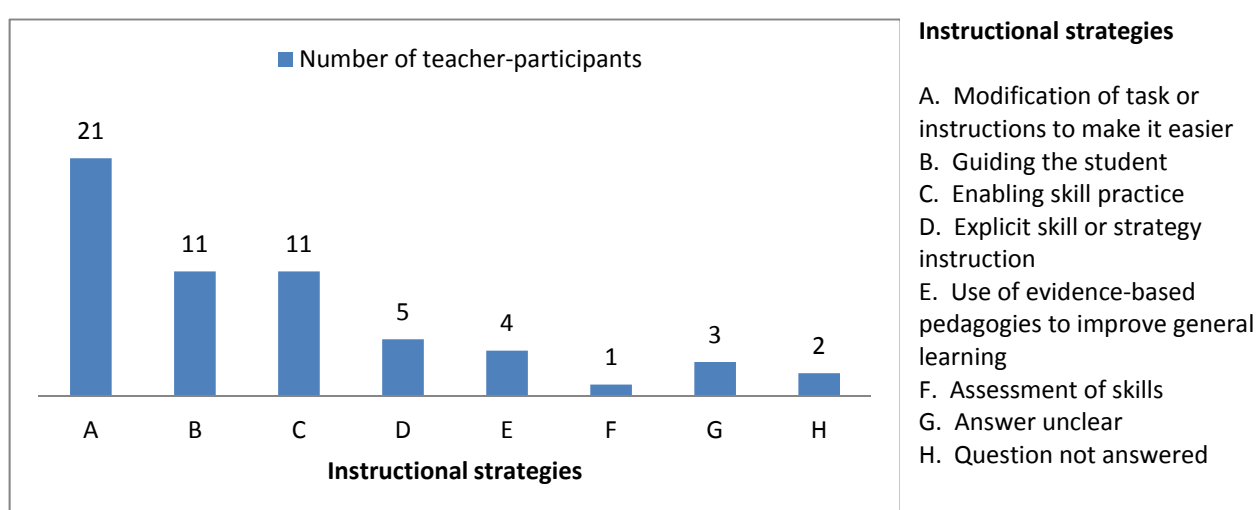
Figure 7: Teacher-participant strategy use to overcome literacy-related difficulties in their Year 9 classes

Teachers were asked whether they used any particular strategies to help students in

their classes overcome their literacy-related problems. Of the 31 teachers who

provided a clear answer to this question, two thirds (22) reported modifying the task

and/or instructions to make them easier for the student. These strategies included:

reading or writing for the student, summarising the ideas or simplifying the vocabulary,

repeating instructions, getting students to work in groups so the weaker students can

use the literacy skills of stronger students, proving information four ways (verbal,

written, graphical and physical demonstration), and enabling students to communicate

understand using methods other than reading or writing.

A third of the teachers (11) reported guiding students to develop their literacy abilities. Strategies included: reading, writing or editing with the student – often during out-of-class sessions; using three-level guides to encourage deeper understanding; providing further explanation or instructions. However, only five teachers (two English, two maths and one literacy) reported that they teach literacy skills explicitly. Skills reportedly taught explicitly included: reading comprehension strategies, vocabulary, prefixes and suffixes, punctuation symbols, nouns, verbs, tenses, spelling patterns, and spelling "essential words".

 A third of teachers (11) reported giving students opportunities to practise literacy skills, such as worksheet activities, games, flashcards, timed-reading practice, and close-reading tasks. However, of these four did not claim to teach the skills they expected students to practise. Some teachers did not identify teaching and learning strategies tailored specifically for improvement of literacy-related difficulties. Four teachers only reported use of evidence-based pedagogies to improve general learning, including cooperative learning strategies, kinaesthetic activities, and discussing ideas before writing. One teacher-participant referred to assessment (*e-asTTle* and teacher-devised reading and writing assessments) as a strategy to over-come literacy-related difficulties.

These results show that most teachers either modify tasks and/or instructions, which enables teachers and students to avoid their literacy-related difficulties, or did not include any literacy-related teaching and learning strategies. Teachers who reportedly included teaching and learning strategies in their lessons to help students overcome literacy-related difficulties relied on time-consuming, teacher-centred guidance or

independent student-centred practice of skills that may not have been taught. Very few teachers reported that they taught specific literacy-related skills to their Year 9 students, indicating that most teachers of Year 9 students do not regard this as an important responsibility of theirs.

4.6.5 Summary of questionnaire responses

The practices reported by teachers in this study show a lack of consistent knowledge across teachers in identifying literacy-related difficulties, probably resulting from the insufficient use of literacy assessments and the poor use of literacy assessment data. They also show the extremely limited literacy-specific teaching that occurs in Year 9 classes. From teacher practices, we can infer teacher beliefs. We can infer from the results of this questionnaire that teachers of Year 9 students do not regard literacy-related assessment and teaching and learning as an important responsibility. These results support the fourth hypothesis that teachers of mainstream Year 9 students lack literacy-specific knowledge and believe it is not their role to teach literacy.

4.4 Summary

The results of this study indicate that the student sample was representative of reading comprehension abilities of Year 9 students in New Zealand, and the range of reading comprehension abilities of Year 9 students and were consistent with nationally normed statistics presented in the *PAT:Reading - Teacher Manual* (Darr, McDowall, Ferral, Twist, & Watson, 2008). Reading self-efficacy, language comprehension abilities and vocabulary knowledge, but not word-reading abilities or decoding knowledge, were shown to contribute to directly to reading comprehension difficulties experienced by mainstream Year 9 students. Additionally, the results showed that

some students beginning their secondary schooling experienced varying degrees of difficulty with mixed combinations of these component reading skills.

The results showed that Year 9 students use a variety of strategies to select test-item responses and these strategies affected the students' reading comprehension test scores. Some strategies, including failure to link main ideas together, use of prior knowledge, poor vocabulary and misunderstanding, were always ineffective and consistently caused students to select an incorrect test-item response. Some strategies were hit-and-miss, such as keyword 'search and destroy' technique, guessing, and memory of content, enabling students occasionally to select a correct test-item response coincidentally. Strategies that consistently enabled students to select correct test-item responses required the students to interpret the meaning of the test items, item responses and the text, including re-reading for meaning, linking main ideas, and combining other strategies to construct meaning. Investigation of the literacy-related practices of teachers of Year 9 students showed a lack of consistent knowledge across teachers in identifying literacy-related difficulties, insufficient use of literacy assessments, poor use of literacy assessment data and extremely limited literacy-specific instruction. These results suggest that teachers of Year 9 students do not regard literacy-related assessment and teaching and learning as an important responsibility.

Chapter Five: Discussion

This study aimed to assess the reading difficulties experienced by students entering secondary school (Year 9s) in New Zealand and to evaluate the literacy-related knowledge and beliefs held by teachers of Year 9 students. This chapter presents a discussion of the results from this study in light of the literature reviewed in Chapter Two. Finally, the implications for future literacy development and leadership in New Zealand secondary schools is discussed.

This study sought to answer three research questions. Firstly, "What is the prevalence of reading comprehension difficulties in Year 9 students and what are the contributors to these difficulties?" The results suggested that a significant proportion of Year 9 students experience reading comprehension difficulties and that language comprehension abilities and vocabulary knowledge contribute directly to their reading comprehension difficulties. Secondly, "Does reading self-efficacy decline as a function of reading comprehension ability?" The results suggested that low reading self-efficacy is correlated with low reading comprehension ability. Finally, "What literacy related beliefs and literacy-specific knowledge are held by teachers of mainstream Year 9 students?" The results of this study suggested that literacy-related practices in Year 9 classes are lacking, indicating insufficient levels of literacy-related knowledge held by teachers of Year 9 students and that they do not regard literacy teaching as an important responsibility.

5.1 What is the prevalence of reading comprehension difficulties in Year 9 students?

The results of this study provided evidence that one in six Year 9 students in mainstream classes experience significant difficulties with reading comprehension. Although this finding suggests a slightly lower proportion of Year 9 students who struggle with reading comprehension than indicated by the nationally normed data in the *PAT: Reading – Teacher Manual* (Darr, McDowall, Ferral, Twist, & Watson, 2008), and a much lower proportion than was reported by Wise (2009) who found that "most middle and high school students [in the USA] read below grade level and are unable to comprehend their increasingly complex texts and course materials" (p. 373), the needs of these students cannot be ignored. Their specific reading difficulties need to be diagnosed so that appropriate instruction can be selected and implemented.

