TEACHING READING TO ASIAN STUDENTS WITH ENGLISH AS AN ADDITIONAL LANGUAGE IN INNOVATIVE LEARNING ENVIRONMENTS IN COMPARISON TO SINGLE CELL TRADITIONAL CLASSROOMS

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By

Yogeetha Devi Bala Subramaniam

University of Canterbury

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College of Education, Health and Human Development.

School of Teacher Education

University of Canterbury

Christchurch, New Zealand

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The material presented in this thesis is the original work of the candidate except as acknowledged in the text, and has not been previously submitted, either in part or in whole, for a degree at this or any other University.

Yogeetha Devi Bala Subramaniam

Dedication

To my parents, the late Rev Elijah Bala Subramaniam and Lydia Kamala Devi, for your prayers and your unwavering belief that I would achieve this dream. You have always seen the potential within me and taught me the value of hard work, perseverance and commitment.

By perseverance, the snail reached the ark. – **Charles Spurgeon**

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Abstract

This thesis grew out of two interests: (i) the New Zealand Government's investment in building flexible, open learning spaces (innovative learning environments) in primary schools; and (ii) the ongoing achievement gaps in reading literacy among New Zealand schoolchildren.

Because of the growing body of research on innovative learning environments, I decided to compare some facets of English-language-reading-related teaching and learning across two learning environments—innovative and traditional—and with two different groups of students: Asian students for whom English was an additional language and students who spoke only English. A mixed-methods approach was used to investigate students' growth in reading and reading-related skills, teacher and student perceptions of their learning experiences and environments, and teacher views of their teaching practices.

I invited Year 5 and Year 6 students from innovative learning environments and traditional schools (i.e., single-cell, sole-teacher classrooms) in the Canterbury district to participate in the quantitative part of the study. Of the one hundred and fifty student volunteers, eighty-one were studying in innovative learning environments and sixty-nine in traditional schools. Three measures were used to assess the students' development in English-language competency across a school year. This involved pre-and post-tests of reading comprehension, listening comprehension and vocabulary development. Differences in growth in the three measures were compared statistically across the two participant groups (Asian students versus English-only-speaking students) and the two types of learning environment (innovative versus traditional). Analyses also controlled for the potential effects of school decile, number of years residing in New Zealand, and language-support classes. The results indicated some inconsistent (across measures and year groups) differences in growth between the two learning environments and across the two student groups. However, there was no evidence to suggest that the innovative learning environments had a negative effect on growth in reading and reading related skills, particularly for the Asian-background students who performed as well, if not better, in the innovative learning environments than their English-only peers and as well as their fellow Asian-background students in traditional classrooms.

Students also completed a questionnaire that asked for their perceptions of their learning experiences during their reading lessons. Questions focussed on teacher support, equity in the classroom, attitudes towards reading, conduciveness of the learning environment for reading, and noise. Analyses, similar to those performed for the growth measures, were performed to

compare the responses of the two participant groups and the two types of learning environment. The results indicated few statistically significant differences, suggesting that the participating students' perceptions were similar across student type and environment. Again, there was no evidence that Asian-background students felt disadvantaged in innovative learning environments compared to their peers in the same or traditional classrooms.

Semi-structured interviews were used to collect qualitative data on teachers' perceptions of teaching reading. Fourteen teachers agreed to be interviewed. They were all teachers of the participating students. Eight teachers were teaching in innovative learning environments and six teachers in single cell traditional classrooms. The themes identified from the interviews were teacher collaboration, teachers' pedagogical style, classroom noise, culturally responsive teaching, peer teaching and student collaborations. These teacher data suggested some contradictory findings compared to the student data.

Overall, the study indicated that innovative learning environments need not be a barrier to learning and developing reading and reading-related language skill, even for students from a second or additional language background (Asian students in this case) that may be perceived (e.g., by their teachers) as susceptible to the negative effects associated with noisy and potentially distracting and inhibiting environments. Clearly further research is necessary to determine the most effective practices in innovative learning environments, but the results do indicate that they can be as effective as traditional classrooms given appropriate teacher experience/skills and support from school leaders.

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Chapter One: Introduction

1.1 Background

A positive learning experience is a crucial aspect of preparing future generations to face a world and a workforce that is changing rapidly through globalisation and technological advancement (Benade, 2015). For today's students, a strong foundation in literacy and numeracy is vital because it enables them to develop the knowledge, attitudes and skills they need to become lifelong learners, essential to leading effective lives in the future (Organisation for Economic Co-operation and Development (OECD), 2018). To keep up with technological, demographic, societal and environmental change that meets the demands of future work, it is crucial for learners to become their own agents of learning, constantly evolving and capable of learning new skills. Therefore, according to Xhomaqi et al. (2019), amongst others, when endeavouring to prepare students to face the uncertainty of the future workforce, schools and their pedagogical practices need to relinquish the teacher's role as the definitive source of knowledge and to empower learners to become agents of their own learning through active participation in the classroom.

In keeping with this thinking, today's educators are increasingly being tasked with equipping students with what have been termed 21st-century skills. These include collaboration, digital literacy, critical thinking and problem solving (Broodryk, 2016). One way forward in achieving this objective currently gaining attention is that of redesigning the organisational architecture of learning environments to facilitate the changing social nature of learning. The idea is to provide spaces that enhance student engagement and motivation and cultivate learner agency through individualised learning and group work (Education Review Office, 2018).

In New Zealand, Christchurch is at the forefront of this type of initiative (Education Gazette Editors, 2016). The Ministry of Education saw the widespread damage to many schools caused by the city's 2010 and 2011 earthquakes as an opportunity not only to restore or rebuild Christchurch's damaged school buildings, but also to bring in building-related, physical space innovations that would cater to the needs of the 21st-century learners. This opportunity accorded with the Ministry of Education's official introduction in 2010 of the "modern learning environment" as part of its 10 Year Property Plan (10YPP) (Ministry of Education, 2021b). Through its Christchurch Schools Rebuild programme, the government has invested $1.137 billion in rebuilding and renewing 115 schools. Of these schools, 13 are new constructions on

new sites, 10 are rebuilds on existing sites, 34 are full redevelopments on existing sites, and 58 are moderate redevelopments on existing sites (Education in New Zealand, 2019a).

Numerous terms are being used (and used interchangeably) to describe the new architectural spaces facilitative of 21st-century-skills development that are being promoted under the rebuild programme: modern learning environment is just one of them. Others include innovative learning environments, flexible learning spaces, new generation learning environments, superblocks, and 21st-century learning spaces (Byers, Mahat, Liu, Knock, & Imms, 2018; Charteris & Smardon, 2018). The spaces are primarily characterised by the opportunity they give students to play an active role in their learning through collaboration and inquiry-based learning (Bisset, 2014; Mulcahy & Morrison, 2017). In this current research, I use the term innovative learning environment because it encompasses the wider ecosystem of people (social), practice (pedagogical), and physical (property). Innovative learning environment also aligns with the term that is now most commonly used in New Zealand (Ministry of Education, 2021a). Consequently, the teachers who participated in my study knew its meaning and therefore the context of my research when I interviewed them.

The Ministry of Education describes the spaces in innovative learning environments as open spaces, varying in size and in combinations of size, that are sufficiently flexible to support a variety of innovative teaching practices and activities expedited through the integration of technology and student agency (Ministry of Education, 2017; Post Primary Teachers Association, 2017). In New Zealand, innovative learning environments are evident in (a) schools newly built according to innovative learning environment floorplans, (b) schools partially rebuilt with the addition of new innovative learning blocks, and (c) existing traditional schools buildings converted internally to accommodate innovative learning environments.

Teachers in these spaces typically come together to work with a large group of students from similar or combined year groups. These spaces give teachers the opportunity, flexibility and technology support they need to work collaboratively with one another and with the students to bring in interventions that continuously help improve teaching and learning practice (Nicoll, 2016). Osborne (2013) similarly points out that teachers in innovative learning environments can use the flexibility of space and access to the variety of resources these environments afford to enhance and extend the repertoire of pedagogies they can use to suit educational needs. In regard to pedagogical variety, Fisher (2005) and Nair (2014) state that innovative learning environments can accommodate a range of teaching styles, from teacher-centred through to

experiential and inquiry-based learning. Weaver (2006) after completing her case study exploring the associations between the physical learning environment and changing concepts of learning, suggested that it is crucial for learning environments to support a variety of learning styles, cater to individual learners and develop strong pedagogical practices able to embrace more flexible use of classroom spaces.

1.2 Statement of the problem

During the 1950s and 1960s, open-plan classrooms became popular as part of the educational reforms movement (Shield, Greenland, & Dockrell, 2010). Learning became more student centred, allowing a focus on the individual needs of students as opposed to the rigid classroom structures typically found in traditional teacher-dominated single-teacher classrooms (Shield et al., 2010). However, lack of teacher education on how to develop practices suitable for open-plan spaces (Brogden, 2007) and noise concerns (Shield et al., 2010) led to a decline in the popularity of this type of classroom. The perceived failure of the 20th-century open-plan classroom has contributed to the current concerns that many parents, school leaders and teachers have about any type of learning encompassing large class sizes in open spaces and students self-managing their learning (Nair, 2014).

Key findings reported by Mackey, O'Reilly, Fletcher, and Jansen (2017) from a survey conducted in New Zealand suggested that teachers and students face a number of challenges when shifting pedagogical practices to innovative learning environments. These centre on collegiality and collaboration among teachers, altering mind-sets to embrace the pedagogical shift, and teachers not receiving the professional development they need to cope with the change. The survey also indicated the need to consider and address students' ability to self-manage their learning and not to feel lost in large groupings.

Despite the challenges of teaching and learning in innovative learning spaces, a survey of 822 school principals and school leaders in Australia and New Zealand conducted by Imms, Mahat, Byers, and Murphy (2017) found these spaces still offer advantages. According to the survey respondents, schools with a relatively high prevalence of traditional spaces had lower 'teacher mind frames'[1] and less 'deep learning'[2] among students than schools with a relatively high prevalence of open-plan spaces. Taylor and Parsons (2011) concluded from their review of

[1] Teacher mind frames: taken from (Hattie 2012). These depict how and to what extent teachers engage in all teaching roles (e.g., evaluators, change agents, adaptive learning experts, seekers of feedback, engagers in dialogue, developers of trust with all) and aspects (e.g., enjoy challenges, see opportunity in errors).
[2] Deep learning: learning to critically understand and interact with learning materials—to examine evidence and form logical conclusions (Beattie et al., 1997).

literature that positive student engagement (comprising a broader sphere of student attributes, such as attitudes toward and participation in the learning process) facilitative of knowledge retention (a facet of deep learning) increases academic achievement, positive behaviour and a sense of belonging. Results from New Zealand's participation in the 2011 and 2016 iterations of the international Progress in Reading Literacy Study (PIRLS) consistently showed that students with positive attitudes toward reading and school attained the higher scores on the PIRLS test of reading competency (Ministry of Education, 2019b; Mullis, Martin, Foy, & Drucker, 2012; Mullis, Martin, Foy, & Hooper, 2017). PIRLS was carried out by the International Association for the Evaluation of Educational Assessment,

The PIRLS findings have also highlighted a concerning, ongoing feature of students' literacy achievement in New Zealand, that is, the large statistically significant difference between those students achieving at the upper end of the achievement scale and those at its 'tail end' (see, for example, Snook, Neill, Birks, Church, Rawlins, & Richards, 2013; Tunmer & Chapman, 2015). Given the importance of reading and English-language skills in determining success in school and life, this large gap continues to be a concern for policymakers and teachers and is one they need to carefully address during transition to innovative learning environments (N. Z. Ministry of Education, 2020).

Essentially, the incorporation of innovative learning environment infrastructure in the many school buildings in New Zealand makes it crucial to explore the impact of these new spaces on reading growth, student perceptions' of the reading lesson conducted in innovative learning environments and the lived experiences of teachers and students who are endeavouring to work in these spaces. To date, there appears to be little research in general on innovative learning environments in the New Zealand context, let alone research specifically designed to explore the links between teacher practices, student engagement and student achievement in these environments.

More than a decade ago, Blackmore, Bateman, O'Mara, and Loughlin (2010) specified the need for empirical data on the connection between learning spaces and academic outcomes. They called for research to focus on the learning outcomes that arise from practices in innovative learning environments and to investigate with greater specificity the lived experiences of teachers and students in those spaces. Five years on, Abbiss (2015) echoed Blackmore and colleagues' call when she appealed for more research on the impact not only of the different pedagogical practices within the new learning spaces but also of the new

learning spaces themselves on academic achievement and the long-term implications of those influences. During their annual conference in Wellington in 2017, the Post Primary Teachers Association, having noted the lack of data on innovative learning environments, urged the Ministry of Education to further research the effectiveness of these environments on student achievement, student wellbeing, teaching and learning, and overall teacher and student satisfaction (Collins, 2017).

1.3 Purpose of the research

My research aims grew out of two interests: (i) the New Zealand Government's growing investment in bringing flexible, open learning spaces characteristic of innovative learning environments to our school buildings; and (ii) the ongoing achievement gaps in literacy among New Zealand schoolchildren. As Abbiss (2015) and Blackmore et al. (2010) maintain, the move into innovative learning environments means changes in classroom pedagogical practice, teacher–student relationships and shifts in curricula (what is to be taught, how it is shaped and how it is delivered).

My interest in exploring the acquisition of language and reading skills[3] within the context of innovative learning environments stemmed from my increasing appreciation that these skills are fundamental to people's wellbeing for without them they are rarely able to function effectively in today's society. Lack of reading literacy limits students' ability to perform in other subjects and to become lifelong learners and gain employment (Kirsch, de Jong, Lafontaine, McQueen, Mendelovits, & Monseur, 2002; see also Dickinson, Griffith, Golinkoff, & Hirsh-Pasek, 2012; Lipka & Siegel, 2011; Nation, Cocksey, Taylor, & Bishop, 2010). Olasehinde, Akanmode, Alaiyemola, and Babatunde (2015) emphasise that reading literacy is crucial to the development of a nation because of its close link to human capital, the sound development of which helps ensure positive social and economic outcomes for that nation.

With these interests in mind, I decided to explore:

1. How innovative learning environment structures might influence teacher practices in reading and student perceptions of their reading class;
2. What differences in influence there might be between this structure and the structure of traditional single-cell classrooms; and
3. What influence innovative learning environments appear to have on reading growth?

[3] Please note that my study focused on the English language.

While I determined that my overall focus would be on teacher practices and student engagement relative to reading growth in innovative learning environments, I decided to add another dimension to my study. This involved comparing, across the two different learning environments (innovative and traditional), the teaching and learning of reading and reading related skills amongst Asian students for whom English was an additional language and the teaching and learning of reading and reading related skills amongst European/Pākehā students who spoke only English. My interest in this regard was fuelled by the significant growth in students from Asian backgrounds in New Zealand schools (Ministry of Education New Zealand, 2018).[4] For example, from 2009 to 2017, the number of Asian students in state primary schools increased from 9.1 percent to 11.8 percent (Ministry of Education, 2016c) and is continuing to increase (New Zealand Trust, 2020). This change in ethnic diversity is projected to continue over the coming years, with New Zealand European/ Pākehā eventually no longer making up the large majority of the population (Office of Ethnic Communities, 2016).

At present, much of the research in New Zealand on how readily students for whom English is an additional language acquire English-language reading skills centres on Māori and Pasifika students. They are seen as "at-risk" students in terms of these skills because of their under-achievement on reading assessments, such as those used in PIRLS (N. Z. Ministry of Education, 2020). However, Asian students who speak English as an additional language can also be seen as a potential at-risk group, in part because they too are exposed to English for only a percentage of the day, unlike English-only-speaking students. Although it can be argued that Asian students have demonstrated high scores on average on reading tests in traditional classrooms over the years as indicated by the PIRLS results, there is potential for them to be at-risk in innovative learning environments as English-language acquisition could be more difficult in open environments than traditional, for example, because open environments are assumedly more susceptible to noise. As interest in innovative learning environments continues to grow, research specifically focused on determining how at-risk students are likely to fare literacy-wise in these environments in comparison to other students seems timely. I wish to emphasise, though, that despite my focus on Asian students, my overall aim is to gain a deeper understanding of the extent to which open learning environments provide supportive learning spaces for all readers.

[4] Asian students in New Zealand come from a wide range of Asian cultures, among them Chinese, Korean, Filipino, Cambodian, Vietnamese, Malaysian, Indian, Singaporean and Sri Lankan.

1.4 Research questions

The lack of empirical data on innovative learning environments concerning growth in learning and at-risk students led to me shaping my doctoral research questions as follows:

a) In innovative learning environments compared to traditional single cell classrooms, does progress in reading comprehension, listening comprehension and vocabulary development (based on achievement test scores) differ between students from an Asian background who speak English as a second or additional language and students who speak only English?

b) How does the type of structural learning environment (innovative learning environment versus traditional single cell classroom) influence students' perceptions of their engagement in reading?

- How do students from an Asian background who speak English as a second or additional language perceive learning to read in a traditional single cell classroom?
- How do students who speak only English at home perceive learning to read in a traditional single cell classroom?
- How do students from an Asian background who speak English as a second or additional language perceive learning to read in innovative learning environments?
- How do students who speak only English at home perceive learning to read in innovative learning environments?

c) From teachers' perspectives, does the type of structural learning environment influence teachers' pedagogical practices in reading?

- What are the pedagogical practices in place that support students (from Asian backgrounds) who speak English as a second or additional language in innovative learning environments in comparison to a traditional single cell classroom?
- What are the pedagogical practices in place that support students who speak only English at home in innovative learning environments in comparison to a traditional single cell classroom?
- What are the barriers for students (from Asian backgrounds) who speak English as a second or additional language in innovative learning environments in comparison to a traditional single cell classroom?
- What are the barriers for students who speak only English at home in innovative learning environments in comparison to a traditional single cell classroom?

1.5 My position as a researcher

I was raised in a rural community in Malaysia with limited resources and limited access to qualified English-language teachers. That experience has enabled me to understand the struggles an English as a second language (ESL) student faces when learning English.

My interest in learning the English language developed during my middle school years when I had an English teacher from the United Kingdom. Her teaching of English differed from how the teachers I had in my primary school taught English. I found her approach intriguing. Her ideas focused on classroom seating and pedagogical practices that involved group work, role-play and language games. During the years that she taught us, my classmates and I gained confidence, felt motivated and began to enjoy and look forward to our English-language classes. I participated actively during lessons, and my English-language abilities began to develop. My experience of learning English with her was so positive that I decided to become an ESL educator like her.

I completed my undergraduate degree and teaching practice in the United Kingdom, which was a comparatively liberal education system in comparison to the highly structured examination-based Malaysian education system. I was determined to share my new insights into language learning and teaching with the teaching community in Malaysia.

I began my teaching career in my hometown in a northern state of Malaysia. During this time, I implemented some of the methodologies that I had grown accustomed to during my study in the United Kingdom. My journey as a teacher soon took me to various schools (urban and rural) in Malaysia, allowing me to experience a diverse group of students from various Asian backgrounds. My work over 15 years as a teacher in an Asian culture where English is a second or additional language furthered my understanding of the practices and challenges teachers face when teaching ESL students, especially those within the highly structured societies typical of many Asian countries.

During my Master's study, I compared and explored the learning environments in Malaysian state schools with those found in the semi-private institutions gaining popularity in Malaysia. These institutions were providing an alternative form of education that emphasised self-regulation and inquiry-based learning. I studied factors influencing parents' decisions to opt for alternative education, parents' reasons for leaving a readily available free public education behind, the challenges faced by operators of these alternative private education, and the future of such institutions in Malaysia.

After completing my Master's, I began my role as a teacher educator. I developed a passion for equipping student teachers to think about inquiry-based learning, critical thinking and learning through play that would be motivating and engaging for language learners.

In summary, my interest in learning environments was framed by my experience as an ESL teacher and as an ESL teacher educator in Malaysia. My personal educational journey sparked my interest in pursuing a Doctor of Philosophy degree looking at the experiences of ESL students in learning environments. On relocating to New Zealand to pursue my PhD, I began noticing the lack of literature on the learning experiences of ESL students in innovative learning environments, and it was this that led me to focus on Asian students' experiences within those environments.

As an insider to the Asian community and having been an experienced ESL learner and teacher, I also wanted to build a research profile that would enable me to be a key contributor in this field. I also considered that my position as an outsider with respect to innovative learning environments in New Zealand would enable me to bring unbiased reflection on and discussion of my research findings.

At the onset of my research, as an outsider to the schooling system and therefore wanting to gain a better understanding of it, I visited Christchurch-based schools and conferences on teaching English to speakers of other languages (TESOL) in Christchurch. To this end, I networked and had conversations with school principals and school teachers of both traditional and innovative learning environments. The pilot work and classroom observations that I engaged in during my doctoral study helped me develop a deeper understanding of day-to-day activities in English-language and reading classes.

1.6 Outline of chapters

The structure of the thesis is as follows.

The current chapter, Chapter One, provides an introductory background to my doctoral study. It therefore focused on my motivation and reasons for conducting this research and outlined the questions I hoped to answer through it.

Chapter Two, the literature review, presents and discusses current literature on (i) innovative learning environments and pedagogical practices (including associated challenges) within them, (ii) student achievement (both in general and with respect to reading) and engagement in innovative and traditional learning environments, and (iii) reading practices in New

Zealand's primary school learning environments. Chapter Two also explores general theories surrounding reading, listening, vocabulary skills and the potential impact of different learning environments on scholastic achievement and engagement among Asian students who speak English as an additional language.

Chapter Three outlines the epistemology, ontology, theoretical framework, methodology, data analysis techniques employed in the research.

Chapter Four gives a detailed account of the measures used in the research. The student assessment battery, which comprised reading comprehension, listening comprehension, and vocabulary development tests, is discussed in detail. An account is also given of the questionnaire administered to the Years 5 and 6 students who participated in the study. This sought to capture Years 5 and 6 students' perceptions of their learning environments and their English reading and language development within those environments. The last measure, a semi-structured interview, asked teachers of the participating students about the reading pedagogical practices they were using in the learning environments to facilitate students' reading skills, and the challenges of teaching in those environments.

Chapter Five details the pilot research. The pilot work and amendments made to the measures are discussed.

Chapter Six discusses the results of the Years 5 and 6 students' performance on the reading comprehension, listening comprehension, and vocabulary development assessments. The results for the Asian students and the English-only-speaking students across the two learning environments (innovative and traditional single cell classrooms) are compared.

Chapter Seven details and compares the findings from the students' answers to the perception questionnaire. The comparisons relate to the same contexts as those in Chapter Six (i.e., Asian-students and English-only-speaking students in innovative learning environments versus Asian-language and English-only-speaking students in traditional single cell classrooms).

Chapter Eight explores the teachers' responses and comments during the semi-structured interviews. This information is examined from within the contexts of the innovative versus traditional single cell classrooms.

Chapter Nine discusses the findings in relation to the research questions and discusses insights gained into reading practices in innovative learning environments.

Chapter Ten presents the overall conclusions drawn from the research findings. The limitations of this research also receive attention, as do suggestions for further investigation.

The thesis appendices includes the assessment battery; Reading and Listening Comprehension (Appendix A), teacher interview questions (Appendix B) and ethical approval (Appendix C).

Chapter Two: Literature Review

2.1 Introduction

This chapter explores the literature pertaining to the key interrelated themes of my research: innovative learning environments and student achievement and engagement within them, the challenges associated with teaching in these environments, reading practices in New Zealand primary schools, reading models and aspects of reading-related pedagogy.

2.2 Innovative learning environments

2.2.1 The changing landscape of education

Recent years have seen a marked interest in innovative learning environments in New Zealand and worldwide. This interest has been spurred by the need to prepare students for the changing landscape of careers by equipping them with the knowledge and skills they need to participate effectively in their societies' future economies (Brewer, 2018). Education for the 21st-century (often referred to as "21st-century skills") envisioned by the United States' National Education Association (2002–2017) seeks to produce people who are sufficiently creative, innovative, autonomous, collaborative and flexible to fulfil not only current but also future workplace demands. This form of education is grounded in social constructivism (Dumont & Istance, 2010; National Education Association, 2002), which focuses on the social nature of cognition and giving learners meaningful contextual experiences, opportunity for collaborative learning, and the pursuance of autonomy (Vygotsky, 1978). This accords with the New Zealand Ministry of Education's (2017) vision statement calling for students to be actively involved in their learning and to aspire to become lifelong learners. According to Bisset (2014), these 21st-century learners need to know *how* kinds of knowledge instead of *what* kinds of knowledge—knowledge that they can use as a springboard to acquire or create new knowledge.

In essence, today's students are increasingly being required to collaboratively engage in the social construction of knowledge in learning communities. This process can see them working with a range of modalities, independently or in groups, informally or socially. As Fisher (2006) stated almost two decades ago, learning environments are responding to these developments by becoming more complex and expanding beyond the classroom. Brooks (2011) and Fisher (2006) point out that a wide range of learning settings needs to be available to allow for the expanding range of alternative and collaborative approaches to teaching and learning. The range extends from traditional classrooms concentrating on instructive pedagogics, through student-centred spaces for transactional methods of teaching, and on to spaces offering

connection between social activities and informal learning, with these latter spaces occurring anywhere in the school from foyers and hallways to lounge-style classrooms.

For Kwek (2011), classroom instruction for today's students needs to be highly attuned to the needs of 21st-century learners, whom Gardner (2010) describes as robust and not afraid to take risks, whether cognitive or physical. Zhao (2009) claims that facilitating and accommodating 21st-century learners requires schools to focus their teaching on five core emphases: skills and knowledge, emotional intelligence, high-level cognitive skills, creativity, and the "new" skills needed for living in a global world. Reflecting on how acquisition of these dispositions and skills plays out for readers, including readers of an additional language, Zhao (2009) contends that this development will help create self-regulated and engaged readers equipped to meet the challenges of a globalised world. Zhao (2009) furthermore stresses the importance of using technology to facilitate reading acumen among today's learners. Technology, he contends, is helping alter the way students in general and readers in particular learn by allowing them to advance beyond their classroom walls and become active participants in subject-knowledge creation, community and the wider world. Alterator and Deed (2013) concur. However, they point out that the upsurge in digital technologies and its role in helping education take place in future-focussed learning spaces requires teachers to rethink their pedagogical practices so they can use these technologies to their and their students' advantage.

2.2.2 A brief history of innovative learning environments

The first so-called open-plan school opened at Finmere in 1959 in the UK (Woolner, 2010). Open-plan learning environments emerged in New Zealand between the 1970s and 1980s. In New Zealand, learning environments made up of relatively large open-plan spaces with two or more teachers evolved from the traditional structure of single-cell, one-teacher classrooms. These open-plan spaces allowed more freedom for students in terms of seating structure and were premised on collaborative teaching and learning practices. However, many of these open-plan spaces were gradually converted back to single-teacher classrooms due to dissatisfaction over teaching and learning within these environments.

Nair (2014) argues that because the failure of the 20th-century open-plan classroom remains influential today, it has discouraged a smooth transition into innovative learning environments. He claims that lack of understanding among many teachers, parents and schools as to the differences between open-plan and innovative learning environment has prevented them from embracing change towards the latter. The design of the open-plan learning space, he says, was

flawed from the beginning. Teachers had to work together to manage large groups of students in an open area that did not have the quiet zones, enclosed spaces and group-work areas essential for the various teaching and learning activities carried out in them. In short, the schools were not designed to embrace the agility of the modern pedagogical practices and educational aims that educational policymakers and practitioners intended for the open-plan era.

2.2.3 Characteristics of innovative learning environments

As noted above, the notion of innovative learning environments is a response to calls for education to facilitate the development of 21st-century learners—learners who are self-regulated and engaged, equipped to face the challenges of and compete successfully in the world of the 21st century. Researchers and practitioners focussed on the *structure* of innovative learning environments begin by considering baseline environmental learning elements, such as natural light, ventilation, temperature and acoustics (Young, Cleveland, & Imms, 2019).

According to the OECD (2010), innovative learning environments are underpinned by seven core learning principles deemed vital for learning effectiveness and success within such environments. The first principle recognises learners as the core participants and positions them as self-directed learners who understand themselves as learners and seek to acquire content knowledge and skills while being supported by the teacher. The second principle emphasises learning as a social activity. It encourages the development of active, co-operative learning through use of communication technologies and project-based, problem-solving, collegial activities. The third principle calls on teachers to perceive learning as a process that is not just cognitively based but also attuned to students' motivations and emotions. The fourth principle states the importance of sensitivity to individual student differences and how to accommodate them in the learning space. Understanding, acknowledging and providing for different learning and understanding competencies and for different linguistic, cultural and social backgrounds is therefore critical. The fifth principle stems from the fourth. It aims to accommodate individual student differences by having each student aim for a workload that interests and challenges them without overburdening them. The sixth principle requires students' progress needs to be assessed regularly and for that assessment to be consistent with learning objectives and offer meaningful feedback. Ideally, formative assessment methods should be used to allow robust evaluation of students' understanding of the concepts and whether they can apply this knowledge to solve other problems. The seventh and final principle specifies the importance of "horizontal connectedness", which in this instance means making connections between

learning in the school and with what goes on in the outside world. Forming partnerships with leaders, teachers, parents and stakeholders is also intrinsic to this process.

Research by Conner and Sliwka (2014) involving application of these principles in initial teacher education has proved useful in documenting the efficacy of these practices and in shaping new teachers' understanding of them. Such understanding contributes to determining how best to use innovative educational infrastructures to achieve intended learning outcomes (Duthilleul, Woolner, & Whelan, 2021). As Martin (2004) states, knowing how to deliberately utilise the spaces to good effect is empowering and effective in influencing teaching and learning practices and behaviours within the classroom. According to Martin (2004), all learning environments encompass three main interrelated elements—physical, social, and cultural. Teachers, Martin continues, need to proactively experiment with what works and what does not work in order to feel sufficiently empowered to shape the learning environment for long-term success.

Research into how teachers and students use these spaces continues to be relatively limited and is therefore needed to understand and thereby enhance the teaching and learning experiences within them. A decade ago, Blackmore, Bateman, Loughlin, O'Mara, and Aranda (2011) found that most literature in the area of innovative learning environments focussed primarily on the design of the learning space and little on evaluating the effectiveness and sustainability of these spaces. Osborne (2013) similarly found that research in the area of innovative learning environments was heavily skewed towards learning space design, furniture, fittings, lighting and acoustics rather than towards alignment of pedagogy and space and the connections between that alignment and academic achievement. However, more recent literature has looked at how architects, teachers and students can come together to shape school designs and the teaching and learning activities within those designs (Bradbeer, 2021; Campbell, Saltmarsh, Chapman, & Drew, 2013a).

Studies on teachers' and school leaders' perceptions of innovative learning environments and pedagogical practices and the changes required to teach effectively within them have also begun to emerge in recent years, including in New Zealand (see, especially, Coddington, 2017; Everatt, Fletcher, & Fickel, 2019; Mackey, O'Reilly, Fletcher, & Jansen, 2017; Osborne, 2016). However, research on students' perceptions of how well they learn in innovative versus traditional learning environments is negligible, as is quantitative data comparing student achievement across the two environments, particularly in primary schools. The absence of such

data makes it difficult for teachers and teacher educators to know which pedagogical practices within such environments are those most likely to facilitate student achievement.

2.2.4 Learning environment and student achievement

Earthman's (2004) review of a large volume of research concerning the adequacy of school buildings identified links between the physical state of school buildings and student achievement. Among the studies that Earthman cited were those which indicated students in poor buildings generally perform less well than students in stable, well-functioning buildings. Students in poor buildings were prone to health issues and had lower levels of motivation. Substandard school buildings also had a negative impact on teacher effectiveness, which in turn had an impact of their students' academic achievement. Earthman concluded from his review that a focus on student health and safety was of primary importance in improving school building-related learning environments, followed by elements of human comfort and adequate facilities such as good indoor air quality, lighting, acoustics and science laboratories. However, a concerning feature of Earthman's review is the apparent assumption that a school's built environment needs to be no more than adequate. While that might be sufficient for some students to experience positive learning outcomes, it is arguably not optimal for others.

From their study of the physical characteristics of 27 primary school learning environments in three areas in England (Blackpool, Hampshire, and London Borough), Barrett, Zhang, and Davies (2015) found that these characteristics explained the 16 percent variation over a year in students' reading, writing and mathematics results. Imms and Byers (2017 compared the mathematics performance of seventh-grade students in an innovative learning environment against the performance of their counterparts in a traditional classroom within the same school situated in Queensland, Australia. The students in the innovative learning environment performed statistically significantly better than their peers in the traditional classroom and demonstrated increased engagement in learning.

Prompted by the Ministry of Education, school principals in New Zealand have been producing (while on sabbatical) reports relating to school leadership. In response to ensuring positive student outcomes within the changing educational landscape in New Zealand, these reports indicate the need for teachers to create collaborative working and learning environments conducive to the development of effective teaching pedagogies and learner agency, effective use of digital technologies, and the building of positive relationships between teachers, students and parents (Arnold, 2016; Coddington, 2017; Nicoll, 2016). It is important to note that the

sabbatical reports simply document their authors' professional views on how school leaders and teachers can positively respond to changing classroom environments. They do not cite data on learning outcomes in general or for specific groups of students (e.g., those considered at risk) in these environments.

2.2.5 Learning environment and student engagement

The extent to which the various facets of learning environments contribute to or hinder students' engagement in their learning is another important aspect of the innovative learning versus traditional learning environment debate. The New Zealand Ministry of Education defines the term "engagement" as active participation in the learning process (Ministry of Education, 2016d). Engagement thus depicts the *extent* of the person's active involvement in the learning activity that is being carried out (Reeve, Jang, Carrell, Jeon, & Barch, 2004). Fullarton (2002) broadly positions engagement as comprising two key aspects—engagement in learning and engagement with schooling. Fredricks, Blumenfeld, and Paris (2004) suggested that student engagement includes behavioural, emotional, and cognitive engagement. Seven years later, Fredericks and colleagues (Fredricks, McColskey, Meli, Mordica, Montrosse, & Mooney, 2011), after reviewing more than 160 studies on engagement, confirmed their multi-dimensional understanding of engagement as encompassing behavioural, emotional, and cognitive engagement.

According to Fredricks et al. (2011), *behavioural engagement* focuses on involvement in academic, social, or extracurricular activities and plays a significant role in academic achievement. Positive *emotional engagement* with teachers and peers creates a positive attitude towards learning and the willingness to participate, a process that creates bonds between the student, teachers, peers and the school. *Cognitive engagement* draws on students' intellectual processing of language (see also Ministry of Education, 2016c). It involves not only thinking consciously and strategising about how to use knowledge but also exhibiting willingness to put in the extra effort needed to comprehend or execute complex or difficult tasks (Fredricks et al., 2004). The connections between these subtypes of engagement are crucial in terms of ensuring overall student engagement, and they are influenced by the individual, the learning environment and the learning tasks (Helme & Clarke, 2001). As Fredricks et al. (2004) suggest, research on student engagement can look at the subtypes as a combined unit, rather than separately. According to Fredricks et al. (2004), this approach offers a reliable and efficient means of collecting data on overall student engagement, and is the approach I used in my current research.

According to various researchers, positive student engagement includes a variety of elements and behaviours: participation, motivation, energy and connection (Appleton, Christenson, Kim, & Reschly, 2006), autonomy and a sense of belonging (Connell & Wellborn, 1991), effort and persistence (Skinner, Wellborn, & Connell, 1990), and attention, interest and investment (Marks, 2000). During their review of relevant literature, Fredricks et al. (2011) documented significant positive correlations between strong student engagement and academic achievement. (Marks, 2000) found that lack of engagement typically has a detrimental effect on student achievement and behaviour, with engaged students more likely than less engaged students to obtain better grades overall and to perform well on standardised tests.

With respect to reading achievement, students who are well engaged in reading activities are more inclined than students less engaged in such activities to develop their reading vocabulary and comprehend what they are reading (Guthrie & Wigfield, 2000). Reader engagement has also received attention in the OECD's Programme for International Student Assessment (PISA) studies. Data derived from PISA show that highly engaged youth from lower socioeconomic status (SES) backgrounds performed as well as youth from highly engaged middle SES groups on various measures of reading competence (Kirsch, de Jong, Lafontaine, McQueen, Mendelvits, & Monseur, 2002). The data also revealed the third leading impact on reading performance after grade and migration status to be student engagement.

What these reading-related findings suggest is that reading engagement plays a crucial role in determining students' academic success even when the likelihood of success may be compromised by barriers such as low-SES home environments. During the 2016 iteration of the International Association for the Evaluation of Educational Achievement's Progress in Reading Literacy Study (PIRLS) (Ministry of Education, 2019), the Year 5 New Zealand students' ratings of themselves as confident readers were much lower on average than the ratings of peers in many of the other participating countries. The results also showed that the New Zealand Year 5 students who rated themselves as confident readers achieved significantly higher reading competency scores than the New Zealand Year 5 students who expressed less confidence. Neglecting the role of student engagement in reading can start a reading decline with lifelong ramification, triggering what is known as the "Matthew effects" (rich-get richer and poor-get poorer), progressive decline of poor readers and the widening gap between good and poor readers (Stanovich, 2009). In similar vein, according to Brozo and Flynt (2008), better readers tend to reinforce their better reading attitudes by providing themselves with more opportunities to read.

Krashen (2004) identified from his review of literature a positive link between students' free reading (reading for leisure) and first- and second-language literacy and reading competence. He compared the competence findings for students who engaged in traditional instruction with the findings for students who voluntarily read for pleasure. The latter group of students generally performed as well as and often considerably better than the former group. Krashen (2004) concluded that more free reading during school would greatly support reading success for both first and additional language students.

Cultural engagement is another key facet of student engagement in learning. Students from diverse backgrounds bring prior knowledge and experiences to their school-based learning that arise from their cultural and language backgrounds. Effective literacy teachers recognise this diversity and help students build on their existing cultural knowledge in order to engage these learners (Ministry of Education, 2016d). Jankowska and Atlay (2008) concluded from their study of student learning in what they termed "creative learning spaces" (spaces for learning in an unconventional way) that these spaces have a "learning ambience" (p. 278) which encourages learning engagement among students from diverse backgrounds. The two authors argue that with the student population becoming more diverse in many countries and more emphasis being placed on equipping students with higher order thinking skills, the need for creative learning spaces responsive to diverse student needs is a critical factor in realising positive student engagement and learning.

2.3 Challenges to teaching and learning in innovative learning environments

Findings from some research studies (see, for example, Osborne, 2013; York-Barr, Ghere, & Sommerness, 2007) indicate concerns about how effective teaching and learning in innovative learning environments is. Among these concerns are those relating to teacher collaboration, hearing clearly in what is often a noisy environment, and visual distractions (Nelson & Soli, 2000). Students who are struggling learners can be easily distracted in these more open learning environments and so exhibit off-task behaviours that can adversely impact their educational achievement (Everatt, Al-Sharhan, Al-Azmi, Al-Menaye, & Elbeheri, 2011). With respect to reading, the decrease between 2011 and 2016 in New Zealand Year 5 students' overall mean reading achievement score on PIRLS is of concern (N. Z. Ministry of Education, 2020).

2.3.1 Collaborative teaching

What is meant by collaborative teaching is complex. Toole and Louis (2002) point out that many researchers struggle to make sense of the concept. Cranston (2007) concurs, saying that

the various definitions have led researchers to use different terminologies to interpret what it is. However, the essence of collaborative teaching seems to centre on systematic professional effort among teachers to share pedagogical ideas and activities to achieve synergistic pedagogical practice (Surowiecki, 2004).

Kruse, Louis, and Bryk (1993) identified five interconnected variables or characteristics that together describe collaborative teaching and indicate how it can be applied to a variety of teaching and learning situations. The variables are reflective dialogue, collaborative activity, deprivatisation of practice, shared sense of purpose with collective responsibility, and a strong focus on student learning. Kruse et al.'s conceptualisation has become the common operational model of collaborative teaching and has been used in many empirical studies (Bolam et al., 2005; Wahlstrom & Louis, 2008). For example, the five characteristics were found to be foundational to effective teacher-based collaboratively oriented professional learning communities (PLCs) in a large scale, multi-site professional learning centre in England (Vescio, Ross, & Adams, 2008). This close alignment is evident in Bolam et al.'s (2005) definition of PLCs. Their definition, built on the above five characteristics, positions the PLC as 'an effective professional learning community [that] has the capacity to promote and sustain the learning of all professionals in the school community with the collective purpose of enhancing pupil learning' (p.145).

When transitioning into innovative learning environments, teachers will need to demonstrate new competencies that align with the spatial and pedagogical shift envisioned by the Ministry of Education (2017). Mackey, O'Reilly, Fletcher, and Jansen (2017) identified eight core components of effective collaborative teaching in innovative learning environments: "student-centred pedagogy; shared belief and understanding; collaboration skill development; support for transition; smart systems to support teaching and learning; specific co-teaching strategies; school-wide structures and processes; and developing understanding of how to use flexible space effectively" (p. 100). Lomos, Hofman, Roelande, and Bosker (2011) conducted an analysis of the data sets for the 2,919 Grade 8 Netherlands students and 130 mathematics teachers who participated in the 2003 Trends in International Mathematics and Science Study (TIMSS). They identified statistically significant positive associations between student achievement and teachers' reflective dialogue, collaborative activities and shared vision.

Campbell, Saltmarsh, Chapman, and Drew (2013a) emphasise that teachers need to rethink their changing role within what they term "non-traditional" classroom environments so they

can develop practices that suit the physical affordances of and pedagogical visions underpinning them. The four authors acknowledge, however, the considerable challenge these environments present for teachers, a challenge that requires them to negotiate together to determine what works pedagogically when endeavouring to facilitate autonomous, flexible learning.

French, Imms, and Mahat (2020) voice concerns over teachers who, despite having moved to an innovative learning environment, fail to move away from the teaching pedagogies they used in their single-teacher traditional classrooms. Teachers working in these new environments are required to work together to foster innovative pedagogies (including inquiry-based and collaborative learning) suited to building competencies such as collaboration, creativity and active learning among their students (Paniagua & Istance, 2018). Teachers in these new spaces also need to learn to be comfortable, after being isolated in their own classrooms, with having other teachers watch them teach and to exposing themselves to critique from their colleagues (Campbell et al., 2013). In the shared new space, teaching is no longer an act practised in isolation but rather one that is shared.

Bradbeer (2021) argues that successful teacher collaboration in innovative learning environments arises when teachers find ways to work effectively together within these (to use his words) socio-spatial settings. Teachers also need to learn and apply new competencies and new pedagogical approaches when transitioning into these environments (Alterator & Deed, 2013; Mulcahy, Cleveland, & Aberton, 2015). Chapman, Randell-Moon, Campbell, and Drew (2014) argue in accordance with the findings from their empirical study of student learning in non-traditional classrooms that the flexibility of space and learner autonomy these environments afford requires teachers to train students to manage their own learning in non-traditional ways. As the authors point out, the pedagogical practices used in these environments and their potential impact—for better or worse—on student learning is of utmost importance.

Realising these success-based requirements appears to present challenges in many instances, however. Smardon, Charteris, and Nelson (2015), for example, concluded from their survey of teachers and principals in New Zealand a lack of clarity over how to match pedagogical innovation to spatial innovation. Osborne (2013) points to the time that teachers need to develop trust of one another in such settings, while York-Barr et al. (2007) highlight loss of autonomy. Thomas (2010) points to the need for teachers to learn how to mediate student learning that takes place in physical learning spaces with learning that takes place in the virtual

learning spaces made possible through digital technologies. These changes typically require a mind-set shift on the part of teachers because the realities of different learning environments influence teacher practices and belief systems (Borg, 2015). As Bradbeer (2021) puts it, the success of teacher collaboration in innovative learning environments depends on the ability of each teacher to sacrifice autonomy and revaluate his or her teaching identity.

It is also important to note that teachers have their own set of beliefs and philosophies on how reading should be taught. The connection between teachers' beliefs, their philosophies and what teachers do in the classroom has been a topic of research interest for some time (see Borg, 2003). However, despite the growing body of research on teachers' belief, little is still known about how such beliefs relate to students' language learning experience in the classrooms (Tsui, 2011). Borg (2003) stated that teachers' beliefs and philosophies are often influenced by their own history and context. This can be their own schooling experiences, their initial teacher education and ongoing professional development, as well as the culture and teaching ethos of the school in which they are working. Teachers' beliefs about how to teach reading can be resistant to change (see, for example, Cunningham et al., 2004; Cunningham & Zibulsky, 2008). This may be evident, even following the restructuring of the school buildings in which they are working (Charteris & Smardon, 2018). Tension may occur between teachers' past beliefs and practices and different pedagogical expectations in innovative learning environments. When there is an absence of specific professional development on how reading can best be taught, particularly in an innovative learning environment, teachers may likely base their reading instruction on their personal beliefs, their own educational experiences and the examples taught during a teacher education programme. Research that provides ways to identify the link between past beliefs and current practices among teachers, and how this may have a negative influence on necessary changes to literacy instruction, would be valuable (see Pajares, 1992). In the case of innovative learning environments, this may best focus on teachers' beliefs about collaborative practices related to literacy instruction. Those with a more negative belief about collaborative practices may find it difficult to adjust to the needs of multi-teacher classroom settings.

Teacher pedagogy is ultimately one of the key factors in ensuring student success in this new era of teaching and learning in innovative learning environments. Although findings from New Zealand's Teacher Led Innovation Fund (TLIF) project (Mackenzie et al., 2017) indicates that these environments can have a considerable positive impact on student-led learning in general and on student engagement, literacy achievement and cross-curricular discussion in particular.

These findings also stress the ongoing need for teachers to facilitate the key competencies in their learners that favour these outcomes. According to a meta-analysis of predictors of learning outcomes by Hattie (2003, 2008), teacher–student interactions and quality teaching have far greater positive outcomes than school structure or class size. These findings align with findings from O'Reilly's (2016) study of effective innovative learning environments in New Zealand. He found that teachers who had received professional development had a better understanding of the pedagogical requirements of these environments and had developed a range of effective skills to work collaboratively within them.

2.3.2 Influence of noise in learning

A number of studies have identified the detrimental effect that noise can have on learning among younger children (see, for example, Klatte, Bergström, & Lachmann, 2013; World Health Organization, 2009). At times, noise may be influenced by aspects of classroom designs beyond the control of teachers (Maxwell & Evans, 2000). For students, constant moderate-level exposure to noise can interfere with classroom activity, impair their ability to perform complex tasks and lead to physical and psychological stress (Rash et al., n.d.; World Health Organization, 2009). In regard to the influence of noise on language acquisition, Hazan and Barrett (2000) found that children in noisy environments had difficulty using stored phonological knowledge such as individual phonemes to restructure degraded speech. Although Gordon-Salant (1985) found ability to hear vowel-based phonemes less susceptible to noise than consonant-based phonemes (susceptible to low and moderate noise levels), high levels of noise put all phonemes at risk and disrupted the listeners' auditory discrimination.

Among the studies exploring the influence of noise on students' reading skills is one by Hygge, Evans, and Bullinger (2002). They found that when an airport in Munich closed down, deficits in reading and long-term memory among nearby elementary school children improved within two years. After the new airport opened in another location, the children in the vicinity experienced reading difficulties and impaired long-term memory. However, Klatte et al. (2013), having examined the study by Hygge and colleagues as part of their review of literature on noise and its effect on learning, stated that the study had methodological limitations that favoured the influence of noise over other potential factors influencing the children's reading skills, such as their SES backgrounds (Haines, Stansfeld, Head, & Job, 2002).

Studies by two groups of researchers (Everatt, Fletcher, & Fickel, 2019; Gumenyuk, Korzyukov, Alho, Escera, & Näätänen, 2004) explored the effect of noise on concentration,

especially that required during active listening in the classroom. The researchers found students were easily distracted and lost their concentration if their classroom environment was noisy. Links between chronic noise exposure and reading acumen were identified in a study by Evans and Maxwell (1997). Their findings showed that children in noisy schools had poorer reading skills than children in quieter schools. The children from the noisy schools were unable to distinguish specific sounds because of these being masked by other competing noises. Their speech perception was relatively poor, and that in turn affected their reading ability.

Another airport-noise-related study considered a classic and conducted by Cohen, Evans, Krantz and Stokols (1980) matched third- and fourth-grade children in three quiet schools with third- and fourth- grade children in three schools in the Los Angeles airport flight path. Findings revealed that the children from the noisy schools had higher blood pressure and were more likely to give up on tasks than the children in the quieter schools. Also, contrary to expectation, the children in the noisy schools became more distracted by rather than habituated to the noise over the four years of the study. However, the normal human-activity-related noise that we encounter daily is quite different from airplane noise and perhaps noise in classrooms is something that children learn to adapt to over time.

Everatt et al. (2011) found that students in open-plan classrooms are more likely to be distracted by the noise in them and to exhibit off-task behaviours if they are young and/or struggling learners. Generally, younger listeners have been found to perform more poorly in noisy environments, as their ability to listen more effectively under noisy conditions develops in the adolescent years (Nelson & Soli, 2000). Nelson and Soli (2000) indicated that students from a second-language background are likely to have difficulty understanding spoken English in noisy conditions, affecting their ability to listen to the verbal sound of words and connect them to written words and thus reading skills. Everatt et al. (2019) asked principals and teachers for their perceptions of student achievement in innovative learning environments. One of their responses was that noise in these environments tends to disfavour low-progress learners.

Wall (2016), in a study commissioned by the New Zealand Ministry of Education, stated that poor classroom acoustics can contribute to students misinterpreting teachers' instructions and to 'tuning out'. While her work focussed mainly on the impact of the design features of learning spaces on student outcomes, she found that poor acoustics can adversely affect teachers as well, thus compromising the whole teaching and learning experience. Despite work such as Wall's,

there is paucity of literature examining the effects of noise level in New Zealand classrooms on reading abilities.

2.3.3 Cultural and linguistic diversity

In recent years, New Zealand's school population has seen a marked increase in students from diverse cultural and language backgrounds. For example, between 1998 and 2020, the percentage of students from Asian backgrounds on the country's school rolls increased by 277 percent (Figure.NZ, 2020), which is partly the reason why I focussed my doctoral research on students from these backgrounds during my doctoral research. A number of researchers (e.g., (Bell, Bogan, & Bogan, 2013; Benzie, 2010) have discussed the problems that students with English as an additional language face when enrolled in mainstream education in a country where English is the primary language. The types of problem they identify are among the reasons why culturally responsive teaching has become a crucial component of pedagogy in today's classrooms.