In addition to students with basic reading comprehension difficulties, the results of this study show that most Year 9 students have average reading comprehension abilities, which is consistent with the nationally normed data in the *PAT: Reading – Teacher Manual* (Darr, McDowall, Ferral, Twist, & Watson, 2008). If these students do not continue to develop their reading skills and strategies, they may fall behind in subsequent years. It is likely that these students have developed the "Basic Literacy" level – word-reading skills, and knowledge of print and literacy conventions, punctuation and story organisation – and some "Intermediate Literacy" skills – increased automaticity, improved understanding of morphology, metacognitive comprehension strategies, vocabulary knowledge, and reading fluency (Shanahan & Shanahan, 2008, p. 44). It is important for these students that they are assessed for both weaknesses and strengths so that instruction can challenge them within their

Zone of Proximal Development (Daniels, 2001) to enable them to continue to develop "Intermediate Literacy" and "Disciplinary Literacy" skills.

Twenty-eight percent of students in this study achieved above average on the assessment of reading comprehension. These students have mastered basic reading comprehension skills and strategies and need to be extended to develop advanced, disciplinary-specific reading comprehension skills and strategies as they progress through the secondary school years.

The results of this study support the finding that students entering secondary school experience a wide variety of reading-literacy needs, from those who still have basic reading difficulties to those who need extension of disciplinary-specific reading comprehension strategies (National Centre for Education Statistics, 2009, cited in Lee & Spratley, 2010). They demonstrate that there is an extensive gap between the highest and lowest readers in students entering secondary school education, which is also found at age 15 (Telford & May, 2010).

5.2 What factors contribute to reading comprehension difficulties?

The results of this study found significant relationships between reading comprehension and reading vocabulary, word-reading skills, and language comprehension. They also showed that reading comprehension test-item response strategies contributed to difficulties on reading comprehension tests. Discovering the level of reading comprehension difficulties experienced by Year 9 students is just the first step on the road to developing comprehensive, differentiated reading development programmes for these students. The next step is diagnosing specific reading-related difficulties that contribute to problems with reading comprehension.

Vocabulary, word-reading and decoding abilities. This study found significant

relationships between reading comprehension abilities and both reading vocabulary

and word-reading skills. Reading vocabulary has been shown in previous research to

affect success in reading comprehension assessment (Dewitz & Dewitz, 2003; Greaney,

2004; Nation, 1998; Nation & Snowling, 1998; Nation, et al., 2004; Nicholson, 1988).

Difficulties occur when the word read is not in the reader's mental lexicon or when the

terminology differs between the text and the test item. In this study, data from

students who completed both tests of reading comprehension (*PAT:RC*) and reading

vocabulary (*PAT:RV*) demonstrated a positive correlation between these abilities, and

multiple regression analysis indicated that reading vocabulary knowledge helped

predict reading comprehension ability. Additionally, students who completed the

close-analysis assessment of reading comprehension test-item response strategies

provided further evidence that vocabulary knowledge or misunderstandings

contributed to the level of success or failure. The types of test items in the *PAT:RC –*

Test 6 require a great deal of inference. For example, of the 42 test items in this test,

33 involve local inference and six involve global inference meaning that 93% of the test

requires the reader to infer information in the texts.   Nation (2005) found that

"children who are poor at making inferences tend to have weaker vocabulary skills

relative to children who are skilled at making inferences, and vice versa" (p. 263).

Word-reading skills have also been shown in previous research to contribute to the

development of reading comprehension (Brent & Milgate-Smith, 2008; Catts & Kamhi,

2005; Gough & Tunmer, 1986; Shanahan & Shanahan, 2008; Spear-Swerling &

Sternberg, 1996).   Shanahan and Shanahan (2008) described word-reading skills, such

as sight-word recognition and decoding strategies, as *Basic Literacy* skills and described

automaticity of word recognition and improved understanding of morphology as *Intermediate Literacy* skills (p. 44). Supporters of the phonics and balanced approaches to reading instruction acknowledge the importance of word-reading skills to the development of reading comprehension (Conelly, Johnson & Thompson, 2001; Pressley, 2006; Share & Stanovich, 1995; Tunmer & Chapman, 2002; Tunmer & Nicholson, 2011). The current study supports these claims and illustrates that most students with poor reading comprehension skills (68%) also demonstrated below-average word-reading abilities [Figure 3].

A strong correlation between reading vocabulary and word-reading demonstrates that these abilities are interrelated. Additionally, both these abilities are associated with decoding skills. The multiple regressions analysis indicated that vocabulary abilities are dependent on word-reading and decoding skills and so, when vocabulary is considered in relation to reading comprehension ability, word-reading and decoding are already accounted for and so they have no additional effect on reading comprehension ability.

These results suggest that some difficulties with reading comprehension stem from difficulties with reading vocabulary, word-reading and decoding. It is important, therefore, that students' word-level abilities are assessed to ascertain whether or not they are experiencing difficulties in these areas. Only by correct identification of component reading difficulties can appropriate remedial reading instruction be selected and implemented.

Language comprehension. It was expected that language comprehension abilities, measured as listening comprehension, would contribute to reading comprehension as indicated by the Simple View of Reading theory (Gough & Tunmer, 1986). Although

the results of the current study showed no correlation between reading comprehension (*PAT:RC* scores) and language comprehension (*PAT:LC* scores), multiple-regression analysis showed that language comprehension abilities did help predict reading comprehension abilities.

It was unusual to discover through analysis of coefficients that, when reading vocabulary skill is held constant, language comprehension is negatively associated with reading comprehension. A possible explanation for this is that the *PAT:LC* assessment is not a pure measure of language comprehension as scores are likely affected by hearing and memory abilities and listening-test-item response strategies.

Categorisation of reading disabilities. The results of this study illustrated that most Year 9 students with reading comprehension difficulties experienced difficulties both with word-reading and with language comprehension. With reference to the categorisation of subtypes of poor readers (Catts & Kamhi, 2005), these students would be classed as *Mixed Reading Disability*. These students require intensive instruction to improve both word-level reading skills and reading comprehension strategies. Some of the poor comprehenders students demonstrated below-average listening comprehension abilities and above-average word-reading skills, and would be categorised as *Specific Comprehension Deficit*. These students would not benefit greatly from word-reading skills instruction, but rather require reading comprehension strategies instruction. A poor comprehender, who demonstrated above average listening comprehension ability and below-average word-reading skills, would be categorised as "having *dyslexia*" (p.74) and would require systematic, explicit word-reading instruction (Ehri, Nunes, Stahl, & Willows, 2001). It is clear that students with

poor reading comprehension will be best served if their component reading difficulties are diagnosed so that appropriate remedial instruction can be selected and implemented.

Reading comprehension test-item response strategies. Research has shown that the strategies used by readers to comprehend and respond correctly to test items influence reading comprehension test scores (Dewitz & Dewitz, 2003; Greaney, 2004; Greaney & Arrow, 2011; Nicholson, 1988). Nicholson (1988) discovered that low-progress readers in the secondary school demonstrated difficulties with inappropriate use of or lack of prior knowledge, lack of vocabulary knowledge and some with decoding. Greaney (2004) reported that test-answering strategies, such as *keyword search and destroy technique*, inability to link ideas, inappropriate use of prior knowledge and lack of vocabulary knowledge, contributed to the selection of incorrect item responses on reading comprehension tests of Year 4 students.

The current study indicated similar findings for Year 9 students with low reading comprehension scores on *PAT:RC*, showing that test-item response strategies affected response selection and, therefore, test scores. This study investigated not only the strategies used to select incorrect responses to test items, but also those used to select correct responses. The results suggested that students' test-item response strategies affected their test scores.

Test-item response analysis showed a wide range of ineffective, coincidental and effective strategies. The *keyword search and destroy technique* was the most common strategy utilised by the students with low comprehension abilities, even though it is not an effective strategy. This strategy consisted of the reader selecting a

keyword from an item response and searching for its existence in the text. If the keyword was found in the text, the reader took it as confirmation that the response containing the keyword was correct. More often than not, this resulted in the student selecting an incorrect response, but sometimes it coincidentally resulted in the selection of a correct response. Because this strategy alone, that is without the use of other strategies, does not consider the meaning of the text, neither an incorrect nor a correct response is a true indication of the reader's comprehension of the text. Similarly, correct or incorrect responses selected using strategies such as guessing or relying on memory of the text are not accurate indications of reading comprehension.