What each student bring into the classroom in the way of cultural norms, values and skills is vital to how he or she learns (Snook, Neill, Birks, Church, Rawlins, & Richards, 2013). Gaining understanding of students' cultural backgrounds and expectations helps teachers increase, through meaningful instructions, student motivation and engagement (Saifer, Edwards, Ellis, Ko, & Stuczynski, 2010). As Gay (2018) states, culturally responsive teaching practice should draw on students' personal and cultural strengths in order to create meaningful learning experiences for them. Macfarlane, Macfarlane, and Gillion's (2015) "braided rivers" model reiterates the importance of integrating the different knowledge bases of a dominant culture and less dominant (often indigenous) cultures. The model illustrates how both streams of knowledge can feed into each other so as to expedite successful learning experiences for students from diverse backgrounds.

Research on culturally responsive teaching continues to emphasise that knowing how certain groups of people construct knowledge is no longer an option but a necessity in classrooms committed to providing appropriate pedagogy for diverse learners (Liu, 2016; Neuman & Bekerman, 2001). For example, most Asian families share a high regard for education and see it as a priority in life. As Dixon (2005) reminds teachers in schools based on Western cultural values and practices, Asian children are generally taught to respond to parents, authority, schools and teachers in ways that differ from what children born and raised in the Western world are taught. In Asian cultures, conserving knowledge is more important than constructing

knowledge in learning situations, with Asian students preferring to read widely and trust expert knowledge, and Western students preferring to question knowledge and form their own opinions (Dixon, 2005).

Various studies have shown large numbers of immigrant Asian students struggling to assimilate into English-language, Western-style education. According to Yao (1985), for example, students from Asian cultural backgrounds typically need to change two types of cultural trait in order to assimilate more quickly. The extrinsic cultural traits of dressing and eating habits are usually easily mastered, but the intrinsic culture traits—value systems, social norms and religious beliefs—require much longer periods of adjustment.

The cultural synergy model developed by Jin and Cortazzi (1995) and cited in Tagg (2015) claims that students arriving in a new learning environment must learn new ways of thinking, feeling and behaving in order to "fit in". This process of acculturation is usually one sided and requires the students to adapt to the new culture and environment. Jin and Cortazzi (1995) emphasise that Western academic staff often expect students to think for themselves, ask for help when needed and take responsibility for their everyday academic learning. However, students from a Confucian heritage background (either in their previous school in their home country or from perception and identity acquired from home) expect teachers to provide and initiate knowledge and learning. They see teachers as problem-solvers who can detect students' learning problems, even when students do not ask for help, and as authorities whose knowledge should not be questioned in front of the whole class (Loh & Teo, 2017).

Hofstede's (2011) cultural dimensions theory distinguishes four cultural dimensions that are passed from one generation to the next and distinguish the members of one cultural group from another: individualism/collectivism; uncertainty avoidance; power distance (strength of social hierarchy); and masculinity/femininity (task-orientation versus person-orientation). These dimensions are not behavioural descriptions but are embedded values within communities (Loh & Teo 2017). According to Loh and Teo (2017) the power distance dimension plays the most important role in the classroom for Asian students. This dimension holds that power distributed unequally in a society is based on hierarchical order, which helps explain why Asian students who are predominately from higher power distance backgrounds highly respect and value teachers and see them as holding the power in classrooms. Also, because Asian cultures are predominantly cultures that favour the collective over the individual, Asian students tend to value group harmony and to conform to group norms—values and behaviours often at variance

with Western systems of education, which typically encourage active learning through active participation (Hofstede, 2001; Loh & Teo, 2017).

For Asian students, many of whom speak English as an additional language, these disadvantages can be amplified if they are expected to learn within innovative learning environments, where contact between student and teacher may occur less often than in a traditional classroom environment and where active learning is the norm. The higher noise levels in innovative environments can produce even more of a struggle for these students if their knowledge and experience of the English language is limited. Therefore, it seems timely to undertake research that assesses the experiences of students who speak English as an additional language in innovative learning environments versus traditional classrooms, with a view to identifying what teachers within such environments might do to facilitate culturally and linguistically responsive, optimal learning experiences for these young people. As Tagg (2015) states, the ability of teachers to teach in intercultural contexts—to take into account the perceptions, expectations and language learning needs of their diverse students—can be an important determinant of the effectiveness of the teaching and learning within learning environments. Fearon (2008), after a year-long investigation in the elementary English as an additional language classroom, found that the key to successful second-language teaching was determined by the quality of collaboration between teachers rather than the different types of model used to deliver English-language lessons in the classroom. Innovative learning environments being a collaborative environment may create a way for teachers to flexibly work together without having to pull out English as second-language students from the mainstream classroom but instead work collaboratively in the mainstream classroom during lessons.

2.4 Reading practices and acquisition of reading skills in New Zealand schools

Reading is a key component of language acquisition, sharing of knowledge and communication of ideas and not surprisingly is considered a prerequisite for academic success (Ministry of Education, 2020; Spacks, 2011). The increasing trend within New Zealand for education to take place in innovative learning environments has implications for students' acquisition of reading skills, especially given the substantial percentage of New Zealand students underachieving in reading. New Zealand's results in the recent Progress in International Reading Literacy Study (PIRLS) show static and more recently declining rates of reading competence among the New Zealand students participating in the study's iterations of 2001 through to 2016 (Ministry of Education, 2019). The widening gaps in reading achievement scale scores between good and poor readers in the PIRLS results also continues to be

disappointing. In this section, ever mindful of the overarching context of learning within innovative learning environments, I look at reading pedagogy in New Zealand schools, examine literature on how children acquire reading skills, and outline factors, including barriers, to learning those skills, especially among children from second-language backgrounds.

2.4.1 Historical context of reading in New Zealand.

New Zealand's approach to literacy was commended worldwide in the 1970s and 1980s (Smith & Elley, 1997). Although the majority of students in New Zealand achieve literacy success that is comparable to other OECD countries (Chamberlain, 2014), efforts to reduce the high level of disparities in reading between the good and poor readers has not been successful (Ministry of Education, 2020). For example, the differences in literacy achievement between Māori and Pasifika students in comparison to Pākehā students (New Zealand European) has steadily increased throughout their schooling years (Chamberlain, 2014; Sutherland, 2019). A similar disparity has also been seen between low-income background European and Asian students and their higher income peers (Nicholson & Gallienne, 1995; Fergusson & Woodward, 2000). Various initiatives have been implemented by the Ministry of Education in an attempt to reduce these large disparities. Amongst the earliest was the 'Reading by 9' initiative from 1998 (Nicholson, 2002). A Literacy Taskforce, made up of mostly educational practitioners, was set up to provide the Ministry of Education with advice on an effective National Literacy Strategy. The National Literacy Strategy goal was to support all nine year olds to become good readers by the year 2005 (Nicholson, 2002). Apart from that, the taskforce also attempted to provide solutions specifically for closing the gap between good and poor readers. Along with the Literacy Taskforce, a Literacy Experts Group was also set up. The Literacy Experts Group comprised of literacy researchers from universities in New Zealand and the New Zealand Council for Educational Research. Their role was to provide the Literacy Taskforce with advice pertaining to theoretical and academic perspective on literary learning. However, both groups were made up of those with opposing views on how children learn to read and how reading should be taught (Soler & Openshaw, 2006). The two main views that emerged were associated with a whole language approach to reading and the phonetic approach to reading (Tunmer & Chapman, 2002). The whole language approach to reading is focused on meaning construction and the underlying belief that children will learn to read the same way they learn to speak as they are immersed into a print rich environment. In opposition to the view of reading put forward by the proponents of the whole language approach, Tunmer and Chapman (2002)

argued that the phonetics approach to reading suggests that reading is a two-stage model. The first stage involves implicit cognitive processes, while the second stage involves explicit cognitive processes. Although in the beginning stage of reading, the use of sentence cues, association with familiar spoken words acquired through the implicit cognitive processes would suffice, it will become increasingly difficult for children to read using the same implicit cognitive processes as they transition into a higher level of reading where they would encounter new words they may be unfamiliar with. At this stage, children would need to know how to use their explicit cognitive processes that focus on the development of phonological awareness such as knowing how to decode words and how sound patterns work in forming words.

The opposing views from the two taskforces prompted them to submit their own reports (Nicholson, 2002). The Literacy Experts Group had emphasised the need to develop the explicit cognitive processes through teacher intervention that provides explicit instructions on the development of phonological awareness. The Literacy Taskforce's report continued to focus on a whole language approach to reading but did note the need for development of word-level skills and strategies when needed (Nicholson, 2002).

Based on the Literacy Taskforce and Literacy Expert reports in March 2000, there was a further parliamentary inquiry into the teaching of reading in New Zealand schools (Education and Science Select Committee Report on Reading, 2001). The Education and Science Committee set up public hearings across New Zealand to give an opportunity for the public to participate in the discussion on how to teach reading. The committee's reports were consistent with those views arguing for the teaching of phonics, and supported the view that all primary school teachers should be able to teach phonetics and decoding skills. However the Ministry of Education was reluctant to accept this suggestion and continued with the Literacy Taskforce's recommendation to have a more balanced approach to teaching reading (Nicholson, 2002).

Despite inquiries into learning strategies and best practices, New Zealand continued to experience a large literacy achievement gap over the following years (Caygill, Zhao, Hunter, & Park, 2021). The debate that continued to arise from these reports were centred mainly on how reading should be taught, but they also brought to light the effectiveness of the Reading Recovery programme that was developed during the 1970s and 1980s under the guidance of Marie Clay. Reading Recovery is a central component of the New Zealand's national literacy strategy and is an early intervention programme helping children with reading difficulties (Openshaw, 2002). The Reading Recovery intervention was funded by the Ministry of

Education and was designed to help poor readers through one-to- one instructions for a period of 12 to 20-weeks. Reading Recovery places importance on reading strategies that teach children to use multiple cues to get meaning from the text (Clay, 2005). The constructive approach to reading that uses multiple cues was firmly rejected by the proponents of phonic instructions who emphasised the need to have explicit instruction on phonemic awareness and decoding skills, especially for struggling readers (Chapman, Tunmer, & Prochnow, 2001; Pressley, 2006). Tunmer, Chapman, Greaney, Prochnow and Arrow (2013) suggested that a more effective way to improve reading for struggling readers is to teach core skills such as phonological awareness and decoding skills persistently until they become automatic. The teaching of these core skills will simultaneously develop comprehension and vocabulary skills as their reading abilities continues to grow (Paris, 2005; Lonigan & Phillips, 2012).

The proponents of phonics questioned the effectiveness of the Reading Recovery intervention programme stating that the programme has not been successful in closing New Zealand's reading achievement gap (Chapman, Greaney & Tunmer, 2007). Chapman et al. (2007) also argued that there was a lack of data showing gains in reading progress through the Reading Recovery programme over that made through other reading interventions. Reynolds and Wheldall (2007) also critiqued the programme arguing that the gains quoted in a number of studies on the effectives of the Reading Recovery programme tended to dissipate over time (see also Glynn, Bethune, Crooks, Ballard, & Smith, 1992; Hiebert & Taylor, 2000).

Critics of the Reading Recovery programme have also questioned the benefits of the intervention programme for Māori and Pasifika students (McDowall, Boyd, Hogdan & Van Vliet, 2005; Chamberlain, 2008). Instead, such critics have argued that teaching/intervention methods should include accommodating students' cultural background, involving family in the process of learning, selecting texts that are culturally responsive and increasing the number of Reading Recovery teachers who are of Māori and Pasifika background (Au, 1998). Church (2005) noted that knowing the barriers to reading will be essential to teaching low achieving students, but that these were not clearly noted in the Reading Recovery programme. Church (2005) suggested that one probably cause could be the fact that the Reading Recovery programme was designed in the late 1970's, prior to the availability of extensive research findings that we have now on how to support low achieving readers. In contrast, Jesson and Limbrick (2014) argued that in order to better determine the effectiveness of the Reading Recovery intervention, ongoing support, school wide literacy strategy, partnership with families and communities are crucial in sustaining the gains achieved. They have argued that

the lack of sustainability of the Reading Recovery programme is, *"less to do with programme inadequacies and is due more to issues of implementation within school systems' (p.115).*

As literature in the area of effective literacy practices expands, research has begun to explore children's literacy during their pre-school period (emergent literacy). Research has specified that emergent literacy is a process that needs to be encouraged by giving children numerous literacy opportunities prior to formal school learning to enable them to have a strong start in school (McLachlan, Carvalho, De Lautour & Kumar, 2006). Echoing Chapman et al, (2000), McLachlan-Smith and Shuker (2002) also emphasised that successful early reading is predicted by children's ability in phonological awareness. McLachlan-Smith and Shuker (2002) continue to stress the importance of direct phonics instruction during the emergent literacy period, focussing on the role of early childhood teachers in setting the foundation of literacy.

In more recent years, and to address the literacy gap between good and poor readers in New Zealand, the ongoing Better Start Literacy Approach has been developed by a team of researchers at University of Canterbury, New Zealand (Gillon et al., 2019). This approach is based on several years of research trials exploring effective foundational skills that are critical to early literacy success. Through the grants obtained from Ministry of Education and the analysis of data from the trial studies, the Better Start Literacy Approach has specified that given the appropriate support, beginner teachers and teacher of Year 1 students can successfully accelerate literacy skills, especially to those who enter school with lower foundational literacy (Gillon et al., 2019). The Better Start Literacy Approach also emphasises the need for a wider systemic framework that supports literacy (Gillon et al., 2019), which includes assisting teachers with resources and professional learning and development. The Better Start Literacy Approach includes the explicit teaching of phonological awareness along with vocabulary elaboration techniques, online monitoring and assessment of progress, engaging whanau and operating within a culturally responsive framework.

Overall, the brief history of teaching reading indicates that debates on how reading should be taught has been a controversial issue in New Zealand. Although there has been persistent debates on how reading should be taught, what remains is the long tail of literacy underachievement.

2.4.2 Reading practices in New Zealand schools

Reading practices in New Zealand schools are mostly influenced by the supply of reading resources and instructional guides issued by the Ministry of Education (Arrow et al., 2015).

New Zealand teachers use a variety of approaches to teach reading, with constructivist and whole-language approaches being the dominant ones. The main practices within these approaches are reading to children, shared reading, guided reading, and reading by children (independent reading) (Arrow et al., 2015).

The Ministry of Education (2016a) explains these four practices as follows. *Reading to children* is a process whereby teachers read aloud to the class while the students listen to the reading. The aim is to promote understanding of written skills through the development of language and listening skills. *Shared reading* begins with the teacher reading aloud to the class and moves into intermittent student participation. Participation brings deeper student engagement with the text, thus helping the children make meaning from the read words and learn strategies for decoding written words. *Guided reading* practices are used mainly for the development of specific skills: comprehension, vocabulary and decoding (see also, Arrow et al., 2015). This activity is often carried out in small groups. At the upper primary levels of schooling, the main focus of guided reading practices is to help students derive overall meaning from what they are reading, which means developing their metacognition rather than have them focus on specific elements. The shared reading process has some similarities with the guided reading process. Both practices aim to help students make meaning from text while ensuring the process is purposeful and enjoyable. However, the difference between the two is the level of teacher involvement. In a shared reading session, the teacher takes greater responsibility when reading the text to the student, whereas in guided reading students apply practices learned in shared reading sessions, with the help of the teacher when needed (Ministry of Education, 2016a). During *independent reading* sessions, students read materials they have selected for themselves. These sessions often see teachers demonstrating the value of independent reading by reading for pleasure themselves. The purposes of independent reading are to cultivate students' lifelong reading habits, to help them establish reading preferences and build background knowledge and vocabulary, and to give them opportunity to practise the reading strategies acquired in the classroom. Many studies have shown positive links between time spent reading independently and educational achievement (for reviews, see Arrow et al., 2015; (Ministry of Education, 2016a).

Arrow et al. (2015) state that students' acquisition of effective reading practices during their primary schooling has been primarily teacher dependent and that those practices have tended to be informed by research in the area of cognitive development. An effective reading teacher has thus been positioned as someone with an excellent knowledge not only of language

structure but also of the correspondence between the sounds of and symbols for written words and the effect of that correspondence on reading. Arrow et al. (2015) go on to say that classroom teachers have generally based their reading-related instructional decisions on their assessments of each student's knowledge of linguistic aspects, and that lack of understanding of what causes reading difficulties and the reasons for those difficulties continues to limit teachers' effectiveness as teachers of reading.

It is important to note that because children entering primary school come from various backgrounds (socioeconomic, cultural, linguistic), they will vary in the extent to which they have had reading-related experiences (e.g., pertaining to grammar, phonological awareness, and simple sight words) (Evans & Shaw, 2008). Some children may have had little or no exposure to reading prior to entering schooling or of reading in a language other than their home background language. These children may struggle as emergent readers, and even more so if they are in learning environments of the kind where (as stated above) noise, less structured teacher-led activity, and numbers of students larger than in traditional classrooms present obstacles to learning (see in this regard comments by Peterson, 1979, during the open-plan classroom era).

2.4.3 Acquisition of reading and other reading-related skills

Lipka and Siegel (2011) describe and discuss five processes that we need to exercise in order to make meaning of written texts. These are phonology (sound and its features), syntax (the order of words and phrases to form proper sentences), working memory (the process whereby we keep track of information in our short-term memory), semantics (the meaning of words and phrases in a text), and orthography. This last process relates to the conventions of a written language that are also the key elements of effective reading. They include the norms of spelling, hyphenation, capitalization, word breaks, emphasis, and punctuation.

2.4.3.1 Models of how individuals acquire reading skills

An influential model of how we acquire reading skills is the *bottom–up model* proposed and developed by Gough (1972). This phonics-based model portrays reading as a sequence, in which readers progress from letter to sound, to words and finally meaning. Reading is initiated by a visual stimulus (letter, word), the eye forms an image of that information, the image and its sound/meaning are stored in the memory, and this process is repeated until all the letters in a word and words in the sentence are known. The sequence is taught systematically and sequentially and builds on one sound and one word at a time. Essentially, readers gain and

master a set skills through repetitive exposure to letters/sounds/words until they can assimilate these steps automatically and make meaning from what they are reading.

In contrast to the bottom–up model is Goodman's (1967) *top–down model* of reading, wherein readers develop the ability to recognise words by sight rather than by analysing every sound and word. Readers use their background knowledge to make educated guesses about what a word says using as their cue the interaction between thought and language. Goodman terms this process the "psycholinguistic guessing game". Under this model, ability to select the most important cues—semantic and syntactic—is crucial for guessing the words correctly and ultimately for effective reading. This view of reading as a holistic process has been criticised by those who consider word recognition skills to be the basis from which children become independent readers (Castles, Rastle, & Nation, 2018).

A third model is one called the *interactive activation model*. It was developed by McClelland and Rumelhart (1981) in response to what they saw as the deficiencies of the bottom–up and the top–down models. For McClelland and Rumelhart, readers' process text by making use of information derived simultaneously from a variety of sources. When the visual image of a letter or a word is signalled to the brain from the eye, the brain's lower-level or higher-level language processes examines it against the brain's existing stored syntactical, semantic, orthographical and lexical knowledge. These metacognitive processes "figure out" how the word fits into that knowledge and then stores it within the knowledge system. Under the interactive activation model, meaning is not present in a text waiting to be decoded. Instead, meaning is created through interactions between the text and reader.

The interactive activation model positions metacognition as a vital part of the process involved in the development of reading comprehension and processing strategies. These strategies include attending and searching, predicting, cross-checking and self-correcting. Reading comprehension strategies enable individuals to make sense of their reading. The New Zealand Ministry of Education (2016) lists several comprehension strategies that proficient readers use:

> making connections between texts and their prior knowledge; forming and testing hypotheses about texts; asking questions about texts; creating mental images or visualising; inferring meaning from texts; identifying the writer's purpose and point of view; identifying the main idea or theme in a text; summarising the information or events in texts; analysing and synthesising ideas, information, structures, and features in texts and evaluating ideas and information. (pp. 141–151)

Gough and Tunmer (1986) proposed their *simple view of reading* (SVR) in a quest to define the importance of decoding skills and language comprehension for achieving reading comprehension. They founded their model on the belief that if decoded words can be understood, then the text can be successfully comprehended. For Gough and Tunmer (1986), the aim underpinning the SVR was to provide a framework describing the processes and skills involved in reading. Today, their framework is widely used for teaching and assessing reading. The two researchers saw reading comprehension as having two basic components—word recognition (decoding) and language comprehension—and they formulated their thinking as follows: Decoding (D) x Language Comprehension (LC) = Reading Comprehension (RC). Thus, D x LC = RC. As Hoover and Gough (1990) later stated, "in the simple view what distinguishes reading is that the reader is exercising his abilities in response to graphic rather than acoustic signals, a feat requiring the reader to decode the graphic shapes into linguistic forms" (p.128).

Gough and Tunmer (1986) stressed decoding skills as competent word recognition skills, exercised by sounding out all the letters in unfamiliar words. For them, decoding skills include sight word reading and phonics, inclusive of unfamiliar words. Gough and Tunmer (1986) defined language comprehension as a process arising out of readers using semantic information acquired through vocabulary, prior knowledge, language structures, genre, verbal reasoning and higher order thinking skills to extract meaning from interrelated sentences. In short, SVR represents reading as a complex integration of skills, and it shows how skilfully reading comprehension is developed.

The SVR formula that Gough and Tunmer (1986) introduced has been replicated many times. For example, Hollis Scarborough's Reading Rope (see Farrall, 2012) depicts the many strands that weave into the SVR model in a simple and logical manner. In order to be a skilled reader, individuals need to skilfully execute and coordinate (weave together) word recognition and language comprehension. The word recognition strand is connected to phonological awareness, decoding skills and sight recognition. The language comprehension strand is interwoven with background knowledge, vocabulary, language structure, verbal reasoning and literacy knowledge. In keeping with the SVR framework, successful reading comprehension requires both strands to work together. Verhoeven, Leeuwe, Verhoeven, and Van Leeuwe (2012) concluded from their longitudinal study that the SVR is an equally valid reading-acquisition model for first language (L1) and second-language (L2) learners because the processes of word

decoding, listening comprehension and reading comprehension are highly comparable across languages.

A more recent model of reading acquisition is the *component reading model* developed by Aaron, Joshi, Gooden, and Bentum (2008). Their framework conceptualises the three domains they consider influence reading: the cognitive, the psychological, and the ecological. The cognitive domain relates to the cognitive processes that directly influence students' ability to read, such as word recognition and comprehension. The second domain emphasises the psychological components that influence reading. They include motivation to read, different learning styles, and engagement in reading. The third domain, the ecological, emphasises the influences of classroom environments, teaching pedagogies, peers, and language background. The second and third domains emphasise factors that support or hinder the development of reading skills. The part that parents and caregivers play in instilling early reading habits in children also comes into the ecological domain. Research shows that parents who do not read are unlikely to read to their children and that such children are less likely than children who are read to from a young age to develop positive attitudes to reading and good reading skills (Kalb & Van Ours, 2014).

2.4.3.2 Factors associated with reading comprehension

Many interrelated factors influence reading comprehension. The most common are those relating to word recognition, listening and inferencing skills, vocabulary development, and background knowledge. These are also the same components that students from second-language backgrounds struggle with (Huang, Cunningham, & Finn, 2010). Kintsch and Kintsch (2005) position good comprehenders of written texts as individuals who can go beyond single word or sentence comprehension to construct a mental model with the help of story elements and prior knowledge.

Word recognition skills are an important determinant but not the only determinant of text comprehension. According to Keenan, Betjemann, and Olson (2008), decoding skills are more significant as a predictor of reading comprehension skill among younger readers because for them this skill is mainly determined by their ability to decode words. As this ability becomes automatic for young readers, they can be slowly exposed to more complex texts and the influence of *listening* comprehension becomes ever more prominent in successful reading acquisition. Children who fail from this point on to develop their reading comprehension skills predominantly do so because they have poor listening comprehension (Hogan et al., 2014).

Listening involves a complex cognitive, psychological and behavioural process that plays a key role in all aspects of learning, including learning to read, but is often neglected in education (Thompson, Leintz, Nevers, & Witkowski, 2004). The SVR defines *listening* comprehension as the ability to understand a text that is read aloud beyond individual words or sentences (Hogan, Adolf, & Alonzo, 2014). Hogan et al. (2014) state that "decoding and listening comprehension are correlated, but separable skills" (p. 200), thus giving equal importance to both skills. In essence, listening comprehension is the ability to form accurate mental models based on what is heard rather than on having to decode a text. However, past reading-acquisition research has focused more on factors affecting decoding skills and on instructions for effective intervention to enhance those skills and less on the development of listening skills (Hogan et al., 2014).

Catts, Adlof, and Weismer (2006) state that despite acquiring adequate word recognition skills, some children continue to experience reading comprehension difficulties. Hogan et al. (2014) concur, stating that these so-called poor comprehenders "have adequate word decoding and reading skills" (p. 201) but tend to be identified only at the later primary grades when reading shifts from "learning to read" to "reading to learn" (p. 201). Catts, Hogan, and Adlof' (2005) argue that the complexity and changing nature of reading comprehension and assessment helps explain why poor comprehenders are more likely to be identified at the later primary grades and even lower levels of secondary schooling than at the lower levels of schooling. For example, students at the lower levels of primary school are usually required to read simple texts and answer simple literal comprehension questions, the answers to which are usually readily apparent in the passage (Catts et al., 2005). As students' progress through their schooling, the texts they read become more complex and so require well-developed sets of language skills, including inferencing skills. The more complex texts do not present the answers as readily as the simpler texts, so students have to 'read between the lines' to draw (infer) meaning from the text, and because inferencing skills are a higher-level set of skills, this is when poor comprehenders become more readily identifiable.

Vocabulary development—the process whereby individuals constantly encounter and learn the meaning of new words—is both a contributor to and an outcome of reading comprehension. As such, it plays an important role in reading comprehension across the age span: a well-developed vocabulary is a strong predictor of reading development in students because rich semantic resources lead to better comprehension (Wright & Cervetti, 2016). Common methods used in schools to build children's word knowledge are the implicit and explicit teaching of

vocabulary. Implicit vocabulary is learned through exposing students to extensive reading materials while explicit vocabulary learning calls for teachers to teach vocabulary overtly to their students.

Beck, McKeown, and Kucan (2013) state that early oral vocabulary development takes place at home and in school through interactions and conversations with parents, siblings, peers and teachers and is further developed through reading. Beck et al. (2013) stress that in order for vocabulary development to occur, students must read extensively and the texts they read must contain a substantial number of unfamiliar words. In addition to reading extensively, students need to be taught the skills to infer meaning from unfamiliar words.

Research evidence has also shown that there can be wide gaps in vocabulary acquisition across children from different home backgrounds, with those differences including appropriate cognitive stimulus in general and early quality exposure to language in particular, such as the number of hours that children are read to at home (Moran & Moir, 2018). Also, books written for young native speakers of a language tend to have larger and more diverse vocabularies than books written for children learning a language as an additional language (Nation, 2015). Children whose native language differs from the language of instruction in their schools may experience hindered reading progress simply because of lack of exposure to the vocabulary of that language (Ford-Connors & Paratore, 2015), creating the necessity for more exposure to and explicit teaching of vocabulary in the language of instruction at school level (Moody et al., 2018; Nation, 2011). Marulis and Neuman (2013) call for interventions that provide such students with *meaningful* word learning experiences that will help them become successful readers. However, New Zealand places less emphasis on teaching vocabulary systematically than do other English-language countries (Ministry of Education, 2019). As such, targeted remedial intervention seems especially important for students from second-language backgrounds, and even more so in innovative learning environments where teachers may be less likely to detect reading-related difficulties experienced by these children.

2.5 Conclusion

This chapter reported on literature highlighting some of the supports and challenges that innovative learning environments pose for student engagement, student outcomes and teachers' pedagogical practices. Particular consideration was given not only to student acquisition of English-language reading literacy in these environments within New Zealand but also such

acquisition by students for whom English is an additional language, such as those from Asian home and cultural backgrounds.

Because research on pedagogy within innovative learning environments is relatively limited, there is a need for more rigorous evidence-based research that (similar to the "What works?" approach prominent in the field of medicine in the 1990s) emphasises the "what works" aspects of them so as to inform ongoing educational policy and practice (Duthilleul et al., 2021). However, there is also still a pressing need for research that address the foundational question posed by Blackmore et al. (2011) of "How does the learning space affect student outcomes?" Furthermore, most of the literature pertaining to innovative learning environments that does focus on this question considers the learning needs and outcomes of learners in these environments whose home language accords with the language of instruction in them. In New Zealand, the recent growth in numbers of students from diverse language and cultural backgrounds calls into question how well these children are acquiring English-language reading and related skills in these innovative learning environments. This question gains even more cogency, given suggestions in the literature of limited knowledge among teachers of effective pedagogical practice (including that relating to culturally responsive teaching) within these new spaces.

In the next chapter, Chapter Three, I outline the methodological processes I used to investigate (i) students' progress in reading and reading-related skills within innovative learning environments and traditional single cell classrooms and (ii) teachers' and students' perceptions of teaching and learning in them.

Chapter Three: Methodology

3.1 Introduction

In this chapter I will provide an overview of how the thesis project was carried out. This overview aims to inform the reader of the research paradigm, epistemology, theoretical framework, methodology and data collection methods that were employed.

3.2 Design of the thesis

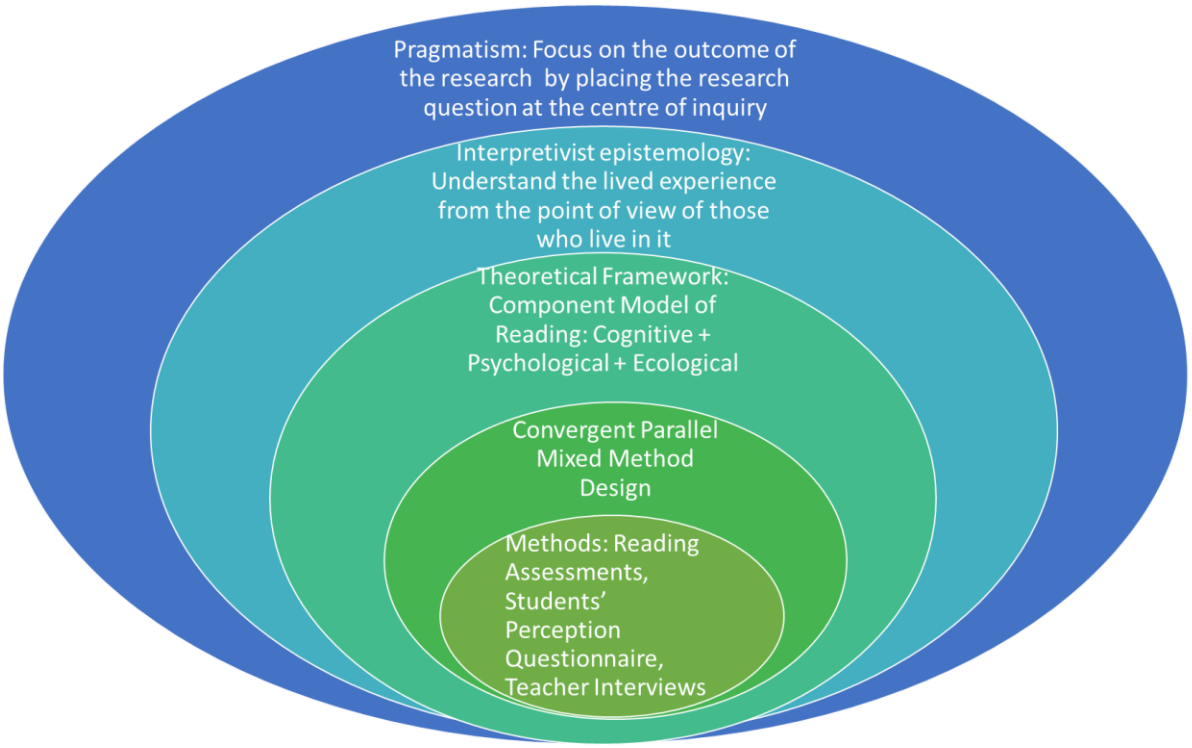


Figure 3.1 Design of the study

This research took a pragmatic worldview (Creswell & Clark, 2018) to draw on the practical outcomes of the research based on the research questions by valuing both the objective (i.e., reading progress acquired through accurate test scores) and the subjective knowledge (i.e., students' and teachers' perceptions) obtained from the research. As many of the research outcomes and connections are established by interpretation of data, the interpretivist epistemology which entails "how we know what we know" (p.8) (Crotty, 1998) was weaved in, to further understand the lived experiences of those who are in the environment (Creswell & Clark, 2018).

The epistemological standpoint was explored through the theoretical framework of the component model of reading (Aaron, Joshi, Gooden & Bentum, 2008). I decided to use the

component model of reading as the theoretical framework for my study, as it represents a unified view of the domains that support the development of reading skills through the teaching and learning as well as the learning environments (see 3.3 Theoretical Framework for further elaboration).

The research used a mixed methodology approach, combining both quantitative and qualitative data and multiple perspectives to study the research questions. The mixed methodology approach is also in line with the pragmatic worldview of research that subscribes to the notion that subjective and objective knowledge are used to answer the research questions (Cohen, Manion, & Morrison, 2018). I aimed to collect quantitative and qualitative data separately but over the same period of time, which fits with a convergent parallel design of the mixed methodology approach. Using the convergent parallel design, I was able to collect both quantitative and qualitative data concurrently, but separately. The quantitative and qualitative data were analysed separately and then merged to draw in-depth discussion from the analyses (Creswell & Clark, 2018).

The quantitative element of the research included two measures: a reading assessment (pre-tests and post-tests) and a students' perception questionnaire. The students who participated in the study were required to complete the assessment measures at the beginning of the school year and then again towards the end of the school year (referred to as pre-test and post-test). These same students were also asked to complete the students' perception questionnaire. The qualitative phase of the research comprised teacher interviews. The aim of the interviews was to explore teacher practices and to analyse them along with the quantitative results to provide a more holistic understanding of the factors explored in the research.

The research methods were designed to answer each research question. The assessments measures were used to answer research question one about progress in reading (i.e., comprehension) and reading-related skills (vocabulary and oral understanding). The students' perception questionnaire was designed to answer research question two and explore students' own understandings/views about their reading development and the methods used in their reading class. The teachers' interviews were conducted to answer research question three and provide a means to better understand the supports and challenges in teaching reading.

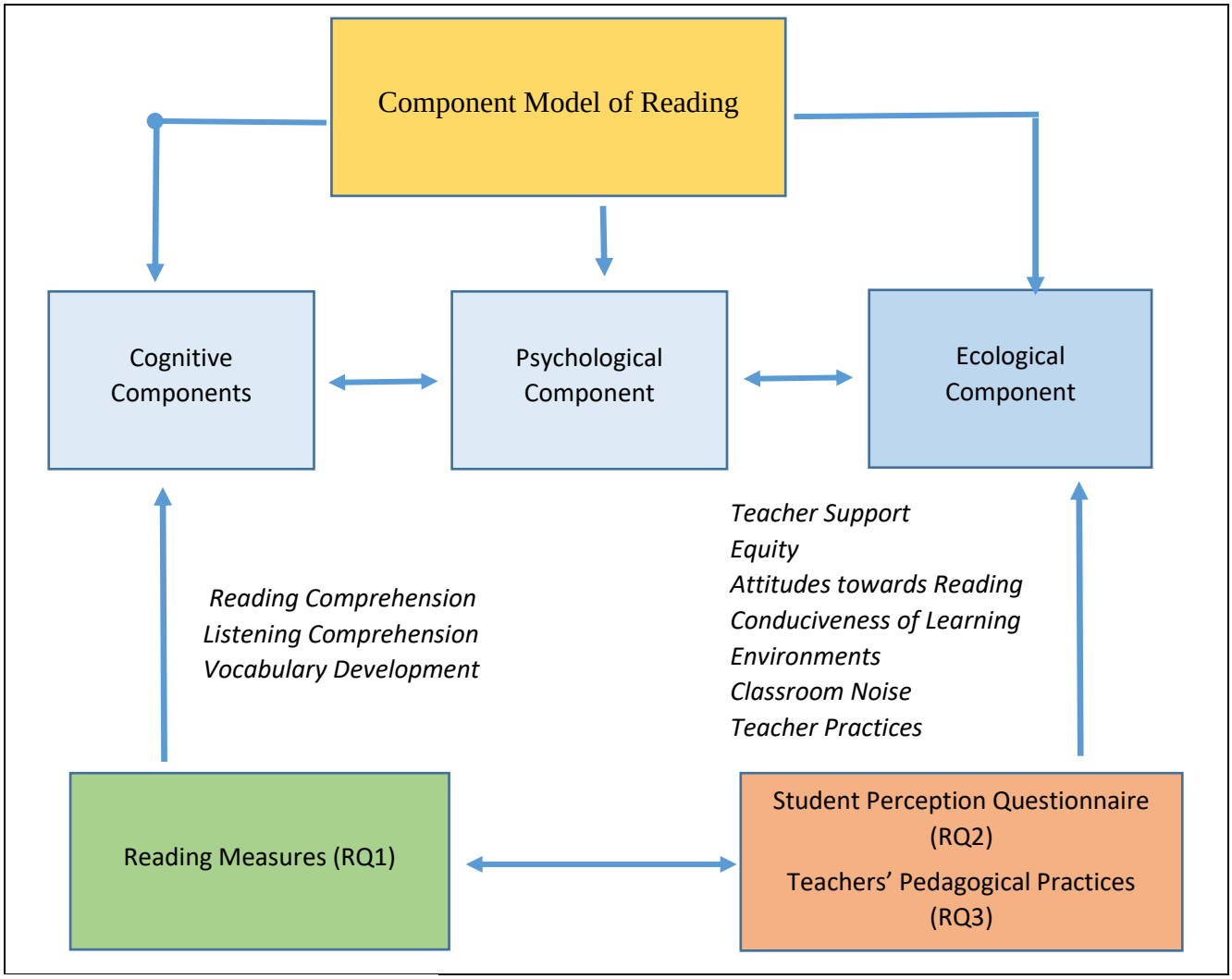
3.3 Theoretical framework

I decided to use the component model of reading proposed by Aaron, Joshi, Gooden, and Bentum (2008) as the theoretical framework for my study, as I considered it would enable me

to take a broad, unified view of the domains that support the development of reading-literacy skills.

Aaron and colleagues' component model of reading maintains that literacy performance is affected by three main domains—cognitive, psychological, and ecological. The cognitive domain represents the word recognition and comprehension skills that are crucial to the development of reading literacy. It resonates with the 'simple view of reading' proposed by Gough and Tunmer (1986). The second domain emphasises the psychological components that influence student performance, such as motivation, learning styles and student engagement in reading. The third domain focuses on the ecological factors that contribute to reading skills. These include classroom environment, teaching practices in these spaces, peer influence and language backgrounds.

I also chose the component model because of its fit with my research questions. My first research question (RQ1), examining reading growth, aligned with the cognitive domain. The interrelated aspects of the physical, social and cultural aspects of the classroom pertaining to students' engagement in reading that I aimed to investigate through the student perception questionnaire (RQ2) and teachers' pedagogical practices (RQ3) aligned with the psychological and ecological domains of the model, as depicted in Figure 1.



Source: *Model adapted from Aaron et al. (2008)*

Figure 3.2 Component Model of Reading as a framework for this research

3.4 Selection of participating schools

The schools that participated in this research were situated in the Canterbury region of New Zealand. The primary criterion used to select the schools for the research was the type of learning environments they were operating under, either an innovative learning environment (newly built and/or refurbished/renovated buildings) or traditional schools with single-cell classrooms. The schools were determined as an innovative learning environment or traditional schools with single-cell classrooms based on the [5]structural setting of the school, school websites pertaining to the transition from traditional single cell classroom to innovative learning environments. This was further confirmed through the conversations with the school

[5] Teaching in spaces that are generally large, open plan classrooms that can accommodate two or more teachers along with 60+ children is referred to as innovative learning environments and teaching spaces in a more traditional single teacher classrooms with about 25 to 30 children are referred to as traditional single cell classrooms and traditional single cell schools in this thesis.

principals. The second criterion governing school selection centred on the proportion (preferably more than 20% of the total school roll) of Asian students in the schools. To determine which schools met this criterion, I looked at the demographic composition of each Canterbury school listed in Education Review Office reports (Education Review Office, 2019). I also identified at this time the proportion of students in each school identifying as New Zealand European/Pākehā who spoke only English.

I then emailed the schools where the proportion of Asian students exceeded 20 percent. The email introduced the study and requested permission for an initial meeting. However, because I received minimal responses from the traditional single cell classrooms type schools where the proportion of Asian students exceeded 20 percent, I had to invite schools with more than 10 percent Asian populations to participate. In total, 12 schools agreed to meet with me to find more information pertaining to the research. During the initial meeting, in each case with the school principal, I used an overview poster to provide information on my proposed project. I also briefed the principals on how I intended to collect and use the study data. The meeting with the principals ended with a school tour and meetings with Years 5 and 6 classroom teachers and team leaders. However, only eight school agreed to participate after the first meeting while the other four schools declined. Of these eight schools, four schools could be classified as innovative learning environment and four as traditional schools with single cell classrooms (see Table 1).

Table 3.1 The participating schools: proportions of European/ Pākehā and Asian students on total school roll.

School type	School decile*	School roll (*N*)	New Zealand European/ Pākehā students (% of total school roll)	Asian students (% of total school roll)
Innovative Learning Environment One	8	471	37	34
Innovative Learning Environment Two	10	645	65	26
Innovative Learning Environment Three	4	168	21	52
Innovative Learning Environment Four	7	585	43	31
Traditional Single Cell School One	6	505	40	33
Traditional Single Cell School Two	9	619	58	17
Traditional Single Cell School Three	10	532	79	11
Traditional Single Cell School Four	9	443	60	22

Note: *The Ministry of Education determines school deciles. Schools are given a rating from 1 to 10. The rating measures the socioeconomic background of the community and it is used for funding purposes. It is not indicative of performance or quality of teaching and learning. The lower the school decile, the more funding the school obtains to support student learning needs.

As a follow-up to the meeting, I emailed information sheets for teachers, parents and students to the teachers in each of the eight schools that agreed to participate in the study. These information sheets contained details about the research and the students' role in the research. Some of the schools asked that I hold a second meeting with the class teachers and the students so I could distribute the information sheets personally and explain to the students the significance of the research and the participation process. However, in those schools where the teachers handed out the information sheet in my absence, I briefed the students about the significance and process of the research during my first data-collection visit to those schools.

3.5 Quantitative data collection

3.5.1 Student participants

I invited Years 5 and 6 students from innovative learning environments and traditional schools in the Canterbury region to participate in the quantitative part of the study. The students I invited to participate were those whose language backgrounds I had identified from information supplied by the students and confirmed by their classroom teachers. The two groups so identified were New Zealand European/Pākehā English-only speakers and Asian students for whom English was an additional language.

Student participation in this research was voluntary, and informed consent (in the form of signed consent forms) to participate was obtained from both students and their parents. Demographic information about the participants additional to that provided in this chapter can be found in the findings chapters of this thesis (i.e., Six and Seven).

A total of 157 students agreed to participate in the pre-tests. However, attrition meant the number of students who undertook both the pre- and the post-test was 150. The seven students who participated only in the pre-test were excluded from the analyses. Of these students, 81 were studying in an innovative learning environment and 69 were studying in a traditional classroom. The participating students had already been exposed to the pedagogical practices associated with their respective learning environment prior to the research. Seventy-one of the 150 students were Asian students who spoke English as an additional language; the rest were New Zealand European/ Pākehā students who spoke only English.

3.5.2 Asian students

The extent to which English was spoken in the homes of the Asian students who participated in the study and for whom English was an additional language varied from family to family. However, the purpose of the research was not to assess the level of English exposure at home, but to look for evidence of the impact of specific features of the two different learning environments on these students' acquisition of reading and reading-related skills. The home and language backgrounds of these students represented all of the Asian populations evident in New Zealand, as listed by the New Zealand Department of Statistics (StatisticsNZ, 2018): Southeast Asian, Filipino, Cambodian, Vietnamese, Burmese, Indonesian, Laotian, Malay, Thai, Chinese, Hong Kong Chinese, Cambodian Chinese, Malaysian Chinese, Singaporean Chinese, Taiwanese, Indian, Bengali, Fijian Indian, Indian Tamil, Punjabi, Sikh, Anglo Indian,

Sri Lankan, Sinhalese, Sri Lankan Tamil, Japanese, Korean, Afghani, Bangladeshi, Nepalese, and Pakistani.

3.5.3 Students speaking only English

These students were New Zealanders of European/Pākehā descent who used only English language to communicate at home and in school. Similar to the definition provided by Kachru (1985), the students in this category were those whose home/heritage backgrounds derived from countries such as the UK, USA, Canada, and Australia, where English is spoken as a native language.

3.5.4 Assessment battery

The assessment battery was designed to address the first research question pertaining to English-language reading growth for Year 5 and Year 6 students in innovative learning environments and traditional single cell schools. The assessment battery comprised pre-tests of reading literacy, which were administered at the beginning of the research, and post-tests of reading literacy that were conducted six months after the pre-tests. Details of the development of the tests can be found in Chapter Four of this thesis.

3.5.5 Student perception questionnaire

Questionnaires are an efficient means of gathering large amounts of data relatively quickly (Cohen et al., 2018). The questionnaire that I developed was designed to provide data that would elicit answers to Research Question 2. The factors considered in the questionnaire were those likely to contribute to students' negative or positive perceptions of their respective learning environments. The questionnaire comprised closed-ended questions with Likert-response scales. This type of questionnaire makes it possible to address areas of interest directly and is quicker to code and to generate response frequencies for analyses (Cohen et al., 2018), including those involving comparisons (in my case perceptions of reading classroom among the two groups of students in innovative learning environments and traditional single cell classrooms). The questionnaire was presented on paper and students had to circle the best option that represented their perception. Each student was given a student code number and the code number was included in the questionnaire. The Asian students (i.e., the students who spoke English as an additional language) were given additional help if needed to ensure they understood all the questions. The same assistance was also offered to the New Zealand European/Pākehā (i.e., English-only speaking) students. Each student was given as much time

as he or she needed to complete the questionnaire. Chapter Four provides further information on the development of the questionnaire.

3.5.6 Quantitative data analysis

The purpose of the analysis was to gain insight into the influence of learning environment on the participating students' English-language reading skills growth. Insight was gained by comparing the assessment battery and questionnaire results for the Asian students and the English-only-speaking students in the innovative learning environments with the results for those same groups of students in the traditional single cell classrooms schools. The quantitative data also aimed to compare these groups of students' perceptions of their learning environments.

I used the Statistical Package for Social Sciences (SPSS) to analyse the assessment battery and student perception questionnaire data, and the Cronbach's alpha statistic to measure the internal consistency (reliability) of the assessment tests. I employed repeated measures analyses of variance (ANOVA) to identify differences in reading achievement between the participant groups (Asian students versus English-only-speaking students) and between type of learning environment (innovative versus traditional). Also performed were analyses designed to control for the potential effects of school decile, number of years residing in New Zealand, language-support classes and gender.

I also used ANOVA to analyse the student perception questionnaire data. Comparisons again focused on student type (Asian students versus English-only-speaking students) and classroom type (innovative learning versus traditional). Analyses were also performed using IBM SPSS Statistic V.25. As with the procedure followed for the assessment battery analyses, I subjected the questionnaire data to internal consistency reliability checks, and controlled for school decile, number of years residing in New Zealand, gender and language-support classes when necessary.

3.6 Qualitative data collection

3.6.1 Teacher participants

I purposively selected two teachers from each of the participating schools to take part in the semi-structured interviews. Teachers selected were those teaching the Years 5 and Year 6 students participating in the research. These teachers had a range of teaching experience in their respective schools, but those selected had to have a minimum such time of two years. This requirement ensured that the teachers interviewed had accumulated some familiarity with the

learning environment they were teaching in and could therefore discuss in detail their pedagogical practices and any challenges they had encountered. Chapter Eight provides further information about the teachers, including gender, years of service, and learning environment.

3.6.2 Teacher interviews

My intention in conducting the interviews was to explore teachers' experiences pertaining to particular topics of interest (Bogdan & Biklen, 2003), notably teachers' classroom pedagogical practices and challenges (Research Question 3), and to use understandings drawn from the teachers' responses to help explain patterns observed in the quantitative data. I decided to adopt a semi-structured form of interview. This approach meant I could ask the teachers the same or similar questions while having the flexibility to explore their responses to those questions by asking additional probing questions (Cohen et al., 2018).

I conducted the interviews with the teachers after the post-test assessments of their students. Each teacher was able to determine the location and timing of his or her interview. I gave the teachers the set of questions three days before the interview so they could reflect on their pedagogical practices beforehand and assured confidentiality in line with the University of Canterbury Ethics Committee guidelines. The questions were sequenced according to the supports for teaching reading, followed by the challenges for teaching reading. Further probing questions began with such statements as "Can you elaborate what you mean by ...?" or "Why do you say …?" or "What do you think …".

I worked to build rapport with the teachers during the quantitative data-collection phase in the hope of encouraging them to be more open, relaxed and confident about sharing their thoughts during the interview. All interviews were audio-recorded and transcribed using pseudonyms.

More information on the development of the interview questions can be found in Chapter Four.

3.6.3 Qualitative data analysis

I adopted an interpretivist epistemology during my study in order to develop a possible version of reality. This type of epistemology interprets how "social actors" interpret the world around them and places this interpretation within a social frame (Bryman, 2016, p. 28). This approach makes it possible for researchers to gain insight into people's complex actions and behaviours while still adhering to the pragmatic requirements of research. For me specifically, the interpretive epistemological standpoint allowed me to explore the responses to the research questions in terms of the links between learning spaces and pedagogical practices in reading classes.

I also took a thematic analysis approach when analysing the interview data. Thematic analysis offers flexibility during data analysis because it is "not wedded to any pre-existing theoretical framework" (Braun & Clarke, 2006, p. 81). To capture patterns within the data sets, I followed the analysis steps proposed by Clarke and Braun (2017). I began by sorting the data according to school type (innovative learning environment versus traditional). I then familiarised myself with the data by reading and re-reading the interview transcripts to identify some initial key ideas. From there, I began developing codes specific to the key points in the interview extracts (e.g., teachers reverting to traditional practices, student management, behaviour management; see example in Figure 2). My next step was to refine the codes and start grouping them based on the common ideas to start generating themes. Having assembled the coded information, in the form of extracts from the interviews, under the themes, I reviewed each extract to ensure I had correctly coded it and that it therefore aligned with the theme. Finally, I related the themed extracts back to my research questions.