Some strategies did reflect reading comprehension difficulties. Inappropriate use of prior knowledge, an inability to link ideas across the text and misunderstanding of the item all resulted in selection of incorrect responses and demonstrate poor understanding of what has been read. Efficient strategies for selecting a correct response required consideration of the meaning of the test item, the test responses and the text itself. They included re-reading sections of text, sometimes to confirm predictions based on keyword search, guessing and memory of the text, and linking main ideas across the text. Selection of correct responses always required understanding of vocabulary used in the items.

It was clear from these results that test-item response strategies contribute to reading comprehension test scores, but also that only some strategies result in an accurate indication of reading comprehension abilities in Year 9s with poor reading comprehension test scores.

When evaluating reading comprehension abilities, it is important for teachers to consider the relative contribution to each student's reading comprehension test scores made by test-item responses and the strategies students use to select their responses. To construct an accurate and comprehensive understanding of students' reading comprehension abilities, it would be beneficial for teachers to use more than one measure of reading comprehension and to analyse both test-item response strategies and reading comprehension strategies used by each student. Instruction of test-item response strategies and reading comprehension strategies will likely improve reading comprehension abilities and reading comprehension test scores.

5.3 Does reading-self efficacy decline as a function of reading comprehension ability?

This study also showed a correlation between reading comprehension and reading self-efficacy. Self-efficacy has been shown to affect reading achievement (Marzano & Pickering, 2011; Mullis, Martin, Kennedy, & Foy, 2007; Solheim, 2011, p. 23). Readers' concepts of themselves as readers affect their capacities to comprehend what they read and their reading-related attitudes and behaviours.

Marzano and Pickering (2011) explained that a learner's ability to answer in the affirmative the questions "How do I feel?" and "Am I interested?" determines whether or not s/he will pay attention to the task, and positive answers to the questions "Is this important?" and "Can I do this?" will determine whether or not s/he will engage in the task. The Reading Self-efficacy Measure developed for this study asked a mixture of questions to determine students' opinions related to reading attention and engagement levels.

A possible explanation for high correlation between reading comprehension and both reading vocabulary and self-efficacy, and the negative coefficients associated with language comprehension and decoding skills, could be that the test results are related to student self-efficacy at the time of testing. The *PAT:RC* and *PAT:RV* tests and the self-efficacy measure were completed in the students classroom groups following a brief introduction and explanation of the assessment procedures and rules by the researcher. With reference to Marzano and Pickering (2011), if the students, when faced with these tests felt uncomfortable or anxious (low "emotional tone" (p. 19)) or that they couldn't do the test (low engagement) – perhaps stimulated by the context of testing in a somewhat impersonal, large-group environment with limited interaction with the researcher – they may not have paid attention or engaged appropriately with the tests causing them to perform more poorly than they might have if they had felt more at ease. The self-efficacy measure are likely to have been an accurate expression of how the students felt during these two tests. On discussion with some of the students in the subsequent individual testing sessions it became clear that they had guessed the answers or not put in much effort on the *PAT:RC* and *PAT:RV* tests because they did not think the testing was important. Acknowledgement of importance is crucial to engagement (Marzano & Pickering, 2011). However, when working one-on-one with the researcher, where casual interactions improved the "emotional tone" of the testing context, and the importance of the assessment (to the research process and to the student as the results would be submitted to their teachers to help them with their learning) was reinforced, both attention and engagement may have improved making their results on the word-reading, decoding

and listening assessments more accurately reflect their true abilities. Self-efficacy was not measured again during these one-on-one test sessions.

It may be stated then, from the results of this study, only that there is evidence for a relationship between reading self-efficacy and reading comprehension abilities, but directional causation cannot be attributed. It may be possible that reading self-efficacy may be dependent on assessment context and influences test scores, especially for students with low reading self-efficacy.

5.4 What literacy related beliefs and literacy-specific knowledge are held by teachers of mainstream Year 9 students?

The results of this study indicate that teachers of mainstream Year 9 students lack the knowledge and skills to assess and remediate the literacy-related difficulties experienced by their Year 9 students. There is evidence of disparate morsels of literacy-related knowledge spread sporadically across teachers: identification of literacy-related difficulties in their Year 9 classes was inadequate; no teachers provided evidence of comprehensive literacy-specific assessment collection or analysis procedures; and, implementation of comprehensive literacy instructional practices was sparse.

Every student deserves instruction that caters to their educational needs (International Reading Association, 2012). They need accurate diagnosis of reading difficulties, appropriate instruction tailored to individual needs, and regular progress monitoring. To achieve this, teachers of mainstream Year 9 students should be trained to assess and remediate their students' reading-related difficulties. They need to have knowledge of assessment tools that are available, what they measure, how they should be administered effectively, how to use tools for diagnostic, formative and

summative purposes, and how to analyse and interpret the quantitative and qualitative results. They need to know how to use assessment information to select appropriate instructional tools and programmes to suit students' needs and how to implement them effectively, and how check for program efficacy. Additionally, they must acknowledge the importance of their role as teachers of literacy.

It seems apparent from the results of this study, combined with the fact that so few teachers contributed to this study (33 out of a possible 83), that very few teachers acknowledge their responsibility as teachers of literacy in their subject area classes and, of those who do, few are able to put their beliefs into practice.

According to the 2012 NZCER national survey (Wylie, 2013), 83% of New Zealand secondary teachers reportedly held the opinion that providing active literacy learning opportunities in their classes was important and 64% claimed they provided such opportunities regularly. The results of this current study indicate that the knowledge and practices of secondary teachers is considerably lacking. Perhaps it is an issue of low teacher self-efficacy, rather than of conscious rejection of responsibility, that hinders teachers taking a more active role as literacy teachers in their subject areas. Marzano and Pickering (2011) reported the findings of a meta-analysis of studies of the "relationship between self-efficacy and work-related performance" (Stajkovic & Luthans, 1998, cited in Marzano &Pickering, 2011, p. 16), which suggested that perceptions of self-efficacy are substantially related to adult work performance.   If a teacher answers negatively to any of the key questions – How do I feel? Am I interested? Is this important? Can I do this? – with regard to literacy-related assessment and instruction, it is likely that s/he will not afford this teaching

responsibility its due attention and will not engage in literacy-related assessment and instructional practices.

To improve secondary teachers' confidence with literacy-related assessment and instruction, they need extensive education about the theories of reading development, various reading difficulties, literacy assessment, and appropriate reading instruction approaches and programmes. Simply identifying students as having literacy-related difficulties, such as they "can't read" or have "writing problems", or merely ranking students according to reading ability, is inadequate. It is important for teachers to be provided with the knowledge and skills to utilise appropriate diagnostic, formative, and summative assessments, and to perform quantitative and qualitative analyses of these assessments, so as to ensure that reading difficulties are accurately diagnosed and, subsequently, appropriately differentiated literacy instructional practices can be integrated into lessons across all subject areas.

Secondary teachers teach students with a wide variety of literacy-related needs. This study has illustrated that, in the reading domain, Year 9 students have difficulties ranging from very basic reading difficulties – decoding, word-reading, vocabulary and language comprehension difficulties – which are associated with difficulties comprehending texts at secondary level. In addition to catering for students with low-level reading difficulties, secondary teachers are responsible for helping students develop intermediate and disciplinary literacy skills such as improved understanding of morphology, metacognitive comprehension strategies, reading fluency and subject-specific vocabulary and background, textual and procedural knowledge. It is important, therefore, for secondary teachers not only to have the knowledge and skills

to enable the use of appropriate literacy assessment and instruction, but also to be provided with significant professional support to develop their literacy-related teaching and learning and assessment practices.

5.5 Study limitations

5.5.1 Sample issues.

Two factors may have under-represented the actual proportion of Year 9 students with significant reading comprehension difficulties in this study. The first factor is the selection process. Because participation in this study was voluntary, it is likely that some students with low reading self-concept, who may have felt anxious about revealing poor reading skills, opted out. The second factor is that this study only assessed students in mainstream classes. This means that students who did not attend mainstream classes due to special educational, physical, and/or behavioural needs were not included in the sample. The reason for this was to illustrate the reading-related difficulties experienced by students who teachers of mainstream classes must be prepared to teach. These results show that teachers of mainstream Year 9 students must be equipped with the knowledge and skills to teach a wide range of reading-related skills and strategies from very basic reading skills to disciplinary-specific comprehension strategies. If all Year 9 students in both schools had been assessed, it is possible that the proportion of students with reading comprehension difficulties would have been larger.

Although the number of students who completed the *PAT:RC* and *PAT:RV* tests was large enough to capture a sample representative of Year 9 students in New Zealand (*n = 257* and *n = 255*, respectively), when the subsequent assessments of students with below-average reading comprehension abilities was carried out, the sample sizes

became very small (*PAT:LC, n = 30*; *BWRT:NZ, n = 33*; *Bryant, n = 32*). The small samples of test scores is likely to have contributed to the unusual results.

The homogeneity of the below-average comprehenders may also have contributed to unusual results. A significant correlation may not have been observed between reading comprehension and either language comprehension or knowledge of the heuristic decoding rules because the students in both test samples were low in both abilities and so their scores are clustered together. These skills would likely be correlated if the ability ranges were wider.

The sample size of teachers was very small. Only 33 out of a possible 83 teachers submitted questionnaires for this study. Because teachers are very busy, it seems likely that only teachers who felt particularly passionate about this field of research – the importance of literacy instruction and assessment in secondary schools – would have made the time to complete the questionnaire.

5.5.2 Assessment measures.

The tests used to measure reading-related abilities in this study may have contributed to the results. The results of this study have shown that the format of the *PAT:RC* test contributed to test scores with respect to the test-item response strategies that students needed to perform in order to demonstrate their reading comprehension skills. Using an additional measure of reading comprehension may have allowed a more accurate indication of the students' reading comprehension abilities. It is likely that test-item response strategies will have contributed to the scores on the *PAT:RV* and *PAT:LC* tests, too. Additionally, the reliability of the *PAT:LC* test as a measure of

94

language comprehension is questionable as factors such as hearing, memory abilities and concentration are likely to have contributed to test scores.

A limitation of this study, which possibly caused the lack of correlation between decoding and reading comprehension, is the style of the *Bryant Test of Basic Decoding Skills* (1975, reproduced in Nicholson, 2005). Although this test provides a quantitative indication of a reader's ability to recognise pseudo-words that emulate English words according to some heuristic decoding rules, in the form of a raw score of pseudo-words pronounced correctly, the raw score perhaps does not accurately represent a quantitative level of decoding ability. The test is better used as a qualitative assessment to ascertain which decoding skills a student has mastered and which require further instruction. Analysis of the assessment responses can help identify students who are "cue or cipher" readers (Tunmer & Nicholson, 2011, p. 409) – that is those who guess words based on letter cues and those who use spelling-sound relationships to interpret words. Because the words in this test are not real words, a reader cannot use other strategies to assist the recognition of words. Word recognition in isolated word-reading (*BWRT:NZ*) and vocabulary (*PAT:RV*) tests, which are strongly correlated with reading comprehension (*PAT:RC*), require not only the use of decoding abilities, but also sight-word reading and semantic understanding which may compensate for some poor decoding skills.

Reading comprehension test-item response strategy use was measured through analysis of students' responses to one text, "Salt" (NZCER, 2008), unlike Greaney (2004) who assessed responses across a number of test texts. Text genre has been shown to influence reading comprehension (Lubawski & Sheehan, 2010; Sadeghi,

Hassani, & Hemmati, 2013) and so it is possible that students may utilise different test-item response strategies and reading comprehension strategies for different text types.

The self-efficacy measure, created by the researcher, was not tested for reliability or validity. It was based on the self-efficacy measure used in the Progress in International Reading Literacy Study (Mullis, Martin, Kennedy, & Foy, 2007) and measured self-efficacy using a balance of attention- and engagement-related statements (Marzano & Pickering, 2011). Additionally, self-efficacy was only measured at one point during the testing process and so may not represent a general indication of each student's reading self-efficacy, but only a snap-shot at one time. As Marzano and Pickering (2011) explained, reading self-efficacy is dependent on the emotional tone of the context. If reading self-efficacy had been measured both during the in-class testing and the one-on-one testing a more reliable evaluation might have been achieved.

All measures, for students and teachers, were completed outside of the context of regular lessons. Nicholson (1988) found that working with students in the classroom environment enabled him to evaluate reading-related activities and difficulties as they occurred in an authentic teaching and learning context. If this study had included observation literacy-related practices of students and teachers in authentic classroom contexts, more might have been learned about the practices teachers employ to identify and remediate students' literacy-related difficulties.

5.6 Implications for practice

5.6.1 Literacy-related professional development for secondary teachers

The need for secondary teacher training (pre- and in-service) in the theories of reading development, assessment and diagnosis of reading difficulties, and effective methods of targeted remedial instruction is clear (National Institute for Literacy, 2007), but it requires substantial time and financial expenditure to enable teachers to learn, reflect, plan, share ideas, work with individual students, and complete administration and paperwork (Wylie, 2013, p. 23).

The importance of literacy development in schools is acknowledged by the Ministry and, in recent years in New Zealand, there have been a number of Ministry-driven literacy development initiatives: "Learning through Language", "Building blocks: A cross-curricular approach", "Secondary Literacy Project" (using the *Effective Literacy Strategies* book), "Secondary Literacy Project" – second instalment (using literacy leaders and focus groups). The Secondary Literacy Project was discontinued in 2012. Each of these initiatives had valuable elements, but cost and time resulted in each being wholly abandoned – baby and bathwater.

Ministry-provided professional development is now very difficult to acquire. Currently, if literacy professional development is required by a secondary school, they must apply for a Professional and Learning Development contract with the Ministry. Contracts are allocated on the Ministry assessment of "priority of need" with a focus on "priority learners", namely Māori and Pasifika students, students with special educational needs, from low socio-economic backgrounds or "in care" (Ministry of Education: Te Tāhuhu o te Mātauranga, 2013). Schools must reapply at the end of each year. The contract involves funding support for a project for school leaders and teachers by way

of a series of workshops and occasionally some supplementary support. These contracts are narrow in focus, failing to cater for the comprehensive needs of secondary teachers teaching students at every level of literacy development.

Just as one-size-fits-all assessment and instruction for students is not effective for all, the same professional development for all schools and all teachers within a school will not be effective for all. Individual teachers will have different needs with regard to the type of knowledge each currently possesses and the knowledge each will need to help cater to his/her students' specific literacy needs. Additionally, in the secondary school context where each student is taught by many teachers it would be inefficient and somewhat redundant for every teacher to be carrying out the same assessment and implementing exactly the same instruction. Literacy assessment, teaching and learning needs to be coordinated at a higher level to ensure a comprehensive and efficient system is in place to serve the needs of teachers and students.

Many secondary schools have developed Professional Learning Groups – small groups of teachers across departments with a shared goal for developing teaching practice to improve student achievement. Groups share knowledge of teaching tools and strategies, often implementing a professional inquiry process to assess the success of a chosen approach to teaching.   However, establishment of a PLG does not ensure successful professional development (Baldwin, 2008). Although in some circumstances sharing knowledge held by individuals within a group can be beneficial, the value of this is limited to what the collective already knows. The results of this study indicate that if every teacher who contributed to this study was involved in the same PLG and was provided with significant time and resources to share their disparate gems of

literacy-related knowledge, staff at these schools could learn a great deal. However, the reality of time- and cost-limits on professional development in secondary schools means that this would be impossible. PLGs can benefit from employing an expert from outside of the school, but the cost of such a venture is inhibitory.

Sustained, high-quality professional development is needed if any literacy program is to be implemented effectively (Deshler, Palincsar, Biancarosa, & Nair, 2007). "When schools develop a comprehensive literacy plan, they amplify their chances for successfully improving adolescent literacy" (p. 57).

5.6.2 A case for in-school literacy specialists

"Reading/literacy specialists or literacy coaches in middle and high schools are still sorely needed" (International Reading Association, 2012, p. 3). Secondary teachers require in-depth, on-going, easily accessible support to develop understanding of literacy assessment and instruction and to improve literacy-related practices. Boards of Trustees would like clearer assessment data to help with allocation of resources (Wylie, 2013, p. 42). An onsite literacy specialist could cater to these needs.