While identifying and developing the themes, I discussed my thinking with my doctoral supervisor and presented it to other stakeholders in the arena of innovative learning environments. I did this because I wanted to ensure that my interpretations of the raw data were plausible and logical (Charmaz, 2005). Throughout this discussion phase, I strictly adhered to the need to ensure the anonymity of the participating schools, students and teachers.

Interview excerpts (examples)	Codes	Themes
Anna: "We're a bit different, like we do our **reading in our home classes**. So, it's not a three-class wide programme. It's just with our own class, but within a bigger space. So, the major thing that I have to consider is **what my kids can do, within my space, to stay focused** on what they've been asked to do. **And to not be interacting with other students from different classes.** And I think for that for me, this year, I've tried to **teach them really good behaviours, to keep doing the reading activities to work through even when they're getting bored, or distracted by noise,** and to be able to stay on that one activity for a while."	Teachers reverting to traditional practices Student management within the classroom Behaviour management of students increases productivity in reading	Nature of teacher collaboration Noise and behaviour management
Karen: "I think it's quite **good when the group teacher can focus on the groups, and then the learning coach can ... who is also a teacher, can support by going around all the rest of the children** and then the group teacher can really focus more on what they're doing there and the learning coach can help with all the follow-up.	Teachers leveraging on each other	
Sue: "Another time, it will be just a real full on "Stop everybody, **the noise level is too high, let's use our whisper voices and say hello.** That's the voice that I want you to use for now on." So, you just need to just remind them. "This is my expectation. This is what I want you to do. And how we want you to do it."	Managing noise levels	

Figure 3.3 Teacher interview data: examples of coded themes

3.7 Trustworthiness and credibility of my research

Robust, valid and reliable collection, analysis and interpretation of data rests on the credibility, dependability, confirmability and transferability of the research work underpinning these processes (Guba, 1981; Krefting, 1991). As a researcher, I developed my credibility within the participating schools and with the students and teachers in them by attending school district meetings, coffee mornings and literacy classes. This process allowed me to become familiar not only with the teachers and students and they with me but also with the nature of each school

and the teaching and learning paradigms within its learning environment. My increasing rapport with the teachers also enabled me to familiarise myself with reading pedagogy. I gained valuable insight into teachers' and students' various reading practices and techniques while simultaneously learning about and comprehending the terminologies that teachers and researchers use when discussing reading-related matters and issues.

As Haynes (2012) reminds us, the position of the researcher can influence the nature and outcomes of the research. During my study, my position was that of both an insider and an outsider. My Southeast Asian heritage places me as an insider to the research. My heritage gave me familiarity with some of the Asian students' languages and sociocultural backgrounds. My own experiences as a school teacher gave me an insider familiarity with participating students. Because it was relatively easy for me to relate to the students, I was able to develop relationships with them that encouraged them to be open when answering the perception questionnaire.

As an outsider to the school, I found the teachers shared their thoughts relatively openly given I was not affiliated to any of the education groups within their professional circle. As an outsider, I was also able to look at the data in ways not coloured by the day-to-day happenings amongst the teachers in the schools. However, I always remained aware of my own biases (my personal beliefs or assumptions) and therefore endeavoured to be as objective as I could when analysing the data. Presentation of my emerging findings at literacy lab meetings within the university and learning environment conferences also helped in this regard. At these times, I sought multiple perspectives on those findings, which helped me clarify any of my own biases that could affect my thematic analyses and interpretation of the research data.

In the next chapter (Chapter Four), I provide more detailed information on the development and administration of the assessment measures I used during my study. During this process, I piloted the measures and used the information obtained from the pilot to amend and finalise the measures used in my main study.

Chapter Four: Development of Measures

4.1 Introduction

This chapter provides a description of the measures I used to obtain data during my research. Measures were developed to compare the English-language reading and reading-related skills achievements of the Asian students and English-only-speaking students learning within innovative learning environment and traditional single cell classroom schools.

Measures consisted of two reading comprehension and two listening comprehension measures that aimed to measure English-language reading and listening progress over most of a school year: one measure of reading and listening was administered near the beginning of the school year (referred to as the pre-measure) and one near its end (referred to as the post-measure). Parallel measures of vocabulary (Nation & Beglar, 2007) were also used to measure the development of [6]receptive vocabulary, with one form of the Nation and Beglar (2007) measures being used near the start of the school year and the other towards its end (again pre- and post- were used to distinguish the two versions).

Students' perceptions of their reading and learning environments were assessed via a questionnaire. The questionnaire was developed to be appropriate to gauge Asian and English-only-speaking students' perceptions of their learning experiences within the two classroom environments.

Finally, a semi-structured interview protocol was developed to gather qualitative data from the classroom teachers about their teaching experiences/strategies related to the students who participated in the research and the environments in which their teaching was occurring. The information sought related not only to the teachers' pedagogical practices but also the challenges they were encountering when teaching English-language reading and reading-related skills to Asian and English-only-speaking students within innovative learning environments and traditional classrooms.

4.2 Assessments battery (pre-test and post-test)

This section describes the development of the assessment battery (paper and pencil tests) I used during my study. The tests were administered twice during the research, approximately five or six months apart, to record the English-language reading progress, listening progress and

[6] Words that the students' understand when they hear it or read it in comparison to words that is used to express themselves in speech or in writing.

vocabulary development of Asian students and English-only-speaking students in innovative learning environments and traditional single cell classroom schools. Chapter 5 describes the piloting of the assessment battery and the modifications made to the instruments as a result of the pilot outcomes. The tests were developed with the New Zealand Curriculum for Years 5 and 6 students in mind (Ministry of Education, 2010).

4.2.1 Reading comprehension tests

I designed the reading comprehension measures in accordance with the literacy learning progression for Years 5 and Year 6 stated in the New Zealand Curriculum (Ministry of Education, 2010). The curriculum requires Years 5 and 6 to be able to accomplish, using strong decoding skills, these aspects of reading: respond to the text; retrieve specific information by skimming and scanning; and integrate and interpret several pieces of related information in order to infer ideas that may not be directly stated (Ministry of Education, 2009).

The reading comprehension measures were designed to assess the participating students' ability to read and understand written text by testing their literal and inferential comprehension skills. *Literal comprehension* relates to a student's ability to comprehend the surface meaning of the text by finding information, through the act of skimming and scanning, that is explicitly stated in the text. This form of comprehension also requires mastery of words, including the ability to decode and access their meanings in context. *Inferential comprehension* requires students to go beyond the written words to discern the underlying meaning—that is, the meaning not explicitly stated. To derive this implied meaning, students must be able to see the relationships between ideas and how the ideas are connected. This act of "seeing" includes processes such as combining ideas, interpreting, drawing conclusions, making predictions and drawing from real-world experiences.

I developed five narrative passages (short stories) to assess these skills. Students were asked to read these stories and then answer questions about them. Their answers to the questions served to identify what they had understood about the stories. More specifically, the passages sought to examine the students' ability to (i) use skimming and scanning skills to locate information from each narrative and thereby understand its key elements; and (ii) to comprehend the story as a whole by showing understanding of the characters' internal responses, thoughts and experiences relayed through the structure of the story as well as its syntax, vocabulary-knowledge and discourse features (Gagarina et al., 2015).

Care was taken to limit the length of the passages and the number of questions so as to keep the test burden on the student to a minimum. This was also done to ensure that the participating students were not kept away from the classroom too long, missing out on their lessons. It was agreed that the tests should take no more than 45 minutes to complete, with that time including the general procedures involved in gathering the students, giving instructions and collecting the answer scripts. Passages were kept to an average length of 150 words to allow students enough time to read each passage and answer the comprehension questions. My primary doctoral supervisor, whose research area is literacy, reviewed the passages and questions to ensure they were age appropriate in terms of context and choice of words. The suitability of the passages for Years 5 and 6 were further confirmed by the teachers who participated in the pilot phase of the study (refer Chapter Five).

The reading comprehension measures contained two sets of tests: Pre-test/Set A, consisting of five passages and 35 questions, administered at the beginning of 2019; and Post-Test/Set B, also consisting of five passages and 35 questions, administered towards the end of the year. B The questions were multiple-choice, with four answer alternatives per question, only one of which was correct. Students were required to circle the answer they thought was correct. They could still see the passage when they answered the questions, and they could read the passage again after reading the questions and had the option to change their answers by crossing out their first choice and circling the response they now thought correct within the allocated time. Example 1 presents an example passage and its associated questions.

Example 1. Sample passage and associated multiple-choice questions taken from Reading Comprehension Pre-Test Set A.

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*Rob sat in the school locker room, staring at his locker where he kept his gym clothes. The locker room was beginning to get crowded as students were coming out of Ms. Manners' English class to get ready for their Physical Education class. Rob just sat there with his hand on his head. Rob's friend Alan saw him sitting on the bench. "**Did it again, Mr. Absent-minded?**" asked Alan. Rob replied, "Yep." Alan found the whole situation funny, shook his head and said, "Here, Rob, you can use my spare set of gym clothes and shoes. I always have an extra pair in my locker. I could even keep a key for you over here if you want." Rob thankfully grabbed the gym clothes and shoes and **sighed deeply.** He ran over to his Physical Education lesson before the strict Mr. Terry called out his name.*

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1. Where did Rob keep his gym clothes?*
   a. In his room
   b. In his locker
   c. In his classroom
   d. In his school bag

2. Which class was Rob going to next?
   a. English class
   b. History class
   c. Football class
   d. Physical education class

3. Who had a spare set of clothes in their locker?
   a. Rob
   b. Alan
   c. Mr. Terry
   d. Ms. Manners

4. In your opinion what is the thing that Rob **"did it again"**?
   a. He left his locker keys at home
   b. He left his gym clothes at home
   c. He was late for his physical education class
   d. He was feeling sad

5. Why did Alan find the whole situation funny?
   a. Rob was very forgetful
   b. Rob had left his gym clothes at home
   c. Rob was late for Physical Education class
   d. Rob was forced to attend Physical Education class

6. Why did Rob **sigh deeply** at the end of the passage?
   a. To express relief
   b. To express tiredness
   c. To express frustration
   d. To express disappointment

7. What kind of friend do you think Alan is?
   a. He is a funny friend
   b. He is an unkind friend
   c. He is a dishonest friend
   d. He is a considerate friend

* Note: The correct answer to each question is circled in this example passage, but students were not able to see the correct answers during the tests

I administered the tests in a room away from the main classroom made available by the class teacher. I gave students the instructions on how to answer the questions (reading of the passage and circling the correct answer) at the beginning of the test. Students were given 35 minutes to complete each test, thus allowing 10 minutes for the general administrative procedures noted above.

4.2.2 Listening comprehension measures

My decision to develop and include measures designed to assess students' listening comprehension in the two different types of learning environment arose because of several findings from the literature (see section 2.3.2.2 in Chapter 2). First, reading-related literature acknowledges the basic relationship between the receptive skills of listening and reading (Wolf, Muijselaar, Boonstra, & De Bree, 2019). The listening comprehension measures I used thus assessed the students' ability to use their receptive skills to process new incoming information while simultaneously keeping older information in mind so they could answer the subsequent questions about what they had heard.

Second, people's increased reliance on audio-visual cues to obtain information from the increasing array of media over recent years has prompted conversations centred on the associations between reading research and listening skills research (Mangen, 2016). Hoover and Gough (1990), for example, found decoding ability and linguistic comprehension (consisting of listening comprehension and vocabulary development) predicts reading ability. Evans and Maxwell (1997) found from their study of reading ability in noisy schools that loud noise levels interfered with the children's speech perceptions, which in turn had a negative impact on their reading ability. As Peelle (2018) points out from his research concerning noise and its effects on the brain and behaviour, it is difficult to understand what is being said in an environment that presents acoustic challenges such as background noise, competing speeches and speech with foreign accent. Because these are possible scenarios in an innovative learning environment, these tests aimed to examine if students, especially second language background students, are negatively affected under acoustically challenging conditions.

The texts for the listening comprehension measures came from an online resource project conducted by Ward, Rogers, Van Engen, and Peelle (2016) that focused on speech comprehension and its effect on cognitive and hearing ability. The texts were modernised versions of Aesop's fables (semantically meaningful stories). I asked a native New Zealander

to read the texts out loud while I audio-recorded them. Having one person do the reading ensured no variation in intonation and pronunciation across the texts.

When listening to the audio-recorded fables, students had to listen for details concerning the various elements of each story. Also, because the elements of surprise and deception common to fables do not always correspond to a character's negative or positive attributes, the students had to listen carefully to obtain information based on what they were hearing.

The listening comprehension measures contained two sets of tests: Pre-Test/Set A, containing six stories and 30 questions), which was conducted at the beginning of 2019; and Post-Test/Set B (seven stories, 28 questions), conducted towards the end of the year. The measures were administered according to the normal assessment practices of the schools, that is, at times of the teachers' choosing.

Students heard each passage in the two tests once only, and as soon as they had heard it, they were asked to answer the set of questions about it. The questions, all multiple-choice, each with four potential answers, only one of which was correct, were presented on paper. Students were required to circle the correct answer. Students had 30-40 seconds to answer the response items to each question (by circling the response alternative they thought correct) before the next audio passage began. The listening comprehension measures were administered within a week of the reading measures. Example 2 provides a sample story and its associated questions from one of the listening comprehension tests.

Example 2. Sample passage taken from Listening Comprehension Post-Test Set B.

Audio (The audio text was pre-recorded and played in an audio format. The text is included as a sample here and was not visible to the students)

A man and a woman lived together in a cottage. Each day, one of their hens laid a single golden egg. Being sure that the hen must have a great piece of gold inside it, they killed it. When they realised it was no different on the inside than any other of their hens, they wept: The silly pair had ruined their everyday treasure with the hope of being rich all at once.

1. Why did they kill the hen?*
   a) They wanted to eat it
   b) The hen was getting old
   c) The hen had stopped laying eggs
   d) They were looking for more gold

2. Where did the man and woman live?
   a) In a barn
   b) In a field
   c) In the city
   d) In a cottage

3. What made the hen so special?
   a) It was a pet hen
   b) It laid golden eggs
   c) It was a very big hen
   d) It was a special colour

4. Why did the couple weep after killing the hen?
   a) They didn't like the meat
   b) They were sad they had killed their pet
   c) They realised they had killed the wrong hen
   d) They realised they were not going to have golden eggs any more

5. What is the moral of this story?
   a) Don't be greedy
   b) Don't kill animals
   c) Don't torture animals
   d) Do what you want others to do to you

6. What was the future looking like for the couple in the story?
   a) They were going to be very rich
   b) They were going to remain poor
   c) They were going to inherit a lot of gold
   d) They were going to have many more hens

* Note: The correct answer to each question is circled in this example story, but students were not able to see the correct answers during the tests.

4.2.3 Vocabulary development tests

The vocabulary development tests used in this study aimed to assess the students' receptive vocabulary development. For students, increases in vocabulary development are a critical aspect of their progress in most areas of learning, but particularly in reading, because that knowledge can enable them to comprehend more demanding texts. I chose a English Language Vocabulary test, Nation's Vocabulary Size Test (Nation & Beglar, 2007) to ascertain the size of the Asian students' and the English-only-speaking students' vocabulary development. My choice was based on the test's proven use as a reliable measure with both native and non-native speakers across a wide range of proficiency levels (Nation, 2012).

To determine vocabulary levels appropriate for Years 5 and 6 students, I used data gathered from use of the vocabulary size test in New Zealand schools developed by Van Hees and Nation (2017). These data indicate that students between 9 and 11 years of age have a vocabulary of between 6000 and 9500 words. Because the students in my study were mainly 9- or 10-year-olds, I selected test-item words from the first 1000 to 7000 on the Nation's Test for inclusion in my pre- and post-tests.

The initial selection of test items from the first 1000 to 7000 Nation's Test words for the vocabulary post-test indicated a Cronbach's alpha of 0.508 (Pilot Study 1 with 12 students, refer to the Pilot Study on Chapter 5). The subsequent vocabulary post-test pilot (Pilot Study 2 with the same items, but with 22 students) still indicated a Cronbach's alpha of 0.520 for the vocabulary post-test. To increase the reliability of the test, items that all the students were getting right and all the students were getting wrong in the post-test were removed and replaced with new words from among the 7,000 to 9,500 listed (which now included less commonly used words by students in the 9 to 10 age bracket). When I piloted the vocabulary post-test for a third time, the alpha coefficient increased to 0.70.

However, it is important to note that these changes made the post-test more difficult than the pre-test and could have contributed to the results documented in Chapter Six, which suggested that the students' vocabulary development either worsened or showed little real improvement over the time between the main study pre- and post-tests.

The students were required to answer 30 multiple-choice questions with four responsive alternatives by circling the best definition. Example 3 presents several items from the vocabulary test.

Example 3. Sample taken from Vocabulary development Pre-Test Set A.

This is a vocabulary test. Please select the option a, b, c, or d which has the closest meaning to the word in **bold.**

1. JUMP: She tried to **jump.**
a) lie on top of the water
b) get off the ground suddenly
c) stop the car at the edge of the road
d) move very fast

2. NIL: His mark for the question was **nil**.
a) very bad
b) nothing
c) very good
d) in the middle

3. STANDARD: Her **standards** are very high.
a) the bits at the back under her shoes
b) the marks she gets in school
c) the money she asks for
d) the levels she reaches in everything

4. BASIS: This was used as the **basis**.
a) answer
b) place to take a rest
c) next step
d) main part

* Note: The correct answer to each question is circled in this example passage, but students were not able to see the correct answers during the tests.

4.3 General procedures for tests

During my initial meetings with the teachers and subsequent email conversations, the teachers arranged for the students in the traditional schools to be tested in a quiet room away from the main classroom to avoid distraction, and for the students in the innovative learning environments to be tested in breakout spaces within the bigger classrooms. In these breakout spaces, students could still see their classmates, but where there would be less noise disruption from the main classroom. The pre-tests were administered after either the morning break or the lunch break. The students completed the reading comprehension and vocabulary development tests during my first visit and the listening comprehension tests during my second. Post-tests were administered according to a similar schedule. The students had a 15-minute break in

between the two tests to avoid fatigue. I arranged for those students who were absent during any of the tests to complete them within a week or two of the originally scheduled test times.

During the pre-tests and post-tests, instructions were read to the students before each test began to ensure they understood the task requirements. Students could also ask any questions about a test prior to its start. As evident from the pilot study work, this procedure enabled students to understand the task requirements. However, with the vocabulary measure, students received (in addition to the verbal instructions) a practice question was to assist them understand the test task. This need for this practice example became evident during the pilot testing.

4.4 Semi-structured interviews

The aim behind the interviews I conducted with the Years 5 and Year 6 classroom teachers of the students who participated in my study was to identify and explore the pedagogical practices that appear to support or present a barrier to the teaching and learning of English-language reading in innovative learning environments compared to traditional school environments. The semi-structured nature of the interviews guided the questions pertinent to my overall research questions I wanted to ask while giving teachers opportunity to share additional information they deemed relevant. To encourage further sharing, I used prompts such as "Could you explain that further?" or "Can you give me an example?" This approach is consistent with research effort directed towards exploring and understanding a person's feelings, thoughts and ways of operating in given situations (Bogdan & Biklen, 2007).

I gave my list of interview questions to the teachers before the interviews. I wanted them to gain an understanding of and a framework for what I wanted to discuss during the interview and also to reflect on the questions and think about possible answers. Because the questions required the teachers to reflect on their practices, I interviewed them in Terms 3 and 4 to give them sufficient time to build rapport with their Years 5 and 6 students.

4.5 Student perception questionnaire

Because students' perceptions of their learning environment influence their learning outcomes, I developed a structured questionnaire that asked the participating students about their perceptions of their learning environments relative to reading. The questions came from various sources (see below) and clustered into five perception scales: teacher support for reading; student equity during reading lessons; student attitudes towards reading; conduciveness of classroom environment for reading and perception of classroom noise during reading lessons.

4.5.1 Students' perceptions of teacher support in the reading class

The scale on teacher support in the classroom was adapted from the *What is Happening in this Class?* (WIHIC) questionnaire, originally developed by Fraser, McRobbie, and Fisher (1996) and revised by Charalampous and Kokkinos (2017). The original WIHIC contains nine scales, but I used and adapted only the scales on teacher support and equity.

Many studies acknowledge the critical role that teacher support plays in terms of student achievement. Students who experience higher levels of teacher support are the students most likely to have better learning outcomes (Hattie, 2012; King, McInerney, & Watkins, 2012; Lei, Cui, & Chiu, 2018). The extent of teacher support that students receive depends on various factors, with class size being one of them (Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher, 2019; Stecher & Bohrnstedt, 2002). In contrast to single cell traditional classrooms, where one teacher typically has between 20 to 30 students, innovative learning environments accommodate larger number of students, all working in an open space under the oversight of several teachers. I was therefore interested in whether the students in the two learning environments differed in how much support they thought they received from their teachers.

Another interesting lead I wanted to pursue was the finding from several studies that students from different cultures may have different perceptions of pedagogical support (Cortazzi & Jin, 2001; Loh & Teo, 2017; Park, 2016; Parkhill & Fletcher, 2008). The question I asked in this regard was whether the Asian students and the European/Pākehā English-only-speaking students had different perceptions of support from their teachers.

I grouped the questionnaire items forming the teacher support scale (see Table 4.1) according to four attributes: teacher helps or supports (Q1, Q2, Q4, Q6, Q7, Q8), befriends (Q5), is there for everybody (Q4, Q7), and shows interest in students' progress (Q1, Q2, Q3,Q5 , Q6, Q8). The response options were based on a Likert scale ranging from; Never (1), Rarely (2), Sometimes (3), Often (4) and Always (5)

Table 4.1 Student perception questionnaire: items making up the teacher support scale.

Question number	**Items**
Q1	My teacher supports me during reading time in class.
Q2	My teacher tells me what I need to do to improve in my reading.
Q3	My teacher tells me what I am good at in reading.
Q4	I have to wait for a long time before the teacher can help me with my reading work.*
Q5	My teacher comes around and talks to me during my reading class to check if I need any help in reading.
Q6	My teacher has helped me to improve in my reading.
Q7	My teacher always answers me when I ask a question during reading time.
Q8	My teacher and I work together to set my reading goals.

Note: * Negatively worded item. This item was reverse scored.

4.5.2 Students' perceptions of equity in classroom during reading lessons

Equity in education can be simply defined as equal opportunities in education (OECD, 2018). Charalampous & Kokkinos (2017) conceptualise equity in the classroom as "the extent to which the teacher treats students equally, including distribution of praise, questions and opportunities to be included in discussions" (p. 386). Research emphasises that one of the seven principles underpinning successful student learning is teacher sensitivity to individual differences (e.g., home background and culture, prior knowledge) among their students (Paniagua & Istance, 2018). Sensitivity means providing opportunities that allow students with diverse learning backgrounds and needs to actively participate in the social nature of learning, which includes the collaborative sharing of knowledge.

The equity in the classroom scale is particularly appropriate within the context of this doctoral research because it allowed me to assess if the participating students from the two cultural/language backgrounds differed in whether they thought their teachers were treating them equally. I also wanted to know if the students from the two backgrounds would differ in their perception of learning and classroom participation (see, in this regard, Cortazzi & Jin,

2001; Hofstede, 2001; Loh & Teo, 2017). In addition, learning in groups or larger groups can be potentially challenging for some students (prompting, for example, feelings of exclusion) if teachers do not deliberately provide opportunities for participation (Mittelmeier, Rienties, Tempelaar, & Whitelock, 2018). Also relevant to the current research are findings by several researchers that Asian students generally prefer to play a more passive role in class and to trust the knowledge of the teacher (Dixon, 2005) unless called upon to participate, an indication that they view talking too much in the class as disturbing or wasting teaching time (Lee, 2011).

I grouped the student perception questionnaire items on the equity scale according to three attributes (see Table 4.2: teacher treats students equally in general (Q1), in opportunities for participation (Q2, Q4, Q5), and does not discriminate in giving praise (Q3). The response options were based on a Likert scale ranging from; Never (1), Rarely (2), Sometimes (3), Often (4) and Always (5).

Table 4.2 Student perception questionnaire: items making up the equity scale.

Question number	**Items**
Q1	I get the same amount of help as the other students from the teacher during reading time.
Q2	I am given the opportunity to share my ideas just like the other students during reading time in class.
Q3	I get the same amount of encouragement from the teacher as other students do during reading time in class.
Q4	I am offered the opportunity to talk in-group discussions just as much as the other students are during reading time in class.
Q5	I am offered the opportunity to answer questions from the teacher just as much as other students are during reading time in class.

4.5.3 Students' perceptions of attitudes towards reading

Estill and Claude (1976) characterise students' attitudes towards reading as "a system of feelings related to reading which causes the learner to approach or avoid a reading situation" (p. 8). They furthermore contend that a learner's attitude towards reading (and, for that matter, any form of learning) can be influenced by their own personal circumstances and their environment.

In more recent years, research has indicated that reading attitude relates to reading performance. For example, a study conducted with 76 Grade 4 students from an elementary school in the American Midwest found that reading attitude significantly predicted reading achievement (Martínez, Aricak, & Jewell, 2008). Kush, Watkins, and Brookhart's (2005) research indicated that students' reading attitude in primary schools forecast long-term reading proficiency and achievement. Results from this study provide some explanation as to why the average reading achievement score for 15-year-old New Zealand students participating in the OECD's Programme for International Student Assessment (PISA) studies has significantly declined since 2000 (Medina & Mcgregor, 2019). These associations between reading attitude and reading achievement affirmed for me the importance of examining students' attitude towards reading during my research.

When developing the attitudes towards reading scale in the student perception questionnaire, I drew on questions in the Revised Learning Process Questionnaire constructed by Kember, Biggs, and Leung (2004). Because this questionnaire is used mainly in secondary schools, I reworded the questions I selected to ensure the language level was appropriate to Years 5 and 6 students. These adapted questions are Questions 1 to 7 in Table 4.3. The remaining questions in the table (7 to 10) were ones I developed myself with the aim of eliciting further useful insight into the participating students' attitudes towards reading.

I grouped the questions for the attitudes towards reading scale according to three attributes: cognitive (Q7, Q10), affective (Q1), and behavioural (Q2, Q3, Q4, Q5, Q6, Q8, Q9). The response options were based on a Likert scale ranging from; Never (1), Rarely (2), Sometimes (3), Often (4) and Always (5). These attributes accord with Wenden (1991), who argued that attitude consists of cognitive, affective, and behavioural components. The cognitive component is made up of beliefs or opinions about the object (reading, in the case of my study), the affective component is made up of feelings and emotions (about reading), and the behavioural component is made up of actions (taken to improve reading). However, according to Van Els, Bongaerts, Extra, Van Os, & Janssen-van Dieten (1984), the relationships between these components are so close that attitude can be obtained by measuring any one of them. Although I tried to provide best fit between questions and component, there may be some overlap across them.

Table 4.3 Student perception questionnaire: items making up the attitudes towards reading scale.

Question number	**Items**
Q1	I like reading.
Q2	I try to use what I have learned in my reading class to help me in my other subjects.
Q3	I try to connect what I have learned before in my reading class to what I am learning now in my reading class.
Q4	I do only what the teacher wants me to do in my reading class and nothing extra.*
Q5	I spend a lot of my free time finding out more about interesting topics, which have been discussed in my reading class.
Q6	I read articles and books, and/or work on reading activities outside the set reading time.
Q7	I want to work more on developing my reading ability so I can enjoy reading on my own without much help from my teachers and parents.
Q8	I like to set my own reading goals.
Q9	I ask for help from my teacher or friends when necessary during reading time.
Q10	I manage my time well in reading.

Note: * Negatively worded item. This item was reverse scored.

4.5.4 Students' perceptions of conduciveness of learning environments for reading

Studies indicate that students who have positive perceptions of their learning environments generally perform better academically than students who hold more negative perceptions (Gibbs & Poskitt, 2010; Gietz & McIntosh, 2014). Design aspects of the learning environment such as classroom layout, resources, lighting, ventilation, acoustics and access to technological devices are integral to creating a conducive learning environment (Blackmore, Bateman, Loughlin, O'Mara, & Aranda, 2011; Groff, 2013; OECD, 2010). Also, research concerning school building design and its ability to facilitate 21st-century pedagogies such as critical thinking, communication, creative thinking and problem-solving continues to grow (C

Bradbeer, Mahat, Byers, & Imms, 2019). The studies cited here all aimed to provide a better understanding of the physical structure of learning environments and the pedagogical changes that teachers need to make within them in order to effectively and collaboratively foster teaching practices that can help students acquire 21st-century skills.

Therefore, as indicated in Table 4.4 the conduciveness of learning environments scale in the student perception questionnaire included four items that together portray a conducive learning environment for reading. The response options were based on a Likert scale ranging from; Never (1), Rarely (2), Sometimes (3), Often (4) and Always (5). Students attaining a higher total score on the scale would consider their learning environment conducive because of having a relatively positive perception of the environment's conducive learning elements (see Q1 to Q4 in Table 4.4 and the explanation for each that follows the table). Students with a lower total score would perceive their classroom environment to be less conducive because of having less positive perceptions of these elements.

Table 4.4 Student perception questionnaire: items making up the conduciveness of learning environments for reading scale.

Question number	**Items**
Q1	I like my classroom environment during reading lessons.
Q2	I like how the reading activities are carried out in the class I am in.
Q3	I have a quiet area in my class that I can go to and read on my own during my reading class.
Q4	I have access to a laptop/iPad/chrome book and online reading support in school to improve my reading skills.

The first question (Q1) forming the scale asked for students' perceptions of the overall conduciveness of the learning environment (e.g., the layout of the space, classroom climate). Because learning-environment conduciveness is also influenced by the teaching pedagogies deployed in them, the second and third questions (Q2 and Q3) reference the teaching practices and strategies that teachers employ within different learning environments to engage students. Examples include a variety of learning zones to accommodate collaborative practices and access to breakout rooms (Barrett, Zhang, Davies, & Barrett, 2015) should a student want a quiet space in which to read. Question 3 was also prompted by a recent study from the New Zealand Council for Education Research (Wylie, McDowall, Ferral, Felgate, & Visser, 2018)

on teaching and school practices. The study authors reported that of the teachers surveyed during the study, 78 percent indicated that innovative learning environments can be detrimentally overwhelming for some students, especially additional language learners (see also in this regard, Huang & Hwang, 2013; Tallon 2009). Therefore, the item on having a quiet space to read (Q4) served to indicate if students found the environment conducive in addressing that need to have a quiet space to read as part of developing reading skills.

The requirement in today's world for students to leave school with 21st-century skills makes a conducive learning environment one that gives students ready access to digital technologies. A learning environment enabled by technology is not only crucial in terms of transforming pedagogical practice but also in terms of supporting student agency (Groff, 2013; OECD, 2010) and enabling students to keep up with school work and develop more flexible ways of learning (Benade, 2015). Although a more critical evaluation of how these digital technologies are being used in the classroom for conducive learning (Castañeda & Selwyn, 2018) is needed, Question 4 in Table 4.4 (access to laptop/iPad/chrome book and online reading support) was designed to gain some idea of whether these technologies help support students' reading progress (Q4).

4.5.5 Students' perceptions of classroom noise

The items making up the fifth scale in the student perception questionnaire were designed to explore the extent to which students perceived noise as a problem in their learning environments. Poor classroom acoustics can have an adverse impact on learning by creating physiological and physical stress and interfering with classroom activity (Education Central, 2019; World Health Organization, 2009). Hornickel, Skoe, Nicol, Zecker, and Kraus (2009) showed that a child's brain has to work extra hard to distinguish sounds that are very similar to one another, and this is especially so for children with reading impairments. Such children are likely to find it especially hard in noisy classrooms to determine how various words are pronounced and how to read them. Several studies have identified negative associations between noise and conducive learning conditions in general (Greenland & Shield, 2011; Nelson, Kohnert, Sabur, & Shaw, 2005; Smardon, Charteris, & Nelson, 2015), between noise and distraction (Shield et al., 2010), and between noise and successful completion of literacy tasks (Dockrell & Shield, 2006). These detrimental effects tend to be particularly pronounced in students with additional learning needs, including students with English as an additional language (Connolly, Dockrell, Shield, Conetta, & Cox 2015).

Of the five items making up the noise scale (see Table 4.5, the first (Q1) aimed to identify students' perception of the intensity of the classroom noise. The aim of the next three items (Q2, Q3, Q4) was to capture students' perceptions of whether noise affected their reading lessons. The last item (Q5) sought to ascertain how (in the students' eyes) teachers responded to classroom noise during reading. The response options were based on a Likert scale ranging from; Never (1), Rarely (2), Sometimes (3), Often (4) and Always (5). Students attaining the higher scores on this scale could thus be seen as less adversely impacted by noise in the classroom during reading lessons (i.e., not distracted by the noise, able to clearly hear interactions between themselves and the teacher, comfortable with the teachers' response to classroom noise). Students attaining lower scores would be the students more adversely impacted by the noise (i.e., distracted by the noise, unable to clearly hear interactions between themselves and their teachers, uncomfortable with the teachers' response to noise in the classroom).

Table 4.5 Student perception questionnaire: items making up the classroom noise scale.

Question number	**Items**
Q1	The class environment is noisy during reading time.*
Q2	The noise around me during reading time distracts me from my work.*
Q3	I can clearly hear what the teacher is saying during reading time.
Q4	My teacher is able to hear me when I respond to questions.
Q5	The teacher carefully monitors the noise level in the classroom during reading activity.

Note: * Negatively worded item. This item was reverse scored.

4.6 Ethical approval for the measures

Prior to conducting my research, I sought and gained approval from the University of Canterbury's Ethics Committee to administer the above measures to the participating students and teachers. Teachers and students were required to give their informed consent in order to participate. In keeping with guidance from Diener, Edward, and Crandall (1978), the informed consent detailed the procedure and requirements of the research. Students and teachers were also informed that their participation was voluntary and that they could withdraw from the research at any point in time before the data analysis stage. To minimise risk for all participants,

information pertaining to their test results, questionnaire findings and interview transcripts was kept anonymous.

4.7 Summary

This chapter described the development of the measures used to gather the study data and the general procedures used to administer them. Table 4.6 provides a summary of those measures.

Table 4.6 Summary of the measures used during the study

Pre- and Post-Test (Set A and Set B) Categories • Reading comprehension • Listening comprehension • Vocabulary development
Student Perception Questionnaire Scales • Teacher support during reading lessons • Equity in the reading class • Attitudes towards reading • Conduciveness of learning environments • Classroom noise
Semi-Structured Interview Categories • Practices teachers use when teaching English-language reading to Asian and English-only-speaking students in innovative learning environments and traditional schools • Challenges in teaching English-language reading to Asian and English-only- speaking students in innovative learning environments and traditional schools

The next chapter, Chapter Five, details the findings from the pilot study. The pilot study assisted in planning and modifying these measures to make them as robust as possible for use in the main study.

Chapter Five: Pilot Study

5.1 Introduction

The aim of the pilot work was to trial the research measures (see Chapter Four) so as to ensure their appropriate use in the main study. A pilot study provides valuable insights about the data-collection procedures and measures relative to the aims of the research. Both the measures and the procedures can then be modified based on the results of the pilot work to ensure they will serve as reliable, valid means of collecting the required data during the main study. The measures trialled during the pilot work were the assessment battery, the student perception questionnaire, and the semi-structured teacher interview. Two pilot studies were conducted specifically for the assessment battery (Pilot Study 1 and Pilot Study 2). The two studies were conducted in the same school, but each study involved a different set of students.

5.2 Pilot Study 1

5.2.1. Student participants

I asked students in a Decile 9 primary school in Christchurch to participate in the two studies used to pilot the assessment battery. The school had been recently converted internally to accommodate innovative learning environments. I sent information letters and consent forms to the school's principal, teachers, parents and students to obtain consent for the students' participation in the study. Three Asian students with English as an additional language and nine English-only-speaking students from Years 5 and 6 agreed to participate. The students were from a mixed-ability group. The pilot study began in June 2018.

5.2.2 Teacher participants

Two class teachers from Years 5 and 6 volunteered to participate in the pilot phase of the research. These two teachers were the class teachers of the students who participated in the pilot study. Their role was to go through the teacher interview with me and to give feedback on the questions and my interviewing style. I also asked the teachers to comment on whether they considered the passages and test items I selected for the student assessment pre-test (referred to as Set A) and post-test (referred to as Set B) suitable for Years 5 and 6 students. I furthermore asked the teachers to review the items in the student perception questionnaire to ensure that the language level used would be easily understood by the students, especially those with a second language background.

5.2.3 General procedures for trialling the Sets A and B tests

My aim in piloting the two tests was to ensure the clarity of the multiple-choice questions and the reliability of the assessments. All 12 students who agreed to participate in Pilot Study 1 completed both the pre- and post-tests for reading comprehension, listening comprehension, and vocabulary development. Before trialling the two sets of tests, I visited the school to introduce myself to the participating students and teachers and to give them background information about the pilot study. The assessments dates for the pilot study were decided at the meeting.

On the first day of the pilot assessments, students completed the pre-tests (Set A) for reading comprehension and vocabulary development. On the second day, they completed the pre-test (Set A) for listening comprehension. They also completed the student perception questionnaire on the second day. Two weeks later, students completed the post-tests (Set B) for reading comprehension and vocabulary development, and then for listening comprehension on the following day. The two sets of tests were conducted two weeks apart to lessen test-related anxiety and fatigue among the students.

As explained in detail in the previous chapter (Chapter Four), the reading comprehension measures required students to read short stories and answer questions relating to them so that I could determine what they had understood about the stories. A similar approach was adopted for the listening comprehension measures, where students listened to an audio script and answered questions relating to what they had just heard. The vocabulary measures called on students to choose the best possible meaning for each word in a list of words administered to them.

The assessments were conducted according to examination-type conditions after the morning break—the same conditions intended for the main study. Before the students began attempting the tests, I asked them to highlight any questions they felt were unclear, too easy, repetitive or had a typographical error. After they finished each test, they and I spent 15 minutes discussing the questions. I carefully considered their feedback when finalising the measures for the main study.

The student perception questionnaire used in the pilot focused on student engagement in a reading class, and it was made up of items forming five scales, as mentioned in Chapter Four, and as intended for the main study. Students used a five-point Likert-type response scale ranging from “Almost Never” to “Almost Always” to answer each question. I guided the

students through each question to ensure they fully comprehended it. The students then completed the questionnaire in small groups in an adjoining classroom. The questionnaire took approximately 25 minutes to complete.

After the reading assessments were conducted, I met with the Years 5 and 6 class teachers to discuss the questions that I have selected for the pre- and post-tests and the student perception questionnaire. I did this to ensure that all measures were suitable and appropriate for Years 5 and 6 students. The class teachers approved the measures, thus confirming that they considered them to be suitable for these students.

5.2.4 Analysis of the data from Pilot Study 1

5.2.4.1 Amendments

After analysing the data obtained from the pilot testing, I made the following minor amendments to the data-collection measures.

LISTENING COMPREHENSION SET A

- Alternative answers for Q6 were revised to ensure that the correct answer was not too easy to identify.
- A typographical error in Q13 was corrected.
- One of the alternatives given in the multiple-choice responses for Q30 was revised to make it clearer.

LISTENING COMPREHENSION SET B

- One of the alternatives given in the multiple-choice responses for Q18 was revised to avoid incorrect interpretation of the word “fall”.
- The typographical error found in Q16 was corrected.

READING COMPREHENSION SET A

- The word “morning” was added to one of the alternatives given in the multiple-choice responses for Q3 to make its meaning clearer.
- The word **‘true’** was bolded to provide more emphasis in one of the alternatives given in the multiple-choice responses for Q23.

READING COMPREHENSION SET B

There were no changes to Reading Comprehension Set B.

VOCABULARY DEVELOPMENT SETS A AND B

Two versions of the test were piloted—Set A and Set B, with Set A administered as the pre-test and Set B as the post-test. No changes were required to the actual tests. However, an instruction page containing an example of what each test required students to do was added as a front page to each test.

5.2.4.2 Pre- and post-test data, Sets A and B

In addition to identifying minor needed changes such as correcting typographical errors and enhancing the clarity of questions, analysis of the pilot data sought to ensure (i) the absence of floor or ceiling effects in the students' pre- and post-test scores on the assessment measures, and (ii) the measures were sufficiently reliable for use in the main study.

Table 5.1 provides a summary of the pre- and post-test data collected during Pilot Study 1. No floor or ceiling effects were detected for the pre- and post-tests. The maximum and minimum scores obtained by the students indicated that the tests were of equivalent difficulty. The Cronbach's alpha of 0.508 for Vocabulary development Set A indicated that the test would benefit from further review. As the schools were ready to embark on the main study, a decision was made to put this test and the other two tests with the lower Cronbach's alpha scores (Reading Comprehension Set B and Listening Comprehension Set A) through the second pilot test and to administer the tests with the higher Cronbach's alpha scores (Reading Comprehension Set A, Listening Comprehension Set B, and Vocabulary development Set B) as the main study pre-tests.

Table 5.1 Summary analysis of Pilot Study 1 data

Pre-Test (Set A) and Post-Test (Set B)	**Total score achievable**	**Lowest test scores students achieved**	**Maximum test scores students achieved**	**Mean scores**	**Standard deviation**	**Cronbach's alpha**
Reading Comprehension Set A	35	18	30	26.92	4.05	0.701
Reading Comprehension Set B	35	19	30	25.00	4.19	0.641
Listening Comprehension Set A	30	19	29	26.00	2.83	0.624
Listening Comprehension Set B	30	17	28	25.00	4.50	0.831
Vocabulary development Set A	30	17	25	25.50	2.57	0.508
Vocabulary development Set B	30	14	28	22.00	5.16	0.853

5.3 Pilot Study 2

5.3.1 Student participants

The second pilot test was conducted in the same school as the first pilot study school but with a new group of students. Four Asian students for whom English was an additional language and six English-only-speaking students participated in this second study.

5.3.2 General procedures for trialling the Sets A and B tests

This second pilot study included three of the six pre- and post-test assessments: Vocabulary development Set A, Reading Comprehension Set B, and Listening Comprehension Set A. The

data for these three assessments included the combined results from the 22 students who participated in the pilots (i.e., 12 students from Pilot 1 and 10 students from Pilot 2).

Similar to the first pilot study, the reading comprehension and vocabulary development tests were trialled on the first day of the piloting, and the listening comprehension assessment was trialled on the second. Testing was performed immediately after the morning break on both days to ensure the students had a break from studying before the assessments. The reading assessment was followed by a 15-minute break before the vocabulary development assessment. Assessments were conducted in the classroom made available by the teacher. This classroom was adjacent to the main classroom.

5.3.3 Analysis of the data from Pilot Test 2

Table 5.2 provides a summary of the data collected during Pilot Study 2. The Cronbach's alpha scores include the data from the 12 students who participated in Pilot Study 1 and the 10 students from Pilot Study 2, so 22 students in total. The Cronbach's alpha scores for Reading Comprehension Set B produced an acceptable Cronbach's alpha of 0.712 with these 22 students. The same could not be said for the alpha for Listening Comprehension Set B, which was 0.624. However, after I removed Questions 12 and 23, the score increased to an acceptable 0.706, and I accordingly decided to omit these two questions from this assessment when I conducted the main study. To allow comparisons between the Set A and B measures, I calculated percentage total scores.

The Cronbach's alpha of 0.52 for Vocabulary development Set A (the assessment piloted during both the first and second studies) was again lower than preferred, despite encompassing the data from the 22 students. This lower than preferred score was likely due to the administrative procedures that changed between the two pilot studies, and not to the omission of a cover page with examples on how to complete the test as I had anticipated. I therefore removed from Vocabulary development Set A the test items that all the students got right and those they all got wrong. As noted in the previous chapter, I selected additional words from the fourth to tenth 1000 words from Nation's (2019) Vocabulary Size Test. I discussed these with the Years 5 and Year 6 teachers to ensure these words would also be appropriate for students at this level. On receiving that assurance, I added the words to the test. I then piloted the test for a third time with the 10 students from the Pilot study 2, and this time it attained a satisfactory Cronbach's alpha of 0.702 (see Table 5.3).

Table 5.2 Summary analysis of Pilot Study 2 data

Pre-Test (Set A) and Post-Test (Set B)	Total score achievable	Lowest test scores students achieved	Maximum test scores students achieved	Mean scores	Standard deviation	Cronbach's alpha
Reading Comprehension Set B	35	20	35	24.64	4.18	0.712
Listening Comprehension Set A	28	17	30	23.72	2.71	0.706
Vocabulary development Set A	30	17	25	21.95	3.16	0.520

Table 5.3 Results for Pilot Test 3 for Vocabulary development Set A

Pre-Test (Set A) and Post-Test (Set B)	Total score achievable	Lowest test score students achieved	Maximum test score students achieved	Mean score	Standard deviation	Cronbach's alpha
Vocabulary development Set A	30	17	25	21.95	3.49	0.702

5.4 Time needed to complete the tests

The pilot work also allowed me to determine the time students would need to complete each of the assessment tests during the main study. The timing for each test was determined based on the average time the students who participated in the pilot studies took to read and answer its associated multiple-choice response options. Table 5.4 gives the total time I determined the main-study students would need to answer each test. The totals are a sum of the average time needed to complete each question and the time needed to read the test instructions.

Table 5.4 Time needed to complete main-study assessments based on the pilot work

Pre- and post-tests	**Completion time**
Reading Comprehension	35 minutes
Listening Comprehension	20 minutes
Vocabulary development	15 minutes

5.5 Trialling the teacher interviews

As a novice interviewer, I found that trialling these interviews with the two Years 5 and 6 teachers who participated in the pilot study helped me gain familiarity with the nature and requirements of interviewing. I began each interview by getting to know the teacher and their learning environments. I also explained the purpose of the interview, how it would be recorded (audiotape), and how the results would be used. I also assured each teacher of confidentiality. I repeated all of this information in the study information sheet I gave each of them. As noted earlier, I gave the interview questions to each teacher two days before their scheduled interviews.

5.5.1 Findings and amendments

The teacher feedback and my own reflections after listening to the audiotapes suggested that the questions were not sequenced well, tended to be repetitive and were not always clearly understood by the teachers. I rewrote a number of questions to avoid repetition and simplified any in need of better understanding. I also narrowed the questions down to two broad thematic areas. The first enquired about teacher practices; the second about challenges associated with teaching reading and reading related skills to Asian students who speak English as an additional language and to English-only-speaking students in the learning environment they were teaching in.

The feedback from the teachers also indicated that a more conversational approach during the interview would build rapport, make participants feel more comfortable and encourage them to engage more with me. The trialling of the interview also revealed that it was crucial for one person to speak at a time and to monitor the participants' voices so that they were clear and sufficiently loud for good audio-recording and transcription purposes. Each interview took approximately 30 minutes on average.

5.6 Trialling the student perception questionnaire

I piloted the questionnaire to ensure myself that students could understand what they were being asked without difficulty. I needed to confirm that the language used was simple and accessible. I therefore discussed in detail with each participating student the words used and the meaning they conveyed.

5.6.1 Findings and amendments

The students unanimously agreed that the five-point Likert response scale of "Almost Never", "Seldom", "Sometimes", "Often", and "Always" used in the questionnaire needed to be amended to help them comprehend the differences between each response word. I replaced "Almost Never" with "Never", "Seldom" with "Rarely" and "Almost Always" with "Always", but retained "Sometimes" and "Often".

I also, based on the students' feedback, slightly rephrased some questions in order to provide further clarity for the students who would be answering the questionnaire during the main study. Most of these changes were minor, such as further simplifying the wording and changing the order of some questions for better comprehension.

Students took approximately 30 to 40 minutes to complete the questionnaire.

5.7 Observation of reading lessons

I carried out observations of reading classes of the two teachers who during the pilot phase of the study to explore day-to-day happenings in classrooms and the teaching practices being used in them during guided reading lessons. I completed two observations in an innovative learning environment (the pilot study school) and one observation in a traditional school classroom environment suggested by my research supervisor. The purpose of my observations was for me to understand the events occurring in a reading lesson and to gain general impressions of the two learning environments. Among the questions I asked myself during the observations were these: How does the reading lesson start? How does it progress into guided reading groups? What do the other students do while the teacher interacts with the guided reading group in front of her? How does the teacher handle lesson interferences?

5.8 Summary

During the pilot phase of my doctoral study, I collected data relevant to the quantitative and qualitative elements of my research. This current chapter therefore documented my trialling of the measures intended for use in the main study, and the amendments I made to them after

analysing the trial findings. In the next chapter, Chapter Six, I report the findings from the main study administration of the assessment battery.

Chapter Six: Research Findings: Assessment Battery (Main Study)

6.1 Introduction

This chapter investigates students' growth in reading and reading-related skills, based on test scores, of the two groups of students who participated in my study: Asian students speaking English as an additional language (Asian students) and European/Pākehā students speaking only English and whose parents were native speakers of English (English-only-speaking students). The chapter presents and compares the test results for these two groups within the context of the environments in which they were learning: traditional schools with single-cell classrooms and schools with innovative learning environments.

The spatial and physical elements of innovative learning environments and their affordance for collaborative teaching aim to provide teachers and students with a flexible, self-directed learning atmosphere (Benade, 2017). Transition from traditional classroom environments into these open, flexible learning spaces requires a paradigmatic shift in terms of teaching pedagogy and classroom management. As discussed earlier in this thesis, while some teachers and students adapt easily to this new way of learning, others struggle.

One group of students deemed a potential "at-risk" group within these new learning environments are Asian students who speak English as an additional language. One of my main aims in conducting this thesis was to explore what difficulties they (assumedly) face when required to understand and develop spoken and written information in English, especially as they may be exposed to English for only a percentage of the day (primarily in their classrooms), unlike their English-only-speaking peers who are exposed to English all day.

Another major aim was to investigate the conjecture that these Asian youngsters may be more adversely influenced than their English-only-speaking peers by the noise and distraction associated with innovative learning environments, which typically accommodate large numbers of students and multiple teachers. Missing key vocabulary and/or lack of exposure to a range of spoken and written forms of English, due to noise or distraction, may therefore have more of a deleterious effect on these additional language learners than their English-only speaking peers.

The study results presented in this current chapter are drawn from the English-language-reading and reading-related skills achievement data that I collected during the main-study phase of my research in the hopes of shedding light on these conjectures. More specifically,

the chapter focuses on Research Question 1 of my thesis: “In innovative learning environments compared to traditional classrooms, does progress in reading comprehension, listening comprehension and vocabulary development (based on achievement test scores) differ between students from an Asian background who speak English as a second or additional language and students who speak only English?”