Furthermore, in the secondary school environment, a comprehensive literacy plan requires coordination across subject areas so that students are receiving appropriate literacy support in all their classes. Such coordination requires collaboration and cooperation from all teachers (Deshler, Palincsar, Biancarosa, & Nair, 2007). A subject-neutral literacy teaching and learning specialist could help foster such collegial interaction.

Many schools have Literacy Leaders – middle managers with varying degrees of responsibility and expertise. Literacy Online provides a job description for literacy

leaders in secondary schools (Barrar, 2010) including key roles such as "Planning, coordinating and evaluating teaching and the curriculum" and "Promoting and participating in teacher learning and development", but it neglects to indicate the need for expertise in the field of literacy education. In order to be an effective teacher-educator – as a literacy leader should be – it is vital to have a solid understanding of the subject matter and to continue developing relevant knowledge and skills.

According to ERO (Education Review Office, 2012), literacy leaders should:

- evaluate the literacy needs of the whole school by coordinating assessment at classroom and individual student levels;

- construct comprehensive plans for teacher professional development and support, and coordinate supplementary support for individual teachers and students based on need;

- keep abreast of current research to identify and select appropriate assessment and instructional tools and subsequently train teachers to use these for greatest effect;

- report directly to the school board to keep them informed of staff and student needs to enable adequate resourcing, and to provide evaluation of success of instructional programs.

Only an appropriately qualified, on-site literacy specialist with sufficient allocated time could fill this role adequately.

5.7 Further research

The current study highlights the need for extensive research in the area of the literacy-related needs of secondary students and the abilities of secondary teachers to respond to those needs. Moreover, it is important that further research investigates the impact of appropriately qualified, on-site literacy specialists on the development both of secondary school teachers' literacy-related knowledge, practices and beliefs and of secondary school students' literacy abilities.

Conclusion

This study has shown that Year 9 students in New Zealand schools experience a wide variety of reading related difficulties. A large proportion of these students experience difficulties with reading comprehension. These low-level comprehenders also experience a range of other reading-related issues including poor decoding and word-reading skills, reading vocabulary, and listening comprehension and low self-efficacy. The students assessed in this study are mainstream students, which demonstrate that teachers of mainstream classes – who are not literacy specialists – are faced with teaching students with an enormous range of reading difficulties.

It is the responsibility of every teacher to integrate appropriate literacy instruction into their subject area lessons according to the needs of their students. To do this, teachers must first identify the literacy-related difficulties of their students and select appropriate instructional programmes and practices. This can only occur if teachers have adequate knowledge and skills. Teachers need to be able to select appropriate literacy assessment tools, analyse literacy assessment data, diagnose students' literacy

abilities and difficulties, select and implement literacy instruction that caters to individual student needs, and monitor student progress and instructional success.

The results of the second part of this study indicated that teachers of Year 9 students in New Zealand lack the literacy-related knowledge and skills to provide differentiated literacy instruction to students according to their needs. The identification of difficulties was poor, which appears to be a result of lack of knowledge or inefficient use of literacy assessment tools and data. Literacy instruction appears to be inconsistent across teachers and did not meet the needs of students identified as having reading difficulties.

The current study provides evidence for the need for a qualified literacy specialist to be employed in secondary schools to coordinate comprehensive literacy schemes that meet the needs of all teachers and all students.

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Appendices

Appendix A: Table of Assessments Available to New Zealand Teachers as Listed on the *TKI Assessment Tool Selector*.

Filters: English – Reading – Year 9.

Assessment Resource Title	Year level suitability	Origin	Standardisation	Administration
Assessment Resource Bank (ARB) - Reading	3-10	NZ	Non-standardised	Individual or Group
asTTle v4 Reading	5-10	NZ	Standardised	Individual or Group
Burt Word Reading Test	2-9	NZ	Standardised	Individual or Group
Cloze Reading Tests 1 - 3, second edition	3-9	Non-NZ	Standardised	Individual or Group
e-asTTle Reading	5-10	NZ	Standardised	Individual or Group
Literacy Learning Progressions Draft - Reading	0-10	NZ	Non-standardised	Individual or Group
Martin & Pratt Non-Word Reading Test	2-10	Non-NZ	Standardised	Individual
Neale Reading Analysis	2-9	Non-NZ	Standardised	Individual
PAT (Progressive Achievement Test): Reading Comprehension - Revised 2008	4-10	NZ	Standardised	Individual or Group
PAT (Progressive Achievement Test): Reading Vocabulary - Revised 2008	4-10	NZ	Standardised	Individual or Group
PROBE - Prose Reading Observation, Behaviour and Evaluation	3-10	NZ	Non-standardised	Individual
STAR (Supplementary Test of Achievement in Reading) 2nd edition	3-9	NZ	Standardised	Individual or Group
Tests of Reading Comprehension - 2nd Edition TORCH:2	4-10	Non-NZ	Standardised	Individual or Group

Appendix B: Ethics Approval Letter

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

25 March 2013

Emma Aitken
42 Benner Drive
NGATEA 3503

Dear Emma

Re: **The General Reading Status of Struggling Year 9 Students and Their Teachers' Perceptions of Their Needs in New Zealand Secondary Schools**

Thank you for your Low Risk Notification which was received on 13 February 2013.

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

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 Keith Greaney   Dr Alison Arrow
       School of Educational Studies   School of Educational Studies
       PN900   **PN900**

       Prof Howard Lee, HoS
       School of Educational Studies
       PN900

Massey University Human Ethics Committee
Accredited by the Health Research Council

Appendix C: "Salt" – A copy of the text from PAT: RC Test 6 used in the analysis of test-item response strategies

Salt

Salt is produced from deposits of rock salt, from sea water, and from the waters of salt lakes and springs. The method of producing salt depends upon the source it is taken from.

If taken from a sea or lake, the water must be evaporated and the grains of salt collected. Much of the salt used for preserving foods is called solar salt because the moisture is dried off by the sun.

Most table salt is made from rock salt, which is found in great beds in many parts of the world where ancient seas have dried away. The usual method of getting rock salt is to drill wells down to the salt beds. Pure water is pumped in through a pipe; when the water dissolves the salt, the brine formed is brought to the surface through another pipe. This method is called hydraulic mining. Evaporation is forced, and the grains of salt are dried in long rotating cylinders through which hot air is passed. The dried, bleached, white grains are then screened for table use, dairy purposes, and packing.

Because much of the world's food is raised in areas where iodine is lacking, saltmakers add a small quantity of iodine to the table salt to make a product known as iodised salt. A little calcium phosphate is added to make the salt freeflowing.

Most of New Zealand's salt requirements are obtained from Lake Grassmere, on the South Island's Kaikoura coast. About 70,000 tonnes of salt is produced there annually.

© Unknown

Appendix D: Reading Self-efficacy Measure

How well do you read? How true are these statements for you?

	TRUE (Very)	TRUE	FALSE	FALSE (Very)
1. I mostly find reading difficult.	○	○	○	○
2. If a book is interesting, I don't mind if it is hard to read.	○	○	○	○
3. Reading is harder for me than for than for many of my classmates.	○	○	○	○
4. I don't like reading difficult books even if I like the topic.	○	○	○	○
5. I usually do well in reading.	○	○	○	○
6. I have trouble reading difficult words.	○	○	○	○
7. People tell me I am a good reader.	○	○	○	○
8. Reading is harder than any other subject.	○	○	○	○
9. Reading is usually easy for me.	○	○	○	○
10. I enjoy reading.	○	○	○	○

Appendix E: Teacher Questionnaire

The general reading status of struggling year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools

QUESTIONNAIRE FOR TEACHERS OF YEAR 9 STUDENTS

PLEASE NOTE - Completion (in part or in full) and submission of this questionnaire implies consent to the following three statements:
- I have read the Information Sheet for Teachers. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.
- I agree to participate in this study under the conditions set out in the Information Sheet for Teachers.
- I agree to allow the anonymous data to be used in this study.

Which subjects do you teach to Year 9 students this year?
[Please type your answers in the box below, separating subjects with commas. Press Tab button to continue.]

Which of the following students are currently in your Year 9 class(es)?
[Please note: if you do not teach any of these students, please leave this section blank and continue with the rest of the questionnaire.]

o ☐ [NAMES OF STUDENT-PARTICIPANTS INVOLVED IN PHASES 2 &3 AT THE RESPECTIVE SCHOOLS WERE LISTED HERE WITH CHECKBOXES.]