Research Questions 2 and 3, which address students’ perceptions of reading and reading-related teaching practices, are covered in Chapters Seven and Eight, respectively, of this thesis.

6.2 The participating students: demographic information

The study was conducted in primary schools in Christchurch, New Zealand. Students from four schools with traditional classrooms and four schools with innovative learning environments participated in it. Student recruitment into the study was in keeping with the ethical procedures, including informed consent, consistent with the requirements of the University of Canterbury’s ethics committee. One hundred and fifty-seven students participated in the pre-tests. However, due to attrition during the study, only 150 students were able to participate in both the pre- and post-tests. They included 96 Year 5 students and 54 Year 6 students. Forty-three of the Year 5 students were from Asian backgrounds and 53 were from European/Pākehā English-only-speaking backgrounds. Of the 54 Year 6 students, 28 were from Asian backgrounds and 26 were from English-only-speaking backgrounds.

The student participants provided information on their age, gender, languages spoken and number of years they had lived in New Zealand (see Table 6.1a). The students from the Asian backgrounds confirmed they spoke an Asian language at home and spoke English when in school for educational purposes. The languages spoken by the Asian students included Chinese (mostly Mandarin), Japanese, Hindi, Kannada, Tamil, Urdu, Malayalam, Sinhala, Malay, Thai, Korean, Vietnamese, Bisaya and Tagalog. On average, the number of years these students had lived in New Zealand was 75.6 months for the Year 5 students and 83.23 months for the Year 6 students.

Table 6.1a Demographic characteristics of students participating in the main study.

		Traditional schools		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
Total number		28	41	43	38
Year	5	22	30	21	23
	6	6	11	22	15
Age	9	19	26	18	21
	10	6	11	22	16
	11	3	4	3	1
Gender	Male	12	16	18	23
	Female	16	25	25	15
School decile	4	-		15	3
	6	13	13		
	7	-		9	8
	8	-		10	6
	9	8	16		
	10	7	12	9	21
Years in NZ (months)		Asian students		Asian students	
		Mean	Standard deviation	Mean	Standard deviation
		75.60	36.90	83.23	41.08

Several of the participating Asian students in both types of learning environment were receiving English-language support. Of the students in the traditional classrooms, two Year 5 and no Year 6 were receiving support. In the innovative learning environments, five of the Year 5 students and nine of the Year 6 students were receiving support (Table 6.1b). The students receiving support had the assistance of teacher-aides and specialised English-language teachers to assist them with their English-language and reading lessons. Some of these lessons were tailored in accordance with the current topic being taught in class; other lessons addressed students' gaps in language and reading. The support for the Year 5 Asian students in the traditional classrooms took place for 30 minutes a day in a room separate from their usual class. Support for the Years 5 and 6 Asian students in the innovative learning environments took place within those environments during language and reading lessons and occasionally in a break-out space or a classroom away from the main classroom for additional support.

Table 6.1b Students receiving English Language Support

	Traditional Schools		Innovative Learning Environments	
English Language Support	Year 5	Year 6	Year 5	Year 6
	2	0	5	9

6.3 Reading growth assessment measures used in the main study

The assessment battery, consisting of pre- and post-tests, was used to assess growth in English-language reading and reading-related skills and covered three main areas: reading comprehension, listening comprehension, and vocabulary development. The mean scores from these assessments were used to determine the reading-related progress of Asian students and English-only-speaking students in traditional schools and innovative learning environments. For a description of the development of these measures, see Chapter Four.

6.3.1 Timeline for tests

All participants sat the pre-tests at the beginning of the study and the post-tests at the end of the study according to the schedule presented in Table 2.

Table 6.2 Testing schedules in the participating schools.

Schools	Pre-tests	Post-tests
Traditional Single Cell School One	March	October
Traditional Single Cell School Two	March	October
Traditional Single Cell School Three	April	November
Traditional Single Cell School Four	June	December
Innovative Learning Environment One	March	October
Innovative Learning Environment Two	March	October
Innovative Learning Environment Three	May	December
Innovative Learning Environment Four	July	December

6.3.2 Test reliabilities

I used the Cronbach's alpha coefficient to test the reliability (based on the results from the 150 students) for the three assessment measures. The reliability scores for each measure were acceptable, with internal consistency varying from 0.791 to 0.853 (see Table 3).

Table 6.3 Internal consistency reliability scores for all measures in the main study.

Tests	Cronbach's alpha
Reading Comprehension Pre-Test	0.791
Reading Comprehension Post-Test	0.831
Listening Comprehension Pre-Test	0.853
Listening Comprehension Post-Test	0.843
Vocabulary development Pre-Test	0.820
Vocabulary development Post-Test	0.834

6.3.3 Statistical procedures

6.3.3.1 Repeated measures analyses of variance (ANOVA)

For the comprehension measures, I used repeated measures analyses of variance (ANOVA) to identify differences in achievement between the Asian students and the English-only-speaking students in the traditional schools and the innovative learning environments. Because the same group of students completed the tests at two specific points in time (i.e., pre-test and post-test), the repeated measures factor was time, with two levels: 1 = pre, 2 = post. Each analysis incorporated two independent factors: type of student (Asian students versus English-only-speaking students) and type of school (traditional versus innovative learning environment). I did not use the repeated measures factor for the vocabulary analyses due to difficulty level variability between the pre-test and post-test versions of the measure. Instead, for vocabulary, I used the pre-test scores as a covariate in analyses of covariance (ANCOVA).

All statistical analyses were performed using IBM SPSS Statistic V.25, with 0.05 being used as the significance level. I performed the analyses for the Year 5 and the Year 6 students separately, as combining these two-year groups may have greatly increased within-group variance, making it more difficult to determine between-group differences.

6.3.3.2 Additional analyses

These controlled for potential differences between the groups based on school decile levels, student length of stay in New Zealand, gender, and participants' involvement in language-support classes.

In regard to school decile level, research indicates that the socioeconomic status (SES) background of students (commonly determined in New Zealand by decile rating) influences reading literacy and attitudes towards reading (Hemmerechts, Agirdag, & Kavadias, 2016). Children from higher SES backgrounds typically get an early start in reading and are therefore likely to have higher levels of reading literacy and better attitudes towards reading than their lower SES peers (Melhuish et al., 2008; Mullis, Martin, Foy, & Hooper, 2017). Because SES is closely linked to reading literacy, I performed additional analyses controlling for school decile to statistically control for the potential influence of school decile in reading growth.

Students who have lived in a country for a relatively long time typically experience more exposure to the mainstream language of that country and so have the potential for greater linguistic ability and vocabulary development in it than those who arrive later (Dewey, 2004; Ife, Vives Boix, & Meara, 2000). I accordingly controlled for length of stay in New Zealand.

Burman, Bitan, and Booth's (2008) investigation of gender differences in language tasks found differences in neural processing of language between girls and boys, especially during the early stages of reading acquisition. The three researchers proposed that girls are able to process language regardless of the stimulus/modality while boys are drawn more to visual and auditory types of stimulus/modality. Various researchers have reported that because girls tend to hold more positive attitudes than boys towards language learning, they do better at language tasks (Martínez, Aricak, & Jewell, 2008; McKenna, Conradi, Lawrence, Jang, & Meyer, 2012; Swalander & Taube, 2007; Worrell, Roth, & Gabelko, 2010). I therefore took the potential influence of gender on reading growth into consideration by controlling for it.

I furthermore controlled for the students who were receiving language support additional to that given in their regular reading classes. Because these students were receiving more hours of tuition in English-language skills, I considered it important to take this factor into account when interpreting the effects of learning environment on English-language reading achievement.

6.4 Findings

6.4.1 Reading comprehension

6.4.1.1 Year 5 students

Table 6.4 presents the descriptive statistics for the participating Year 5 students' performance on the reading-comprehension pre- and post-tests. The increases in all mean values from the pre-test to the post-test indicate that the reading comprehension of both groups of students (Asian, English-only-speaking) in both learning environments (traditional, innovative) progressed over time.

Table 6.4 Year 5 students' reading comprehension: descriptive statistics.

		Traditional Schools		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 22	*N* = 30	*N* = 21	*N* = 23
Reading Comprehension (Pre-Test scores)	Mean	23.04	24.56	22.80	20.04
	Standard deviation	5.19	4.53	3.32	6.10
Reading Comprehension (Post-Test scores)	Mean	24.00	26.43	25.40	21.73
	Standard deviation	5.85	3.24	5.78	6.04
% increase/decrease		+4.2	+7.6	+11.5	+8.4

The repeated measures ANOVA for the Year 5 students revealed a statistically non-significant three-way interaction between time (pre-test versus post), student group (Asian versus English-speaking-only) and school type (traditional versus innovative) ($F_{(1,92)} = .819$, $p = .368$). This analysis also produced a statistically non-significant two-way interactions between time and student group ($F_{(1,92)} < .001$, $p = .996$), and time and school type ($F_{(1,92)} = .542$, $p = .463$). However, the result for time was significant ($F_{(1,92)} = 12.38$, $p = .001$), indicative of improvements in reading comprehension over the period of the study. There was also a significant interaction between school type and student group ($F_{(1,92)} = 8.18$, $p = .005$) wherein the Asian students performed better than their English-only-speaking peers in the innovative learning environments, while the reverse pattern was observed in the traditional schools.

Figure 6.1 graphically represents the Year 5 students' performance across time on the reading comprehension test. Here we can see a small improvement in the mean test scores for the Asian students in the traditional schools over time. These students' performance is slightly lower than that of their English-only-speaking peers, but the difference between these two groups is

minimal. The reverse pattern is evident in the innovative learning environments. The Asian students' performance is better than that of the English-only-speaking students at both the pre- and post-test levels and is also larger across the two levels.

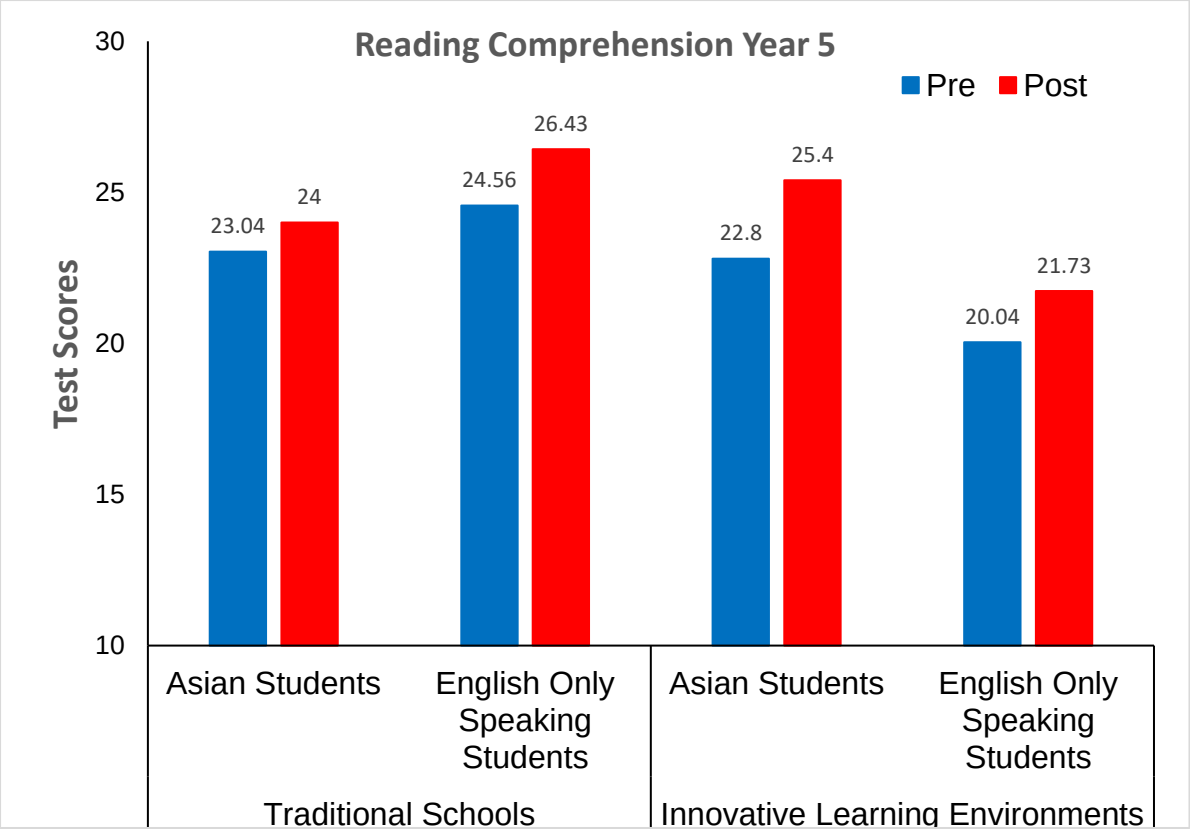

Figure 6.1 Year 5 students: pre- and post-test reading-comprehension mean achievement test scores.

The analysis controlling for school decile did not diverge from the findings reported above, with the three-way interaction between the study variables still being statistically non-significant ($F_{(1,91)} = .385$, $p = .536$). The same was the case for the analysis controlling for length of stay: the three-way interaction was again non-significant ($F_{(1, 91)} = .817$, $p = .368$). Similarly, I found a non-significant three-way interaction when I controlled for gender ($F_{(1, 91)} = 1.064$, $p = .305$). These results suggest that any differences in school decile level, length of stay in New Zealand or student gender were unlikely to provide explanations for the differences in reading comprehension scores between the two groups of students in the two environments.

Overall, the results indicated that the Asian students were not at a specific disadvantage in an innovative learning environment when their growth in reading comprehension over the school year was considered. In fact, it appears that the Asian students were producing slightly better

results in reading comprehension than their English-only-speaking peers in the innovative learning environments. In contrast, in the traditional schools, the English-only-speaking students appeared to be producing slightly better reading-comprehension scores than the Asian students. However, the reading-comprehension growth of the Year 5 Asian students learning in the innovative environments was as good as, if not better, than the growth shown by the Asian students in the traditional school settings.

6.4.1.2 Year 6 students

Table 6.5 presents the descriptive statistics for the participating Year 6 students' performance on the reading-comprehension pre- and post-tests. The information in the table shows an overall increase in mean values from the pre-test to the post-test for all students except the English-only-speaking students in the traditional schools. The means for these students show only a slight decrease from the pre-test to the post-test and the differences are too slight to warrant further attention or to offer much explanatory power for the findings.

Table 6.5 Year 6 students' reading comprehension: descriptive statistics.

		Traditional single cell school		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Reading Comprehension (Pre-Test scores)	Mean	25.66	29.54	26.09	27.66
	Standard deviation	4.17	3.44	3.93	3.41
Reading Comprehension (Post-Test scores)	Mean	28.00	28.81	27.68	28.40
	Standard deviation	5.40	2.44	4.96	3.62
% increase/decrease		+9.1	-2.5	+6.1	+2.7

The repeated measures ANOVA for the Year 6 students indicated a statistically non-significant three-way interaction effect between time (pre-test versus post), student group (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,50)} = .949$, $p = .335$).

This analysis also indicated non-significant interactions between time and student group ($F_{(1,50)}$ = 3.001, p = .089), and time and school type ($F_{(1,50)}$ = .101, p = .752). Time was non-significant ($F_{(1,50)}$ = 3.02, p = .088), indicative of no improvement in reading comprehension over the period of the study. There was also no interaction between school type and student group ($F_{(1,50)}$ = .311, p = .580), suggesting that the Asian students performed at similar levels to those of their English-only-speaking counterparts in both the innovative and traditional learning environments.

The information presented in Figure 6.2 shows that while the reading comprehension of the Asian students in the traditional schools apparently improving between the pre-test and the post-test, the reading comprehension of the English-only-speaking students is static across the two tests. The Asian students in the innovative learning environments appear to have performed equally as well as their English-only-speaking peers in the post-tests. Overall, the mean scores between student type and school type indicate the Asian students and their English-only-speaking counterparts performing at similar levels within the two learning environments.

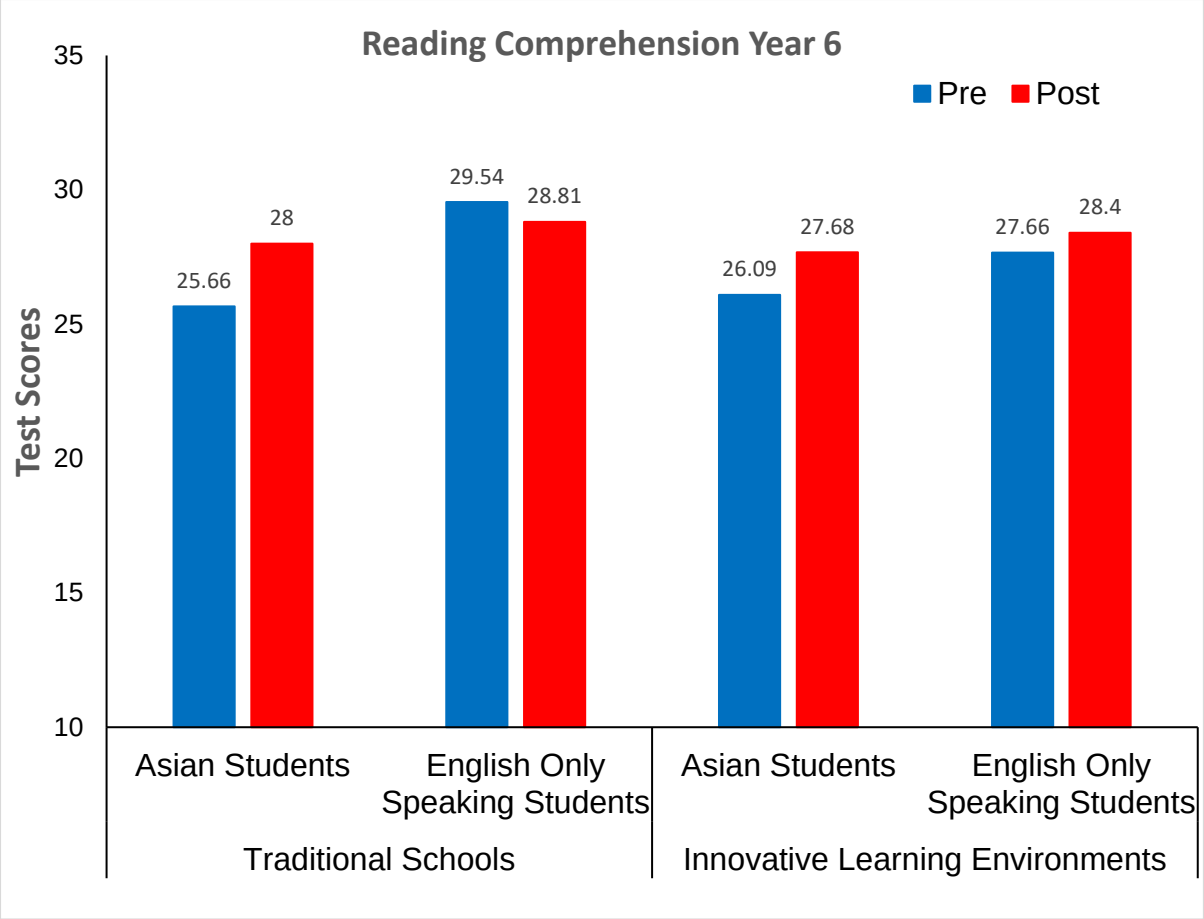

Figure 6.2 Year 6 students: pre- and post-test reading-comprehension mean achievement test scores.

Additional analyses, controlling for school decile, did not diverge from the findings reported above, with the three-way interaction between the study variables still being statistically non-significant ($F_{(1, 49)} = 1.067$, $p = .307$). The same was the case for the analysis controlling for length of stay—again, the three-way interaction was non-significant ($F_{(1, 49)} = .929$, $p = .340$). Similarly, I found no significant three-way interaction when I controlled for gender ($F_{(1, 49)} = 1.030$, p = .315). These results suggest that any differences in school decile level, length of stay in New Zealand or student gender were unlikely to provide explanations for the differences in reading comprehension scores between the two groups of students in the two environments.

Overall, the results indicate that the Asian students were not at a specific disadvantage in an innovative learning environment when their growth in reading comprehension over the school year was considered. However, due to the higher number of participants in the innovative than in the traditional learning environments and the small number of Asian students in the traditional classrooms, caution is required when interpreting the reading-comprehension results for the Year 6 students.

6.4.2 Listening comprehension

6.4.2.1 Year 5 students

Table 6.6 presents the descriptive statistics for the participating Year 5 students' performance on the listening-comprehension pre- and post-tests. As indicated in the chapter on the pilot studies (Chapter Five), I removed two items from the listening-comprehension post-test to increase test reliability. I calculated the scores in terms of percentages to allow comparisons between the pre-tests (30 questions) and the post-tests (28 questions). As is evident from the table, the mean values for all students except the English-only-speaking students in the innovative learning environments showed improvement between the pre- and post-tests.

Table 6.6 Year 5 students' listening comprehension: descriptive statistics.

		Traditional single cell schools		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 22	*N* = 30	*N* = 21	*N* = 23
Listening Comprehension (Pre-Test scores)	Mean	75.04	82.33	75.71	73.21
	Standard deviation	20.16	9.09	15.36	20.76
Listening Comprehension (Post-Test scores)	Mean	83.00	86.83	79.23	71.17
	Standard deviation	15.05	10.29	14.76	23.80
% increase/decrease		+10.6	+5.4	+4.6	-2.7

The repeated measures ANOVA for the Year 5 students indicated a statistically non-significant three-way interaction effect between time (pre-test versus post), student group (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,92)} = .165$, $p = .686$). Time between tests was significant ($F_{(1,92)} = 7.170$, $p = .009$), indicative of improvements in listening comprehension over the period of the study. This analysis also indicated non-significant two-way interactions between time and student group ($F_{(1,92)} = 3.005$, $p = .086$), and time and school type ($F_{(1,92)} = 4.447$, $p = 0.38$), results which suggest that the students in the traditional schools were performing at similar levels to the students in the innovative learning environments.

The bar graphs in Figure 6.3 depict the Asian students' and the English-only-speaking students' listening-comprehension achievement based on type of learning environment. In comparison to the students in the innovative learning environments, the students in the traditional schools show greater growth over time in listening comprehension. The mean scores (post-test) for the Asian students in the traditional classrooms are nearly the same as the mean scores for the English-only-speaking students, indicating that the Asian students in the traditional environments were progressing well. We can also see that the Asian students in the innovative learning environments were performing well, with improvements across the pre- and post-test period. These students' mean scores also show them performing better than the English-only-speaking students, suggesting that the Asian students in the innovative learning environments were not at a specific disadvantage with respect to listening comprehension. On the contrary, the mean listening-comprehension scores for the English-only-speaking students in the innovative learning environments are lower than the corresponding scores for their Asian peers in those same environments. Furthermore, although the scores for the Asian students in both environments show progress in listening comprehension over time, the scores for the Asian students in the traditional classroom is showing slightly more growth in comparison to the scores for the Asian students in the innovative learning environments.

The listening achievement pattern for the Year 5 students evident in Figure 6.3 is similar to the Year 5 students' reading comprehension pattern (Figure 6.1). In both instances, the Asian students in the innovative learning environments performed better than the English-only-speaking students in both the pre- and post-tests, while the performance of the English-only-speaking students in the traditional schools was slightly better than that of the Asian students. However, this pattern may again be more a feature of catchment area and general school sample than an effect of school type.

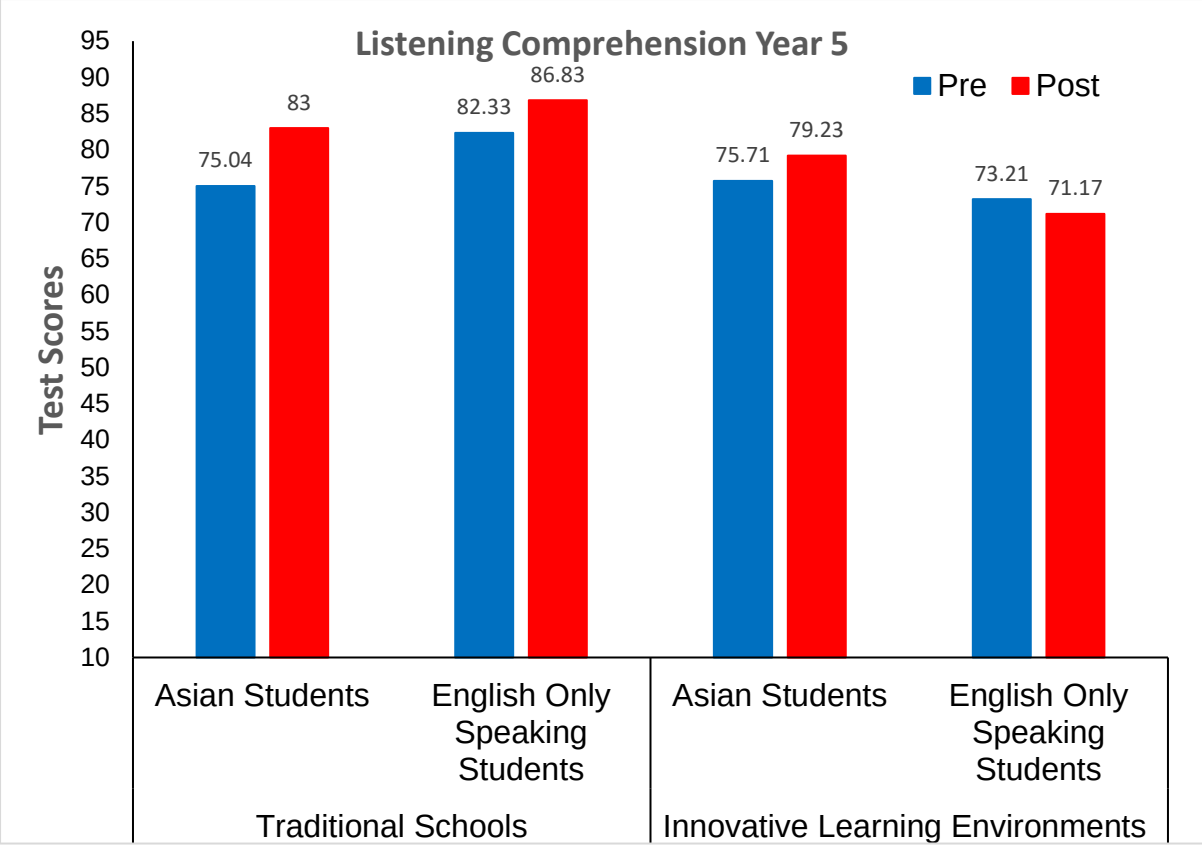

Figure 6.3 Year 5 students: Pre- and post-test listening-comprehension mean achievement test scores.

Additional analyses, controlling for school decile, did not diverge from the findings reported above, with the three-way interaction between the study variables still being statistically non-significant ($F_{(1,91)}$ =.003, p =.958). The same was the case for the analysis controlling for length of stay. Once again, the three-way interaction was non-significant ($F_{(1, 91)}$ = .194, p = .661). Similarly, the three-way interaction was still non-significant when I controlled for gender ($F_{(1, 91)}$ = .428, p = .515). These results suggest that any differences in school decile level, length of stay in New Zealand or student gender were unlikely to provide explanations for the differences in reading comprehension scores between the two groups of students in the two environments.

Overall, and consistent with the findings for reading comprehension, the results indicated that the Year 5 Asian students were not at a specific disadvantage in an innovative learning environment when their growth in listening comprehension over the school year was considered. Again, the growth in the Year 5 Asian students' learning in the innovative learning environments was almost as good as the growth shown by the Asian students in the traditional

settings. In reality, the test scores demonstrated by the English-only-speaking students may be the scores of potential concern.

6.4.2.2 Year 6 students

The overall mean values on the listening-comprehension pre- and post-tests for the Year 6 students (Table 6.7) indicate that both groups of students (Asian, English-only-speaking) in both environments (traditional, innovative) were performing at a high level.

Table 6.7 Year 6 students' listening comprehension: descriptive statistics.

		Traditional single cell schools		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Listening Comprehension (Pre-Test scores)	Mean	80.16	92.09	84.45	80.86
	Standard deviation	16.65	9.35	11.64	20.99
Listening Comprehension (Post-Test scores)	Mean	79.66	92.72	85.27	86.80
	Standard deviation	17.62	5.19	12.63	8.62
% increase/decrease		0	0	+0.8	+5.9

The repeated measures ANOVA for the Year 6 students indicated a statistically non-significant three-way interaction effect between time (pre-test versus post), student group (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,50)} = .298$, $p = .587$). This analysis also indicated non-significant two-way interactions between time and student group ($F_{(1,50)} = .736$, $p = .395$), and time and school type ($F_{(1,50)} = .824$, $p = .368$). Time between pre- and post-tests was non-significant ($F_{(1,50)} = .894$, $p = .349$), indicative of no improvement in listening comprehension over the period of the study. In addition, there was no interaction between school type and student group ($F_{(1,50)} = 3.556$, $p = .065$), a result which suggests the Asian students in both learning environments were performing at levels similar to those of their English-speaking counterparts in both environments.

The bar graphs in Figure 6.4 depict the Asian students' and the English-only-speaking students' achievement in listening comprehension based on school environment. Evident is the lack of

noticeable improvement by both sets of students in both environments across time. The mean achievement scores of the Asian students in the traditional schools are lower than the mean scores of the English-only-speaking students. The bars also show the English-only-speaking students initially performing at a higher level than the Asian students on the pre-test. The mean scores for both groups of students in the traditional schools indicate a flattening off in listening comprehension. Similarly, we can see the Asian students and English-only-speaking students in the innovative learning environments achieving good results in the pre- and post-tests. The Asian students have maintained their mean score while the English-only-speaking students have had an increase in their progress.

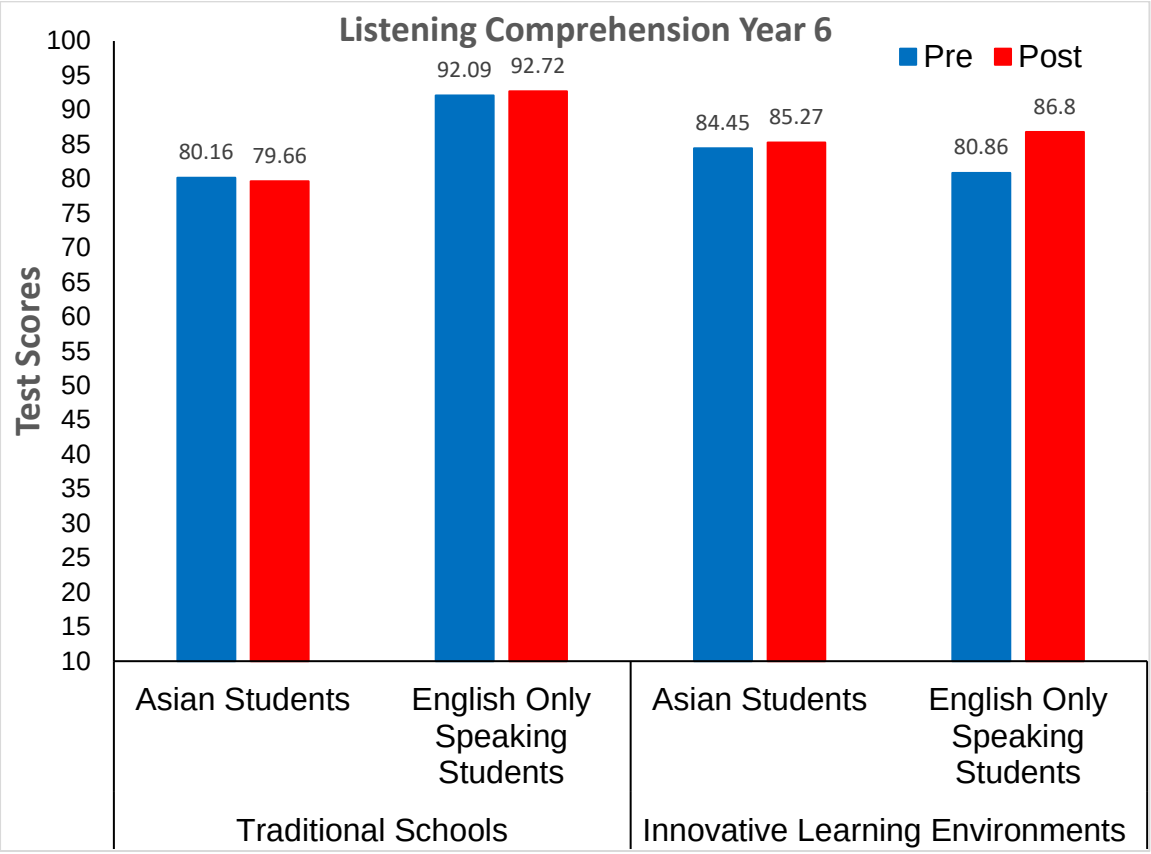

Figure 6.4 Year 6 students: pre- and post-test listening-comprehension mean achievement scores.

Additional analyses, controlling for school decile, did not diverge from the findings reported above, with the three-way interaction between the study variables still being statistically non-significant ($F_{(1,49)}$ = .084, p = .773). The same was the case for the analysis controlling for length of stay, with the three-way interaction non-significant ($F_{(1,\ 49)}$ = .303, p = .584). Similarly, I found no significant three-way interaction when I controlled for gender ($F_{(1,49)}$ = .262, p = .611). These results suggest that any differences in school decile level, length

of stay in New Zealand or student gender were unlikely to provide explanations for the differences in reading comprehension scores between the two groups of students in the two environments.

Overall, the results indicate that the Year 6 Asian students and the English-only-speaking students in the innovative learning environments performed better on listening comprehension than their Year 5 counterparts. Although mindful that these are different samples of students, we can identify a general progression in comprehension across the student groups from one year to the next consistent with the number of years spent in school. Also, the data collected for the Year 6 Asian and the Year 6 English-only-speaking students in the innovative learning environments suggest that for these students learning in these environments did not disadvantage their listening comprehension. However, as with the findings for reading comprehension, caution is required when interpreting the results for the Year 6 Asian students in the traditional classrooms. Because the number of Asian students in this sample group was small, more research with a larger sample of students is needed to provide more conclusive findings.

6.4.3 Vocabulary development

The initial analysis of the vocabulary development data for the participating Year 5 and Year 6 students indicated no significant growth in that knowledge across the two test periods. One possible reason for this finding is that the difficulty level of the two measures differed, a possibility reinforced by the pilot data, which indicated this same pattern. Given this possibility, I statistically controlled for the difficulty level of the vocabulary test to increase the robustness of the results and the validity of their interpretation. I used univariate statistics to examine if a potential interaction between the independent factors (school type and student type) had an effect on the dependent variable (vocabulary development pre- and post-test). I also added the pre-test scores as a covariate to control for pre-test vocabulary development levels and thereby improve the accuracy of the results.

After I controlled for pre-measure vocabulary levels of knowledge, my analysis of the *Year 5* data indicated a statistically significant interaction between student group (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)} = 4.064$, $p = .047$), indicating a difference in performance based on school type and student type. My analysis of the *Year 6* data, after I had controlled for pre-measure vocabulary levels of knowledge, indicated a non-significant interaction between student group (Asian versus

English-only-speaking) and school type (traditional versus innovative) ($F_{(1,53)} = .139$, $p = .711$). However, the difference, once the vocabulary scores at the pre-test phase of the study had been controlled for, between the Asian students and the English-only-speaking students approached significance ($F_{(1,53)} = 4.000$, $p = .051$), suggesting a trend for the English-only students to out-perform the Asian students on the vocabulary measure.

6.4.3.1 Year 5 students

The information in both Table 6.8 and Figure 6.5 present the vocabulary development results for the Year 5 Asian students and the Year 5 English-only-speaking students in the two learning environments after I had controlled for difficulty level. The bar graphs in Figure 5 show the Asian students performing at similar levels in both the traditional and the innovative learning environments, and the Asian students in the innovative learning environments performing slightly better than their English-only-speaking peers. The means for these students show only slight differences to warrant further attention or to offer much explanatory power for the findings.

The overall results indicate that the Year 5 Asian students' vocabulary development was not negatively affected by innovative learning environments, and that the English-only-speaking students in the innovative learning environments experienced less growth in vocabulary development than the English-only-speaking students in the traditional schools.

Table 6.8 Year 5 students' vocabulary development: descriptive statistics.

		Traditional single cell schools		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		$N = 22$	$N = 30$	$N = 21$	$N = 23$
Vocabulary Development	Mean	16.95	18.53	16.76	15.04
	Standard deviation	6.49	4.40	3.49	5.81

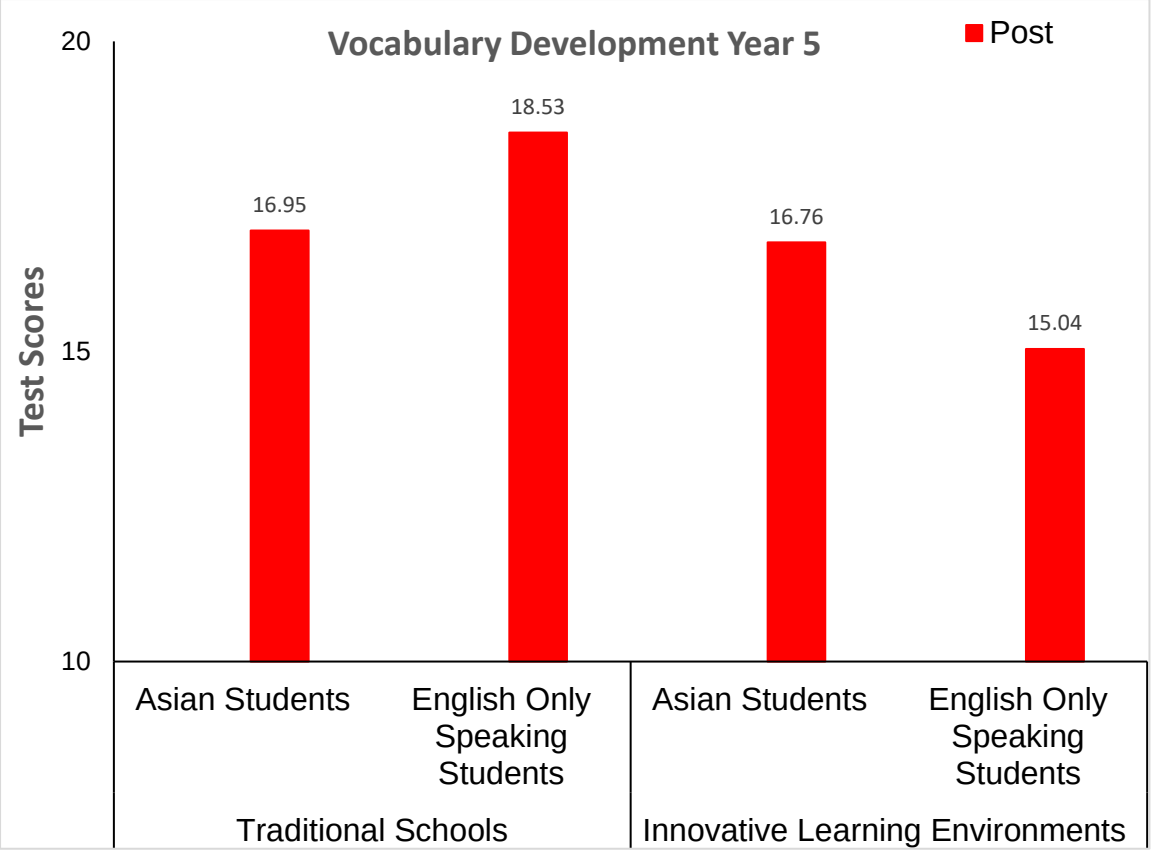

Figure 6.5 Year 5 students: vocabulary development mean scores.

Additional analyses, controlling for school decile, reported a statistically non-significant two-way interaction between the study variables ($F_{(1,95)}$ = 2.595, p = .111), suggesting that any differences in school decile level did not contribute to the differences in vocabulary development. Controlling for length of time in New Zealand indicated a significant interaction ($F_{(1, 95)}$ = 3.917, p = .051) between student groups (Asian versus English-only-speaking) and school type (traditional versus innovative), suggesting that for the Asian students, length of study had an effect on vocabulary development. I found a similar significant interaction when I controlled for gender ($F_{(1, 95)}$ = 3.257, p = .035), a result suggesting boys and girls were performing differently in the two learning environments. However, the vocabulary development of the Asian students in the innovative learning environments still appeared to be greater than that of their English-only-speaking peers once I controlled for length of stay, a finding which suggests that being in innovative learning environments had not disadvantaged the Asian students.

6.4.3.2 Year 6 students

The information in Table 6.9 and Figure 6.6 present the vocabulary development results for the Year 6 Asian students and the Year 6 English-only-speaking students in the two learning

environments after I had controlled for difficulty level. Similar to the findings for the Year 5 students, the bar graphs in Figure 6 show the English-only-speaking students in the traditional schools performing better than the other student groups. However, the difference between the mean score for the English-only students in these schools is only minimal when viewed against the mean score for the English-only-speaking students in the innovative learning environments.

The information in Figure 6.6 furthermore shows the Asian students in both learning environments performing at similar levels. As such, it can be argued that the Asian students in the innovative learning environments were no more disadvantaged than the Asian students in the traditional schools. The same cannot be said, however, with respect to the vocabulary performance of the Asian students in the innovative environments compared to the performance of their English-only-speaking peers in those same environments. Here, we can see the former group of students at an apparent disadvantage. As with the findings in the other sections of this chapter, particular caution is required when interpreting the results for the Asian Year 6 students in the traditional schools because of the lower number of participating Asian students in those schools than in the innovative learning environments.

Table 6.9 Year 6 students' vocabulary development: descriptive statistics.

		Traditional single cell schools		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Vocabulary Development	Mean	17.00	23.45	18.27	22.40
	Standard deviation	2.28	1.86	5.01	2.97

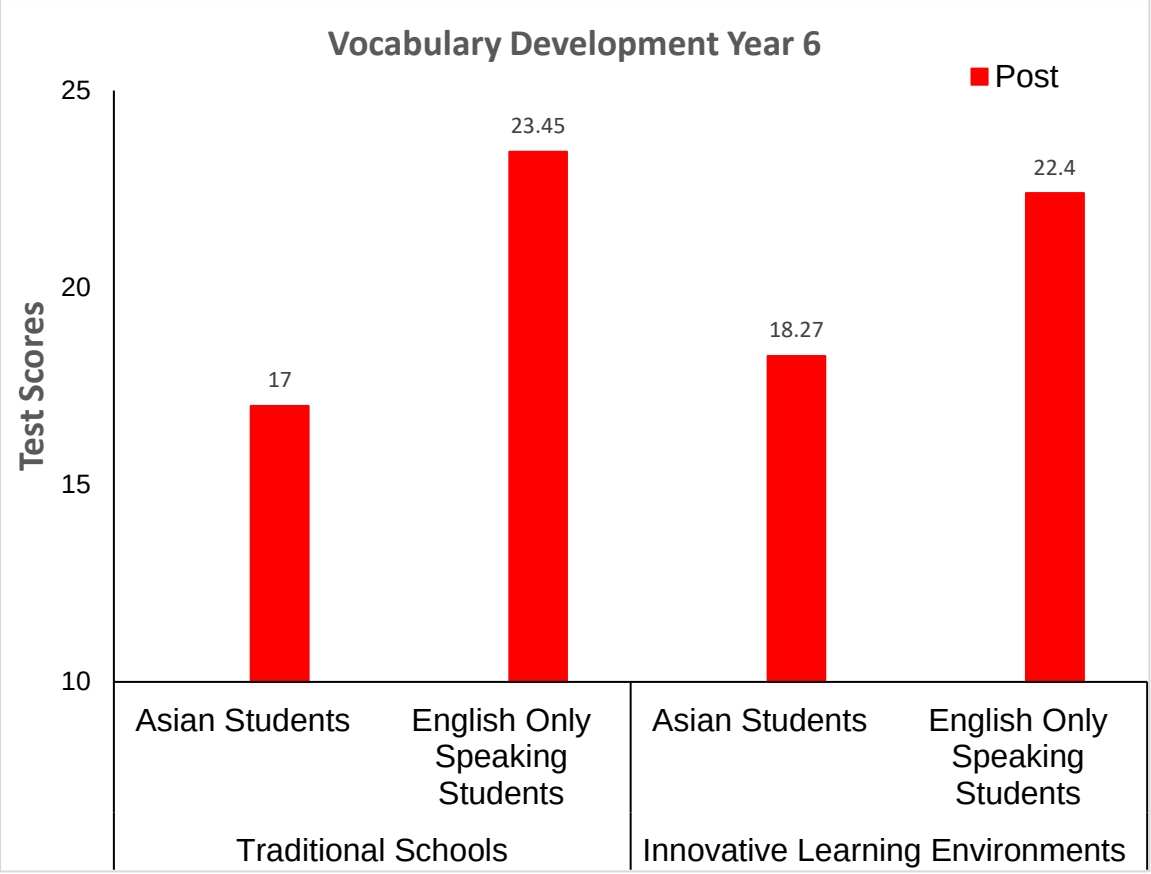

Figure 6.6 Year 6 students: vocabulary development mean scores.

Additional analyses, controlling for school decile, revealed a statistically significant interaction between student type and school type ($F_{(1,53)} = .957$, $p = .001$). Similarly, analysis controlling for length of stay indicated an interaction between school type and student type ($F_{(1,53)} = .705$, $p = .003$). These findings suggest that differences in school decile and length of stay in New Zealand were likely explanatory contributors to the current findings. A gender effect was also observed ($F_{(1,53)} = .739$, $p = .002$), suggesting that boys and girls were performing differently in these learning environments (traditional and innovative).

6.5 Asian students' receiving/not receiving English-Language Support

In addition to exploring the variables potentially contributing to the students' performance on the assessment measures detailed in the sections above, I endeavoured to compare the progress of Asian students receiving English-language support with the Asian students not receiving this support. Because the number of participating Asian students with language support was relatively low, I combined the assessment-measures data from the Year 5 and the Year 6 Asian participants to increase the power of the analyses and to determine the effects present. The findings for each measure follow.

6.5.1 Reading comprehension, Years 5 and 6 Asian students

Table 6.10 presents the reading-comprehension (pre- and post-tests) descriptive statistics for the Asian students, including those receiving English-language support, in the two learning environments (traditional versus innovative). The overall mean values for the various groups of Asian students in the two environments indicate that all of them were performing at similar levels and showing similar progress in reading comprehension over time. The bar charts in Figure 6.7 show the Asian students with language support and those without this support progressing at similar levels in both types of learning environment. This pattern suggests that additional language support in either environment is unlikely to provide explanations for the differences in reading comprehension for the Asians student groups.

Table 6.10 Reading comprehension: descriptive statistics for Years 5 and 6 Asian students' receiving/not receiving English-Language Support.

		Asian students in traditional single cell schools	**Asian students in innovative learning environments**	**Asian students with English-language support**
		N = 26	*N* = 29	*N* = 16
Reading Comprehension (Pre-Test scores)	Mean	24.00	25.00	23.37
	Standard deviation	4.24	3.89	5.59
Reading Comprehension (Post-Test scores)	Mean	25.88	26.82	24.25
	Standard deviation	4.71	5.49	7.13
% increase/decrease		+ 7.8	+ 7.3	+ 3.8

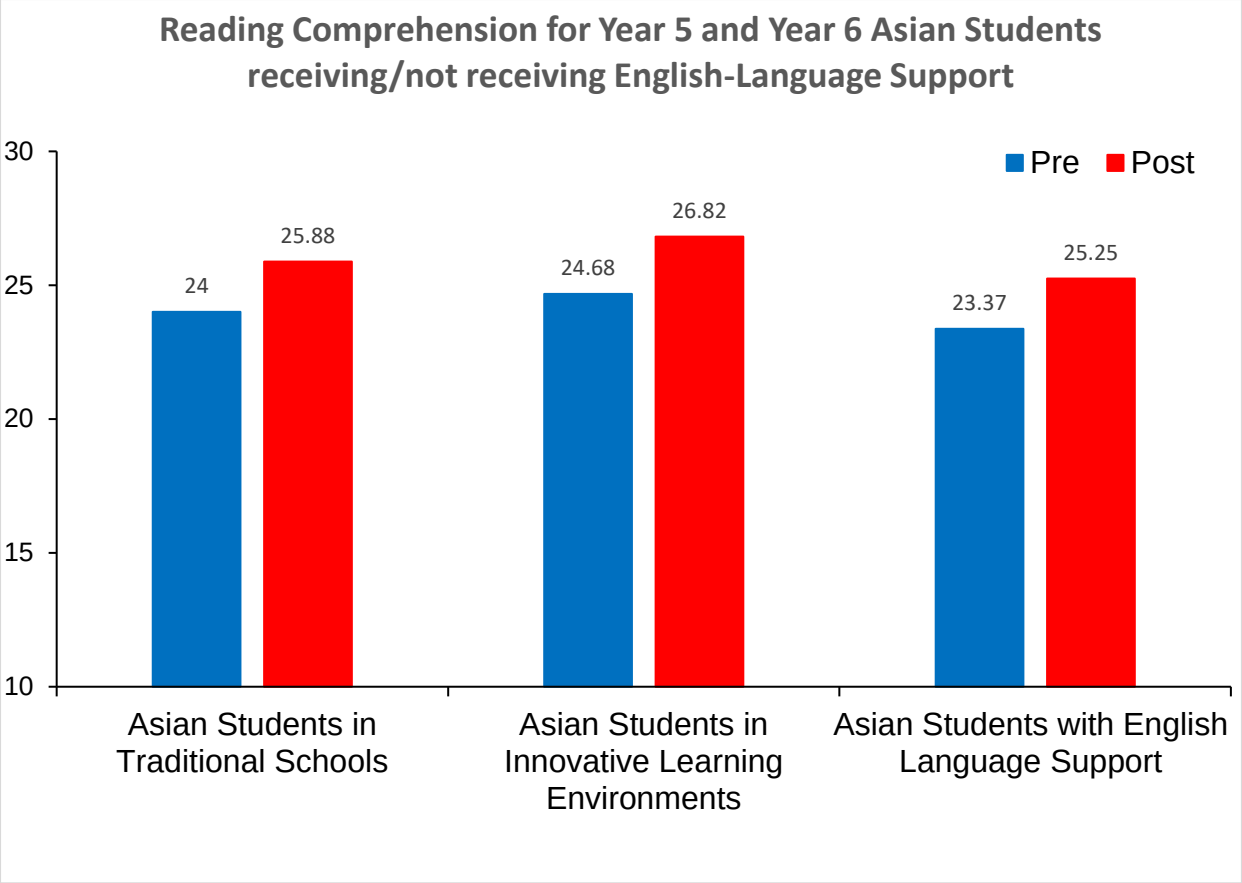

Figure 6.7 Years 5 and 6 Asian students' receiving/not receiving English-Language Support: pre- and post-test reading-comprehension mean scores.

The repeated measures ANOVA for the Year 5 and Year 6 students indicated a statistically non-significant interaction between time (pre-test versus post) and the Asian student group from the learning environments combined (traditional and innovative) ($F_{(1,146)} = .441$, $p = .724$). This finding suggests that, over the period of the study, the Asian students receiving language support were performing at similar levels to the Asian students not receiving language support. As such, it is unlikely that the additional support for language learning received by the 16 students in the research had an effect on the students' reading-comprehension scores.

6.5.2 Listening comprehension, Years 5 and 6 Asian students

Table 6.11 presents the listening-comprehension (pre- and post-tests) descriptive statistics for the Asian students, including those receiving English-language support, in the two learning environments (traditional versus innovative). Similar to the findings for reading comprehension, the overall mean listening-comprehension scores for the various groups of Asian students in the two learning environments indicate that they were all performing at similar levels and showing similar progress in listening comprehension over time.

Table 6. 11 Listening comprehension: descriptive statistics for Years 5 and 6 Asian students' receiving/not receiving English-Language Support.

		Asian students in traditional single cell schools	**Asian students in innovative learning environments**	**Asian students with English- language support**
		N = 26	*N* = 29	*N* = 16
Listening Comprehension (Pre-Test scores)	Mean	78.65	80.72	74.62
	Standard deviation	14.26	13.93	22.81
Listening Comprehension (Post-Test scores)	Mean	84.92	82.06	78.50
	Standard deviation	12.37	13.95	17.84
% increase/decrease		+ 8	+ 1.7	+ 5.2

Again in keeping with the findings for reading comprehension, the bar graphs in Figure 6.8 indicate that the listening-comprehension performance of the Asian students receiving English-language support was progressing at much the same level as that of the Asian students not receiving this support.

The repeated measures ANOVA for the Years 5 and 6 Asian students indicated a statistically non-significant interaction between time (pre-test versus post) and the Asian student group from the learning environments combined (traditional and innovative) ($F_{(1,146)} = .857$, $p = .465$). This finding suggests that the Asian students who were receiving English-language support during the course of the study were performing at similar levels to the Asian students not receiving this type of support. As such, it is unlikely that language-support provision contributed to explanations for the Asian students' performance on the listening-comprehension measures.

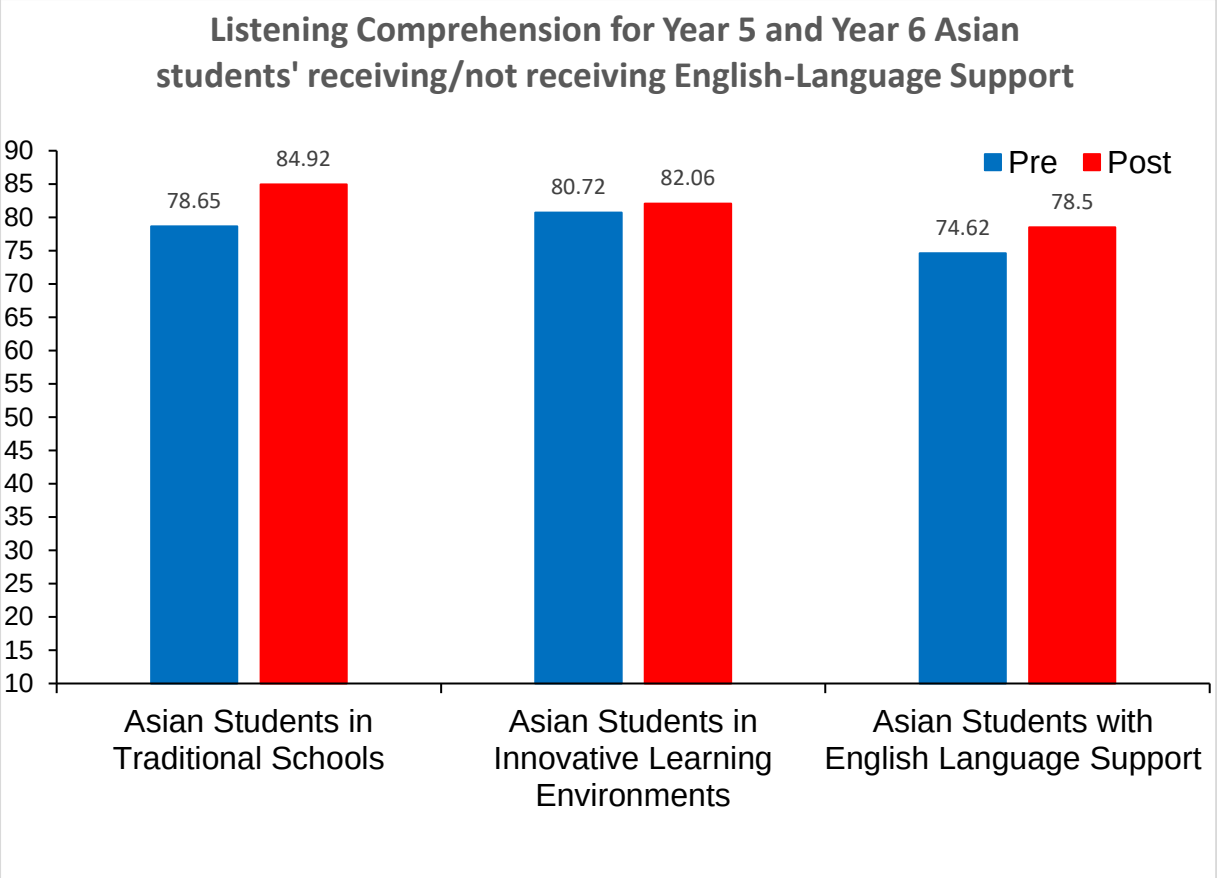

Figure 6.8 Years 5 and 6 Asian students' receiving/not receiving English-Language Support: pre- and post-test listening-comprehension mean test scores.

6.5.3 Vocabulary development, Years 5 and 6 Asian students

Table 6.12 presents the descriptive statistics for the Years 5 and 6 Asian students receiving or not receiving English-language support in the two learning environments. The bar graphs in Figure 6.9 indicate the Asian students without language support performing slightly better than the Asian students with language support. However, the difference is too minimal to warrant further attention or to offer much explanatory power for the findings.

After I controlled for pre-measure vocabulary levels, my analysis indicated a statistically non-significant interaction between the two student groups (language support versus no such support) in both the traditional schools and the innovative learning environments ($F_{(1,149)}$ = 1.878, p = .136). This finding suggests that, with respect to vocabulary development, the Asian students who were receiving language support were performing at similar levels to the Asian students not receiving language support over the period of the study. As such, language support classes are unlikely to contribute to explanations for student's vocabulary development performance.

Table 6.12 Years 5 and 6 Asian students' vocabulary development: descriptive statistics for students' receiving/not receiving English-Language Support.

		Asian students in traditional single cell schools	**Asian students in innovative learning environments**	**Asian students with English-language support**
		N = 26	*N* = 29	*N* = 16
Vocabulary Development	Mean	17.73	18.41	14.62
	Standard deviation	5.28	4.36	4.6

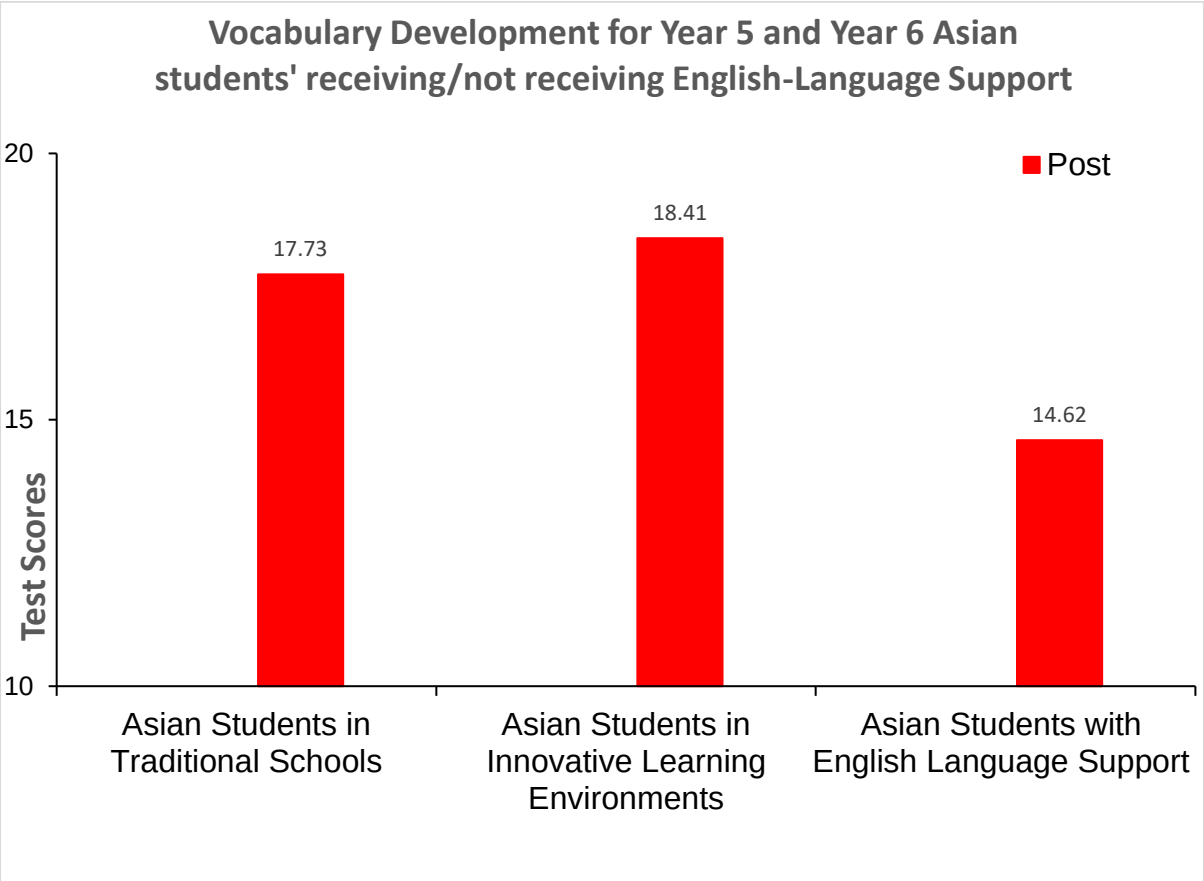

Figure 6. 9 Years 5 and 6 Asian students' receiving/not receiving English-Language Support: vocabulary development mean test scores.

6.5.4 Summary

Overall, the findings from the analyses of the data for the Years 5 and 6 Asian students receiving or not receiving English-language support indicated that their pre- and post-reading comprehension, their pre-and post-listening comprehension and their vocabulary development

tests were not influenced much by presence or absence of language support. However, it is interesting to note that Asian students requiring language support showed progression on the reading and listening measures.

6.6 Chapter conclusion

This chapter detailed and examined whether the structures of the two learning environments (traditional versus innovative) appeared to have any discernible influence on the participating students' progress in English-language reading and reading-related skills. The findings for the Year 5 students suggest that innovative learning environments were not negatively affecting Asian students' reading comprehension, listening comprehension, and vocabulary development. The Year 6 Asian students in the innovative learning environments appear to have been performing equally as well as their English-only-speaking peers on reading comprehension and listening comprehension but less well on vocabulary development. The lower vocabulary score amongst Asian students was not, however, specific to the innovative environments, as it was also apparent in the traditional schools. Overall, the results indicated that the Asian students were not at a specific disadvantage in an innovative learning environment when their growth in reading and reading related skills over the school year was considered. In reality, the test scores demonstrated by the English-only-speaking students in Year 5 of innovative learning environments may be of potential concern.

My focus in the next chapter (Chapter Seven) is on the findings from the students' responses to the Student Perception Questionnaire. Specifically, the chapters examines the Asian and the English-only-speaking students' respective perceptions of their reading class and their reading teachers in the two learning environments—traditional and innovative.

Chapter Seven: Research Findings: Student Perception Questionnaire (Main Study)

7.1 Introduction

Students' perceptions of effective teaching and learning are a crucial aspect of their overall academic success and they contribute to setting the classroom climate that influences student behaviour (Ovbiagbonhia, Kollöffel, & Brok, 2019). Much of the current literature in the area of innovative learning environments began with research examining the architecture of refurbished and purpose-built school buildings and the teacher practices and teacher collaboration within those environments (Osborne, 2016; Young, Cleveland, & Imms, 2019). In recent years, substantial research involving teachers' and principals' views of innovative learning environments (Benade, 2015; Paniagua & Istance, 2018; Smardon, Charteris, & Nelson, 2015) has given us deeper insight into the realities of teaching in innovative learning environments. However, it is important to note that the lens through which teachers and school leaders view the learning environment may be very different from the lens through which students view it. Gaining an appreciation of how students view their learning spaces becomes essential when we realise that the primary impetus behind the development of innovative learning environments has been to foster innovative competence in students (Beghetto & Kaufman, 2014).

As indicated in Chapter Four, an important aim of my doctoral investigation was to collect students' perceptions of various aspects of the two different learning environments that featured in my study: traditional school classrooms and innovative learning environments. The Year 5 and Year 6 students who participated in my study completed a questionnaire that asked them to give their perceptions of various aspects of their learning environments. These included teacher support, equity of educational provision, attitudes towards reading, the conduciveness of the environment to learning, and noise. In each instance, students were asked to consider their questionnaire answers within the context of their English-language reading classes.

This chapter documents and examines the results of the students' questionnaire responses to the questionnaire and thus addresses my second research question, Research Question 2: "How does the type of structural learning environment (innovative learning environment versus traditional classroom) influence students' perceptions of their engagement in reading?" Research Question 3, which addresses teachers' perceptions of the two learning environments relative to students' English-language reading is addressed in Chapter Eight.

7.2 The participating students: demographic information

A total of 150 students answered the questionnaire. These students were the same students who participated in the English-language reading comprehension, listening comprehension, and vocabulary development battery of assessments (see previous chapter). Table 6.1 in Chapter Six sets out the demographic characteristics of this sample of students.

7.3 Statistical analyses

The findings in this chapter are ordered in five sections that correspond with the five item-based scales in the questionnaire. All questionnaire items were accompanied by this five-point Likert response scale: “Never” (1), “Rarely”(2), “Sometimes”(3), “Often”(4), “Always”(5).

The scales were labelled “Teacher Support”, “Equity”, “Attitudes Towards Reading”, “Conduciveness of Learning Environments”, and “Noise”. The lower mean student scores on each scale indicated a negative to neutral perception; the higher scores indicated a more positive perception. Negatively worded items were reversed scored.

The analyses of variance (ANOVA) that I conducted using the mean scale scores had two factors—type of student (Asian versus English-only-speaking) and type of learning environment (traditional school versus innovative learning environments). I used IBM SPSS Statistic V.25 to perform these two by two-factorial ANOVA and considered $p < 0.05$ statistically significant. In these analyses, there were three effects reported, most importantly the interaction between school type and student type. Also reported were two other effects—school type and student type.

I used Cronbach’s alpha to ensure the item reliability of the overall student perception questionnaire. The resulting coefficient was acceptable with an internal consistency of .683. Table 7.1 presents the alpha coefficients for each of the scales within the questionnaire. As shown in the table, the coefficients for conduciveness of learning environments and classroom noise are below the thresholds usually deemed acceptable (i.e., .60 and above), perhaps because of too few items in the scales or because the items in the scales were not a sufficiently good fit. These factors need to be taken into consideration when interpreting the findings relating to these scales. Also, as with the findings for the test measures in Chapter Six, the difference between the number of participants in the two learning environments (traditional versus innovative) and the especially small number of Asian students in the traditional schools means many of the results presented in this current chapter need to be interpreted with caution.

Table 7.1 Reliability of scales in the student perceptions questionnaire.

Questionnaire scales	**Cronbach's alpha**
Teacher support	.669
Equity	.805
Attitudes towards reading	.673
Conduciveness of learning environments	.502
Classroom noise	.574

7.4 Findings

7.4.1 Students' perceptions of teacher support during reading

When asked to give their perceptions of teacher support, students were asked to think specifically about the support they received during their English-language reading classes.

7.4.1.1 Year 5 students

Table 2 presents descriptive statistics for the Year 5 Asian students' and the Year 5 English-only-speaking students' perceptions of teacher support during English-language reading classes in the two learning environments (traditional versus innovative). The mean scale scores indicate students in both learning environments perceived the frequency of teacher support as being in the vicinity of "sometimes to often", suggesting that more often than not students were receiving teacher support during their reading classes. The minimal difference in perceptions between the students across the two school types argues against concerns that teachers in innovative learning environments may be unable to provide the same level of learning assistance to their students as that provided by teachers in traditional schools.

The bars in Figure 7.1 indicate that the Asian students in the innovative learning environments had a slightly better perception than their Asian peers in the traditional schools of teacher support, but the difference in the scale score means is too small to suggest statistical significance. There is thus no evidence to suggest that Asian students in innovative learning environments saw themselves as being at a specific disadvantage in terms of teacher support. These students also held slightly less positive perceptions than their traditional school counterparts of teacher support during reading, but again the difference in the means is too small to be statistically significant.

Table 7.2 Year 5 students: descriptive statistics for the reading-related teacher support scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 22	*N* = 30	*N* = 21	*N* = 23
Students' perceptions of teacher support	Mean scale score	3.3	3.6	3.5	3.3
	Standard deviation	.60	.56	.53	.49

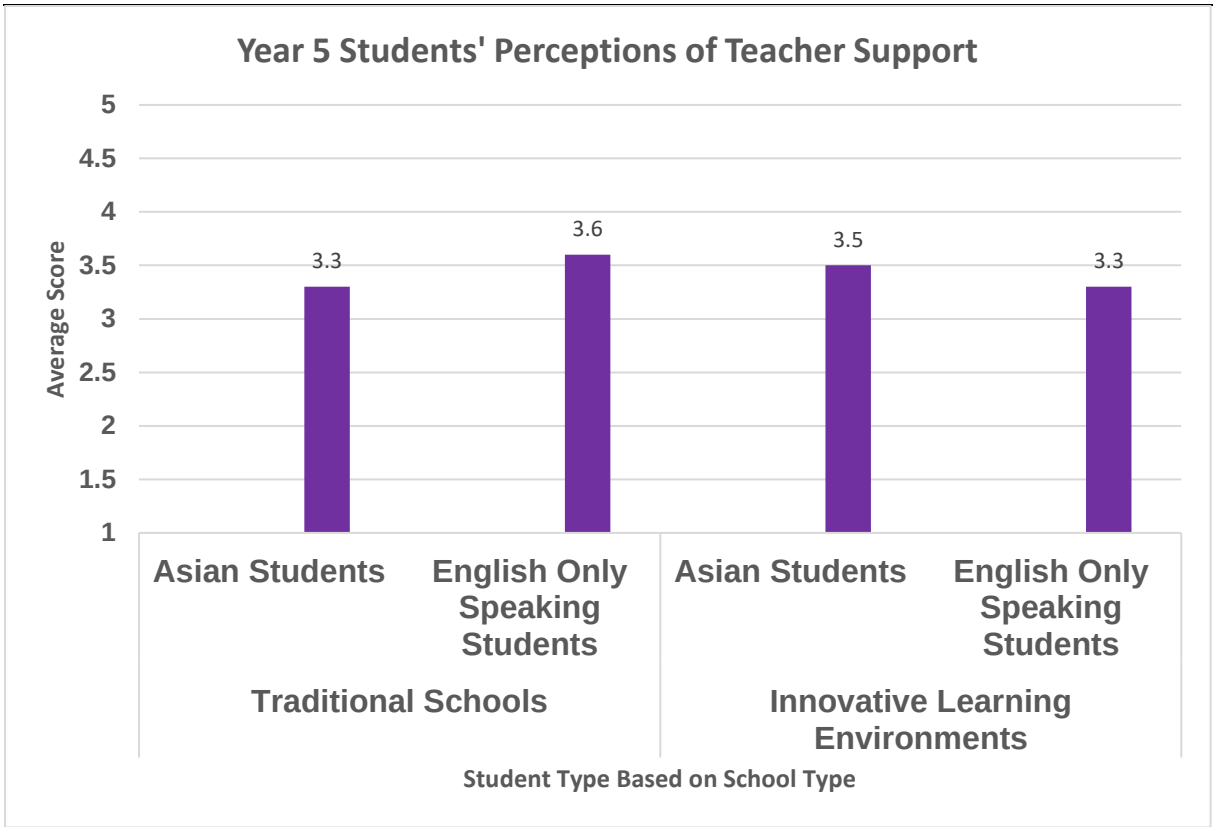

Figure 7.1 Year 5 students' mean response scores on the perceptions of teacher reading-related support scale.

The analysis for teacher support indicated a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)}$ = 3.883, p = .052), suggesting that the students in both learning environments held similar perceptions of teacher support. Although the p value is nearly significant, there is insufficient evidence to conclude any significant differences in the means across the combinations of student type and school type. The analysis further indicated that

school type ($F_{(1, 95)} = .069$, $p = .793$) and student type ($F_{(1, 95)} = .936$, $p = .336$) had no significant influence on students' perceptions of teacher support.

7.4.1.2 Year 6 students

Table 7.3 presents descriptive statistics for the Year 6 Asian students' and the Year 6 English-only-speaking students' perceptions of teacher support during their English-language reading classes in the two learning environments (traditional versus innovative). The similarity in the average mean scale scores indicates that students in the two learning environments held much the same perceptions of teacher support during their reading classes.

Table 7.3 Year 6 students: descriptive statistics for the reading-related teacher support scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Students' perceptions of teacher support	Mean scale score	3.2	3.7	3.4	3.1
	Standard deviation	.49	.56	.59	.88

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

Similar to the findings for the Year 5 Asian students, the bar graphs in Figure 7.2 suggest the Year 6 Asian students in the innovative learning environments had a more positive perception than their English-only-speaking peers of teacher-related support during reading classes. The opposite pattern is evident in the bar graphs for the students in the traditional schools. Here, the mean scale scores indicate the English-only-speaking students had a more positive perception than the Asian students of teacher support. In addition, the Asian students in the innovative learning environments compared to the Asian students in the traditional schools appear to have had a more positive perception of teacher support. Of the four student groups (student types), the English-only-speaking students in the innovative learning environments had the lowest average score on the teacher support scale. However, the small differences between all of the means suggest that the differences are unlikely to be statistically significant.

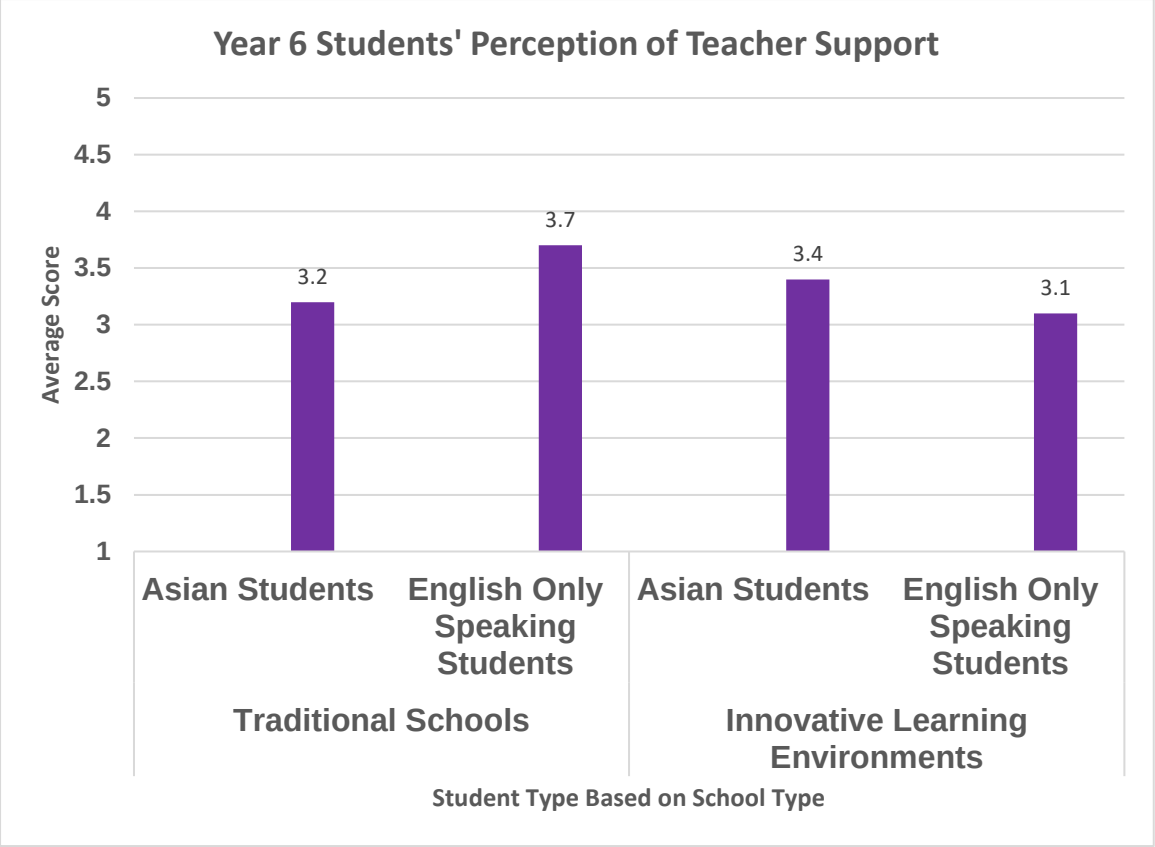

Figure 7.2 Year 6 students' mean response scores on the perceptions of teacher reading-related support scale.

Not surprisingly, then, the analysis indicated a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1, 53)} = 3.656$, $p = .062$), suggesting that the amount of support perceived by students was similar in both environments. The effects of school type ($F_{(1, 53)} = .944$, $p = .336$) and student type ($F_{(1, 53)} = .379$, $p = .541$) on students' perceptions of teacher support were also non-significant.

7.4.1.3 Comparative comment on Year 5 and Year 6 findings

The Year 6 findings were consistent with the Year 5 findings, indicating that, compared to the Asian students in traditional schools, the Asian students in the innovative learning environments did not perceive themselves to be at a distinct disadvantage in terms of teacher support during reading classes. Also, as with the observation made for the Year 5s, the Year 6 English-only-speaking students had a slightly less positive perception than their English-only counterparts in traditional schools of teacher support.

The finding that both the Year 5 and Year 6 Asian students in the innovative learning environments had a slightly more positive perception of available support than their English-only-speaking peers. This may be because the Asian students had access to more than one teacher within the classroom, unlike the traditional classroom where only one teacher would have been available to give support. To look at this pattern another way, the less positive perception of teacher support among the Year 5 and the Year 6 English-only-speaking students in the innovative learning environments could be because teachers in these environments deliberately check on students who speak English as an additional language to ensure they are well supported. I saw evidence of this type of support during my visits to reading classes, and it was also practice confirmed by the teachers during my interviews with them (refer Chapter Eight)

7.4.2 Students' perceptions of equity in the reading class

When asked to give their perceptions of equity, students were asked to think specifically about the equity they experienced and observed during their English-language reading classes. Equity as described in Chapter 4 (section 4.4.2) is defined as being given equal opportunity in the reading classes; opportunity for participation without being discriminated.

7.4.2.1 Year 5 students

Table 7.4 presents descriptive statistics for the Year 5 Asian students' and the Year 5 English-only-speaking students' perceptions of equity during English-language reading classes in the two learning environments (traditional versus innovative). The mean scale scores in the table indicate that the students in both learning environments had a slightly above average perception of equity in their reading class.

Table 7.4 Year 5 students: descriptive statistics for the reading-related equity scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 22	*N* = 30	*N* = 21	*N* = 23
Students' perceptions of equity	Mean scale score	3.5	3.8	3.8	3.8
	Standard deviation	.77	.82	.84	.84

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

The bar graphs in Figure 7.3 show three of the four groups of students with identical mean scale scores of 3.8, namely, the Asian students and the English-only-speaking students in the innovative learning environments and the English-only-speaking students in the traditional schools. This identical score indicates a generally positive perception of equity in the reading class. Although the score for the Asian students in the traditional schools suggests a less positive perception of equity, the difference is small.

The analysis for students' perceptions of equity in the reading class produced a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)} = .822$, $p = .367$). The analysis furthermore indicated a non-significant effect of school type ($F_{(1, 95)} = .567$, $p = .453$) and of student type ($F_{(1, 95)} = .654$, $p = .421$) on students' perceptions of equity during reading lessons.

Overall, the findings indicate that the Asian students in the innovative learning environments did not see a disadvantage equity-wise during their reading classes. It seems that teachers in these environments were providing equal opportunities for both the Asian and the English-only-speaking students to participate effectively in reading activities and acquire reading skills.

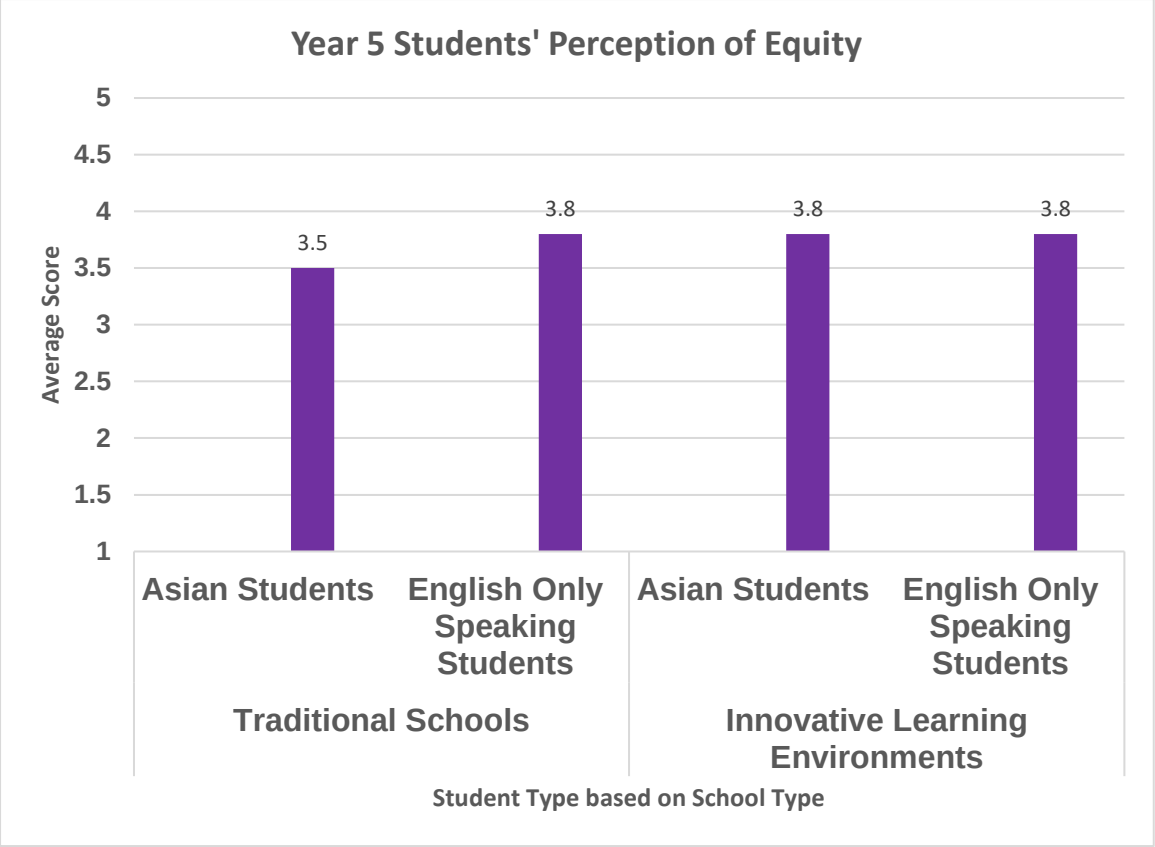

Figure 7.3 Year 5 students' mean response scores on the equity during reading class scale.

7.4.2.2 Year 6 students

Table 7.5 presents descriptive statistics for the Year 6 Asian students' and the Year 6 English-only-speaking students' perceptions of equity during English-language reading classes in the two learning environments (traditional versus innovative). The mean equity scale scores in the table and the corresponding bar graphs in Figure 7.4 indicate that the students (both Asian and English-only-speaking) in the traditional schools had more positive perceptions of equity during reading classes than did their peers in the innovative learning environments.

The analysis showed that school type did indeed have a statistically significant association with perceptions of equity ($F_{(1, 53)} = 4.866$, $p = .032$). Here, students in the traditional schools had more positive perceptions of equity than the students in the innovative learning environments. Within each environment, however, the association between equity perception and student type was non-significant ($F_{(1, 53)} = .384$, $p = .538$), suggesting that the two types of students in each environment had similar perceptions of equity during reading lessons. Analysis also indicated that student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,53)} = .405$, $p = .528$) had non-significant associations with perception.

Table 7. 5 Year 6 students: descriptive statistics for the reading-related equity scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Students' perceptions of equity	Mean scale score	4.0	4.3	3.6	3.6
	Standard deviation	1.02	.41	.73	1.14

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

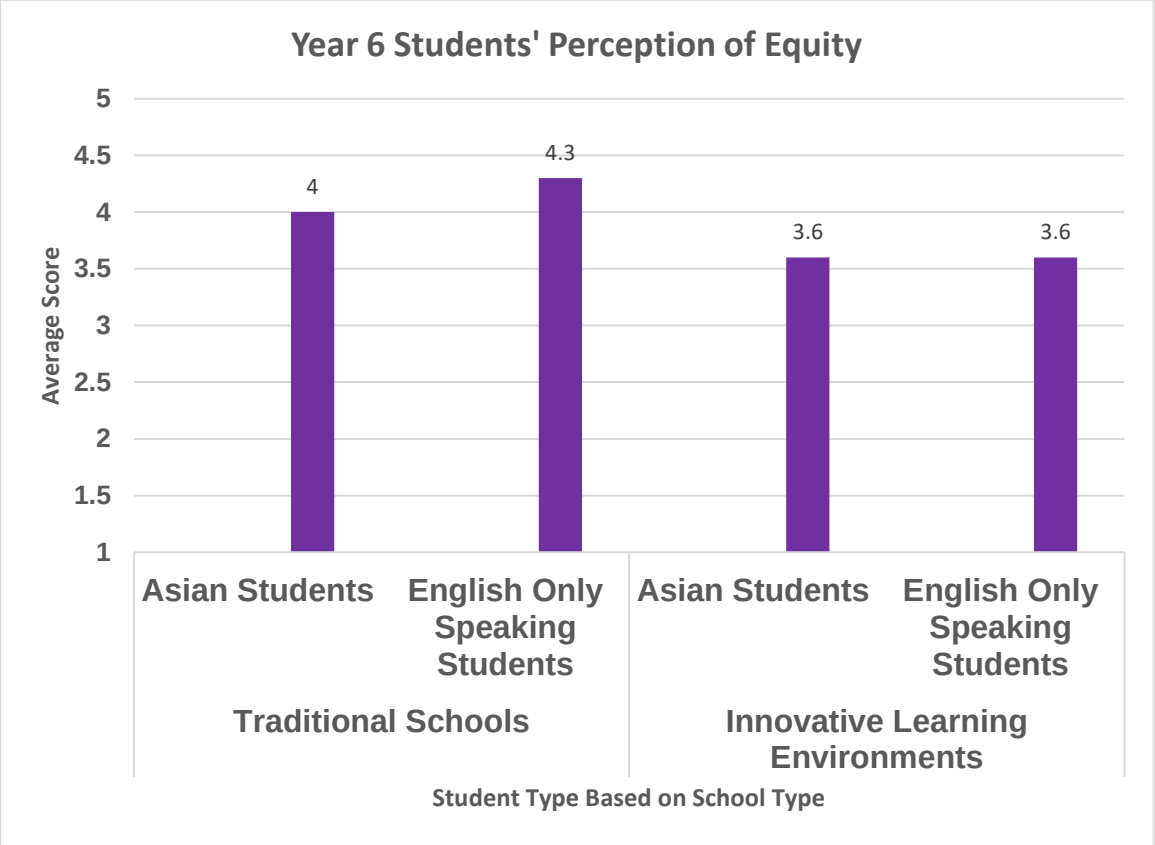

Figure 7.4 Year 6 students' mean response scores on the equity during reading class scale.

Overall, then, the results for the Year 6 students in relation to the equity scale suggest that the students in the traditional schools generally had more positive perceptions of equity in their reading class than the students in the innovative learning environments. Also, while the

English-only-speaking students in both learning environments had either the same or very similar perceptions of equity as the Asian students in those environments, the English-only-speaking students in the traditional schools had a more positive perception of equity overall.

7.4.2.3 Comparative comment on Year 5 and Year 6 findings

In general, the mean scale scores for the Year 6 students in the traditional schools was relatively large compared with the corresponding mean scores for the Year 5 students in those schools. This finding could be a function of the smaller number of students in the Year 5 sample. Another potential reason could relate to the teacher skill set that promotes equal participation. These assertions are hypothetical and thus require further investigation.

7.4.3 Students' perceptions of their attitudes towards reading

When asked to give their perceptions of their attitudes towards reading, students were asked to think specifically about their English-language reading classes.

7.4.3.1 Year 5 students

Table 7.6 presents descriptive statistics for the Year 5 Asian students' and the Year 5 English-only-speaking students' perceptions of their attitudes towards reading during English-language reading classes in the two learning environments (traditional versus innovative). The mean score values and the corresponding bar graphs in Figure 7.5 indicate that of the four groups of students, the Asian students in the innovative learning environments had the most positive perceptions, while the English-only-speaking students in the innovative learning environments had the least positive perceptions. These findings suggest that Asian students' attitudes towards reading are not impaired by their being in an innovative learning environment. In fact, it seems this type of learning environment may foster better reading attitudes amongst Asian students.

Table 7.6 Year 5 students: descriptive statistics for the attitudes towards reading scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 22	*N* = 30	*N* = 21	*N* = 23
Students' perceptions of their attitudes towards reading	Mean scale score	3.5	3.5	3.8	3.3
	Standard deviation	.49	.48	.53	.74

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

The analysis conducted for attitudes towards reading indicated a statistically significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)} = 4.664$, $p = .033$), suggesting that students' perceptions of their attitudes towards reading differed in accordance with learning environment. However, further analysis indicated only one significant association between student type and perception ($F_{(1, 95)} = 4.130$, $p = .045$), wherein the Asian students in the innovative learning environments had a more positive perception than the other student groups when it came to attitudes towards reading. No significant associations were observed for school type and perception ($F_{(1, 95)} =.021$, $p = .886$).

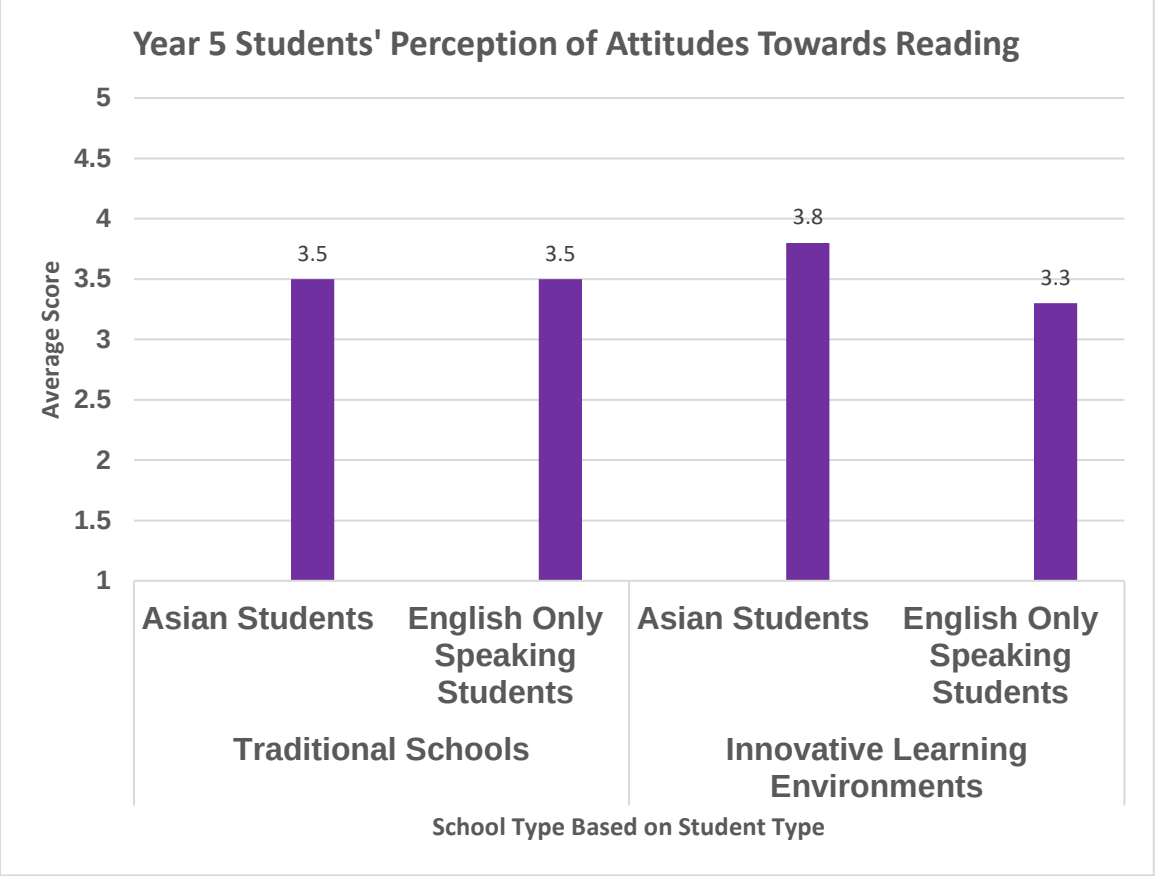

Figure 7.5 Year 5 students' mean response scores on the attitudes towards reading during reading class scale.

7.4.3.2 Year 6 students

Table 7.7 presents descriptive statistics for the Year 6 Asian students' and the Year 6 English-only-speaking students' perceptions of their attitudes towards reading during English-language reading classes in the two learning environments (traditional versus innovative). The mean scores in the table and the bars in Figure 7.6 reveal the English-only-speaking students in the traditional schools as apparently having the most positive perceptions of their attitudes towards reading. Figure 7.6 also shows the Asian students in innovative learning environments appearing to have a more positive perception of their attitudes towards reading in comparison to their English-only-speaking counterparts and the Asian students in the traditional schools.

Table 7.7 Year 6 students: descriptive statistics for the attitudes towards reading scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Students' perceptions of their attitudes towards reading	Mean scale score	3.3	3.7	3.5	3.3
	Standard deviation	.39	.52	.46	.63

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

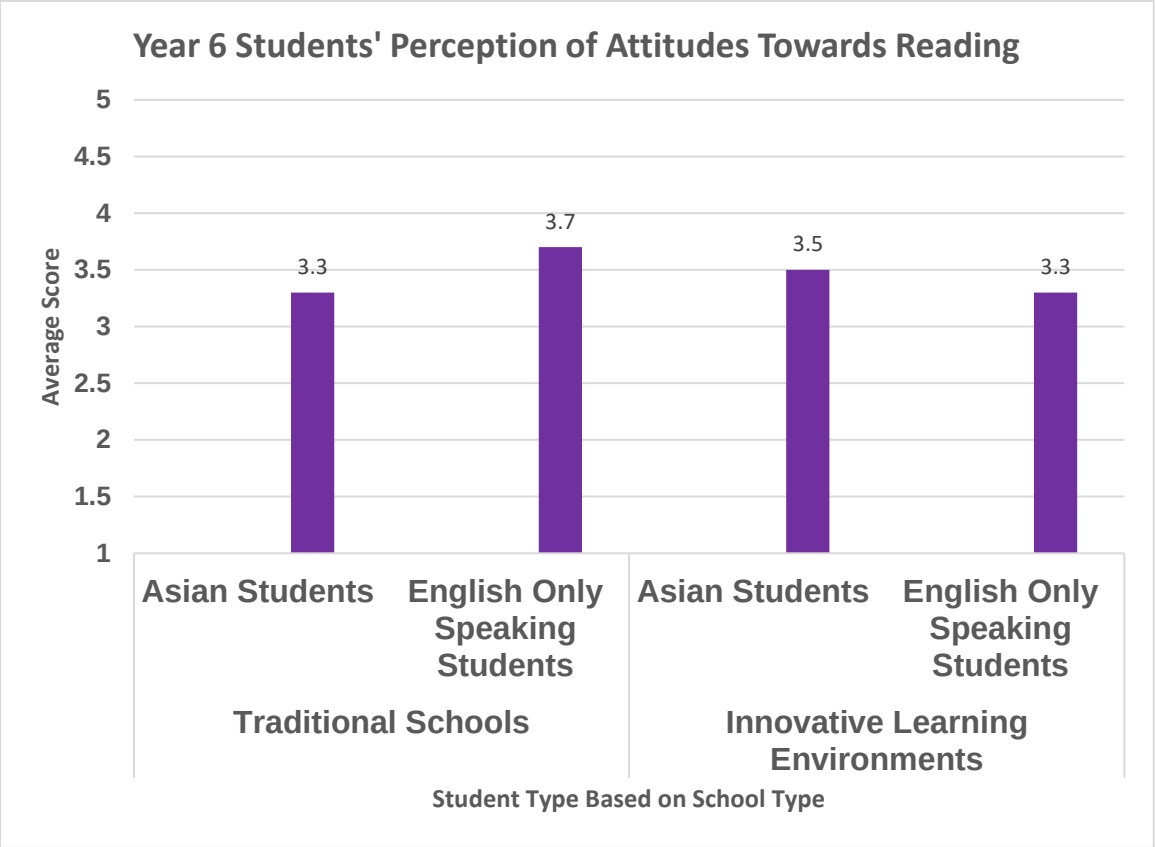

Figure 7.6 Year 6 students' mean response scores on the attitudes towards reading during reading class scale.

In support of the patterns identified above, the analysis for the Year 6 students' attitudes towards reading in reading class indicated a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,53)} = 2.694$, $p = .107$). This finding suggests that all four groups of students in

both environments held similar perceptions of their attitudes towards reading. The analysis further indicated that neither school type ($F_{(1, 53)}$ =.357, p = .553) nor student type ($F_{(1, 53)}$ = .357, p = .553) significantly influenced the participating students' perceptions of their attitudes towards reading.

7.4.3.3 Comparative comments on Year 5 and Year 6 findings

The Year 6 Asian students in the innovative learning environments had a more positive outlook on reading than their Asian peers in the traditional schools and their English-only-speaking counterparts in both learning environments. This finding is consistent with the Year 5 finding indicating that the Asian students' perceptions of their attitudes towards reading were not negatively impacted by their learning environment being an innovative one. To explore this pattern further, I decided to conduct additional analyses controlling for school decile level (see Chapter Six), which I used as a de facto measure for students' socioeconomic status (SES).

A considerable body of research shows the influence of SES on attitudes towards reading and the acquisition of reading literacy (see, for example, Hemmerechts, Agirdag, & Kavadias, 2016). Children from higher SES backgrounds tend to get an early start in reading and are more likely than children from lower SES backgrounds to develop good reading attitudes and attain higher scores on reading literacy tests (Melhuish et al., 2008; Mullis, Martin, Foy, & Hooper, 2017).

The Year 5 analysis controlling for school decile showed a statistically significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)}$ = 4.038, p = .047), indicative of possible associations between students' perceptions of their attitudes towards reading attitude and the catchment area. However, analysis controlling for decile in Year 6 showed no statistically significant interactions between student type and school type ($F_{(1, 53)}$ = 2.482, p = .122). This lack suggests that school decile level offered no explanation for the Year 6 students' perceptions of their attitudes towards reading.

In addition to controlling for decile, I controlled for gender to determine if it this variable had any explanatory power. Many studies have consistently supported the notion that girls have more positive attitudes towards reading than boys do (see, for example, Logan & Johnston, 2009; Martínez, Aricak, & Jewell, 2008; McKenna, Conradi, Lawrence, Jang, & Meyer, 2012; Swalander & Taube, 2007; Worrell, Roth, & Gabelko, 2010).

My analysis of the data obtained after controlling for gender for the Year 5 students showed a statistically non-significant interaction between student type (Asian English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)} = 3.050$, $p = .084$). On inspection, it was evident that among the Asian students in innovative learning environments there were more females than males participants (15 females to 6 males), whereas the numbers were more equal for the traditional classroom schools (12 and 10). A gender effect on this self-report scale, therefore, may partly explain the interaction effect identified without controlling for gender. The gender-controlled data for the Year 6 students still indicated a non-significant interaction between student type and school type ($F_{(1, 53)} = 2.657$, $p = .110$).

7.4.4 Students' perceptions of the conduciveness of their learning environment for reading

When considering how conducive they considered their school environments for reading to be, the students were asked to think about conduciveness in relation to their English-language reading lessons.

7.4.4.1 Year 5 students

Table 7.8 presents descriptive statistics for the Year 5 Asian students' and the Year 5 English-only-speaking students' perceptions of the conduciveness of their learning environment for reading during English-language reading classes in the two learning environments (traditional versus innovative). The mean scores in the table and the bars in Figure 7.7 indicate that the Asian students in both the innovative learning environments and the traditional schools had similar perceptions of the conduciveness of their learning environment during reading lessons. In comparison, the English-only-speaking students in the innovative learning environments had a slightly less positive perception of the conduciveness of their learning environment. However, the difference is too small to be significant. These results suggest that the Asian students and the English-only-speaking students in the innovative learning environments saw reading classes in the same conducive terms as their peers in the traditional school reading classes.