What literacy-related problems have you identified in the year 9 students' in your class(es) this year?
[Please type your answer in the box below. Press Tab button to continue.]

[Continued on next page]

How do you measure literacy skills in your class(es)? If possible, please be specific (e.g. names of assessment tools you've used this year).

[Please type your answer in the box below. Press 'Tab' button to continue.]

How do you analyse literacy-assessment data that you gather? If possible, please give specific examples.

[Please type your answer in the box below. Press 'Tab' button to continue.]

Do you have any particular strategies that you use to help these students overcome their literacy-related problems in your class?

[Please type your answer in the box below. Press 'TAB' button to continue.]

Are you happy to be contacted by the researcher to discuss these issues further?

[IF YES, PLEASE PROVIDE YOUR NAME AND CONTACT EMAIL ADDRESS.]

114

Appendix F: Initial email invitation to schools

Dear [PRINCIPAL],

My name is Emma Aitken and I am a postgraduate student at Massey University. I have been a secondary teacher for nearly a decade, in Otago, in and around London, and in Palmerston North. I have recently moved to the Waikato District with my fiancé, and we are loving living in such a friendly place!

I have a particular interest in improving student literacy and currently am on leave from my position of Literacy Coordinator at Freyberg High School in Palmerston North. This year I have been awarded study leave to expand my understanding of literacy and will investigate the literacy-related needs of Year 9 students in New Zealand schools.

I would like to invite students and staff at [NAME OF SCHOOL] to participate in a study to evaluate the reading-related needs of Year 9 students in New Zealand and the perceived needs of these students according to their secondary teachers. This study will be the basis for a Master of Literacy Education thesis.

As you know, the New Zealand Ministry of Education believes: "Literacy in English is critical in enabling students to engage successfully with all aspects of the curriculum" (Sewell, 2010). All teachers are charged with the responsibility to identify individual literacy needs of students and to provide extension, maintenance, and remediation according to those individual needs.

The teacher's evaluation and understanding of the literacy needs of students depends on that teacher's knowledge of literacy development, use assessment tools, interpretation of assessment data, and selection and implementation of appropriate instructional methods. In my experience as a secondary teacher in New Zealand and the United Kingdom, two things have become apparent: that there exists an erroneous public belief that all students arrive at secondary school with adequate literacy skills to engage with secondary-level texts, and that teacher training institutions in New Zealand do not provide adequate training for secondary teachers in foundation literacy skills instruction to enable secondary teachers to provide the appropriate instruction for their myriad students' literacy needs.

No database is currently available in New Zealand which illustrates the true literacy needs of students entering secondary school (i.e. Year 9 students). New Zealand's National Education Monitoring Project 1995-2012 (Educational Assessment Research Unit, 2011) provides snap-shot comparisons of average reading abilities of Year 4 and Year 8 students, comparing the two year groups within and across years, but does not provided detailed data on what specific reading skills or specific needs within the years groups.

In Term 2, I would like to work with the Year 9 students at [NAME OF SCHOOL] and their teachers to build a clear picture of the reading-related difficulties experienced by students entering secondary education in New Zealand.

Please find attached an information sheet providing further details about this study.

I look forward to your response.

Yours sincerely,

Emma Aitken
BSc DipGrad(Otago) GradDipTeach(DCE) PGDipLitEd(Massey) ATCL
Literacy Coordinator – Freyberg High School (on study leave)

Appendix G: Information Sheet for Schools

The general reading status of struggling Year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools

INFORMATION SHEET
for schools

My name is Emma Aitken, a postgraduate student at Massey University. I have been a secondary teacher for nearly a decade, in Otago, in and around London, and in Palmerston North. I have a particular interest in improving student literacy and hold the position of Literacy Coordinator at Freyberg High School in Palmerston North. This year I have been awarded study leave to expand my understanding of literacy and will investigate the literacy-related needs of Year 9 students in New Zealand schools. In my research, I aim to build clarity around the wide range of reading-related difficulties experienced by students in the first year of secondary school. The aim of the study is to show what Year 9 students' reading needs actually are and what their teachers perceive their needs to be. This study will be the basis for a Master of Literacy Education thesis.

Project Description and Invitation

This study aims to evaluate the actual reading-related needs of Year 9 students in New Zealand and the perceived needs of these students according to their secondary teachers. Two schools will be selected to take part.

In each school all Year 9 students will be invited to participate. Those students who provide both parental and their own consent will be assessed using the following tools: Progressive Achievement Test - Reading Comprehension (PATC), Progressive Achievement Test - Reading Vocabulary (PATV), Progressive Achievement Test – Listening Comprehension (PATL), Burt Word Reading Test, Bryant Pseudo-word Reading Test, and a reading self-efficacy measure. The raw test results will be made available to the students' teachers at the conclusion of the data-collection phase of the study. If schools/teachers have already used any of these assessment tools this year, I would ask to be allowed to use the collected data, to avoid the complications of students being tested again. Consent will be sought from parents/caregivers and students to use this data, too.

The teachers of the Year 9 participants, across all subject areas, will also be invited to complete a very short questionnaire regarding literacy in their classrooms. These responses will be used to evaluate what teachers perceive the reading-related needs of their students to be.

I hope that your school will agree to participate in this study. This would involve: allowing me to invite your Year 9 students and their teachers to be involved, enabling me to be on school campus to carry out data-collection (testing), and allocating a staff-member to work with me to organise an appropriate assessment schedule which minimises impact on students and teachers.

How will students be recruited?

All Year 9 students will receive a written invitation to participate and an introductory letter (similar to this one) for their parents/caregivers to read. The students and the parents/caregivers will be asked to complete a written declaration of consent before any assessments will be carried out.

Assessment procedures:

Firstly, all student-participants will be assessed using both the PAT Comprehension and Vocabulary tests and a reading self-efficacy measure. These tests will be administered by me to groups of up to 30 at a time and will require 60 minutes for introductions, administration and testing. The results of these tests will enable the selection of up to 20 students from each school, who will be further tested using Burt Word Reading Test and Bryant Pseudo-word Reading Test. These tests are administered one-on-one and will require individual meetings of about 60 minutes with each student. A small number of these students will also be assessed using the PATL test and interviewed about their PATC responses. A schedule of testing times will be arranged in consultation with schools and teachers to minimise any impact on student learning.

How will teachers be recruited?

I will ask schools to provide the names of all the teachers of all the students in the study. All of these teachers will be invited to contribute to this study. Teachers will be offered the choice between electronic and hardcopy questionnaire formats. They will be asked to identify which student-participants they teach and to indicate which subject(s) they teach as well as answering a small number of questions relating to the reading-related issues in their classes. Completion and return of the questionnaire implies consent for the anonymous data to be used in the study. However, teacher-participants have the right to decline to respond to any of the questionnaire items.

Participants' Rights

No school, student or teacher is under any obligation to accept the invitation to participate in this study. All participants who accept the invitation have the right to the following:

· to decline to answer any particular question;

· to withdraw from the study*;

· to ask any questions about the study at any time during participation;

· to provide information on the understanding that his/her name will not be used unless s/he gives permission to the researcher;

· to given access to a summary of the project findings when it is concluded.

*Withdrawl from participation

All participants may withdraw from the research at any time during the data-collection phase of the study, including on the day that the data-collection takes place. If a participant chooses to withdraw from the research, this means that participant's data will not be used in this study. However, when data is ready to be analysed, it will not be possible to identify individual participants so it will not be possible for the anonymous data to be withdrawn.

Safety and confidentiality

All testing will take place in school. The PAT tests will take place in a classroom. At each school, I will need to arrange a small, quiet space to use for the individual testing phase where the students will be and feel safe and comfortable working alone with me.

Raw data will be collected with student-participant names attached and will be kept in a secure location. When data is entered into a secure location on my laptop, no names will be entered; number codes will be used. Teacher questionnaires will be completed anonymously. Data will be reported anonymously in the thesis: no school or participant names will be used. All raw data gathered and held by me will be destroyed at the completion of the study.

Rewards for student participation

Students who participate will each receive a small stationery item, such as a pen, as an expression of gratitude for taking part.

Access to study findings

I will make my findings available to participating school communities when the thesis has been marked.