Table 7.8 Year 5 students: descriptive statistics for the conduciveness of environment for reading scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 22	*N* = 30	*N* = 21	*N* = 23
Students' perceptions of the conduciveness of their classroom for reading lessons	Mean scale score	3.8	3.8	3.8	3.5
	Standard deviation	.64	.81	.58	.70

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

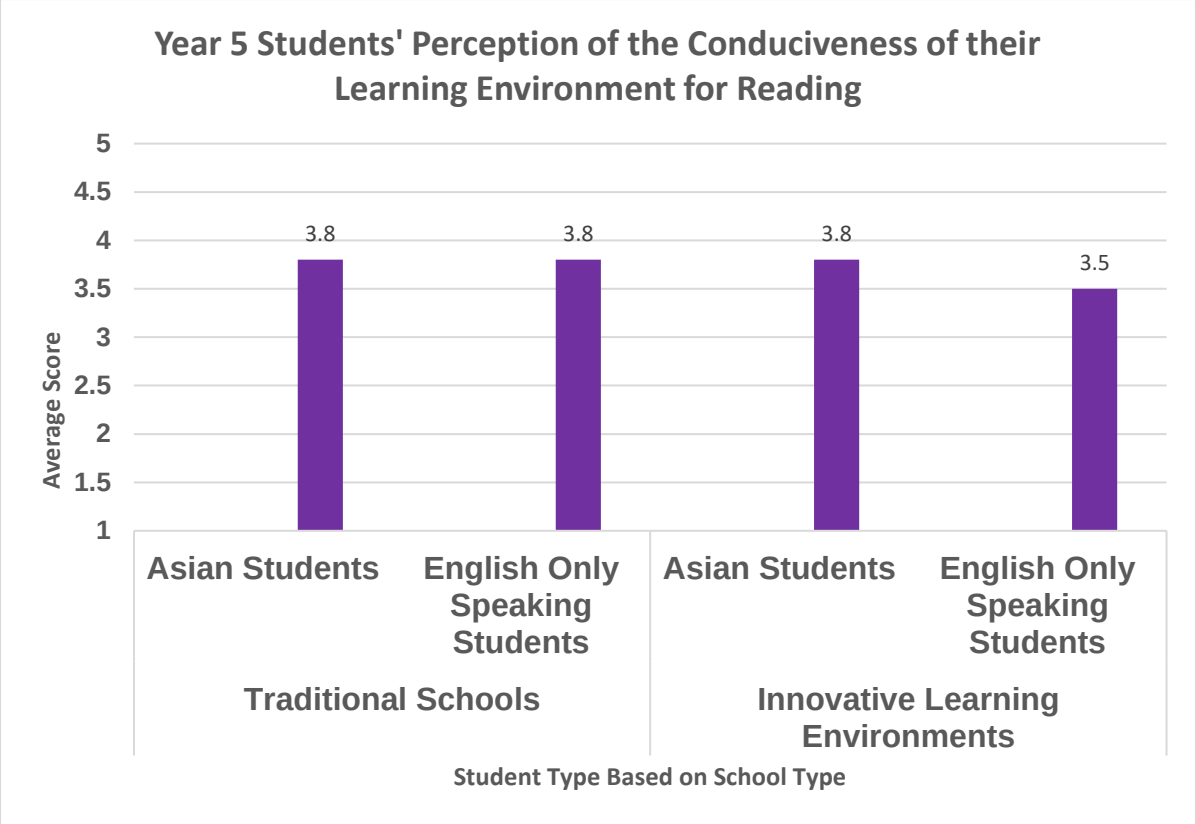

Figure 7.7 Year 5 students' mean response scores on the conduciveness of learning environment for reading scale.

The analysis for students' perceptions of their classroom environment during the reading class indeed revealed a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)} = .907$, $p = .343$). The analysis further indicated that neither school type ($F_{(1, 95)} = .933$, $p = .337$) nor student type ($F_{(1, 95)} = .238$, p = .627) had a significant effect on students' perceptions of the conduciveness of their classroom environment during reading class.

7.4.4.2 Year 6 students

Table 7.9 presents descriptive statistics for the Year 6 Asian students' and the Year 6 English-only-speaking students' perceptions of the conduciveness of their learning environment for reading during English-language reading classes in the two learning environments (traditional versus innovative). The mean scores in the table 7.9 and the bars in Figure 7.8 indicate the same pattern of perception for the Year 6 students as for the Year 5 students, with no discernible difference between the groups of students in terms of their perceptions of conduciveness. Again with the mean for the English-only-speaking students in the innovative environments being slightly lower than the means for the other three groups.

Table 7.9 Year 6 students: descriptive statistics for the conduciveness of environment for reading scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Students' perceptions of the conduciveness of their classroom for reading lessons	Mean scale score	3.8	3.7	3.8	3.5
	Standard deviation	.76	.70	.75	.83

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

The analysis for students' perceptions of their classroom environment during their reading classes did indeed indicate a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,53)}$ = .488, p = .488). The analysis further indicated non-significant associations between school type ($F_{(1, 53)}$ =1.077, p = .304) and perception and between student type ($F_{(1, 53)}$ = .323, p = .572) and perception.

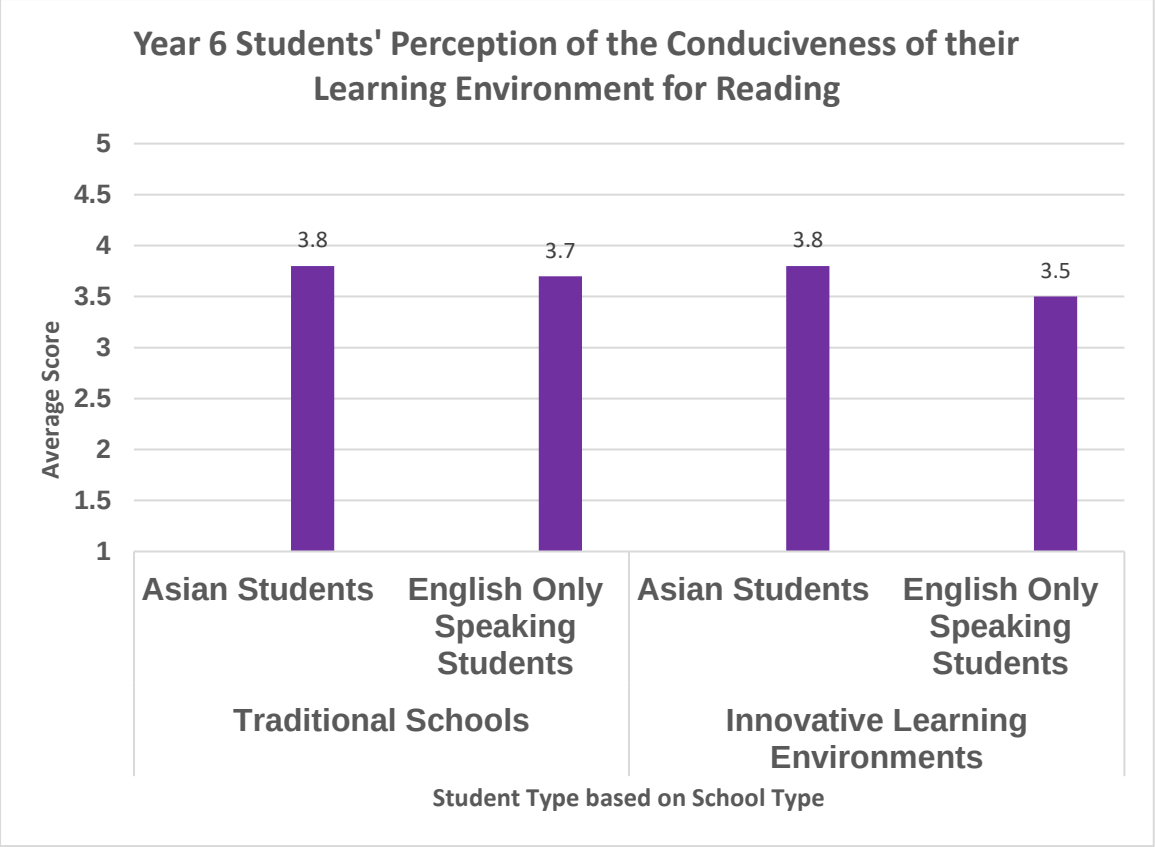

Figure 7.8 Year 6 students' mean response scores on the conduciveness of learning environment for reading scale.

7.4.4.3 Comparative comments on Year 5 and Year 6 findings

The Years 5 and 6 Asian students in both the innovative learning environments and the traditional schools appear to have had similar perceptions of the conduciveness of their learning environments for reading during English-language reading lessons. In comparison to the other student groups, the Years 5 and 6 English-only-speaking students in the innovative learning environments appear to have had a slightly less positive perception of the conduciveness of the learning environment. However, the differences were too small to be statistically significant. Therefore, once more the results present no evidence to suggest that the Asian students or the English-only-speaking students perceived innovative learning environments to be less conducive than traditional schools to reading during reading classes.

7.4.5 Students' perceptions of classroom noise

When thinking about classroom noise while answering this part of the student perception questionnaire, the students were asked to think about noise during their English-language reading lessons.

7.4.5.1 Year 5 students

Table 7.10 presents descriptive statistics for the Year 5 Asian students' and the Year 5 English-only-speaking students' perceptions of classroom noise during English-language reading classes in the two learning environments (traditional versus innovative). The mean scores in the table and the bars in Figure 7.9 indicate that, despite the larger numbers of students in the innovative than in the traditional environments and an expectation that the former tends to be noisier; students in both learning environments had similar perceptions of noise during reading lessons. The means also indicate that all students perceived noise as being present "sometimes" and that noise may have thus deterred learning at such times.

Table 7.10 Year 5 students: descriptive statistics for the classroom noise during reading scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 22	*N* = 30	*N* = 21	*N* = 23
Students' perceptions of classroom noise during reading lessons	Mean scale score	3.5	3.4	3.6	3.3
	Standard deviation	.54	.56	.58	.69

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

The analysis of students' perceptions of classroom noise during their reading classes indicated a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative) ($F_{(1,95)}$ = 1.752, p = .189). The analysis also indicated a non-significant effect of school type ($F_{(1, 95)}$ =.000, p = .988) and of student type ($F_{(1, 95)}$ = 3.000, p = .087) on students' perceptions of classroom noise during reading classes.

One of the reasons for the similar perceptions of noise across the student groups in the different learning environments could be the presence of materials used to absorb sound and thereby minimise ambient noise in classrooms. Teacher practices relating to classroom activities and noise management might also offer explanations for the similarity in perceptions.

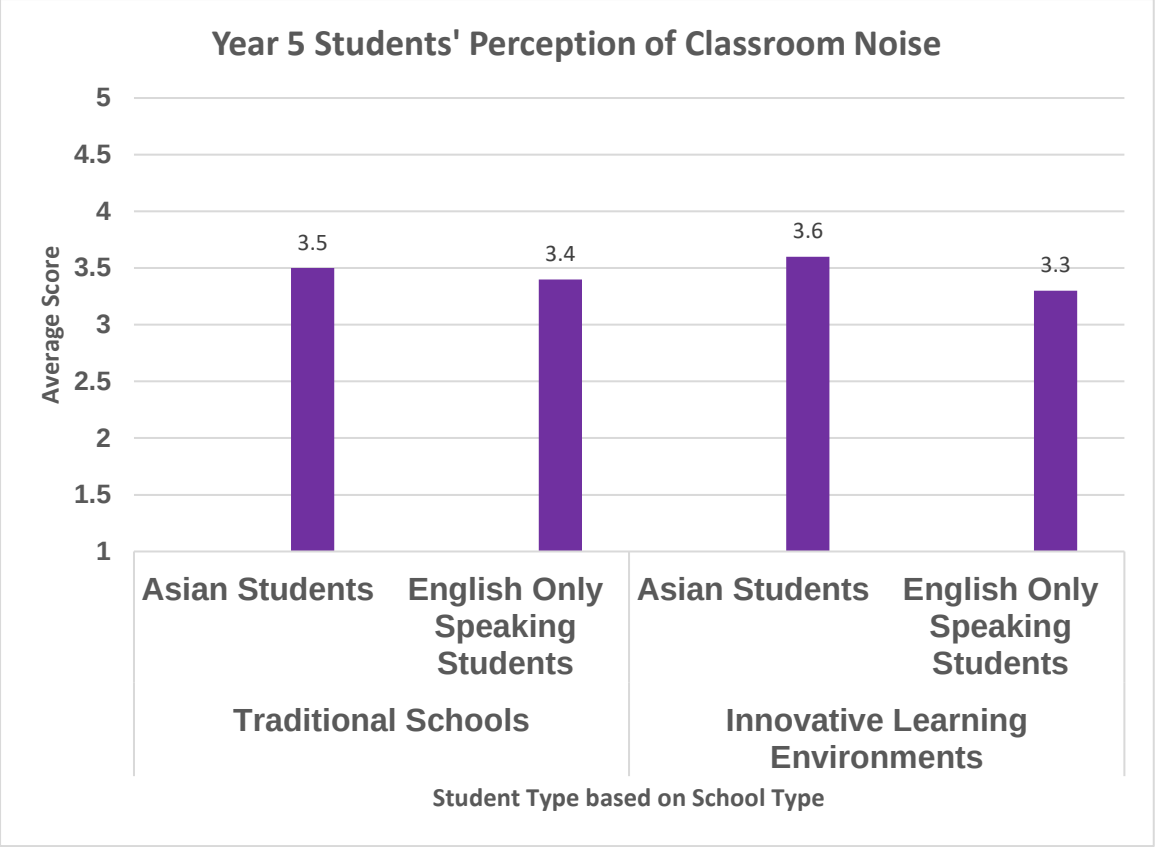

Figure 7.9 Year 5 students' mean response scores on the classroom noise during reading scale.

7.4.5.2 Year 6 students

Table 7.11 presents descriptive statistics for the Year 6 Asian students' and the Year 6 English-only-speaking students' perceptions of classroom noise during English-language reading classes in the two learning environments (traditional versus innovative). The mean scores in the table and the bars in Figure 7.10 show the students in the innovative learning environments apparently more affected than the students in the traditional schools by the presence of noise during reading lessons. Also, compared to the Asian students in the traditional schools, the Asian students in the innovative learning environments seem to have been less positive about classroom noise. However, the small number of Asian students in the Year 6 traditional schools may have contributed to this result.

Table 7.11 Year 6 students: descriptive statistics for the classroom noise during reading scale.

Description		**Traditional schools**		**Innovative learning environments**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 6	*N* = 11	*N* = 22	*N* = 15
Students' perceptions of classroom noise during reading lessons	Mean scale score	4.0	3.8	3.2	3.2
	Standard deviation	.56	.56	.68	.90

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

The analysis indicated a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (traditional versus innovative learning environments) ($F_{(1, 53)} = .714$, $p = .402$). There was, however, a significant association between school type and noise perception ($F_{(1, 53)} = 8.237$, $p = .006$). This finding indicates that the students in the traditional schools had a more positive perception of noise than their peers in the innovative learning environments. The effect of student type ($F_{(1, 53)} = .411$, $p = .524$) on students' perception of noise was not significant.

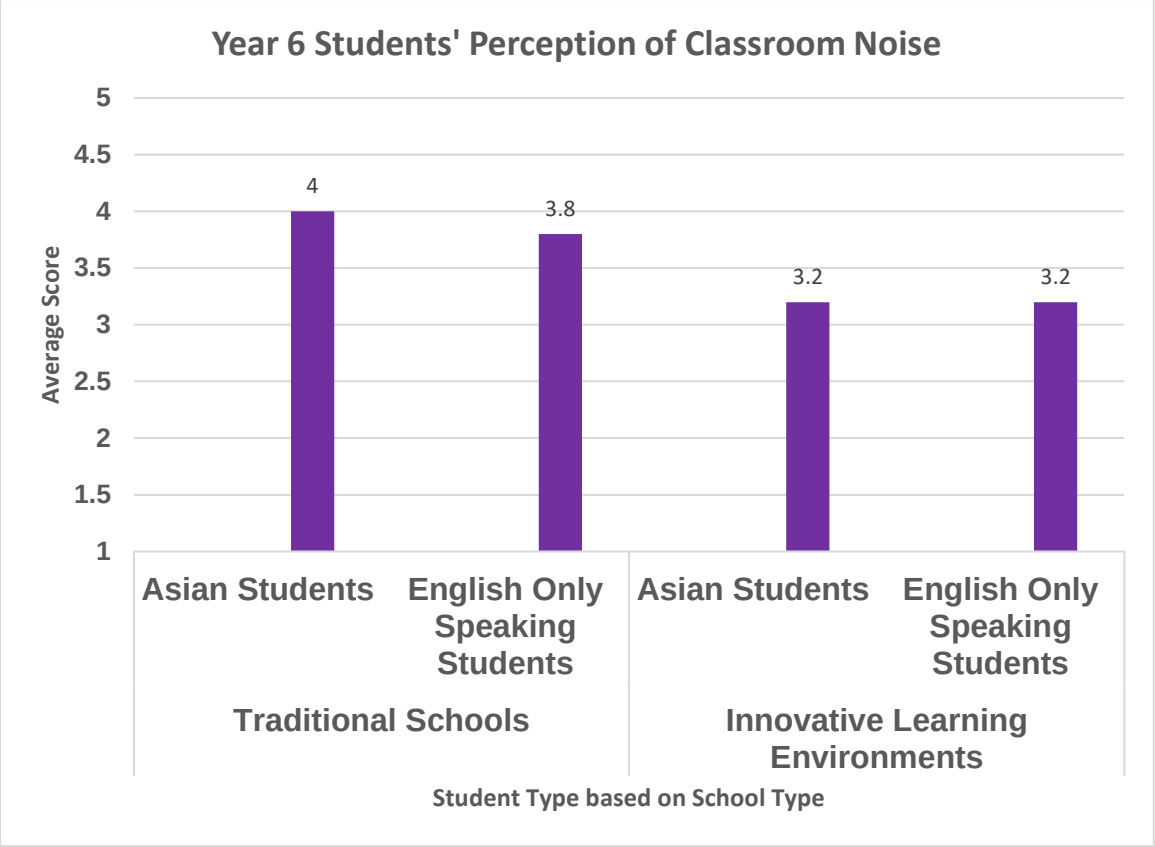

Figure 7.10 Year 6 students' mean response scores on the classroom noise during reading scale.

7.4.5.3 Years 5 and 6 Asian students in innovative environments with/without language support

In addition to ascertaining the four groups of students' perceptions of classroom noise, I conducted another noise-related analysis focused on data from the participating Asian students in the innovative learning environments. Here, I explored whether the noise-related perceptions of Asian students with English-language support differed from the perceptions of Asian students without English-language support. Because of the low number of participating Asian students with language support in the research, I combined the data from the Year 5 and the Year 6 participants to increase the power of the analyses and to determine the effects present.

Table 7.12 presents descriptive statistics for the two groups' perceptions of classroom noise during English-language reading classes in the innovative learning environments. The mean scores in the table indicate that the two groups had very similar perceptions of classroom noise during their reading lessons.

Table 7.12 Years 5 and 6 Asian students' receiving/not receiving language support: descriptive statistics for classroom noise during reading scale.

		Asian students without English-language support in innovative learning environments	**Asian students with English-language support in innovative learning environments**
		N = 29	*N* = 14
Students' perceptions of classroom noise during reading lessons	Mean scale score	3.3	3.5
	Standard deviation	.68	.63

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

The analysis confirmed this similarity, as the effect of student type (Asian students without language support in innovative learning environments versus Asian students with language support in innovative learning environments) on noise perception was statistically non-significant ($F_{(1,42)} = .937$, $p = .339$). Despite concerns that complex acoustics deemed to be a feature of innovative learning environments may pose learning challenges, especially for at-risk students, a group which includes English as additional language learners (McLaren & Humphries, 2009; Nelson & Soli, 2000), the Asian students (i.e., those with and those without language support) in those environments seemed to be no more fazed by noise than their Asian peers in the traditional schools.

7.4.5.4 Years 5 and 6 students in innovative environments within new buildings versus refurbished buildings

Structural aspects of the school play an important role in keeping noise levels low. Newer, purpose-built schools or school buildings tend to have in-built good-quality classroom acoustics while refurbished buildings usually attempt to minimise ambient noise through pedagogical practices or rearranging the layout of the learning spaces. I completed another set of analysis with the aim of determining whether the participating students (both Asian and English-only-speaking) in innovative environments within refurbished school buildings held different perceptions of noise than their peers in innovative environments within purpose-built school buildings. I again combined the data from the Year 5 and the Year 6 participants to increase the power of the analyses and to determine the effects present.

Table 7.13 presents descriptive statistics for the students' perceptions of classroom noise during English-language reading classes in innovative learning environments in the two types of school (refurbished versus new purpose-built). As evident from the table and the bars in Figure 7.11, the students in the two school types indicated that the physical characteristics of the schools had no impact on students' perceptions of noise.

Table 7.13 Years 5 and 6 Asian students in refurbished versus purpose-built schools: descriptive statistics for classroom noise during reading scale.

Description		**Refurbished innovative learning environment**		**Purpose-built innovative learning environment**	
		Asian students	English-only-speaking students	Asian students	English-only-speaking students
		N = 19	*N* = 14	*N* = 24	*N* = 24
Students' perceptions of classroom noise during reading lessons	Mean scale score	3.3	3.5	3.5	3.1
	Standard deviation	.65	.60	.68	.84

Note: Response items and their score values were Never (5), Rarely (4), Sometimes (3), Often (2), Always (1).

The analysis produced a statistically non-significant interaction between student type (Asian versus English-only-speaking) and school type (refurbished versus purpose-built) ($F_{(1, 80)}$ = 2.621, p = .110). The non-significant effect of school type ($F_{(1, 80)}$ = .216, p = .643) indicates that the structural aspect of the school had no influence on the students' perceptions of noise, while the non-significant effect of student type ($F_{(1, 80)}$ = .391, p = .534) suggested students in both type of buildings had similar perceptions of noise. The similarities in perception could be associated with teachers adapting reading lessons in ways that minimise noise or because of teachers' ability to manage classroom noise in general.

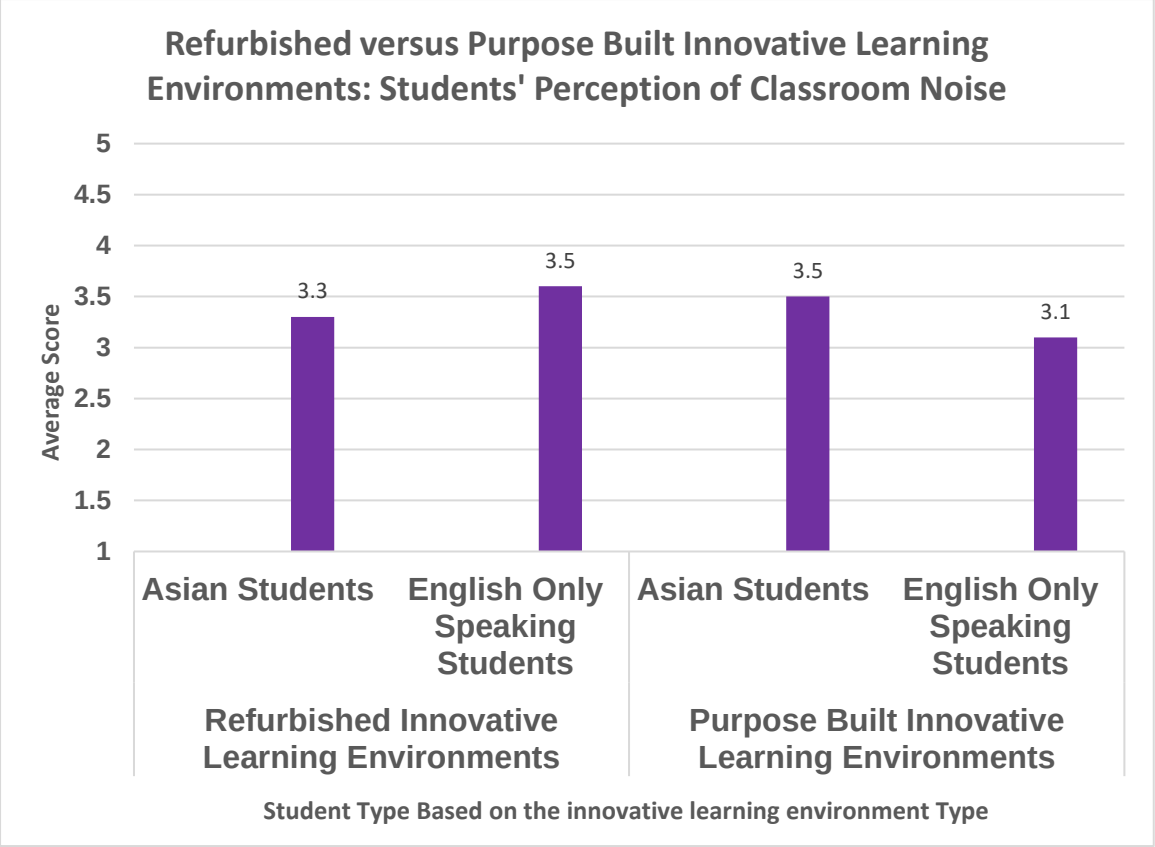

Figure 7.11 Years 5 and 6 students in refurbished versus purpose-built school buildings: mean response scores on the classroom noise during reading scale.

7.4.5.5 Comparative comments on Year 5 and Year 6 findings

Overall, the results from the perceptions of noise analyses suggest that the Year 5 and the Year 6 students in both learning environments (traditional versus innovative) were very similar. This pattern could indicate that students in innovative learning environments are no more affected by noise than the students in the traditional schools. Similar findings is also evident when students receiving language support is compared against those who are not receiving language support. Students' perception of noise is also very similar when comparing between building types.

7.6 Conclusion

This chapter sought to give insight into some of the key features pertaining to innovative learning environments from the perspective of students. As Ahmed, Taha, Al-Neel, and Gaffar (2018) point out, students who perceive their learning environment positively tend to achieve better learning outcomes. However, to date, much of the literature on these environments and views about them have presented the perspectives of teachers and school leaders (Coddington, 2017; Everatt, Fletcher, & Fickel, 2019; Mackey, O'Reilly, Fletcher, & Jansen, 2017; Osborne,

2016). Although Upitis (2004) in her article on school architecture and complexity stated that "in order for complex systems to thrive it is critical that the agents in the system come into contact with one another" (p. 30), the one agent who has received little attention, including in New Zealand, is the student. The analyses presented in this chapter endeavoured to help remedy that situation by exploring students' perceptions of their learning environments. Specifically, the exploration focused on Year 5 and Year 6 Asian and European/Pākehā English-only-speaking students' perceptions of elements of their respective classroom environments (traditional or innovative) during English-language reading classes.

The results of the analyses presented here indicate that the participating students' mean scores on the five student perception scales, each featuring a different aspect of learning environments (i.e., teacher support, equity, attitudes towards reading, conduciveness of the learning environment for reading, and noise) were very similar across student type (Asian versus English-only-speaking) and environment (traditional versus innovative learning). Of particular interest is the finding that Asian students in innovative learning environments appeared to see these environments as no more detrimental to their English-language reading than did their peers (i.e., the English-only-speaking students in the two environments and the Asian students in the traditional schools).

The insights gained here into students' perceptions of innovative learning environments suggest that most of the negatives pertaining to teacher support, students being distracted or lost in larger classrooms and reduced motivation are worries not necessarily supported by the data presented in this chapter. These insights could also help alleviate teacher concerns and give them the confidence to redirect their efforts towards exploring further innovative approaches to teaching reading.

Chapter Eight explores the teachers' responses and comments during the semi-structured interviews. This information is examined from within the contexts of the innovative versus traditional learning environments.

Chapter Eight: Research Findings: Teacher Interviews (Main Study)

8.1 Introduction

Teachers' beliefs about teaching and learning influence how they perceive effective styles of teaching and learning. As Yero (2010) reminds us, teachers' beliefs are deep rooted and therefore have a strong impact on their pedagogical practice. This chapter reports on the findings from the semi-structured interviews with the 14 teachers who agreed to participate in my study. It responds to my third research question (Research Question 3): "From teachers' perspectives, does the type of structural learning environment influence teachers' pedagogical practices in reading?" More specifically, the interviews explored the teachers' perceptions of teaching reading and reading-related skills in innovative learning environments versus teaching reading and reading-related skills in traditional school classrooms. The questions in the interviews called on teachers to

1. Give their thoughts on how the physical structure of the learning environment influences their pedagogical practices when teaching reading and reading-related skills; and
2. Give their perceptions of teaching, within the two learning environments, reading and reading-related skills to Asian students for whom English is an additional language compared to teaching English-language reading to students from European/Pākehā home backgrounds who speak only English.

Particular emphasis is also given in this chapter to identifying what features support and what features challenge teachers teaching reading and reading-related skills in these two types of learning space.

The teaching of reading referred to in this chapter encompasses guided reading lessons and independent reading sessions. Guided reading lessons are conducted with groups of students to build their comprehension skills (listening and reading) and vocabulary. Independent reading sessions encourage students to read extensively and build upon the strategies they have acquired during guided reading lessons.

The findings in this chapter are presented in two main sections. The first covers the themes relating to teaching reading and reading-related skills to Year 5 and Year 6 students in general that emerged from analysis of the interview transcripts; the second focuses on the themes relating to teaching reading and reading-related skills to Asian students for whom English was

an additional language. Pseudonyms are used to maintain the anonymity of the teachers who participated in the interviews.

8.2 Demographic information

Of the 14 teachers I interviewed, eight were teaching in innovative learning environments and six were teaching in traditional single cell classroom schools. All 14 were teaching English-language reading to the students who participated in my research. Table 1 provides demographic information on the 14 teachers.

Table 8.1 Teacher interviewees: demographic information

Learning environment	Teacher (pseudonym)	Gender	No. years teaching	No. years in learning environment	School building-type
Innovative Learning Environment One	Karen	Female	15	4	Refurbished
	Sharon	Female	3	3	Refurbished
Innovative Learning Environment Two	Debra	Female	39	5	Purpose-built
	Jill	Female	20	4	Purpose-built
Innovative Learning Environment Three	Heather	Female	39	6	Purpose-built
	Sue	Female	28	6	Purpose-built
Innovative Learning Environment Four	Anna	Female	2	2	Refurbished
	Wendy	Female	7	4	Refurbished
Traditional Single Cell School One	Kate	Female	12	N/A	N/A
	Rita	Female	17	N/A	N/A
Traditional Single Cell School Two	Tracy	Female	38	N/A	N/A
	Megan	Female	14	N/A	N/A
	Jane	Female	14	N/A	N/A
Traditional Single Cell School Three	Emily	Female	21	N/A	N/A

Note: N/A = not applicable.

8.3 Themes relating to teaching reading and reading-related to Year 5 and Year 6 students

Several recurring themes arose from the analyses of the interview transcripts in regard to teaching reading and reading related skills to Years 5 and 6 students in innovative learning environments and traditional school classrooms. These themes were (i) teacher collaboration during reading lessons; (ii) student choice during reading lessons; (iii) barriers to co-teaching reading; and (iv) challenges associated with teaching reading in innovative learning environments in comparison to barriers experienced in traditional schools.

8.3.1 Teacher collaboration

8.3.1.1 Innovative learning environments

In general, analysis of the information gained from the teachers teaching in the innovative learning environments was that some teachers preferred to carry out their reading lessons in their homeroom classes or in a quieter space away from the main classroom, while others preferred working in the open space area as a team with or alongside the other teachers. Since completing her pre-service teacher training two years previously, Anna (Innovative Learning Environment Four) had never taught in a traditional single cell school; her teaching experience had thus been solely in an innovative learning environment. Wendy, her colleague, who shared the space with her, had been a teacher for seven years and had spent four years teaching in an innovative learning environment. Their learning environment was part of a refurbished school building.

Anna and Wendy structured their reading lessons in a similar fashion. They both opted for the traditional school method of teaching reading. They conducted their reading lessons within their homeroom space, with each teacher taking one end of the room. They therefore chose to configure their reading lessons to a traditional type of classroom setting.

> We do our reading in our home classes. So it's not a three-class-wide programme. We are just with our own class but within a bigger space. (Anna, Innovative Learning Environment Four)

> With reading, we have stayed with our own classes, our own homerooms, because it makes it a lot easier. (Wendy, Innovative Learning Environment Four)

Anna and Wendy considered the physical layout of their particular innovative learning environment with its large number of students unsuitable for collaborative teaching and learning of reading. The two teachers said that in order for them to "anchor" the students'

learning and to keep a close check on their progress, they needed to keep the students in small single-teacher-managed groups. Essentially, each worked as a homeroom teacher during reading lessons.

> For the flexible learning environment, it makes it [teaching reading] quite hard. Because for reading, it's something that needs to be quiet, that needs to be calm. You need to be able to sit with the kids and do your groups and things. I don't know, the flexible learning environment hasn't really changed my programme. I sort of taught really the same way that I teach it in a single cell [traditional class] as opposed to a flexible. (Wendy, Innovative Learning Environment Four)

> So the major thing that I have to consider is what my kids can do within my space to stay focussed on what they have been asked to do and not to be interacting with other students from different classes. (Anna, Innovative Learning Environment Four)

Benade (2017), when writing about what it takes to be a 21st-century teacher, claims that, for teachers, transitioning from traditional classrooms into innovative learning environments that focus on collaboration and teamwork requires teachers to engage in mental shifts that enable them to embrace new innovative pedagogies. The mindset influencing Wendy and Anna's approach to taking reading lessons was a traditional one centred on their personal teaching philosophy that effective teaching of reading needs to be done in a calm environment away from noise and distraction where students can focus.

Teacher collaboration presented itself uniquely in Anna and Wendy's innovative learning environment. Their collaboration focussed on collaboration of ideas during their meetings. This meant they shared only teaching information and strategies but did not work as co-teachers team-teaching when running their reading lessons.

> In reading there is collaboration in terms of how we are running reading, which programme we are currently running within our class, how we are teaching the strategies and which texts we are focusing on. (Anna, Innovative Learning Environment Four)

However, towards the end of the interview, Anna reflected on what she had said and suggested that she and her colleagues should start to work more collaboratively given they shared the same teaching and learning space.

> Being in the same space together, we have the opportunity to do things together. But we don't do it all the time. (Anna, Innovative Learning Environment Four)

Further scrutiny of Anna's comments indicated that she saw working collaboratively as helpful during the teaching of reading if one teacher focussed on teaching guided reading to a group of students while the other managed the other children working independently. However, her perception of collaboration within innovative learning environments lacked depth, as her comments on sharing instructional practice did not include the need to share the types of pedagogical beliefs and student-centred pedagogies characteristic of the 21st-century model of education:

> Collaboration makes a difference in terms of, like, if one teacher has something they want to get done, like assessment, they can do that. And it makes a difference in terms of, like, one teacher being in charge of more behavioural stuff and one teacher being in charge of the teaching reading. (Anna, Innovative Learning Environment Four)

Her comments certainly appear to be the antithesis of the elements of collaborative teaching in innovative learning environments that Mackey, O'Reilly, Fletcher, and Jansen (2017) identified from their New Zealand-based research study. Those elements included student-centred pedagogy, shared beliefs, strategies specific to the learning context, and understanding of the space itself.

Wendy believed that collaborative teaching is possible for various other subjects and types of learning, but not reading:

> In reading not so much; we don't join for collaboration much at all. To be honest, we do it in writing and math, but not so much in reading. (Wendy, Innovative Learning Environment Four)

Although Wendy stated later in her interview that working collaboratively with other teachers offers benefits, such as learning new skills and teaching strategies, she seemed to see collaboration offering her little in the way of advantage:

> I've, in a way, it's probably more of a personal thing, but I've learned from the other teacher I share the classroom with. I've learned from her different things that she does in her reading programme that I wouldn't have seen if I was in a single cell. But it's just like the minor things, like wee activities and things, but not necessarily anything that's made it even more like any better as such. I don't know because I think it's a bit of the same. (Wendy, Innovative Learning Environment Four)

There seemed to be a mismatch between how Anna perceived future collaboration possibilities and Wendy's perception of the need for collaboration during reading lessons. Despite the physical space in Innovative Learning Environment Four being conducive to collaborative practice, the two teachers occupying that space seemed to lack interest in such practice with respect to their reading lessons and in discussing the possibility with each other.

The interviews with Anna and Wendy revealed how important it is for teachers in New Zealand to reconsider their fixed mindsets in order to embrace the collaborative practices envisioned by the Ministry of Education (Ministry of Education, 2017). The shift towards collaborative teaching demands a growth mindset. According to Dweck (2014), teachers' mindsets have an impact on their students' ability. A fixed mindset discourages teachers from risk-taking and learning from the many people around them, including their students. In order for a growth mindset to happen, trust plays an important role. It is important for teachers to build relational trust with others in their learning spaces and communities so they can take risks while simultaneously feeling safe (Cranston, 2011).

Sue and Heather from Innovative Learning Environment Three spoke highly of innovative learning environments and appeared to be enjoying their experience as educators in this setting. Their school had operated the innovative learning model for six years and both teachers had been teaching in it throughout those years. Sue was able to draw comparisons between her experience teaching in a traditional school and her experience teaching in an innovative learning environment. With respect to teaching reading, she considered traditional single cell classrooms more teacher centred, with the class teacher being the one to decide on the reading activities and how the reading lesson would progress.

> If I think back to how teaching reading is in a single-cell classroom, I would have more teacher control over what I'm asking my children to do. So I essentially tell them, "Okay, you're reading with me, and we're reading this text and we're reading it this way. You're doing this activity as a follow-up, you're doing that activity, and you're doing that activity. So I'll have four or five groups. I'm reading with one group; everyone else is silent". (Sue, Innovative Learning Environment Three)

Sue said that her experience of teaching in an innovative learning environment is that teachers make each learner's individual needs central to their reading-related pedagogy and that there is constant discussion between the teachers on how they can improve their practice as a group in this regard.

> When we have reading, we have talked extensively about how we are setting up our groups. We do a lot of testing of the children, so that we make sure our groups are set up in the right way. If we find that we're concerned about a child, we talk about it with each other. We redevelop our groups if we need to. And one person might take the lead on one group and then a few weeks down the track will change over and we go, "Okay, so what have you done here?" So we're thinking just how to best teach the kids really. And we have meetings every week. So we're all the time having those little professional discussions. (Sue, Innovative Learning Environment Three)

O'Reilly (2016), in his study on innovative learning environments, identified that teachers who had received professional development on teaching in such environments had better understanding of them and developed a range of effective skills to work in them. Therefore, Sue's and Heather's positivity about their learning environment could be attributed to the preparation their school had done to transition teachers into this type of environment. Rather than relying solely on literature published in these areas, the school had arranged for their teachers to travel to Australia to experience first-hand an innovative learning environment in operation.

> As a school, we went over to Australia, and looked at three different learning environments over there that encompass students from zero to eight, and different ways of running the open plan. Then we came back here and discussed what would be our version. And it has evolved over time. So yes. From our beginning of our journey into this, it's been six years. (Sue, Innovative Learning Environment Three)

In Sue's classroom, reading was combined with writing to form what the teachers referred to as literacy. Students therefore studied these subjects together.

> With our group at the moment, we are running literacy afternoons. So literacy encompasses both reading and writing. And so we try and incorporate the reading and writing together. We do still pull out the reading groups per se, but we'll also look at their writing at the same time. It's become merged. (Sue, Innovative Learning Environment Three)

Sue and her co-teachers had combined reading and writing during the literacy period to reduce noise generated by reading activities. Sue said the combined literacy practice had successfully reduced the noise because while one teacher conducted reading sessions with one-half of the class, another teacher oversaw the other half, the members of which were involved in writing tasks.

> At the moment we're doing writing and reading together. So one teacher's on reading and one teacher's on writing, and then we swap over so that all groups are getting an even spread of teacher time and teacher focus with their reading groups. Yeah … the noise level is not an issue because they're writing. And so we've got reading and writing together. (Sue, Innovative Learning Environment Three)

Heather, also from Innovative Learning Environment Three, appeared to demonstrate a high level of knowledge regarding the philosophy behind the school's teaching styles. She repeatedly referred to children's developmental milestones, and how she utilised these to inform her explicit teaching of individual children. Heather stated that Piaget's cognitive development theory (Piaget, 2003) in particular informed the school's teaching philosophy and therefore her teaching. She explained that the reading curriculum at her school linked directly to Piaget's developmental stages. She also said that although 62 percent of her students were bilingual, they were reading beyond the Ministry of Education's national standards for reading. She attributed this accomplishment to "getting the foundations right" at the early stages of reading.

> Well, we are slow to start, because we have based everything we do on the development of the brain. So, we know the frontal cortex comes aligned around about the age of seven. So, we're not doing cognitive learning before then, because children are not ready, and we break down their disposition in themselves as a learner. So, the first year is very slow but by the end of their second year at school, they're reading … what we used to look at is the national standard. Most of them are reading beyond that. (Heather, Innovative Learning Environment Three)

Heather further elaborated that, in her school, the children in the early years of schooling (Years 1 to 3) were taught reading in a way similar to that practised in traditional single-cell classrooms. She and her colleagues considered this the best approach until the students were ready (typically during Years 4 to 6) to be more independent as readers and to embrace interest-based reading choices. Heather believed that intrinsic motivation to learn fosters a genuine enjoyment of reading and extends beyond the classroom. This, she said, led to students becoming more engaged and less distracted over sustained periods.

> Those in Year Fours and Fives, we have read the *Dragon Defenders*, and that was the first novel … and that was getting them to be able to find the way into Google, find the book, find the place. I read, they read along and we talk about it as we go. They're loving

> it. Their comments … I have gathered their voices for their reports. I love this [approach] because it's far more interesting. Because the excitement comes in. (Heather, Innovative Learning Environment Three)

Heather's colleague Sue, from the same learning environment, also positioned innovative learning environments as an ideal place for teacher collaboration. She claimed that because students are co-taught by teachers, there is opportunity to have conversations about students' progress, to think and plan together. Sue's tone of voice was noticeably positive whenever she talked about collaboration. She argued that when collaboration is done well, it develops teachers' teaching skills and fosters a sense of emotional wellbeing.

> Innovative learning environments encourage teacher collaboration, open discussion with each other, and you are able to have conversations about students and their progress. We find that we're concerned about a child. We talk about it with each other. And we say the reasons why. We redevelop our groups. We change them if we need to. (Sue Innovative Learning Environment Three)

Heather also took the idea of collaboration seriously. She stated that the teachers in her school talk constantly about the reading curriculum.

> So at the beginning of each staff meeting, we talk about the emerging curriculum, so where the interests of the children are going and how they can be linked to the New Zealand curriculum. And so, for reading in particular, then they would break into their hubs and they'll be talking about how they're going to do it. So everything is collaborative. So today I've got three extra teachers [aides] here. And those teachers [aides] go in and release the classroom teacher so they each get a block to do the collaboration. And it's just continual conversation. They talk all the time. You go into the staff room at any time, they'll be talking learning. (Heather, Innovative Learning Environment Three)

Debra, from Learning Environment Two (a purpose-built school), had been teaching in this environment for five years. During the interview, she indicated that she preferred to carry out her guided reading lessons with the sliding doors of the overall large learning space shut. As she explained, closing the sliding doors provided a traditional single-cell space for teaching reading. The sliding doors, Debra continued, gave her flexibility with respect to her reading class.

> I always like to have a quieter space, and I do readings with smaller groups, because then you can focus individually on the children that you have got, but there is no distraction around them. (Debra, Innovative Learning Environment Two)

As a senior teacher, with 39 years of teaching experience, Debra emphasised that because she was considerably more senior than the other teachers in the space, she could head the collaborative discussion and activities. Although describing herself as "fairly easy-going", the following excerpt from her interview suggests she was using her seniority to influence the team of teachers in her shared space by putting forward her ideas quite strongly.

> I guess we have different ways of doing things. In Term One of the year it's always ... sometimes I'd say, "I don't care, what you guys do. This is the way we're going to do this because I've been here longer than you have and we're doing it this way." And then we might sort of modify things and someone else might come and say, "Let's at least try this." And so, yeah, as I said, I'm fairly easy-going. I can adapt to anybody within reason (Debra, Innovative Learning Environment Two)

Jill had been a teacher in the same innovative learning environment for four years, and with Debra taught the Years 5 and 6 students. Jill said the only difference between the space she was now teaching in and the traditional schools she had taught was the former had more teachers to assist in reading. She said that students equipped with reading skills were allowed to continue reading based on their interests, and the teachers within the shared space would facilitate the process. This approach, she continued, allowed her students to make more informed decisions about their learning and that having multiple teachers to facilitate the process meant her students had the benefit of getting to know different teachers and other students too.

> We will have set reading groups sometimes. But once they've got those skills, we actually let them go off on particular tangents [on] whatever they're wanting to learn about and they get to choose what they are doing. So, yeah, we would probably have done that in single cell, as well. But you get more flexibility with having two or three teachers because one can help out with maybe reading groups, or target the lower groups, and the other one can help across the board, the bigger groups. (Jill, Innovative Learning Environment Two)

Jill went on to say that collaboration usually took place at the beginning stages of yearly reading programmes, with responsibility for groups of students devolving to individual teachers after

that, except for conversations regarding topics and activities. However, Jill seemed to contradict herself here, given she had earlier said teachers helped across the board, including when students began independent reading based on their interests. Jill nonetheless appeared to be well satisfied with how teacher collaboration worked at her school.

> So the collaboration between the teachers takes place with the planning, generally at the beginning of each of the units, and then each teacher will then go off and decide. So their group will get to a point and they'll know where to go next. So we're always talking about our groups and always conversing about what we're doing; on the whole sort of topic that we may be covering. But, yeah, planning after a point gets quite individual to the groups we're working with and the children we're working with. (Jill, Innovative Learning Environment Two)

The two teachers (Karen and Sharon) from Innovative Learning Environment One (set in a refurbished building) had clearly defined classroom roles and responsibilities. Karen, who had been teaching in the innovative learning environment for four years, said each teacher in her reading class had a role to play.

> At the moment we have a group teacher and we have a learning coach. And so the group teacher will be taking groups and the learning coach is going around supporting all the other children. (Karen, Innovative Learning Environment One)

"Learning coach" aligns with one of the two evidence-based practices for innovative learning environments espoused by Cook and Friend (2004). (The other is "station teaching".) Karen spoke confidently of the teaching structure within her classroom and stated that the role-based style of teaching allowed the group teacher to focus on the groups as a whole and the learning coach to act as a follow-up around the room. Each teacher in the classroom had opportunity to act as the group teacher or the coach from day to day, and each was aware of their roles and associated clearly defined responsibilities on that day.

The use of learning coaches in reading programmes enables one teacher to take primary responsibility for the overall direction of reading lessons and the learning coach to act as a support to individual children. Once the primary teacher has issued the large-group instructions, she or he takes on guided reading groups while the learning coach goes around the classroom working with someone who needs extra help and generally making sure students are on task and completing the tasks set for them for the week.

The other popular collaborative teaching method in innovative learning environments noted above, that is, station learning, requires teachers to work together on an equal capacity. Each teacher plans a lesson and the students choose which group they will opt into for the day. During station teaching, teachers teach the materials they have prepared to one group of students and then repeat it to another group. Other teachers constantly add to the materials prepared by the other teachers, creating a bank of resources. Sharon gave an example of station teaching at her school during reading lessons.

> So all the books that we selected were focussed on looking after the environment. And because there's three teachers, each teacher plans one book and the children opt into what one they would like to do. Then, like, once I've planned one … it might rotate and then another teacher might take it and add on to it. So the kids might like to choose another book as their second option. (Sharon, Innovative Learning Environment One)

Sharon, who had been teaching in her school's innovative learning environment for the past three years, considered station teaching gave students high levels of autonomy and allowed them to make choices about what they would learn. She agreed station teaching was a good way for students to learn because it gave them access to different teaching styles and accommodated different learning styles. However, she commented that she and her colleagues had initially struggled with the continuity of their lessons and especially with tracking individual student achievement. They did not know which students were achieving well, and which students not so well. To remedy this situation, the teachers decided to write daily progress notes.

> There's a lack of continuity. Like I said, they're [the students] not going to always have the same teacher every time, especially for reading. So we had to change it up a bit and start checking in at the end of every lesson, because the three of us, we will have different kids at each time, so writing notes on that kid, and then when they go to the next teacher, the teacher knows what they've done the day before. (Sharon, Innovative Learning Environment One)

The comments about collaborative pedagogy during reading lessons from the teachers in the participating innovative learning environments suggest that while some enjoyed the professional collaboration others were reluctant (or unable) to shift their practice from traditional approaches. Also, while the teachers could generally explain the types of collaborative teaching pedagogies they implemented or could potentially implement during

reading, they tended to say little about how these collaborative pedagogies serve to enhance personalised student learning, a key driver of 21st-century learning, suggesting a possible disconnect between knowing what collaborative teaching is and its relevance for 21st century learning. The nature of collaboration also suggested that there are some challenges in teachers practising collaboration and schools may need to provide professional development on collaborative pedagogy.

The types of collaborative practices that the teachers did mention resonate with those described by Whyte, House, and Keys (2016). Whyte et al. state that most of the collaborative techniques teachers use in innovative learning environments are those adopted from the 1990s' co-operative teaching practices advocated by Cook and Friend (2004). These practices mainly involve pedagogical approaches aligned with supportive teaching, alternative teaching and parallel teaching, and over time have extended to include complementary teaching, co-teaching, and team teaching. According to Groff (2013), schools that have grasped the fundamentals of teaching in 21st-century innovative learning environments tailor their pedagogical practices to ensure the learner is at the centre of all pedagogical programmes and decisions. These schools therefore recognise the importance of individual student differences, focus on learner emotions and motivation, and encourage co-operative learning.

8.3.1.2 Traditional single cell schools

The interviews with the teachers from the traditional schools indicated that they were carrying out their reading lessons by themselves in their homeroom classes. However, several of the teachers said that collaboration in terms of ideas and resources did occur occasionally. Kate, from Traditional Single Cell School One, said that the extent of collaboration in reading in her school varied from team to team and did not follow a specific pattern.

> We tend to do smaller planning together and that varies from team to team. But generally, you know, we come together, and we talk about what we're doing, what programmes we're running, and we share resources. There's not really any team teaching or cross-grouping across classes and we don't do interchange. (Kate, Traditional Single Cell School One)

Tracy, from Traditional Single Cell School Two, explained that the teachers in her year group came together at the beginning of each year to plan student groupings for reading lessons. Decisions as to which students would be in which groups were based on ability, but teachers could interchange students from across the cohort so as to buddy them up with a student at the

same reading level. This approach, Tracy continued, enabled each teacher to have groups of students of similar ability, and thereby work effectively with them. Once the teachers had decided on the groups, they worked individually within their classrooms.

> At the beginning of the year, we look at our students' reading ages. We could have six-plus groups within our class. And we know that is too many to make much of an impact. So we often collaborate then. If somebody has got children in their class who could buddy with the two children of my class, we work it that way, so that the children are working at the stage they are at for reading. We then make sure that we are able to [effectively] manage our four or five groups, including those children from other classes. (Tracy, Traditional Single Cell School Two)

Emily, from Traditional Single Cell School Three, said that her syndicate had earlier discussed trialling a collaborative approach to their reading pedagogy. They wanted to do this in order to be more effective teachers of reading and to leverage the time they could spend with each group. They agreed the trial should involve collaboratively assigning students to reading groups based on reading age. Therefore, at the beginning of the second school term, the teachers had gone ahead with their plan.

> In Term Two, we decided to actually, sort of more, be a bit more collaborative, but we put the children into more, into similar learning needs. So I do one group a day, and I can spend quality time with that group. And then they have either a follow-up activity usually and have a couple of independent reading activities. (Emily, Traditional Single Cell School Three)

Megan (Traditional Single Cell School Two) and Rita (Traditional Single Cell School One) said that although the teachers at their student-year level worked together and shared resources for a variety of subjects, they rarely did this for reading.

> We do it on some things but not so much for reading. Reading topic work, absolutely. Anything related to other things we might share some other resources, but we don't tend to plan together, [don't tend to plan] reading. (Megan, Traditional Single Cell School Two)

> We tend to collaborate with inquiry. But with literacy and maths, we tend to do our own thing at the moment. (Rita, Traditional Single Cell School One)

The interview data revealed that some of the teachers preferred being single-cell classroom teachers because that role gave them the freedom and associated flexibility to determine the direction of their reading lessons based on their students' interests.

> It means that I have the ability to do what I want to do to help my learners. I don't have to talk with two other people and get them on board, like, "I want to try this today." And I don't have to talk to two other people and try and convince them or negotiate. I've got that freedom to make that decision. (Jane, Traditional Single Cell School Two)

> If something crops up, if there is something interesting, then we can go with that. Whereas I feel that if we were in an open class, then we've got to stick to the programme all the time because you're working with all the children and teachers. (Rita, Traditional Single Cell School One)

> I think the flexibility to sort of take things on a different direction. I had a group and we were reading about a forest that had been burned down. And we started talking about the Canterbury hills, the Port Hills, that had burned down, etcetera. And we ended up actually going on a whole-class trip to Port Hills. Whereas in an innovative learning environment, I would have children from different classes, different homerooms. I don't think you could do that [the class trip in such a situation]. (Kate, Traditional Single Cell School One)

Jane, Rita and Kate obviously enjoyed having the freedom and flexibility to adapt their reading programmes based on their own preferences. The traditional single-cell classrooms therefore appeared to give these classroom teachers, compared to their colleagues in the innovative learning environments, more autonomy over determining the reading content and structure of the reading programmes and lessons in their schools.

8.3.1.3 Commentary on collaborative teaching

This section on the nature of teacher collaboration outlined the various types of teacher collaboration existing within the participating innovative learning environments and traditional schools. The teachers in the former environments spoke of various types of collaboration during reading, ranging from team teaching to individual teaching in homeroom-type classes. The level of collaboration in these environments appears to have been situated on a continuum from ideas-based collaboration through to full-on shared responsibility for teaching all students together. In the traditional single cell schools, the teachers were primarily using individual classroom teaching. The collaboration evident there centred on determining student-ability groups.

Situated alongside the range of teacher collaboration practices evident in both learning environments were practices characteristic of teacher autonomy or individualism. Hargreaves (2001) emphasises that autonomy should not always be seen negatively. He describes three forms of teacher autonomy: constrained individualism, strategic individualism, and elective individualism. Constrained individualism refers to collaboration between teachers that is constrained by organisational and administrative limitations. Factors constraining individualism include the physical structure of the learning environment, the quality of the learning space, and supply of teachers. Strategic individualism sees teachers opting out of collaboration as a strategic response to mounting pressure from work to efficiently invest their time and energy at any one moment. Elective individualism reflects teachers' choice to work alone even when there are opportunities for collaboration. This choice can be influenced by teacher personality, pedagogical preferences and teaching style. The most common type of autonomy evident in this study are constrained individualism and elective individualism whereby teachers are seen to opt out of collaboration due to perceived structural limitations and preference to work alone.

8.3.2 Student choices during reading lessons

8.3.2.1 Innovative learning environments

The information in the interview transcripts made clear that some of the teachers in the innovative learning environments were intent on engaging and motivating their students by initiating and sustaining student-directed learning, which meant students could self-select learning tasks. With respect to reading, students exercised choice within the context of programmes featuring an array of teacher-selected activities. Thus, when not involved in a guided reading session with their teacher, students could choose from a set of activity options (e.g., listening to an audio text, doing word work, completing topic work) and make it their preference for that particular day. As several teachers explained, these practices gave students a degree of autonomy over and ownership of their learning during reading lessons.

> We have something called Ako plans, which is them learning at their own pace. So we have, like, different steps—Step One, Step Two—and they are able to do that independently. (Sharon, Innovative Learning Environment One)

> We do the Daily Five programme, when they are not with me in a guided reading group. They can read for themselves, read to a buddy, listen to reading, work on writing or do a

> vocab word-work exercise. Those are their choices. (Anna, Innovative Learning Environment Four)

> It has opened things up to be a lot more student focussed and collaborative, so that the kids can actually make choices about what they want to learn, etcetera. They get to choose their own [activities]. (Jill, Innovative Learning Environment Two)

However, these teachers, like others from the innovative learning environments, were more inclined to talk about the various reading programmes they used rather than discuss how these programmes worked within the structure of the learning environment to promote student-directed learning. The ideas shaping the students choices available to the students seemed to be highly similar to the self-directed plans implemented in some of the traditional schools that took part in the research. Leadbeater (2006) refers to this pseudo type of self-directed learning as shallow personalised learning or "mass customisation" decided by the teacher. As Bolstad, Gilbert, and McDowall (2012) point out, in order for deep personalised learning to take place, students need to be "co-creators" of the learning content, which means their choices and interests are clearly reflected in that content.

Teachers Heather and Sue, however, were able to show through their descriptions of the reading programme in their school (Innovative Environment Three) a strong move towards having students as co-creators of learning content. More than any of the other innovative learning environment teachers, Heather appreciated the role of student as co-creator and how the innovative environment benefitted that role. She praised the interest-based allowance that the innovative learning environment offered her students, stating that it nurtured her students' reading skills through learner agency and autonomy. The structure of the environment and the resources within, that allows her students to go off into different spaces to work on their own, with another student or even several on areas that interest them could have presumably contributed to this.

> It is interest based. It's far more interesting because the excitement comes in. They did a whole lot of research into World War Two and compared religions. So we do reading that way; just opens up the world. (Heather, Innovative Learning Environment Three)

Sue, one of Heather's colleagues in Learning Environment Three, worked in a similar way with regard to the reading programme. However, where she thought appropriate, she steered some of her students towards certain topics because of her knowledge of those students as individuals.

> Now in this environment, your children are directing the learning and we are wanting to help push that and focus on that and give that importance. For example, I've had other children do history of the Philippines; this is where they've come from. They look up on the internet or come get out books from the library and read about different things. (Sue, Innovative Learning Environment Three)

There was a strong sense of satisfaction in Heather and Sue's respective voices as they talked about their pedagogical practices in reading. The interview transcript for both women provided many examples of the opportunities their students had to develop their language and reading skills, to analyse texts, infer, compare, synthesise, and predict outcomes, and to develop them in ways that were always interest based and personalised. Clarke (2013) says that personalisation of learning is determined by who has control over the learning. In Heather's and Sue's reading-lesson classes, students were given the opportunity to participate in text selection once teachers have identified the broad topics and related reading skills that need to be covered, they worked with students to ensure how and what students would like to learn in relation to that topic and reading outcomes. This facet of their learning could be the one reason why these two teachers made no mention during their interviews of behaviour-management issues or noise in their learning environment.

8.3.2.2 Traditional single cell schools

As in the innovative learning environments, teachers in the traditional schools gave their students choices during their reading lessons. Jane, from Traditional Single Cell School Two, stated that the freedom and flexibility that she had as a single-cell classroom teacher extended to her students because of the variety of pre-selected activities she offered them. During reading, this variety included (amongst others) looking at poetry for reading responses, going to the library to select reading materials, and using Minecraft: Education (a game-based learning platform designed to promote creativity, problem-solving and collaboration).

> They [the students] can choose if either they do it in the book or they can do it on a device and sometimes through Minecraft. I use Minecraft: Education. They can use that as well. They also have to read poems. It's part of my reading prose. So we look at a poem and then they complete their reading responses. Sometimes I have a group that can go to the library, or at times I use a storyboard, so I give them a choice all the time. (Jane, Traditional Single Cell School Two)

Megan, also from Traditional Single Cell School Two, welcomed being able to work in a single-cell classroom. She said that teachers in such classrooms have the freedom to select the activities they think best for their students. Unlike in collaborative teaching situations, they do not have to accommodate the ideas of other teachers.

> But then I think the wonderful thing about a single cell is that you do have the opportunity for teachers to go with their passion. It's twofold there really. It does give you the opportunity to work with your children's passions, [and] with your passions and your strengths. (Megan, Traditional Single Cell School Two)

Kate (Traditional Single Cell School One) stated that students differ not only in terms of learning style but also in terms of the attitudes they hold towards learning. She therefore considered giving students choices relevant to their individual learning needs and interests, which she deemed a crucial aspect of keeping them engaged. In regard to reading, she said some of her students were naturally driven while others struggled to stay focussed on the reading task and required constant encouragement to stay with it. By ensuring that the reading activities she selected for her students offered choice, she provided that encouragement and helped keep them motivated. Knowing her students well, she said, allowed her to run her class according to her students' needs.

> There are choices of activities that they can do, so when they're given more of a choice, they can be more motivated. (Kate, Traditional Single Cell School One)

8.3.2.3 Commentary on student choices during reading lessons

The interviews indicated that in all of the participating schools except Innovative Learning Environment Three, the teacher or groups of teachers pre-determined reading activities. Innovative Learning Environment Three differed because the teachers and the students co-created reading activities. This is not to say the other learning environments did not offer student choice; however, those choices were determined by the teacher. In the innovative learning environments, groups of teachers established a mix of activity choices sufficient for a large group of students while in the traditional single cell schools just one teacher, the class teacher, selected the choices.

8.3.3 Teachers' operational (pedagogical) styles

8.3.3.1 Innovative learning environments

The innovative learning environment is designed to enable teachers to work together to meet the needs of the students. While the vision of teacher collaboration may be aspirational, the

responses from some of the teachers I interviewed indicated that collaborative teaching was not always easy or straightforward. For example, it seemed to me, based on analysis of the interview transcripts, that teachers' teaching styles and classroom behaviour management were factors undermining collaborative teaching in the innovative learning environments. As Debra (Innovative Learning Environment Two) commented, some teachers in a learning environment have their own methods of teaching reading and sometimes those methods do not align well with the methods practised by the other teachers in that environment.

> Teachers will have their own ways of working and that doesn't always work for the other teachers around them. (Debra, Innovative Learning Environment Two)

Both Anna and Wendy (Innovative Learning Environment Four) said they largely conducted their reading activities within their own homeroom because they saw their style of teaching reading as different from the style of one of their colleagues. They perceived this difference as a barrier to collaboration.

> Teacher Two is different to me, and that's how she is, but that's her personality. And that's about how she teaches. Yeah, so it's not necessarily wrong. It's just different to how I am. (Anna, Innovative Learning Environment Four)

Karen (Innovative Learning Environment One) and Wendy (Innovative Learning Environment Four) expressed particular concern over colleagues' different ways of managing student behaviour. This concern presented as a recurrent theme in a recent survey (Campbell, 2020) that asked teachers to give their perceptions of teaching and learning in an innovative learning space in a suburban school in Scotland. Karen and Wendy went on to say that because the teachers in their learning environments had different views on managing student behaviours and expectations, collaboration had become difficult and undermined opportunity for class-wide reading programmes.

> I think in some cases, if you are with certain other teachers who may not have good behaviour management, collaboration becomes difficult. (Karen, Innovative Learning Environment One)

> But that's because different teachers have different ideas of rules. So we've had to be really strict on saying all of us apply the same rules. We've had to make sure we communicate and that we're all on the same page with everything to help manage the class. (Wendy, Innovative Learning Environment Four)

Anna, also from Innovative Learning Environment Four, suggested that the way learning is usually conducted in an innovative learning environment might exacerbate the management issue.

> The challenges are that the different classes are doing different things. And also the different teacher expectations. (Anna, Innovative Learning Environment Four)

These differences in pedagogical approach and behaviour management can make collaborative teaching an unpleasant experience. Teachers therefore need to realise that communication and conflict resolution between teachers is crucial to realising the vision of innovative learning environments. They need to critically and collegially examine and overcome their collaboration barriers so they can work towards the shared practice foundational to the culture supportive of the 21st-century learner. Importantly, as Coke (2005) has argued, teachers need to model good collaboration in their classrooms so that their students can transform their learning styles to be more collaborative (another feature of 21st-century learning). When, Coke points out, students see teachers sharing knowledge and accommodating one another's needs, strengths and weaknesses, they are likely to follow.

8.3.3.2 Traditional Single Cell School

Although teachers in traditional schools taught individually within their own classrooms, they experienced challenges associated with teachers' different pedagogical approaches similar to those experienced by their innovative-environment peers. Jane, from Traditional Single Cell School Two, gave examples from her own experience of how these differences played out with respect to collaborative teaching.

> So, I tend to do my own thing a lot more. And that's just because, you know, we have very, very different teaching styles. Although I have collaborated with teachers before … I had a teacher a couple of years ago and got on very, very well with him and we did a lot of work together. We had the same sort of teaching philosophy and the same sort of teaching style. (Jane, Traditional Single Cell School Two)

Kate and two of the teachers from Traditional Single Cell School Two (Jane and Megan) specified during their interviews that having a single teacher in the classroom could have drawbacks. Jane, for example, mentioned that because her students are taught only by her throughout the year, they have no option but to "put up" (her words) with her teaching style and what that might mean for their learning.

> We’re not all going to be the right fit for every child in our class. I think that’s possibly where more than one teacher is going to help because if you don’t have that connection with one child, maybe they might have it with somebody else. Whereas in my classroom, children don’t get any choice. They have to put up with me for the whole year whether they enjoy me as a teacher or not. (Jane, Traditional Single Cell School Two)

Kate and her Traditional Single Cell School One colleague Rita acknowledged that time and student group management tended to be important pedagogical factors in a single-teacher classroom with as many as 30 students. Rita specifically pointed to the difficulties of managing the large disparity of reading levels in her classroom. The two women suggested that the presence of a second teacher in the classroom would not only make it easier to manage groups of students within the time available but also to share ideas about how to best utilise that time.

> When you look at the amount of time a teacher has with each child and you’ve got thirty children in the class, you always want more time. And I don’t think we could do a lot different because you’ve sort of got to do your best to spread your time evenly across the children, so I couldn’t do anything different. Unless I split myself in two. I do miss sometimes working with another teacher; you can bounce ideas off each other. (Kate, Traditional Single Cell School One)

However, despite not having the second teacher to teach with, Kate seemed happy with being a single-cell class teacher because, as she said, it gave her the flexibility to adapt her programmes based on her students’ interests and needs. Although concerned about her ability to meet her students’ individual learning needs effectively, Rita said she had learned to accept the need to manage this issue as part of teaching in a single-cell classroom. She, like Kate, had seemingly accepted that it is impossible for a single-class teacher to meet all of her students’ needs, especially the needs of those students requiring frequent additional help.

> I’ve got one boy who needs constant help in reading and I can’t give him that and he has no teacher-aide time, but I can’t give him the constant support he needs because then it means I let the other twenty-nine children in the class down. So, I can’t give him as much support as he needs. So that makes it really hard. But that’s part of teaching. (Rita, Traditional Single Cell School One)

Megan from Traditional Single Cell School Two also acknowledged that effective teaching within a single-cell classroom necessitated planning and good time management. However, she also pointed out that work as a sole teacher frequently created particular pressures and demands

that could induce stress. She believed that having another teacher in the classroom to assist or co-teach was therefore likely to benefit both teachers and students.

> You've got thirty children in a single cell, trying to make sure their reading groups aren't too big, [trying to make sure] that you're seeing people enough during the week. I mean those more able readers; I would see them less than the less able readers. Sometimes when you're in a single cell, you can put an incredible pressure on yourself, which I think … [is less] in a collaborative environment, when you've got somebody else to help regulate and moderate. (Megan, Traditional Single Cell School Two)

Megan's comments resonate with the findings of study a conducted with teachers and students in 10 primary schools in England conducted by Glazzard and Rose (2019). The two researchers found that students tended to pick up on their teachers' stress levels, even though the teachers thought they were concealing the stress from their students, and that awareness by the students in turn affected their learning processes.

8.3.3.3 Commentary on teachers' operational styles

The findings presented in this section indicate that teachers' operational styles are a main indicator of successful collaboration in innovative learning environments. Although, unlike their innovative-environment colleagues, the participating teachers in the traditional schools did not have to be concerned about accommodating the operational styles of other teachers, they expressed concerns about the pressures associated with sole teaching, such as having sufficient time to teach their less proficient students.

8.3.4 Classroom noise

8.3.4.1 Innovative learning environments

A Ministry of Education report on the design quality of learning spaces (Ministry of Education, 2017) identified that the acoustics in many older school buildings designed for traditional classrooms but refurbished to accommodate innovative learning environments can mean noise levels that undermine collaborative teaching and effective learning. Anna and Wendy, both working in a refurbished innovative learning environment (Innovative Learning Environment Four), said that the noise within their classroom was a huge distraction for them when teaching reading. They also, when talking about noise, implied that teachers' different tolerances to noise and their different student-behaviour-management practices could exacerbate the noise issue and teachers' willingness to work collaboratively.

> For noise level, I would say last term, and the first two terms, I was working with a different colleague. And that was a challenge because her class level of acceptable volume was louder than what my class had an expectation [of]. And that was a distraction and was challenging for my kids and somewhat for me, as well. (Anna, Innovative Learning Environment Four)

> The noise is really loud and the fact that your kids, if you're not keeping an eye on them, they'll get up and they'll move around, or be talking to someone else, or they won't be doing what they're meant to be doing. It just makes it a lot harder to control because of the big space with more noise. They might be doing something different down their end, then my kids are getting distracted by what they're doing. The noise is probably a big thing. But that's because different teachers have different ideas of different rules. So we've had to be really strict on saying that all of us should apply the same rules. It doesn't always work though. (Wendy, Innovative Learning Environment Four)

Karen, who was also teaching in a refurbished building (Innovative Learning Environment One), agreed with Anna and Wendy that refurbished buildings are generally not acoustically fit for purpose. Karen stressed, however, that collective behaviour management within the classroom helped reduce unnecessary classroom noise.

> In here, it can get a little bit noisy sometimes, just because of the structure of this … old building that's just had the walls cut out. So it can get a little bit noisy, but it's fine because our behaviour management I think is quite good … [for] me and my two colleagues. So for us, it doesn't get too noisy. (Karen, Innovative Learning Environment One)

Like Karen, Jill (Innovative Learning Environment Two) considered noise was generally not a significant issue when effective behaviour management was in place.

> I kind of run a quiet—semi-quiet—classroom. The biggest challenge would be if you probably didn't have your behaviour management, or your noise level is up that you couldn't actually keep that nice quiet time to actually have quality conversations with the groups that you're actually working with. I mean, if you have really good routines and really good behaviour management, then the kids just follow. And it's easy. (Jill, Innovative Learning Environment Two)

Debra, from the same school as Jill, had a different opinion about the noise in the learning environment. She obviously found it an issue during reading lessons. She conducted her lessons in a separate room away from the main classroom as she was teaching the lower ability group of students but the interview extract indicated that noise still impinged on her lessons.

> You can hear that I haven't got the door shut so you can hear the noise. You know, when you've got so many children, that's a factor. Sometimes the type of children that you've got, you know, that certainly makes a difference. (Debra, Innovative Learning Environment Two)

For Heather from Innovative Learning Environment Three, noise had not been a deterrent to teaching and learning in her reading classes.

> That is the reading room. You can go in there at any given time and there will be children in there reading, and it will be quiet. They might have the door closed, but they will be quiet. But if you go into the whole space, because of its design, you can see seventy children working, and there isn't a noise that will be above a hum. (Heather, Innovative Learning Environment Three)

Heather credited the low noise levels to her and her colleagues' commitment to engaging students' intrinsic motivation through interest-based reading activities. This approach, she said, kept the students focussed on the task, hence reducing unnecessary noise. Heather also claimed that if the school develops the child holistically, that is, socially, emotionally, physically, spiritually, culturally and intellectually, from day one, then that child will know how to manage themselves, thereby limiting disruptive classroom behaviour and noise.

Sue, also from Learning Environment Three, held the same views as Heather. She also advised that teachers in learning environments such as hers need to constantly check noise level and ascertain if a lessening of student engagement is contributing to escalating noise. Sometimes, she said, teachers need to be flexible and modify their approach to best suit the situation and the students.

> That's the thing about this environment. It's flexible. You can check and change and the kids are adaptable, and they tell you what they think about things pretty quickly with their behaviour. At the moment we're doing writing and reading together. The noise level is not an issue because they're writing. And so we've got reading and writing happening together, and that reduces the noise. (Sue, Innovative Learning Environment Three)

She also gave an example of her practice when noise became an issue.

> "Stop, everybody, the noise level is too high. Let's use our whisper voices. That's the voice that I want you to use from now on." So you need to just remind them. This is what I want you to do and at the same time just making sure that I have got the right level of stuff for them to do. (Sue, Innovative Learning Environment Three)

8.3.4.2 Traditional Single Cell School

The participating teachers from the traditional schools said that noise was not a barrier to the efficacy of their reading lessons. Tracy, from Traditional Single Cell School Two, said that because such classrooms have fewer students than in innovative learning environments, noise levels tend to be lower and easier to manage. She also said that less noise in the class assisted the students in their language and reading lessons, as they could clearly hear how words are articulated.

> The fact that we can have quietness from the other children. So, they are able to hear the words, or the way things are articulated or pronounced, perhaps more easily than if there was the surround-sound of other children's voices. I feel that probably being in a single cell allows me to do that. (Tracy, Traditional Single Cell School Two)

Megan, from Traditional Single Cell School Two, and Emily, from Traditional Single Cell School Three, agreed that the lower volumes of noise and therefore less distraction in single-cell classrooms. This allowed them to concentrate on their reading lessons and the needs of the children without having to worry about trying to meet the needs of the large number of children typical of innovative learning environments.

> There's not a lot of other noise going on. You just have fewer distractions. You can just concentrate on those children in your classroom. You're not having to worry about comings and goings of children, other things happening in the wider environment. So I think having the separate single cell, you're not seeing anything else that's going on, and kids are more focussed with you, and they're not distracted. (Emily, Traditional Single Cell School Three)

> Having an environment that's probably not quite so noisy and less distraction is great. I think in the single cell I like being able to keep an eye on them in a smaller area and trying to get them to be more self-regulated learners and be aware of those ones that will wander off and things. (Megan, Traditional Single Cell School Two)

8.3.4.3 Commentary on noise

Open collaborative environments, such as innovative learning spaces, generate noise because of the interactive nature of the teaching and learning that occurs within them. Teachers and students compete with one another in the shared space to be heard, which can lead to the classroom becoming a very noisy and an unpleasant place in which to learn. Campbell, Brokmann, Vugts, and Oorschot-Slaat (2018) point out that increased noise in the classroom causes a reflex reaction that encourages people to raise their voices involuntarily. This is known as the Lombard effect. Regulating classroom noise requires collaborative effort from everyone using the space, with that effort being modelled by the teachers. Also, when planning their lessons, the teachers sharing these spaces need to collaboratively consider the noise level each learning activity may induce. By carefully combining activities, teachers can minimise noise and the learning-related distraction it causes.

8.4 Teaching English-language reading to Asian students

Several clear themes in regard to teaching English-language reading to Asian students for whom English was an additional language emerged from analysis of the teacher interview transcripts. These themes, common to both learning environments (innovative and traditional), resonated with the some of the themes and commentary relating to the students in general (see above).

The first theme was teachers' responses to culturally responsive teaching. The second centred on the teachers' perceptions of Asian students in terms of their work ethics, cultural attitudes to learning, respect for teachers, and pattern of classroom participation. The third revolved around peer teaching and student collaboration, and teachers' perceptions of how these collaborative practices benefit student learning. The fourth theme elaborated on teachers' perceptions of classroom support for Asian students in open-space (multiple teachers) and traditional classrooms (single teacher). The fifth theme focussed on the influence that teachers thought noise had on Asian students' reading skills. The sixth and final theme was the lack of relevant reading resources likely to appeal to and motivate Asian students.

8.4.1 Theme 1: Culturally responsive teaching

Culturally responsive teaching has become a crucial component of pedagogy in today's classrooms. Teachers who have knowledge and understanding of their students' respective cultural backgrounds and expectations are better able to increase student motivation and engagement through meaningful instruction (Saifer, Edwards, Ellis, Ko, & Stuczynski, 2010).

For example, in Asian cultures, conserving knowledge is more important than constructing knowledge from learning (Dixon, 2005). In general, Asian students prefer to read widely and to trust expert knowledge whereas Western students prefer to question knowledge and form their own opinions. Research on culturally responsive teaching continues to emphasise that if teachers are to provide pedagogy responsive to student cultural diversity, they need to know *how* certain groups of people construct knowledge (Liu, 2016; Neuman & Bekerman, 2001). This understanding is therefore no longer an option but a necessity in classrooms, both innovative and traditional.

8.4.1.1 Innovative learning environments

Most of the teachers in these interviews found it hard to elaborate when I asked them to explain how the structure of the innovative learning environment helped teachers teach reading to Asian students who spoke English as an additional language. The teachers' responses suggested that the structure of the learning environment made no difference to how they taught reading to Asian students; they were teaching reading to these students the same way they were teaching their English-only-speaking students.

> I think they ... do quite well. Yeah, 'cos we've got the different teachers, and then we've got the different children. All the children in here support each other. Yeah, I think they're fine 'cos we're kind of always monitoring and checking in with them. They seem all right. Would you think it would be overwhelming or something like that for them [Asian students], because of the large number of students in the class? (Karen, Innovative Learning Environment One)

> I don't know. Maybe just working with a variety of people. Or hearing lots of language because so many kids in here. (Wendy, Innovative Learning Environment Four)

> I just have a wee boy from Sri Lanka and apart from him wanting testing done in the first couple of days, he goes, "I like this." And I said, "What do you like about this?" He said, "I don't have to sit at the desk. I can sit on the floor if I want." I said, "Yes." [He said,] "I can sit at the bean bag if I want"? I said, "Yes, you can do whatever you like." He said, "I like this." I don't know, looks like he felt that the pressure [of schooling] wasn't quite there, he seemed quiet surprised. (Jill, Innovative Learning Environment Two)

> They end up coming out at different times of the day for extra support for mainly reading and comprehension and things like that; otherwise we still just do it as normal with them in our groups. I've got two that I have to keep an eye on because they don't fully

> comprehend exactly what's going on; I just check in with them. But I haven't changed my programme as such. (Wendy, Innovative Learning Environment Four)

The long and often awkward moments of silence that occurred with most teachers when I asked them to think about the pedagogies they thought supported teaching Asian students to read English-language texts indicated they had given little thought not only to students' cultural heritage and their learning beliefs but also to how their own teaching reading pedagogies affected these students' acquisition of English-language reading and reading-related skills. The teachers struggled to articulate any suppositions they did have about these students' cultural backgrounds and what those backgrounds might mean for the students' English-language reading and reading-related skills.

> I would assume that they would find it different, the whole practice of our reading programme challenging, because it's probably different to what they are used to from their home countries where I think it's a way more, like, regimented. Asian students who've got lower language skills, maybe or just potentially, can be quieter. Like a little bit more withdrawn. More reserved, maybe is the word. I am not sure. (Anna, Innovative Learning Environment Four)

The teachers' constant use of phrases like "I think", "I would assume", "Maybe", "I don't know", "They seem all right" also reflected the teachers' struggle to identify practices specifically supportive of Asian students' reading. These responses may indicate that the teachers in this research were underestimating the power culture has on how students' process learning.

8.4.1.2 Traditional Single Cell School

When asked to explain how the structure of the traditional single cell classrooms helped teachers teach reading to Asian students who spoke English as an additional language, the teachers in the traditional schools appeared to have a better grasp of the diverse cultural backgrounds of the Asian students in their classrooms and the need to tailor their reading programmes to meet the needs of those students. For example, Jane (Traditional Single Cell School Two) indicated that knowing the individual learner is important when catering to his or her needs, especially if English is an additional language for that learner. Emily (Traditional Single Cell School Three) demonstrated her cultural awareness when she indicated that different Asian cultures have different educational needs. Both were also aware of the differences that lie within the wider Asian community. As Emily implied, knowing how to

teach to these differences is crucial for all Asian students' progress in English-language skills and English-language reading acquisition.

> It's about knowing the learner and catering to the different needs of the students in your class. I think it should always be about what can I do to help the learning of the children in my classroom? So … and I think it all depends year to year, I mean, and I may have to re-evaluate what I'm doing and my writing programme to help support that person, especially if English is their second or additional language. (Jane, Traditional Single Cell School Two)

> Asians, you know, it's quite a big, huge geographical label ... It's too broad. I mean, we used to have children here who have come from Korea. Now they were very different, and you know, now we've got a lot of Filipino children, and they are very different to the Korean children. It's hard to have to generalise. You have to cater to individual needs. (Emily, Traditional Single Cell School Three)

8.4.1.3 Commentary on culturally responsive teaching

Despite the growing body of work on cultural differences and the influence of those differences on students' learning, many of the statements made by the teachers from the innovative learning environments showed a lack of such awareness and depth with respect to teaching English-language reading to students from Asian cultures. Gay (2018) emphasises that culturally responsive practice should draw on students' personal and cultural strengths in order to create learning experiences meaningful to them, while Macfarlane, Macfarlane, and Gillon's (2015) "braided river model" stresses the importance of integrating the different knowledge bases of a dominant culture and indigenous cultures. Macfarlane et al.'s model illustrates how both streams of knowledge can feed into each other to create successful learning experiences.

The difference between the understandings of culturally responsive teaching between the teachers in the innovative learning environments and the teachers in the traditional schools may be because the teachers in the traditional schools had smaller number of students in their classes. That smaller number possibly made it easier for the teachers to develop closer relationships with their students and gain better knowledge of their cultural backgrounds.

8.4.2 Theme 2: Teachers' perceptions of Asian students

The teachers in the traditional schools couched their perceptions of Asian students' "personalities" in the classroom in terms of knowing the individual learner and catering to their

needs (see Theme 1). As such, the findings in this Theme 2 section relate only to the comments of the teachers in the innovative learning environments.

8.4.2.1 Innovative learning environments

The interview data showed that most of the teachers in my study had observed personality and learning differences and preferences between the Asian additional language learners and the English-only-speaking students in their classrooms. Sharon, from Innovative Learning Environment Two, was one of the teachers who thought Asian students were not only quieter in class than their European/Pākehā peers but also preferred to work and talk in smallish groups.

> They're a little bit quieter with asking questions; they're not going to be the first to put their hand up if they're struggling. They will normally just sit there until the teacher approaches them or [they'll] ask their peers. They're more inclined to talk to their friends as opposed to coming up to a teacher. Yeah, I think maybe the fact that they are able to ask a friend that speaks the same language as them restrains them from asking a question openly in front of the whole class. (Sharon, Innovative Learning Environment One)

Wendy (Innovative Learning Environment Four) observed that the Asian students who were additional language learners did not interact much [during discussion with teacher and group work] during lessons and, in comparison to other students, had to be prompted more in this regard.

> I'm sitting here with a group around my table and we're reading a book. And I think I find that Asian students or second-language learners, they don't interact as much, and they have to be prompted a lot more. So … most of the kids will go, "Yeah I did that" or "Blah, blah, blah, I did this" or "I like this". But a lot of them just sit back, and they're just kind of watching, and they'll do what they're being asked to do. But they just are quite introverted. (Wendy, Innovative Learning Environment Four)

Jill (Innovative Learning Environment Two) also considered the Asian students she taught to be slightly more reserved than her English-only-speaking students. However, she thought this reserve might be because Western teaching styles were not what they were accustomed to. Jill and her Innovative Environment Two colleague Debra said the Asian students in their classes typically took a longer time to build relationships with their teachers. However, Debra said that even though the relationship built slowly, once established it tended to be strong as they begin to feel safe to open up with the teacher. Jill and Debra's comments below also seem to reflect

some understanding of culturally responsive teaching with some contradiction with what they have said in Theme 1.

> Slightly more reserved initially. I think that until you build up that relationship, but also, I don't know whether it's our Kiwi way of teaching and that's more relaxed. It's not so structured, so they don't know how to possibly be really open about what they're talking about. Yeah, so they are slightly more reserved, but they get better as the year goes on. (Jill, Innovative Learning Environment Two)

> Often, it takes them a bit longer to establish relationships with, especially when you've got three different people, they are sort of a bit hesitant. But we find that once they've got a relationship with one teacher, then it's a very strong, very firm relationship. (Debra, Innovative Learning Environment Two)

Debra also said she thought Asian students are very determined and strong willed in regard to their learning.

> We have a large number of Asian students. They are very determined, very strong on the learning, and they really, really focus, really, really hard. I would think they certainly progress the fastest and, even in this environment [innovative learning environment], they still progress more. (Debra, Innovative Learning Environment Two)

When I asked Debra why she considered Asian students highly focussed and hardworking, she attributed their determination to their home backgrounds and environment.

> I think it is their historical background. They come from very strong academic backgrounds, and often both parents are here on scholarships. Often one parent will be studying, one parent will be teaching or lecturing, or one parent will be studying and one parent will be, you know, working other jobs and things like that. And they have a very, very strong academic focus for their children. (Debra, Innovative Learning Environment Two)

8.4.2.2 Commentary on perceptions of Asian students'.

Asian students' "personalities" in the classroom can very likely be an influence of their heritage. Countries that are within the Chinese cultural sphere, such as those in Eastern and South-East Asia, are strongly influenced by Confucianism. For example, according to the Confucian ethic, students rarely ask questions in open learning environments because they perceive teachers as authorities who should not be questioned in front of the whole class (Loh

& Teo, 2017). Asian students also generally prefer to ask questions in smaller group settings or in private to avoid "losing face" or losing respect in front of their classmates (Lee, 2011; Loh & Teo, 2017). They also tend to withhold their own thoughts to preserve either their "own face" (their own image), "other-face" (the other person's image) or "mutual face" (the images of both parties) (Walsh, Gregory, Lake, & Gunawardena, 2003). Once aware of these traditions, teachers practising Western-style pedagogy, which emphasises questioning, reasoning in relation to acquired knowledge, and challenging the views of others (Dixon, 2005), would soon realise that this approach to education presents challenges for Asian students. Cultural differences such as these can cause teachers to misinterpret Asian students' styles of learning as passive and introverted, when in fact these students' preference is to approach the teacher in private or refrain from sharing views that might oppose the teacher's.

Indian cultural mores relating to the student–teacher relationship is strongly influenced by mythology. Hindu epics such as *The Mahabharata* position the status of the teacher as higher than that of the father. Teachers are highly respected for their wisdom and knowledge. In East-Asian countries, students always address the teacher as "Teacher" or sometimes by their surnames, and use the respectful form of pronoun when talking to teachers (Lee, 2011). The epics, folktales and teaching traditions in Asian cultures that emphasise the hierarchical difference between teachers and students have been passed down from generation to generation and are the cornerstone of teacher–student relationships. Wursten and Jacobs (2013), having used the (Hofstede, 2001) cultural framework to analyse key issues in education, recognised the role of culture in attributing high status to teachers and argued that it is short-sighted for educational practitioners to overlook that influence in the classroom.

Research by Cortazzi and Jin (2001) supports the notion that different cultures have different learning styles. They claim that the term "passive learners" predominately used in relation to Asian students of Chinese heritage may be inaccurate. Instead, these students can be considered reflective learners, a style of learning that is very different from the Western style of active learning. For teachers, acknowledging that different cultures embrace different styles of learning is another important facet of providing meaningful learning for all the students in the their respective learning environments.

8.4.3 Theme 3: Peer teaching and student collaboration

8.4.3.1 Innovative learning environments

Interview questions asking teachers what they thought would help Asian students in innovative learning environments do well with respect to their English-language reading prompted an almost universal response: learning support from and collaboration with student peers. More specifically, teachers considered being in a larger classroom benefitted Asian students because they had more students to assist them through peer teaching. The more capable peer concept (Vygotsky, 1978), akin to students working collaboratively in groups, appeared to be a practice either gaining favour or already favoured by the participating teachers.

Sue, from Innovative Learning Environment Three, emphasised that because the two teachers in her space were rarely able to fully cope with the reading needs of all their students, peer teaching offered an important support strategy, and especially so for Asian students who were struggling to read English. Sue capitalised on the diversity within the classroom by making it an essential resource. She also said the open class environment made it easier for Asian students who spoke the same language to help one another.

> I think what I really like about this is, if a child comes in and is not really good at reading, they are free and, if comfortable, to speak in their own language to another child who is able to help them to in turn feel comfortable to speak in English later. There are always students here that will understand what they're saying. Which is really cool. (Sue, Innovative Learning Environment Three)

In similar vein, Jill (Innovative Learning Environment Two) believed that in open classroom environments, having a good number of students from the same non-dominant language background is an advantage because teachers can always find a student who is proficient enough in the language to help teach another student from the same background who is struggling to read the language. She said that peer teaching among the Asian students in her classroom typically saw the peer teacher helping for a short period or even spending up to half a day with the student requiring assistance. These little transitions from teacher dependency to peer dependency allowed the reading teacher to focus on other needs in the classroom, she said.

> You've got so many kids there. I mean, these days, in our classrooms, we've got a huge variety of nationalities. There's always a kid through our whole block who can speak the language. "Can you come and help out for a bit," you know. We always grab them and

> say, “Can you come and spend half a day?” It’s total immersion, and they do the best they can. (Jill, Innovative Learning Environment Two)

Debra stated that the large numbers of students in innovative learning environments meant her Asian students benefitted from being constantly exposed to the English language, even when they were not working directly with the teacher.

> I think it’s good because they are exposed to the other language all the time. You know, even if they’re not working with the teacher, they’ve still got other children working with them or talking to them. And I think it helps them learn a lot quicker the oral language. (Debra, Innovative Learning Environment Two)

Karen and Sharon, both from Innovative Learning Environment One, also thought that the mixed-ability groupings in their classrooms helped the Asian students. They said they expected students proficient in English-language reading to help those Asian students requiring language support in general or in regard to translation.

> We have mixed-ability reading groups, and so the children will support each other. We have quite a few children in here who can help translate with different things as well. The children help them in the mixed-ability groups. (Karen, Innovative Learning Environment One)

> A lot of them will find that there’s other students in the class that speak that additional language. For example, we have got a lot of children that speak Mandarin, and so some children that do speak Mandarin, their English is quite strong as well. So we use them to help translate. (Sharon, Innovative Learning Environment One)

The above interview excerpts indicate that the teachers in these innovative learning environments saw peer teaching and student collaboration as a way of assisting Asian students with their reading lessons. For the teachers, encouraging their more proficient students to support the less proficient students enabled them (the teachers) to focus more on whole-class reading instruction.

8.4.3.2 Traditional Single Cell School

The teachers in the traditional schools also emphasised the benefits of peer teaching. Like Jane from Traditional Single Cell School Two, they were using the buddy system (same-age peer tutoring) as a means of assisting Asian students experiencing English-language reading difficulties.

> We can buddy them up with another child or especially if they've come in and they've got very little English. (Jane, Traditional Single Cell School Two)

Rita (Traditional Single Cell School One) and Tracy (Traditional Single Cell School Two) agreed that peer tutoring helps teachers address the time-management and student-support issues that teachers in single-cell classrooms typically face, while Megan (Traditional Single Cell School Two) emphasised that peer tutoring develops student empathy among students and reinforces the peer tutors' reading skills.

> At my school, you've got a cross-section of a lot of different cultures, and some of them are very good readers. What I'll do then is I'll work with them, but I can't work with them longer than I work with other groups. So they all get me for a certain amount of time, and then I might do some peer teaching so other students will help them with what they're doing. (Rita, Traditional Single Cell School One)

> They know that they've got a buddy. So if they can't come to me because I'm working with guided silent reading, for instance, they will go to their buddy, and then wait until I'm available, and then they'll come to me. It's like they've got somebody there to help them, all the time. (Tracy, Traditional Single Cell School Two)

> The buddy system I find works really well. And having empathy for others and teaching other children skills reinforces their own skills and makes them actually think, "How am I going to explain this?" You know, sometimes when you've got somebody else who speaks the same language, it can be really helpful. There is strength in peer tutoring. (Megan Traditional Single Cell School Two)

8.4.3.3 Commentary on peer teaching and student collaboration

The teachers in both the innovative learning environments and the traditional schools saw student collaboration during reading lessons as an effective means of assisting Asian students with their English-language reading. In both learning environments, peer teaching, conducted either in pairs or groups, was the most common form of collaboration during these lessons. Peer tutoring meant assigning a more capable peer (or peers) of the same age group to tutor a less able peer (or peers) of the same age group. In essence, the teachers saw the peer tutors as an extension of themselves and helped with time-management.

Topping, Buchs, Duran, and Van Keer (2017) claim that a well-structured approach to peer tutoring allows for active engagement, increased student performance, and motivation for both

the tutor and the tutored. Because students of similar age are cognitively and emotionally closer, they are able to use mutual concepts and experiences when explaining something, a situation that can sometimes make it easier for students to understand their peer tutors than their teachers. Bowman-Perrott, Davis, Vannest, Williams, Greenwood, and Parker (2013) concluded from their meta-analysis of data pertaining to peer tutoring in elementary and secondary schools that peer tutoring has wide-ranging benefits, such as improving social and communication competence and self-concept. The study also emphasised that peer tutoring was a highly effective intervention for high-need, at-risk students and in traditional single-cell teacher classrooms.

While student-collaboration practices such as peer tutoring confirmed the participating teachers' appreciation that less proficient Asian students need assistance with their reading, there was little evidence in the interview data of the teachers taking these students' interests, learning preferences, pairing compatibility, and cultural values into consideration when assigning them to peer tutors of collaborative groups. For example, and as indicated in the previous subsection of this chapter, Asian students tend to learn differently from Western students (Campbell & Li, 2008; Lee, 2011). Western ways of working in collaborative situations and dealing with differences in opinion are dissimilar to how people from Asian work in these situations. Differences in thinking, expressing ideas and dealing with conflict are therefore all factors that teachers need to consider before assigning Asian students to groups or pairing them with more proficient learners.

Also, lack of familiarity with Asian learning philosophies can see teachers implementing learning methodologies that may not suit Asian students. Eastern learning methodologies have their foundations in Confucian Heritage Culture (CHC). Students from countries with strong CHC such as China, Vietnam, Japan, Korea, Singapore, Taiwan, Hong Kong and Malaysia are strongly influenced by the collectivist orientation (Nguyen, Terlouw, & Pilot, 2006) mentioned earlier in this chapter. This orientation values interdependence, hierarchical roles, respect for authority and places high value on group unity (DeCapua & Wintergerst, 2004). Consequently, teachers also need to take these orientations into consideration when assigning Asian students to collaborative learning groups (Dixon, 2005). A further consideration for teachers is that not all Asian ethnic groups draw on CHC in the same way (Park, 2016), so recognition of diverse learning preferences across these groups is also important.

The emphasis in New Zealand curricula on 21st-century student-centred education, where students are active participants in learning through group discussions, inquiry and project-based learning, favours Western-style learning methodologies and preferences. Nevertheless, understanding the learning cultures of Asian students and making gradual shifts in teaching pedagogies is important in keeping these students motivated while gradually acclimating them to this more Western-based style of education. As Neuman and Bekerman (2001) caution, teachers need to navigate those cultural resources in the classroom effectively to ensure the success of their pedagogical practice.

8.4.4 Theme 4: Teacher support for Asian students

8.4.4.1 Innovative learning environments

The creation of larger open-plan classrooms featuring innovative learning environments has given rise to the availability of more than one teacher per classroom. Innovative Learning Environment One colleagues Jill and Karen said that having more than one teacher in their classroom means teachers can rely on one another to assist Asian students who require help with their English-language reading. Unlike the single teacher of traditional single-cell classrooms, an innovative-learning-environment teacher collaborating with other teachers can step away from the larger group or groups of students to focus on assisting specific students in need of extra help.

> It's about having that time. If you were the only one in the classroom with your thirty kids, then you can't be pulled away that quickly. Because there are a couple of teachers available, you can call someone out for five, ten minutes and have the conversations or the teaching or just to set them up and then slot them back in. (Jill, Innovative Learning Environment Two)

For Karen, designating teachers within the classroom as learning coaches and another as the class teacher meant the class teacher could continue with reading instructions without having to pause to assist students needing extra guidance.

> They're [the students] quite good at time management, getting work completed. It's just sometimes it won't be quite what we were looking for. So that's why you pull them out in a little group, or the learning coach will go around one on one to explain. (Karen Innovative Learning Environment One)

8.4.4.2 Traditional Single Cell School

The teachers from the traditional schools spoke about the close relationships that can be fostered between teacher and students in a single-cell classroom. Jane (Traditional Single Cell School Two) and Emily (Traditional Single Cell School Three), for example, both said that the traditional classroom allowed them to get to know their students really well, and that the smaller number of students in these classrooms facilitated this process. Jane added that knowing her students well enabled her to support her students promptly when they needed extra assistance in reading.

> I know every single child in my class really well and I know what they enjoy. I know them as a learner; I know about them. I have that relationship, and if something's not going well, I can pick up on that and help support them with possibly doing something different at the time if they need to or having a bit of a time out. So, I think that's probably one of the things; definitely the relationships with the children, I think, is key to learning. (Jane, Traditional Single Cell School One)

> And you get to know the children a lot better instead of constantly sort of maybe rotating around, as they might do in the modern learning environment. I think you really do get to know the kids. (Emily, Traditional Single Cell School Three)

8.4.4.3 Commentary on teacher support for Asian students

For Asian students in innovative learning environments, having more than one teacher available to them presents the advantage of a one-on-one session with a teacher or a small-group interaction with a teacher. The close relationships that the teachers in the traditional schools said they fostered throughout the year with their students could be said to offer the same advantages for Asian students but in a different way. Close relationships provide teachers with understanding of how their students learn and how to provide them with personalised help. As Loh and Teo (2017) state, ready access to the teacher not only gives Asian students opportunity to clarify and to learn but also confidence that they are learning from the expert.

In high power-distance societies such as Singapore, Malaysia, Hong Kong, China, South Korea, Indonesia, Vietnam, Thailand and Philippines, the teacher as expert is a core concept in education (Loh & Teo, 2017). The power distance index, one of Hofstede's (2001) five dimensions of culture, states that power is distributed unequally among the individuals making up societies, cultures, and organisations. Across all levels of education in high power-distance countries, primary power lies in the hands of the teacher. In Vietnam and China, for example,

the teacher holds a very respectable position in society, sitting just below the king and above the father (Nguyen et al., 2006). Students from these heritage backgrounds prefer a teacher-centred approach, which means they stay quiet as a sign of respect. A related concept is that of "losing face"—a concept that Western educators often find challenging to understand. Not wanting to lose face discourages students from asking questions in front of the whole class. Teachers are seen as conversation initiators within the class and the effectiveness of the learning process lies in the hands of the teacher (Wursten & Jacobs, 2013). Hence, For Asian students, having access to and learning from a teacher is preferred, is considered as learning from the authority in the field, and is an essential part of learning.

However, the presence of a teacher and ready access to him or her alone does not necessarily signify quality learning. Teachers not only need to be well informed of the subject matter but also responsive to the students' educational needs, which includes knowing how best to engage and motivate them (Williams & Williams, 2011). Thus, within the context of reading support for Asian students, teachers must be able to tailor that support in ways that accommodate learning preferences aligned with the pedagogical beliefs and practices of the students' respective cultures.

8.4.5 Classroom noise

8.4.5.1 Innovative learning environments

When reflecting on the learning-related benefits and barriers of their learning environments for teaching English-language reading to Asian students, Wendy (Learning Environment Four, refurbished building) and Jill and Debra (Learning Environment Two, purpose-built school) specifically identified noise as an issue for their Asian students. Wendy spoke for all three of them when she said:

> Just the noise, you know, because there are so many extra kids. Trying to pick up new words that they've never learned before. (Jill, Innovative Learning Environment Two)

Debra said that the classroom noise interfered with her guided reading lessons for both her Asian and her English-only-speaking students. Her answer to the problem had been to conduct her reading lessons in one of the empty rooms within the innovative learning environment and to keep the door to the room shut.

Wendy, along with Sharon (Innovative Learning Environment One, refurbished building), specified that noise meant their Asian students often misheard or misinterpreted teaching

instructions. The teachers therefore used visuals to remind their Asian students of the tasks they need to complete during their reading lessons or on a daily basis.

> I normally have a list on my board. So today at reading these are things as your first priority and that's your second. Then once you've finished those two, you can do this. Just make sure it's written out there because if it's not written up there, or if I don't keep telling them, they'll just miss it. (Wendy, Innovative Learning Environment Four)

> It's all about visuals. I think that helps. It helps them because it gives them a sense of structure. I think for them especially, the language barrier can make it a little bit difficult for them to figure out where they need to be or what they need to do. So having the wall up there with their faces for, like, Monday, Tuesday, Wednesday, they know exactly where they need to be at that time. (Sharon, Innovative Learning Environment One)

Wendy identified noise as an even more cogent problem for Asian students who had recently arrived from overseas. She said they struggled with the disparity between the noise level in their classrooms in their home countries and noise levels in the innovative learning environment.

> I think the noise is probably an issue because I've talked to a couple of them. And they'll go, like, "So loud," just because they have obviously just come from overseas and their classrooms were quiet, and everyone was seated and very structured compared to what we have here. Over here it's very loose. Yeah, just the difference. I think that's a struggle for them a lot of the time. (Wendy, Innovative Learning Environment Four)

8.4.5.2 Traditional Single Cell School

None of the teachers in the traditional schools identified noise in the classroom as a problem during English-language reading lessons for their students, whether Asian or English-only-speaking. This could also be due to the fact that noise is easier controlled with a smaller group of students. However, three of the traditional-school teachers did express concern about the noise level in innovative learning environments, and what they saw as its adverse effect on reading. For example, Kate (Traditional Single Cell School One) said that noise in these environments [innovative learning environments] could distract students from their reading tasks, while Megan and Tracy, both from Traditional Single Cell School Two, said students experiencing challenges with their reading benefitted from being in less noisy classrooms.