Project Contacts

Participants and parents/caregivers will be provided with contact details of the researcher and/or supervisors to enable them to ask any questions about the study.

Researcher:	Emma Aitken	aitkene@freyberg.ac.nz	021 103 9267
Supervisors:	Dr Keith Greaney	K.T.Greaney@massey.ac.nz	06 356 9099
	Dr Alison Arrow	A.W.Arrow@massey.ac.nz	06 356 9099

Appendix H: Information Pamphlet for Students

MORE ANSWERS

What happens if I do not want to do the test or I change my mind?

You do not have to participate at all. You may choose to pull out at any time during the testing and then none of your results will be used in the study. However, when you have done the tests and I have entered the data onto my laptop, I won't know which results are yours so I won't be able to remove your results at that stage.

What if I fail the tests?

It is totally fine if you struggle with the tests. By trying your best and showing me what is hard for you, you will help me find out what Year 9 students struggle with so we can help you become better readers.

What if something goes wrong?

If you are worried about any part of this study, you should talk to your teacher or your parent/caregiver who also have information sheets. If they are not sure of the answers to your questions, they can contact me and I will do my best to answer your questions.

Will I be paid for doing the tests?

No. I am not allowed to pay you, but each student who completes the tests will be given a small gift, like a pen, as a thank-you for taking part.

GIVING CONSENT

What does it mean to give my consent?

If you choose to consent to being part of my study, you agree to do the assessments outlined on page 2. You also agree to let me use your results in my study. Remember, you can choose to stop taking part at any time during the testing phase.

Your parent or caregiver will also be asked to give consent for you to take part.

Please ask your teacher, parent or caregiver if you have any questions.

MASSEY UNIVERSITY

Project Contacts

Researcher: Emma Aitken aitkene@freyberg.ac.nz   021 103 9267

Supervisors:

Dr Keith Greaney   K.T.Greaney@massey.ac.nz 06 356 9099

Dr Alison Arrow   A.W.Arrow@massey.ac.nz 06 356 9099

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, email humanethics@massey.ac.nz.

MASSEY UNIVERSITY

Institute of Educational Studies

Master of Literacy Education Research

"The general reading status of struggling year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools"

INFORMATION SHEET for Year 9 students

INVITATION

My name is Emma Aitken. I have been a secondary teacher for nearly ten years and this year I am a student at Massey University completing a Masters degree.

I would like to invite you, a Year 9 student at [ENTER NAME OF PARTICIPATING SCHOOL], to participate in a research study to find out what difficulties Year 9 students have with reading.

Before you decide if you would like to participate in this study, it is important for you to understand what you will be asked to do. Please take time to read the following information carefully as it will answer some of the questions you may have. Please ask your teacher if you have any other questions.

I hope you will take part in this study to help me find out what Year 9 students find difficult about reading.

WHAT WILL I BE ASKED TO DO?

Stage one: all Year 9 participants will be asked to do these tests:

- PAT test of Reading Comprehension: to test your understanding of what you read

- PAT test of Vocabulary: to test your understanding of word meanings

- A few questions about how you feel about reading

Stage two: about 20 Year 9 participants will be asked to do these tests:

- Burt Word Reading Test: to test your ability to read words by themselves

- Bryant Pseudo-word Reading Test: to test your skills at reading words you've never seen before

Stage three: a few Year 9 participants will be asked to do these tests:

- PAT test of Listening Comprehension: to test your understanding of what you hear

- Interview about responses to the PAT Reading Comprehension test: to find out the reasons that you choose your answers

ANSWERS TO SOME OF YOUR QUESTIONS

Where and when will the tests happen?

All tests will happen at your school, in a classroom or [other room provided by the school], during class-times.

What if I've already done these tests this year?

I will ask your permission to use the results of the tests you've already done. You won't have to do the same tests again.

What happens to my test results?

I will keep your tests and results in a safe place so no-one else will see them except for your teachers and my supervisors. You can ask to have your results if you want. I will type your results into my laptop with a code instead of your name so that no one will know which results were yours. When I write my report – which is called a thesis – I will not use any names at all. I will destroy the tests when I have completed my research.

What will my results be used for?

I will look at all the results I gather and see what difficulties Year 9 students have with reading. I will write a report (thesis) that will be marked at university. I may also write other reports or presentations to help other people understand the difficulties Year 9 students face. No student names will ever be used in these reports or presentations.

Appendix I: Information Sheet for Parents/Caregivers

The general reading status of struggling Year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools

INFORMATION SHEET
for Parents/Caregivers

My name is Emma Aitken, a postgraduate student at Massey University. I have been a secondary teacher for nearly a decade, in Otago, in and around London, and in Palmerston North. I have a particular interest in improving student literacy and hold the position of Literacy Coordinator at Freyberg High School in Palmerston North. This year have been awarded study leave to expand my understanding of literacy and will investigate the literacy-related needs of Year 9 students in New Zealand schools.

I would like to invite the Year 9 students at [ENTER NAME OF PARTICIPATING SCHOOL] to participate in a research study to investigate the wide range of reading-related difficulties experienced by students in the first year of secondary school. The aim of the study is to show what Year 9 students' reading needs actually are and what their teachers perceive their needs to be.

This study will be the basis for a Master of Literacy Education thesis.

Before you decide whether or not you would like your child to participate in this study, it is important for you to understand what it will involve. Please take time to read the following information carefully and discuss this with your child.

Who will conduct the research?

I will be conducting the research under the supervision of lecturers at Massey University, Dr Keith Greaney and Dr Alison Arrow.

What would your child be asked to do if s/he took part?

Firstly, all student-participants will be assessed using both the Progressive Achievement Tests - Reading Comprehension and Vocabulary tests and a reading self-efficacy measure. These tests will be administered by me to groups of up to 30 at a time and will require two sessions of up to 60 minutes each.

Secondly, your child may be one of up to 20 students who are selected to complete some more assessments, including Burt Word Reading Test and Bryant Pseudo-word Reading Test. These tests will be administered one-on-one and will require your child to meet with me individually for about 60 minutes.

Thirdly, your child may be one of a small number of students selected to complete the PAT – Listening Comprehension test and be interviewed by be about responses to the PAT Reading Comprehension test.

A schedule of assessment times will be arranged in consultation with schools and teachers to minimise any impact on student learning.

Where will the research be conducted?

All assessment will take place in school. The PAT tests will take place in a classroom. I will arrange a small, quiet space to use for the individual testing phase where the students will be and feel safe and comfortable working alone with me.

What if my child has already done these tests this year?

Your child may have been assessed already this year using one or more of these tests mentioned above. If this is the case, I will ask for your consent to use the data from those tests in my study, and your child will not be required to do the tests again.

What happens to the data collected?

Raw data will be collected with your child's name attached and will be kept in a secure location. When data is entered into a secure location on my laptop, no names will be entered; number codes will be used during analysis. Data will be reported anonymously in the thesis: no school or participant names will be used. All raw data gathered and held by me will be destroyed at the completion of the study.

(Please note that names of children will be necessary, in the first instance, to ensure that only those children whose parents/caregivers have not objected to their involvement will have their responses used in the data analysis).

What happens if my child does not want to take part or changes his/her mind?

There is no obligation to participate at all in the data collection and your child may withdraw from the research at any time, including on the day that the assessment takes place. If you or your child choose to withdraw your child from the research, this means that your child's data will not be used in this study. However, when data is ready to be analysed, it will not be possible to identify individual children so it will not be possible for the anonymous data to be withdrawn.

Will my child be paid for participating in the research?

No. Payments are not permitted. However, at the conclusion of the research, students who have who have participated in the study will be gifted a small stationery item as a thank-you for taking part.

Will the outcomes of the research be published?

There is a possibility that the results of the research might be published in relevant journals and/or incorporated into reports (e.g., to be given to New Zealand secondary schools). The results of the research may also be included in presentations (e.g., to participating schools and to other professionals). However, no participating school or student will be identified.

When the research is completed, the results will be provided to the participants and their families via the school. This is likely to take place in mid-2014.

What if something goes wrong?

If you have a concern about any aspect of this study, you should ask to speak to me (see below for contact details) and I will do my best to answer your questions. If I am unable to resolve your concern, or you wish to make a complaint regarding this study, please contact my supervisors.

Project Contacts

Researcher:	Emma Aitken	aitkene@freyberg.ac.nz	021 103 9267
Supervisors:	Dr Keith Greaney	K.T.Greaney@massey.ac.nz	06 356 9099
	Dr Alison Arrow	A.W.Arrow@massey.ac.nz	06 356 9099

Appendix J: Information Sheet for Teachers

The general reading status of struggling Year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools

INFORMATION SHEET
for Teachers

My name is Emma Aitken, a postgraduate student at Massey University. I have been a secondary teacher for nearly a decade, in Otago, in and around London, and in Palmerston North. I have a particular interest in improving student literacy and hold the position of Literacy Coordinator at Freyberg High School in Palmerston North. This year, I have been awarded study leave to expand my understanding of literacy and will investigate the literacy-related needs of Year 9 students in New Zealand schools.

There is little data available currently that illustrates the actual literacy needs of students entering secondary schools in New Zealand. In addition, there is sparse evidence to inform what secondary teacher literacy training should include, or what in-service professional development and support should be provided to secondary teachers who teach students with reading difficulties.

I would like to invite the teachers of Year 9 students at [ENTER NAME OF PARTICIPATING SCHOOL] to participate in a research study to investigate the wide range of reading-related difficulties experienced by students in the first year of secondary school. The aim of the study is to show what Year 9 students' reading needs actually are and what their teachers perceive their needs to be.

This study will be the basis for a Master of Literacy Education thesis.

Before you decide whether or not you would like to participate in this study, it is important for you to understand what it will involve. Please take time to read the following information.

Who will conduct the research?

I will be conducting the research under the supervision of lecturers at Massey University, Dr Keith Greaney and Dr Alison Arrow.

Why have you been invited to take part?

[ENTER NAME OF PARTICIPATING SCHOOL] has provided me with the names of teachers of the Year 9 students who will be participating in this study. [See below for details of what the student participation involves].

What would you be asked to do if you took part?

You will be required to **complete a very short anonymous questionnaire** (available in hardcopy or electronic formats) about the reading-related difficulties you have observed in your Year 9 classes this year. You will be asked to identify which student-participants you teach and to indicate which subject(s) you teach. You will then be asked **a few questions relating to the reading-related issues in your classes**.

At the end of the questionnaire , you are invited to provide your name and email address only if you wish to be contacted for further discussion of your responses.

Completion and return of the questionnaire implies consent for the anonymous data to be used in the study. However, you have the right to decline to respond to any of the questionnaire items.

Participant's Rights

No school, student or teacher is under any obligation to accept the invitation to participate in this study. All participants who accept the invitation have the right to the following:

- to decline to answer any particular question;

- to withdraw from the study*;

- to ask any questions about the study at any time during participation;

- to provide information on the understanding that your name will not be used unless you give permission to the researcher;

- to be given access to a summary of the project findings when it is concluded.

Withdrawl from participation

All participants may withdraw from the research at any time during the data-collection phase of the study, including on the day that the data-collection takes place. If a participant chooses to withdraw from the research, this means that participant's data will not be used in this study. However, when data is ready to be analysed, it will not be possible to identify individual participants so it will not be possible for the anonymous data to be withdrawn.

What happens to the data collected?

Questionnaire responses will be collected anonymously and will be kept in a secure location. Number codes will be used to identify participants during analysis. <u>All data will be reported anonymously in the thesis: no school or participant names will be used.</u> All raw data gathered and held by me will be destroyed at the completion of the study.

(Please note that names of student-participants will be necessary, in the first instance, to ensure that only those student-participants whose parents/caregivers have not objected to their involvement will have their responses used in the data analysis. Teacher-participant names will not be required. Only teachers who wish to be interviewed about questionnaire responses will be invited to provide a name and email address.)

Will the outcomes of the research be published?

There is a possibility that the results of the research might be published in relevant journals and/or incorporated into reports (e.g., to be given to New Zealand secondary schools). The results of the research may also be included in presentations (e.g., to participating schools and to other professionals). However, no participating school or student will be identified.

When the research is completed, the results will be provided to the participants and their families via the school. This is likely to take place in mid-2014.

What if something goes wrong?

If you have a concern about any aspect of this study, you should ask to speak to me (see below for contact details) and I will do my best to answer your questions. If I am unable to resolve your concern, or you wish to make a complaint regarding this study, please contact my supervisors.

Project Contacts

Researcher:	Emma Aitken	aitkene@freyberg.ac.nz	021 103 9267
Supervisors:	Dr Keith Greaney	K.T.Greaney@massey.ac.nz	06 356 9099
	Dr Alison Arrow	A.W.Arrow@massey.ac.nz	06 356 9099

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, email humanethics@massey.ac.nz.

Information about student participation

Your Year 9 students will be invited to participate in this study. Each will receive a written invitation to participate and an introductory letter for their parents/caregivers to read. The students and the parents/caregivers will be asked to complete a written declaration of consent before any assessments will be carried out.

Assessment procedures:

All student-participants will be assessed using both the Progressive Achievement Test - Comprehension and Vocabulary tests and a reading self-efficacy measure. These tests will be administered by me to groups of up to 30 at a time and will require two session of up to 60 minutes for introductions, administration and testing.

The results of these tests will enable the selection of up to 20 students who will be further tested using the Burt Word Reading Test and the Bryant Pseudo-word Reading Test. These tests are administered one-on-one and will require individual meetings of about 60 minutes with each student.

A small number of these students will be selected to complete the PAT – Listening Comprehension test and be interviewed by be about responses to the PAT Reading Comprehension test.

A schedule of testing times will be arranged in consultation with schools and teachers to minimise any impact on teaching and learning.

Safety and confidentiality

All testing will take place in school. The PAT tests will take place in a classroom. At each school, I will need to arrange a small, quiet space to use for the individual testing phase where the students will be and feel safe and comfortable working alone with me.

Raw data will be collected with student-participant names attached and will be kept in a secure location. When data is entered into a secure location on my laptop, no names will be entered; number codes will be used. Data will be reported anonymously in the thesis: no school or participant names will be used. All raw data gathered and held by me will be destroyed at the completion of the study.

Rewards for student participation

Each students who participates will receive a small stationery item, such as a pen, as an expression of gratitude for taking part.

Appendix K: Participant Consent Forms

The general reading status of struggling Year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools

PARTICIPANT CONSENT FORM

– school

I have read the Information Sheet for Schools. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to allow the researcher, Emma Aitken, to carry out this study at this school under the conditions set out in the Information Sheet.

Name of school (printed)

_____

Position held at this school (printed)

_____

My full name (printed)

_____

Signature:

_____**Date:**_____

The general reading status of struggling Year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools

PARTICIPANT CONSENT FORM

– student-participant

I have read the Information Sheet for Students and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to verbal tests being sound recorded.

I wish/do not wish to have my recordings returned to me.

I agree to participate in this study under the conditions set out in the Information Sheet.

My full name (printed)

_____

Signature:

_____**Date:**_____

The general reading status of struggling Year 9 students and their teachers' perceptions of their needs in New Zealand secondary schools

PARTICIPANT CONSENT FORM

– parent/caregiver of student-participant

I have read the Information Sheet for Parents/Caregivers. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to my child's verbal tests being sound recorded.

I wish/do not wish to have my child's recordings returned to me.

I agree to allow my child to participate in this study under the conditions set out in the Information Sheet.

If you do not want your child's results to be used in this study, you must contact [NAME OF PRINCIPAL], [NAME OF LIASON TEACHER] or Mrs White (researcher) by email or phone.

My child's full name (printed)

_____

My full name (printed)

_____

Signature:

_____**Date:**_____

Appendix L: Email Invitation to Teachers

Dear [NAME OF SCHOOL] teachers of Year 9 students,

Thank you all for your assistance with my research so far!

I now invite you to contribute to a very short questionnaire for teachers of Year 9 students. The information sheet attached provides the details of this part of my study. In short, my aim is to gather data that demonstrates the need for a literacy clinician in secondary schools to aid teachers and students.

Shortly, you will receive an email generated from my Google account inviting you to contribute on a Google Form. (Please look for it in your junk-mail if it doesn't arrive in your inbox today.) The questionnaire consists of only seven questions. Please click on the link in the invitation email; it will take you to the online form.

I hope you will see the value of this research and recognise that your contribution is important.

Please feel free to email me at this address with any questions you may have!

Many thanks,

Emma White