> I think the noise level is less in single cells, and the ability for the children to actually become off task is less because I can see and hear them. (Kate, Traditional Single Cell School One)

> Just thinking about a collaborative environment, I think, for some children, the noise level and the amount of people or the amount of things that can distract them can be really hard for some children, especially children with language challenges. (Megan, Traditional Single Cell School Two)

> For those who have learning and language challenges, they need to be in an environment where it is very quiet for them to focus. (Tracy, Traditional Single Cell School Two)

8.4.5.3 Commentary on classroom noise

It was obvious from the interview transcripts that teachers in the innovative learning environments but not the traditional schools found noise an issue for their Asian students during English-language lessons. As noted earlier in this chapter, poor acoustics, even in the purpose-built and refurbished innovative learning environments, underpinned noise issues. In the innovative learning environments, poor acoustics, in association with large numbers of students engaged in different reading activities in large open spaces, exacerbated noise, according to their teachers. Teachers in the traditional classrooms found it easier to limit noise during reading lessons.

Wall (2016), in a report on the impact of classroom design and its effect on student outcomes, stated that poor classroom acoustics can have a negative impact on both teachers and students. With teachers that impact may manifest in terms of annoyance, less patience and less inclination to repeat information, and fatigue. Students may miss or misinterpret parts of lessons or tune out of them altogether, thus adversely affecting their educational achievement. In their investigation on the effects of classroom noise on the attention and speech perception of students listening through their second language, Nelson, Kohnert, Sabur, and Shaw (2005) not surprisingly found that processing information in English is more difficult for these students than for their English-only-speaking peers. The four researchers also observed that although response accuracy for both English-only-speaking students and students speaking English as a second language was lower in noisy surroundings, the average decline for the second-language students was four times greater. Nelson et al. recommended prompt identification of noise sources and keeping noise to a minimum during teacher-led instructions, especially in classrooms that include students for whom English is a second language.

8.4.6 Theme 6: Reading resources

8.4.6.1 Innovative learning environments

Several of the participating teachers from these environments said that access to culturally meaningful resources to support Asian students with their English-language reading would benefit these students. Sue (Innovative Learning Environment Three) observed that, for these students, having English-language books featuring their own cultures would encourage their engagement in the classroom.

> I would love to have some more books available in New Zealand that hark to their cultures and where they come from. So I have books that are about the Philippines and about China and about Hong Kong that they can relate a little bit to and say, "Ooh, I've been there", "Ooh, I've seen that" or "Ooh, I know about that." So it's finding those texts that they would really love to read and connect with. (Sue, Innovative Learning Environment Three)

Debra, also from Innovative Learning Environment Two, highlighted the apparent lack of such resources in classrooms. Like Sue, she thought that culturally-relevant resources could provide useful connections for her Asian students by enabling them to position their learning within the context of their own cultures and experiences.

> And sometimes, you know, some of the Asian children coming through, with the materials that we've got, they sort of go, "What is this all about?" Because they don't know what it's about. So that can be quite challenging. So if I have, like, books from their home countries or about their home countries, but in English, I don't know how that could be done. But that would definitely be an advantage for them. (Debra, Innovative Learning Environment Two)

Anna (Innovative Learning Environment Four) pointed out that, from her experience, the reading resources available within classrooms sometimes did not accord with the reading level of those students with language barriers. For example, she said, the content might be too difficult for them to understand or they might not possess the background knowledge to understand a culturally embedded text. Anna maintained that having on hand a variety of reading materials that address these problems would help such students succeed with their reading.

> I would say maybe access to appropriate resources, specifically like things they need to succeed in reading. Maybe the books are too hard to understand or maybe they can't relate to the text. Yeah, that sort of thing. (Anna, Innovative Learning Environment Four)

8.4.6.1 Traditional Single Cell School

Kate (Traditional Single Cell School One), like Sue, Debra and Anna, thought that access to more Asian-themed reading resources would benefit her Asian students' English-language reading by capturing their interest.

> I mean having a wide range of books that appeal to all students is important because not all children enjoy the topics that we select. If there is a limited range of texts available, then you are not always going to capture their interest. So, I think being well resourced with a variety of reading books is important. (Kate, Traditional Single Cell School One)

8.4.6.2 Commentary on reading resources

Several teachers from both learning environments wanted to support further their Asian students English-language reading by having English-language reading resources containing content relating to the students' cultural backgrounds and experiences. The same problem has been evident with regard to Maori and Pasifika students, but that situation has now begun to change as there are more such resources now being produced and published for these students. The teachers' thinking in this regard aligns with the simple view of reading, which identifies background knowledge as a key element of successful reading comprehension (Gough & Tunmer, 1986). It seems that texts predominantly designed with Western contexts in mind may hinder reading engagement and skills acquisition among students unfamiliar with the culture. Unequivocally, possessing background knowledge is useful when reading texts or books from a certain discipline or culture. For teachers teaching reading to Asian students for whom English is an additional language, having access to resources that are culturally familiar to these students gives teachers another tool with which to motivate these students' reading and help set them up for greater classroom participation.

8.5 Conclusion

The analyses of the teacher interview transcripts in this chapter brings context to understanding the pedagogical practices and challenges that teachers in innovative learning environments versus those in traditional schools using and experience when teaching reading and reading-related skills. The teachers who participated in this research were able to offer their perspectives based on their experiences teaching English-language reading lessons to Asian

students and English-only-speaking students in both types of environment. The findings presented in this chapter relate to the main themes emerging from the analysis of the interview transcripts. Taken together, these findings show the apparent centrality of teacher collaboration with respect to how well reading lessons play out in innovative learning environments for students in general and Asian students learning English as an additional language in particular.

The findings suggest that teacher collaboration during English-language reading lessons in the innovative learning environments was influenced by different teacher personalities, pedagogical preferences, their management of student behaviour and their tolerance for noise. In some instances, teacher collaboration encompassed either all of or just one or two of the following aspects: initial planning of reading programmes at the beginning of the term; planning throughout the school year; reading lessons; and reading resources. Of the teachers who worked collaboratively during reading lessons, one teacher took on smaller guided reading groups based on ability or mixed ability, while one or two other teachers assisted as facilitators for students requiring additional support.

Several of the participating teachers in the innovative learning environments saw teacher collaboration as the most effective method of teaching the larger number of students in these environments. Their comments indicated that in order to build good collaborative practices, teachers need to be good team players. They need to work on their teaching relationships within the classroom and to have a shared vision of learning outcomes for their students and how to help them achieve those outcomes. However, in some of the participating environments, teachers' personalities and operational styles undermined effective collaboration.

Teacher commentary also indicated that professional development for teachers transitioning into innovative learning environments from traditional environments is a valuable step forward. Several teachers said transition planning and constant conversations around collaboration and pedagogy contributed to positive perceptions of the new learning environment and that working extensively on setting up professional discussions had helped them personally work through their transitions.

Most teachers in the innovative learning environments spoke frequently of the issue of noise within the classroom as a distraction during reading lessons, especially for those students for whom English was an additional language. Teachers expressed concern that noise lessened the ability of these students to hear and understand new words, including how to pronounce them, and that this type of difficulty was especially relevant for Asian students in lower ability groups

and/or who had newly arrived in New Zealand from a non-English-speaking country. The findings from the interviews showed teachers were aware that effective behaviour management could lower noise levels in innovative learning environments. Designing and timetabling activities to ensure that no one activity at any one time generated noise sufficient to distract others was also seen as an effective noise-limitation response. However, these potential solutions require teacher communication and collaboration.

Interestingly, despite drawbacks such as noise in the innovative learning environments, findings presented in Chapter Seven show that the Asian students in the innovative learning environments tended to have better perceptions of teacher support during English-language reading lessons than the Asian students in the traditional schools. One possible reason for this pattern, mentioned by several of the participating teachers, is that the additional teachers in innovative learning environments give students access to multiple teachers for support in comparison to traditional schools where the classroom teacher manages 25 to 30 students unassisted most of the time. Several of the participating teachers also indicated that the larger number of students in innovative learning spaces offered their Asian students opportunity to immerse themselves in an English-speaking environment through the various collaborative activities on offer. According to these teachers, the constant exposure to the language that these students experience in these environments helps them improve their cognitive assimilation of English and better understand cultural aspects of the language.

The findings from the teachers' interview data also highlighted the value of peer teaching in both innovative learning environments and traditional single cell classrooms as a support for Asian students' progress in English-language reading. Teachers identified that, for Asian students, having access not only to peers but also more than one teacher maximises their reading support. According to the teachers, the larger number of students in innovative learning environments means that teachers can generally find a peer who suits the particular learning needs (e.g., reading level, linguistic background, cultural background, compatible personality) of a student in need of additional support. As for single teacher classrooms, additional support offered through peer support helps the teachers with time-management

In the next chapter, Chapter Nine, I draw together data from the three main-study findings chapters and evaluate and explain that information in relation to the research questions underlying my doctoral research.

Chapter Nine: Discussion

9.1 Introduction

A key focus of an innovative learning environment is that of facilitating a more student-centred space wherein students can develop the 21st-century learning skills that foster deep learning activities and encourage the development of student agency, collaboration and inquiry, often through the facilitation of digital technologies. Numerous studies have investigated relationships between the physical spaces of learning environments and teacher pedagogies. Some studies of innovative learning environments, for example, have highlighted concerns regarding effective, harmonious teacher collaboration in these spaces (see, for example, Mackey, O'Reilly, Fletcher, & Jansen, 2017; O'Reilly, 2016); others have looked at students' ability to hear clearly in these often perceived noisier learning environments (see, for example, Everatt, Fletcher & Fickel, 2019; Gumenyuk, Korzyukov, Alho, Escera, & Näätänen, 2004; Nelson & Soli, 2000).

Further investigation into concerns such as these may be particularly important for students who are learning to use a second language. Children and young people learning English as an additional language may be at greater risk than their peers for whom English is their first language of falling behind in more open and potentially noisier learning environments (Wall, 2016). This consideration was behind my decision to investigate whether and how innovative learning environments might affect reading and reading-related skills; reading comprehension, listening comprehension and vocabulary development of students for whom English is an additional language as well as those students for whom English is their first language. The additional language students whom I invited to participate in this research were all from Asian backgrounds. I also decided to investigate students' perceptions of their learning experiences and environments and teacher practices in these environments compared to students' perceptions of and teachers' practices in traditional schools (containing single-cell, sole-teacher classrooms). I furthermore wanted to explore if perceptions and practices differed according to "student type" (Asian students reading and reading-related skills as an additional language versus European/Pakeha students who spoke only English) and "environment" (innovative versus traditional).

In their report exploring associations between innovative learning environments and students' learning outcomes, Blackmore, Bateman, Loughlin, O'Mara, and Aranda (2011) agreed that further empirical evidence would be needed to study the connection between these relatively

new environments and learning outcomes. The need for such investigations is still apparent. Articles in the media (Eder, 2018; King, 2019; Walters, 2018) point to an ongoing debate about how well innovative environments support student learning. These articles report parents' and some educators' concern that aspects of innovative learning environments do not serve students' learning as well as traditional single-teacher classrooms do. Parents' concerns have focussed, for example, on their child having sufficient access to teachers and on elevated noise levels due to the large number of students and the physical layout of the space.

Such concerns have resulted in some parents removing their children from schools that have moved away from traditional to innovative learning environments. Instead of premature dismissal based on speculative ideas of the innovative approach, arguably inflamed by media as suggested above or some schools' refusal to innovate their learning environment (Wells, 2018), we need robust evidence-based research that addresses the veracity of the concerns, especially in terms of whether innovative learning environments are detrimental to or supportive of student learning. Such research would help educational policy-makers, teachers and parents make informed decisions about the educational utility of these environments.

The current lack of concrete measurable evidence is often seen as a contributor to cases against the establishment of innovative learning environments. The absence of such evidence makes it difficult to determine which side of the debate has credibility. As I explored (through, for example, relevant literature) the need for this type of evidence-based research, I specifically noted the lack of quantitative data measuring subject-based learning progress in innovative learning environments compared with subject-based learning progress in traditional schools. I also observed the need for evidence-based quantitative data specifically measuring the learning progress of students from second- or additional-language backgrounds and wondered if that progress might be more disadvantaged in innovative learning environments than in traditional environments.

9.2 What do the results show?

The overarching finding from the data I collected was that, despite some minimal differences in scores on the pre- and post-test reading achievement measures between the two school types (innovative learning environments versus traditional single cell schools) and between the two student groups (Asian students versus English-only-speaking students), there was no strong evidence to indicate that innovative learning environments had a negative effect on growth in reading and reading-related skills over the period of the research. Indeed, in contrast to the

types of concerns about innovative learning environments noted above, my research suggests that the large class sizes common in these environments is not an issue for students' development of English-language reading, listening and vocabulary skills and that this outcome was evident for both groups of students (English-only-speaking and Asian) who participated in the study. This inquiry therefore suggests that student learning was not compromised by their being in innovative learning environment and that gaining reading skills in this type of environment is feasible.

Nonetheless, it is important to acknowledge that large class sizes and the potential lack of teacher support can be unsettling for many parents, especially if their source of information is derived from data-free newsprint. Concerns such as these are compounded by the ongoing achievement gap evident in the New Zealand data from the large-scale international assessment study of reading achievement known as PIRLS (Progress in Reading Literacy Study). The New Zealand data consistently show Māori, Pasifika and students from various second-language background groups performing at the low end of the achievement scale (Mcdonald, 2006). Concerns over this situation within the context of innovative learning environments are similar to those raised by Peterson (1979) during the open-plan classroom era of the 1970s. Peterson argued that lower-ability students were less likely to do well in open-plan spaces and so might require greater direct instructional approach in comparison to high-ability students. Teachers, Peterson continued, therefore needed to be especially mindful of their students' individual learning needs and to tailor learning to those needs.

The findings drawn from my analysis of the teachers' comments during my interviews with them and from my analysis of the students' responses to the student perception questionnaire revealed a disparity between the students' views and the teachers' views of teaching learning in the innovative learning environments. One of the main disparities was that teachers' concerns about noise were not shared by the students. More importantly, the reading growth data showed that teachers' perception that noise presented a barrier to successful reading outcomes in innovative learning environments was not supported by the students' reading achievement results, given that growth was similar in both environments. The findings also suggested that, when necessary, teachers found ways to teach reading in quiet spaces in some of these learning environments and such practices could have contributed to the disparity between students' views and teachers' views.

The concerns that the teachers expressed about noise in the innovative learning environments may have grown out of uncertainty about best-practice pedagogical approaches in innovative learning environments or possible misconceptions about these environments. Uncertainty may be particularly evident among teachers transitioning from traditional classrooms to innovative environments. The failure of the open plan movement in the 1970s, amplified by media reports and commentary on innovative learning environments may have led teachers to identifying aspects of these environments, such as noise, as problematic. Yet, as my observations during my visits to observe reading lessons in the participating schools' classrooms revealed, the strategies the teachers in the innovative environments were using to manage noise were not very different from the strategies the teachers in the traditional schools were using. These strategies included constantly reminding students to use their "inside voice" or "whisper voice" to keep the noise at an acceptable level. I also noticed that in attempting to curb noise levels during reading class, some teachers resorted to a more teacher-centred pedagogy in which the teacher talked and the students listened, with limited opportunities for student collaborative activities.

The disparity between the teachers' view and the students' view pertaining to noise could thus indicate that the teachers' behaviour management strategies to reduce noise levels were successful. An alternative explanation is that students are simply not as aware of the noise around them their teachers and parents might expect them to be, and that noise is therefore more of an issue for teaching than for learning. This alternative explanation is also supported by the overall finding that the students' performance on the reading measures was not substantially different across environment type (innovative versus traditional) and student type (English-only-speaking versus Asian).

There could, however, be some unintended detrimental consequences of teachers in innovative learning environments trying to limit noise that they perceive as a distraction to student learning during reading activities. Their focus on noise management could see them scaling back on fully immersing themselves in collaborative practices, such as group activities and discussions, and involving not only their students but the other teachers in the learning space. They may plan activities in accordance with the level of noise generated instead of practising more collaborative, creative types of activities, thereby limiting opportunity for 21st-century learning set down in the New Zealand Curriculum. Essentially, teachers could retreat to single-teacher classroom practices, as I observed in Innovative Learning Environment Four. Apprehensions to fully immerse in pedagogical practices envisioned for the innovative learning environments

could stem from concerns such as students' inability to distinguish specific sounds during reading because it is masked by other competing noises, distractions and loss of concentration (see Everatt, Fletcher, & Fickel, 2019; Evans & Maxwell, 1997; Nelson & Soli, 2000).

Certainly, the focus on noise during reading lessons encouraged most of the teachers in this research to resort to reading activities that were low in noise level. They therefore had students working independently or within small groups on specific tasks, an approach which the teachers nevertheless tended to perceive as self-directed learning on the part of the students. Teachers ensured students knew exactly what they needed to do as part of their reading tasks; they only had to give instructions at the beginning of the week and the students proceeded to carry out the tasks throughout the week, with the teachers providing a facilitative role as needed. Leadbeater (2006) refers to this type of self-directed learning as shallow personalised learning or "mass customisation". Although these activities are governed by teacher input and self-directed to an extent, they leave little room for students to exercise choice over their reading activities and to explore further through experiential and inquiry-based learning.

Although innovative learning environments are intended to be more fluid teaching and learning spaces, allowing for more flexibility for innovation (Bisset, 2014), the reading-related teaching and learning methods appeared, in general, not to be distinctively different in the two learning environments that featured in my study. Although these pre-planned activities in Innovative Learning Environments gave students control over what they wanted to accomplish during the independent reading sessions, it did not extend beyond giving students the opportunity to select tasks from a pre-planned set of activities. To facilitate student centred learning, students need to play a part in the decision making process of what, why and how learning takes place. Green, Facer, Rudd, Dillon and Humphreys (2005) stressed the learning environment should be flexible enough to enable student to work beyond the parameters of a conventional classroom by connecting resources through the affordance of technology and that allows learning from multiple sources. The lack of emphasis on digital technologies as a means to extend teaching and learning suggests that teachers need to demonstrate greater understanding of student centred learning and develop these skills within their reading programme to extend reading beyond the classroom. Having said that, it is also possible that the teachers based on their professional experience do feel the need to intervene through the pre-planned activities to keep students in line with the national reading curriculum levels.

While noise has become an area of discussion for many teachers in this research, teachers need to shift their focus from the noise levels that is generated within the classroom and focus more on exploring students' personal interest in reading that could increase their engagement in reading and in turn reduce noise generated from off-task behaviour. During the interview, teachers who implemented interest based learning indicated that such strategies were successful in keeping students engaged and task focused. However, teachers needed to ensure that students had the right level of reading activities selected and suitable ability or mixed ability groups that could work with. This was done through the trialling of different combinations of groups and activities (such as alternating reading and writings tasks within the smaller groups) to create a more conducive and less noisy environment for reading. These are some of the steps that could be replicated by other Innovative Learning Environments in ensuring students are engaged in reading. However, in saying that it is important for teachers to ensure that students have acquired sufficient reading skills through explicit teaching before being able to expand on interest based reading (Rowe, 2006). Ultimately, the teachers would have to decide on the best pedagogical practices that would suit their students. In a shared space, teachers consult each other and develop solutions pertaining to their teaching pedagogy.

Concerns pertaining to teacher support for potentially struggling readers in larger classroom with larger number of students was also addressed in this research from a student's perspective. However, the data seems to suggest otherwise with Asian students in both Year 5 and Year 6 in Innovative Learning Environments indicating almost similar perception of teacher support. However, the teachers in Traditional Schools highlighted the difficulties involved in teaching a wide disparity of reading levels in the class and inadvertently there is a greater possibility for students needing additional help to receive less teacher support. They further implied that it is difficult for a single class teacher to support the reading needs of students who need additional help, due to the limited time they have with each student as they teach 20-25 students without collegial support. Arguably, this lack of fellow teacher collegial 'on the spot' support could result in students in Traditional Schools not getting sufficient teacher time increasing the possibility of 'at risk' students to be better supported in Innovative Learning Environments. Asian students' attitude towards reading in Innovative Learning Environment that is slightly better than their peers in Traditional Schools could be a contributing factor of the support they receive in class. Difficulty in overcoming the time constraints of meeting the wide range of student learning and behavioural needs compounded by other tasks such as assessments and projects can induce stress for the teacher. The stress induced by the job demands of a teacher

can make the teacher less engaging and enthusiastic, contribute to poor student outcome, and cause a high turnover in teachers that can be harmful to lower performing students (Greenberg, Brown and Abenavoli, 2016). Innovative Learning Environments could be a way forward in sharing the workload between teachers as it decreases the need for individual planning and emphasises more on team planning, sharing resources and ideas and enabling teachers to teach to their strengths.

Nevertheless, noise can be a deterrent factor in reading when teachers have to teach in an Innovative Learning Environment and it may seem reasonable to assume that students with a second language background would struggle more in an open and potentially noisy environment. It can be argued that students in lower primary years or struggling readers who are still developing their basic reading skills could perform more poorly in noisy environments (Evans and Maxwell, 1997; Nelson and Soli, 2000; Everatt et al., 2019). However, data pertaining to the reading growth of Asian students in Innovative Learning Environments does indicate otherwise. One possibility of such findings could be that by the time students reach Year 5 and Year 6 of schooling, they are likely to have strong foundational skills in reading that they would have acquired in their lower primary years. Therefore, noise may not be a deterrent factor to reading. Consequently, emphasise on a constructive approach advocated by the current teaching philosophy in Innovative Learning Environments may not be the best approach for struggling readers. These struggling readers would benefit from a more didactic style teaching before they can participate in a more student centred constructive learning (Rowe, 2006). This does not suggest that Innovative Learning Environments are not suitable for struggling readers. On the contrary, the different space configuration in Innovative Learning Environments in comparison to Traditional Schools could potentially provide a quieter and less distracting space for children through the break out rooms or sliding glass doors depending on layout configuration. In comparison, some traditional schools may have less square footage per child and have poor sound insulation for struggling readers to develop their reading skills. In fact, the teachers' interviews pointed out that the larger number of students also allowed for more targeted peer support and possibly greater language immersion as they are exposed to the English language that is continually generated around them and supports their reading.

9.2.1 Teachers with more experience of innovative environments had more positive perceptions of teaching in them

Consistent with findings from Fletcher and Everatt (2021), the teachers in my study who had higher levels of experience of teaching in innovative learning environments (based on the

teacher demographic information) had more positive and supportive perceptions of teacher collaboration. Teachers with lower levels of exposure to these environments had a more closed view of collaborative practices. The less experienced teachers seemed more reluctant than their more experienced colleagues to work collaboratively. For example, of the teachers in the innovative environments, those in Innovative Learning Environment Four had the least amount of teaching experience in this type of environment. Their comments during my interviews with them and my observations of them during reading lessons indicated they were the teachers least inclined to work collaboratively and they preferred the students to work on their reading within a homeroom class. These teachers attributed their preference for relatively little collaboration to the poor acoustics in the refurbished building housing the innovative learning environment. They therefore perceived the need to manage student behaviour in ways that minimised noise, and the ways they preferred were akin to teacher practice in traditional single-cell classrooms. They also considered that the best way to anchor their students' learning was by keeping a close check on the students' progress. They apparently felt they could only do this by having the students work in small reading groups managed by the homeroom teachers, again typical of traditional school pedagogy.

Interestingly, the teachers in the other innovative learning environments set in refurbished buildings, despite also expressing concerns over noise and student distraction, indicated that these problems could be addressed by the teachers collaborating with one another. They particularly identified collegially determined student behaviour-management skills and co-planning of lessons that took account of the potential noise level each activity might generate.

In general, the teachers with more experience of teaching in innovative learning environments seemed to be having a greater degree of success in directing their teaching pedagogy towards collaborative practices. They appeared to have worked with one another to re-evaluate their teaching practice by determining the teaching styles and behaviour management of students most conducive to facilitating good learning outcomes for their students within these environments.

In keeping with the current discourse in innovative learning environments, (see for example (Alterator & Deed, 2013; Deed & Lesko, 2015; Mulcahy, Cleveland, & Aberton, 2015; Benade, 2017), it seems that simply having an innovative learning environment (whether purpose built or in a refurbished building) is not the key factor in directing pedagogical practice towards collaborative teaching. Rather, it can be argued that the key consideration centres on the

supports that teachers need so they can work collaboratively in these environments towards a pedagogical shift that is in line with the 21st century education model. If so, teachers new to teaching in innovative learning environments could benefit from having more experienced colleagues coach and mentor them. Teachers with more experience probably also have more confidence to work out creative ways of facilitating teacher collaboration and of melding teachers' diverse pedagogical styles in ways that ensure consensual, collegial teaching focused on achieving mutually agreed learning outcomes for students.

9.2.2 Teachers awareness of Asian students' learning needs did not always translate into relevant pedagogy

The stereotypical views of the Asian student as being passive, introverted, determined, hardworking, requiring more prompting to participate and generally reluctant to directly approach the teacher for support were prevalent in the teacher-interview data. Teachers seemed to think that best pedagogical practice with Asian students was teacher-centred. These assumptions led to teachers constantly checking the Asian students' reading progress and on-task activity. This checking was particularly evident in the large (in terms of physical space and number of students) innovative self-directed learning environments where the teachers thought the Asian students might be especially reluctant to approach teachers of their own volition.

Nonetheless, the increased attention and support for Asian students made possible by several teachers in the innovative learning environments appeared to be a positive factor for these students. The students' positive perception of teacher support in these environments indicated that they welcomed these efforts. Also, this direct approach by the teacher may have aligned with a view held in a number of Asian cultures that the teacher is the authority, and as such is someone who comes to the student rather than the other way around. However, while such intentional attention seems highly important for Asian students, and especially those with second-language backgrounds, it may have meant reduced communication and checking-in with English-only-speaking students struggling with reading. This consideration could explain the less positive perceptions of teaching support among the English-only-speaking students in the innovative learning environments.

According to McGrath, Stock, and Butcher (2007), New Zealand has been generally ill prepared for the rapid increase in Asian students eventuating from increased migration into this country by people from Asian countries. This lack of preparedness within the context of education was apparent in the interview commentary from those teachers who struggled to

identify the teaching pedagogy they thought would best support the teaching of reading to Asian students in innovative learning environments. As noted in the interview findings chapter of this thesis, expressions such as “I think”, “I would assume”, “Maybe”, “I don’t know”, “They seem all right” were evidence of this struggle. The question could have come as a surprise to the teachers as they may have an assumption that the current scope of support for second language learners should be equally applicable to Asian students as any other group of second language learners.

In general, the teachers seemed to have a “broad-sweep” understanding of the learning needs of their Asian students, with those understandings based on the aforementioned assumptions about Asian learning. However, as Liang, Dai, and Matthews (2020) remind us, teachers need to continue to recognise that all students are unique, even if they perceive (rightly or wrongly) that the backgrounds of certain groups of students are relatively homogenous. In New Zealand, the term “Asian student” itself is a broad one. Asian students in New Zealand may be Asian-New Zealanders, that is, students of Asian descent, born in New Zealand and indirectly exposed to Asian culture through their parents. Or they may be international or immigrant students from Asian countries. And within those groupings are a plethora of ethnic, cultural and religious identities, among others. I consider that if teachers had better understandings of the diverse student identities among the Asian students within their classroom, they would be better able to articulate and develop reading activities suited to the learning needs of these students.

Tan and Goh (2006) advise that in collective cultures such as Chinese, Japanese and South East Asian, learners typically view themselves as an extension of a group and prefer working within their own cultural groups. This practice gives these learners a sense of affiliation and security, especially when attempting tasks that may be challenging. I saw evidence of this when I administered the reading assessment battery and the student perception questionnaire to the students who participated in my study. Most of the Asian students were more inclined to sit with other Asian students during the testing and completion of the questionnaire. Understanding these cultural differences and building them into ways of learning within the classroom seem vital steps towards improving the quality of the learning experiences of Asian students from diverse backgrounds. The culturally responsive model of the “braided rivers” developed by Macfarlane, Macfarlane, and Gillion (2015) has relevance here. The model advocates the importance of having different cultural knowledge systems function both separately and as integrated entities. For example, most Asian students liked group work where they could discuss ideas, improve their English language skills and cultural knowledge,

challenging some of the stereotypical views of Asian students being passive; but disliked group assignments as they felt that it was unfair for those who worked very hard in completing the tasks (Campbell & Li, 2006). Having such knowledge, teachers could perhaps consider students' needs and beliefs prior to organising reading groups and reading assignments within the whole class-reading programme to provide a more balanced approach to support Asian students.

Although, in my study, the comparison of the reading assessment data for the Asian students with the assessment data from the English-only-speaking students showed no discernible difference in performance between the two groups, these results should not suggest Asian students in New Zealand innovative learning environments are never disadvantaged or that they never need reading-related support. Nor should this finding lead teachers to embrace the long-standing discourse of "model minority", a term associated with Asian Americans. This concept was first used by William Peterson in an article he wrote for the *New York Times* in 1966 (Peterson, 1966). Peterson wrote of the remarkable determination, strong work ethic and advancement of the minority group of Japanese people in America despite the challenges they faced there. This narrative of model minority soon came to refer to the Asian American population in general, with all people of Asian descent seen as superior to other minority groups in terms of educational achievement (Wong, 2015). This stereotypical view has led to the perception that Asian students are high-achieving students. When held by teachers, that perception may see teachers ignoring the individual needs of Asian students and thus creating stress for those Asian students who may not be in the high achiever category (Wong & Halgin, 2006).

As Park (2000) cautions, differences with Asian groups of students may be far more complex than are readily observable and therefore should not be overlooked by educators. For example, students or their parents who are from refugee backgrounds predominantly from South-East Asian countries (Cambodian, Hmong, Lao, Vietnamese) may lack experience of formal education and English-language skills, whereas students from East Asian backgrounds (Chinese, Japanese, Koreans) are more likely to have been exposed to formal education and English Language (Chow, 2011; Ngo & Lee, 2007).

Because Asian students can differ in their experiences and perceptions of learning, teachers again need to avoid the stereotypes and look to supporting individual students in accordance with their language-learning and academic backgrounds. Another point of relevance here is

that the stereotype promulgated by the model minority myth could weaken the case for research on Asian students' experiences and learning in New Zealand schools (Museus & Kiang, 2009), thus compromising best-practice pedagogy for these students and from there, their learning outcomes. These considerations seem especially cogent given the increasing number of students from Asian backgrounds in schools across New Zealand.

It is common for an Asian student in New Zealand to be taught by a teacher who does not share the same common cultural background. Hence, there is a possibility that many teachers lack knowledge of how students from these different cultures learn and construct knowledge. Studies have suggested that students achieve better in classrooms of teachers who have had formal multicultural education to understand their students' culture and lived experiences (Banks et al., 2005; Sleeter, 2001). On the contrary, when teachers lack knowledge of their students' culture and learning background, this may put at risk the academic performance of their students (McKown, Gregory, & Weinstein, 2010). Therefore, it is crucial for teachers to understand the likely differences in learning preferences amongst children from different cultural backgrounds and how this can influence their current learning (see discussions in Darling-Hammond & Bransford, 2007). As the student population in the New Zealand classrooms becomes more diverse, it is important for the teacher education programmes to incorporate courses that instil cross-cultural competence to assist teachers in managing the diverse student population.

9.2.3 Students perceived both classroom environments as conducive to reading whereas teachers did not

The study results showed no discernible difference across learning environments (traditional versus innovative) with respect to the participating students' perceptions of the conduciveness of their type of classroom to learning English-language reading. The result is an interesting one given the teachers' apparent perception of innovative learning environments as less conducive than traditional classrooms to reading. Although many teachers are slowly adapting to the pedagogical practices suitable for innovative learning environments and are gaining more understanding of student learning within this type of space, the above finding suggests that some teachers have yet to feel confident in it.

The shift from traditional-school pedagogy to innovative-environment pedagogy is a complex process and one that key players within the education sector should not underestimate. Some teachers may need more evidence to persuade them that innovative learning environments are conducive to long-term improved student learning outcomes. And, once committed, they may

need ongoing professional development and support to help them make needed changes to their teaching methodologies. It is therefore essential for educational policymakers and school leaders to develop and implement structured systems that support teachers as they embark on the transition from traditional single-cell classrooms to innovative learning environments.

9.3 Limitations of the research

The main limitation of the research is the small number of Year 6 Asian participants in the traditional schools. Obtaining data from schools in Christchurch that were still operating traditional single-teacher classes was challenging, given that Christchurch is at the forefront of the transition into innovative learning environments. The fact that the majority of these schools wanted only their Year 5 students to participate in the research compounded the problem. Caution should therefore be exercised when interpreting the research findings relating to the Year 6 students. Future research concerning students with second-language backgrounds in innovative learning environments could expand beyond Christchurch to include other schools in New Zealand.

A second limitation was that since the overarching intention of the research was to explore the design related factors that influenced teachers' pedagogical practices in reading, the research did not probe widely into teachers' beliefs and philosophy pertaining to teaching reading. Nonetheless, the findings did suggest that the teachers' beliefs and philosophies influenced their practices.

The third limitation of the research concerns the tendency for questionnaire respondents and interview participants to respond in a manner that they feel is acceptable or what they think the interviewer wants to hear instead of relating what they really think or perceive (Dempsey, 2010; Krefting, 1991). Consequently, when answering the student perception questionnaire, the students may have responded in a manner they deemed socially appropriate. This type of response is especially concerning when students are asked to comment on aspects of classroom learning that involve the class teacher, which in the case of my study included teacher support, equity in the classroom, and noise levels. In an effort to limit socially acceptable answers, I assured the students and the teachers that their responses would be kept anonymous. Students were allocated numbers instead of names when they responded to the questionnaire. They also answered the questionnaire in a separate room with no teacher present.

Fourth, the research relating to the Asian students would have benefitted from having a focus-group discussion in each school as a follow-up to the structured questionnaire. These groups

would have allowed me to delve deeper into these students' perceptions of the conduciveness of innovative learning environments for their acquisition of English-language reading skills. For example, I could have encouraged the students to talk about specific features of their learning environments that they thought enhanced or challenged their learning during their reading classes. Further careful probing might have provided more information about the specific details of the support they received from teachers, the type of support they preferred, and what they saw as the advantages and disadvantages of having several teachers in the one learning space.

Finally, the fact that the students' mean scores on the vocabulary post-test were lower than their mean scores on the pre-test suggests the post-test was considerably more difficult than the pre-test. The post-test included words that are generally less frequently known and used by students in Years 5 and 6. The test needs to be revisited, with the possibility of drawing words from the first 9000 words (frequent and less frequent words suitable for 9- to 10-year olds) from Nation's Vocabulary Size Test (Nation & Beglar, 2007), as both pre and post-tests to see the growth in vocabulary instead of using two sets of tests with different test items.

The following chapter, Chapter Ten, presents recommendations arising out of the findings as well as suggestions for future research and an overall conclusion.

Chapter Ten: Recommendations, Future Research and Conclusion

10.1 Recommendations

10.1.1 The pivotal role of school leadership

Teachers in the participating schools who had (i) engaged in professional learning and development courses on pedagogy in innovative learning environments before fully immersing themselves in those spaces and/or (ii) had been able to take risks and trial pedagogical methods within those spaces were the teachers most positive about teaching reading in these spaces. They were also the teachers most likely to have better teacher collaboration and to be least affected by noise concerns associated with the learning environment.

School leaders thus have a pivotal role to play in ensuring that teachers are equipped with the necessary skills to leverage innovative learning environments to support effective 21st-century teaching and learning. Teachers need to familiarise themselves with how these innovative learning spaces can be best used to promote learner agency. As research (see for example Benade 2017; Alterator & Deed, 2013; Saltmarsh, Chapman, Campbell, & Drew, 2015) points out, the innovative learning space itself does not contribute to effective pedagogies; rather, the crucial contributor is the teacher's ability to identify and then effectively implement the teaching and learning strategies that optimise teaching and learning for all learners.

Because teacher collaboration is a feature of effective pedagogy within innovative learning spaces (see for example Wall, 2016; Fullan & Langworthy, 2014)), school leaders also need to help teachers work collegially and compatibly. To facilitate this process, it is important that leaders consult with teachers to ensure harmonious teacher pairings/groupings in these spaces. School leaders furthermore need to cultivate ongoing professional discussions so as to better identify, understand and overcome any challenges the teachers experience when working in these spaces and to encourage them to take informed risks associated with trying out new pedagogies.

10.1.2 The need for teacher education

Teacher education also, of course, has an important role in equipping teachers to work effectively within innovative learning environments. Course-based preparation and practical-placement sessions for pre-service and in-service teachers will assist teachers as they transition from traditional into innovative learning environments. For example, teacher education providers need to ensure that pre-service teachers experience at least one placement in an innovative learning environment. With respect to the reading and the reading-related skills

context of my study, teacher education providers also need to ensure pre-service and in-service teachers develop reading strategy instructions that align with 21st-century skills, that is, have a strong emphasis on student personalised, self-regulated learning. It is also equally important to have an understanding of culturally responsive pedagogy for initial teacher education and ongoing professional learning and development. This should enable teachers to work effectively with second language learners from varying backgrounds, leading, potentially, to teachers providing the type of support required within increasingly diverse classrooms of all types.

10.1.3 Sharing best pedagogical practices

Dissemination of best practice in innovative learning environments, including those relating to facilitating learning among students for whom English is an additional language, is useful in helping schools build their knowledge and resource banks. My review of relevant recent research in this area (see Section 2.3 of Chapter 2) indicated a dearth of research in New Zealand on the learning experiences and learning outcomes of second-language students in innovative learning environments.

Best practices when teaching reading in innovative learning environments should be circulated and widely available to schools through readily accessible outlets such as the Ministry of Education website and local school and teacher meetings. Practice-related information could include proven teacher and student collaboration methods, reading resources suitable for innovative learning environments, behaviour management approaches during reading lessons within those environments, and specific strategies for facilitating English-language reading skills among students from second-language backgrounds. These strategies would benefit schools and teachers newly embarking on teaching reading in innovative learning environments. They would also benefit teachers who have predominantly taught English-only-speaking students and who may therefore not have the skill set to teach reading to small numbers of second-language learners in their schools. Sharing best practice should also give teachers greater confidence to experiment with innovative approaches to teaching reading, to evaluate the outcomes of those approaches and to make necessary adjustments.

10.1.4 Supporting Asian students in innovative learning environments

My research pointed to several useful means of supporting, within these environments, the English-language reading skills of Asian students for whom English is an additional language. First, collaborative teaching allows one teacher to focus on teaching guided reading to a group

of students while the other teacher can manage the other children who are working independently. Working together collaboratively gives teachers opportunity to converse about students' progress and plan lessons accordingly. Second, student peer-teaching strategies can provide teachers with another means of supporting Asian students with their reading. Teachers need, however, to find peers who are compatible with the students requiring additional support. Compatibility indices include speaking the same second language, having the same country of origin, and harmonious personalities. Peer teaching is also a good way to support students who are new to the country or have basic reading skills. Peers can offer translation in the student's first language, thereby assisting that student with the initial stages of reading and assimilation into the classroom. The typically large number of students in innovative learning spaces also means Asian students can immerse themselves in an English-speaking environment through various collaborative activities.

10.1.5 Supporting English-only-speaking students in innovative learning environments

The research in this thesis found that, in the innovative learning environments, the Asian students generally performed slightly better than the English-only-speaking students in reading and reading related skills had more positive perceptions of their learning experience and environments. Although the differences may seem minimal, it is important to investigate these anomalies further. This pattern of Asian students outperforming English-only-speaking students or having more positive perceptions of their learning experience and environments was less evident in the traditional schools. A possible reason for this difference could be the tendency for teachers to focus more on students who are potentially "at risk" in larger classroom settings, such as students who are learning through a second language. As a consequence of this focus, teachers may place less emphasis on supporting the reading development of English-only-speaking students, including those who are struggling with their reading. If this supposition is validated by further research, this tendency for lesser support could be detrimental for English-only-speaking students if left unchecked.

10.2 Suggestions for future research

It became evident in the reporting of the findings that some teachers had a particular approach to teaching reading and their approach was resistant to change, despite the shift to teaching in an innovative learning environment. These teachers' personal beliefs and philosophies pertaining to teaching reading and their resistance to change were seen to influence the level of collaborative practices in the classrooms. For this reason, the findings from this research should pave the way for future research that explores the area of teachers' beliefs and

philosophies and its influence on reading instructions and collaborative practices in innovative learning environments. For example, this may involve examining beginner and experienced teachers' beliefs and philosophies in literacy instruction/practices and culturally responsive teaching. Research could also further explore how individual beliefs and philosophies can evolve to become a group belief or philosophy over time. How these beliefs relate to practices in innovative learning environments would then be assessed through observation or further interview questions. It may be that certain teacher beliefs may influence the extent of the change to effective literacy practices in innovative learning environments. Culturally responsive teaching makes working with children from different cultural background easier, no matter the architectural structure of the learning environment (Liu, 2016; Neuman & Bekerman, 2001).

This research focussed on the broad-based definition of Asian peoples provided by StatsNZ (Ethnic Group Profiles, 2013). However, as stated in the discussion chapter of this thesis, the reading abilities of Asian students predominately from South-East Asian backgrounds, such as Cambodian, Laotian, and Vietnamese (Chow, 2011; Ngo & Lee, 2007), may require further investigation, because they are less likely than people from other Asian backgrounds to have had exposure to the English language.

It would also be interesting to include Asian parents' voices to add depth and insight to perceptions of learning in general and learning to read in particular within innovative learning environments. Asian parents, especially those from a migrant background, come to New Zealand with a set of beliefs and expectations on how schools should operate. Asian parents' educational philosophies generally have their foundations in Eastern traditional methodologies. Gaining insights from those perspectives and the implications of those insights for Asian children being educated in Western education systems would be valuable.

My doctoral research also examined, through use of listening and reading measures, growth in students' literal and inferential reading comprehension. With research in the area of 21st-century literacies gaining increasing traction, a useful addition would be research exploring the impact of technological advances on students' reading skills and habits and how these tools are being and can be used to develop students' critical thinking, communication, collaboration and creativity, all 21st-century skills.

10.3 Conclusion

Securing empirical data on learning outcomes in innovative learning environments in comparison to traditional single-cell single-teacher classrooms is proving to be vital as more schools transition to open-plan spaces with their multiple teachers and larger numbers of students. A common assumption is that larger classrooms comprising learners from a number of traditional-sized classrooms disadvantage student learning, and that this disadvantage is especially marked for those students who are struggling learners. This assumption, fuelled by media giving negative accounts of learning within these spaces, has caused anxiety amongst parents. Many parents remain unconvinced that innovative learning environments may be better suited than traditional classrooms model to facilitating learning outcomes for students in the 21st century. For example, a particular concern that may need to be addressed in this regard is the notion that innovative learning environments may be contributing to New Zealand's long tail of underachievement in reading.

The current research combined findings from the assessment measures, the student perception questionnaire and the teacher interviews to provide an empirical basis for arriving at a more informed perspective on the three main research questions informing this study. First, the study indicated that innovative learning environments need not be a barrier to learning and developing reading and reading-related language skill, even for students from a second or additional language background (Asian students in this case) that may be perceived (e.g., by their teachers) as susceptible to the negative effects associated with noisy and potentially distracting and inhibiting environments. Second, the students in the innovative learning environments appeared to have a better perception of teacher support and better attitudes towards reading in the innovative than in the traditional learning environments. Third, there was no discernible difference between students' perceptions of noise across the two learning environments, suggesting that concerns about noise in the innovative learning environments expressed by some teachers were not shared by their students. Fourth, most of the interviewed teachers agreed that having several teachers in the innovative learning environment space allowed for more targeted student support during reading, especially for struggling readers. Fifth, teachers also tended to think that the larger number of students in the innovative spaces allowed for better pairings for peer support and effective learning of language through immersion.

Taken together, these findings suggest that moving away from the traditional method of teaching reading, namely teacher centred whole-class and/or ability-based-group instruction by

one teacher, may be a viable means of closing New Zealand's current achievement gap in reading. Changes would encompass multiple sources of support for students, including from teachers and peers, along with immersion language learning in an open setting that invites students to be part of the reading-related planning and learning process.

Finally, the research identified a gap in teachers' knowledge pertaining to Asian students' preferred teaching and learning preferences. Research into pedagogical practices in innovative learning environments has not previously addressed the voices of Asian students. As has occurred with research initiatives focussed on Māori and Pasifika students, we need to examine and reflect on the learning needs of Asian students. We particularly need to reflect on culturally responsive pedagogy and culturally supportive relationships between teachers and students from Asian backgrounds. Given the increasing number of Asian students enrolling in New Zealand primary schools (Figure NZ Trust, 2020), more studies directed towards gaining increased understanding of best-practice pedagogy with Asian students should give these students even better opportunity for learning success in innovative learning environments. This research has thus provided a platform for further research surrounding effective practices for second-language students' learning (including of English-language reading and related skills) in innovative learning environments.

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Appendices

Appendix A: Assessment Battery

Reading Comprehension

Set A

<u>Instructions</u>.

Read the passages below and circle a, b, c or d depending on what you think is the correct answer.

Passage 1.

Anna went to bed very late on Sunday as she had a lot of homework to complete for the next day at school. She was exhausted when she got to bed. Anna was fast asleep as the sun shined through the lace curtains of her window. She rolled over a couple of times in her bed to avoid the morning sun from hitting her face directly. As she gently opened her eyes she slowly realized that it was Monday. "8:30am!" she screamed. I need to be there by 9.00am. "What have I done!" Anna flew out of bed, almost tripping and threw on her clothes, quickly washed her face, brushed her teeth, grabbed her backpack, and then ran out of the house without even locking the door.

1. Why did Anna go to bed so late on Sunday?
    a) She wanted to attend a party
    b) She had a nap in the afternoon
    c) She needed to complete her homework
    d) She was watching her favourite show on TV

2. Why did Anna role over a couple of times in her bed?
    a) She was restless in bed
    b) She was having a nightmare
    c) She wanted to avoid the morning sun from hitting her face
    d) She was rolling over her books and wanted to get comfortable

3. What did Anna say as soon as she woke up?
    a) She screamed at the sun
    b) She screamed for breakfast
    c) She screamed it was Monday morning
    d) She screamed at the condition of her room

4. In your opinion where was Anna going?
    a) Work
    b) School
    c) To the mall
    d) Meet her friends

5. How much time do you think Anna has to get to the location?
    a) 1 hour
    b) 2 hours
    c) 30 minutes
    d) 1 hour 30 minutes

6. How did Anna feel when she woke up?
    a) Tired
    b) Bored
    c) Happy
    d) Shocked

7. Choose a statement that is **TRUE**.
    a) Anna was unwell
    b) Anna was wasting her time in bed.
    c) Anna did not have time for breakfast
    d) Anna had plenty of time left in the morning to get to where she needed to go.

Passage 2

Rob sat in the school locker room staring at his locker where he kept his gym clothes. The locker room was beginning to get crowded as students were coming out of Ms. Manners English class to get ready for their physical education classes. Rob just sat there with his hand on his head. Rob's friend Alan saw him sitting on the bench. **"Did it again, Mr. Absent Minded?"** said Alan. Rob replied, "Yep." Alan found the whole situation funny, shook his head and said, "Here, Rob, you can use my spare set of gym clothes and shoes. I always have an extra pair in my locker. I could even keep a key for you over here if you wanted." Rob thankfully grabbed the gym clothes and shoes and ***sighed deeply*** and ran over to his physical education lessons before the strict Mr. Terry called out his name.

8. Where did Rob keep his gym clothes?
    a) In his room
    b) In his locker
    c) In his classroom
    d) In his school bag

9. Which class was Rob going to next?
    a) English class
    b) History class
    c) Football class
    d) Physical education class

10. Who had a spare set of clothes in their locker?
    a) Rob
    b) Alan
    c) Mr. Terry
    d) Ms. Manners

11. In your opinion what is the thing that Rob **"did it again"**?
    a) He left his locker keys at home
    b) He left his gym clothes at home
    c) He was late for his physical education class
    d) He was feeling sad

12. Why did Alan find the whole situation funny?
    a) Rob was very forgetful
    b) Rob left his gym clothes at home
    c) Rob was late for physical education class.
    d) Rob was forced to attend physical education classes

13. Why did Rob **sigh deeply** at the end of the passage?
    a) To express relief
    b) To express tiredness
    c) To express frustration
    d) To express disappointment

14. What kind of friend do you think Alan is?
    a) He is a funny friend
    b) He is an unkind friend
    c) He is a dishonest friend
    d) He is a considerate friend

Passage 3

As soon as Jane heard the news from Kevin, she left her evening drink of chamomile tea on the coffee table and rushed out in her night clothes. She was walking around the neighborhood with a torchlight. She would stop at every street corner, shine the light and call out “Max! Max! Come on boy!” Every once in a while she will looked at Kevin but did not say a word to him. Kevin held his head low and did not make any eye contact. After walking around the neighborhood for more than an hour, she turned around to Kevin and said, “How many times have I told you to make sure that you shut the door after you come in from your soccer match? Kevin did not say a word but instead kept shouting “Max! Max!”

15. What was Jane drinking when she heard the news?
    a) Milk
    b) Coffee
    c) Hot chocolate
    d) Chamomile tea

16. Why was Jane carrying a torchlight?
    a) To shine on Max
    b) To shine on Kevin
    c) To shine on the boy
    d) To shine on the street corners

17. How long were they walking around the neighbourhood before Jane spoke to Kevin?
    a) 1 hour
    b) 30 minutes
    c) 20 minutes
    d) 40 minutes
    e) 1 hour 20 minutes

18. What time of the day was it when they went out looking for Max?
    a) Noon
    b) Night
    c) Morning
    d) Afternoon

19. In your opinion, how was Jane feeling towards Kevin?
    a) Excited
    b) Anxious
    c) Worried
    d) Disappointed

20. What was Kevin's relationship to Max?
    a) Max is Kevin's friend
    b) Max is Kevin's family pet
    c) Max is Kevin's neighbour
    d) Max is Kevin's younger brother

21. How was Kevin feeling at the end of the passage when he kept shouting "Max! Max!"?
    a) Happy
    b) Angry
    c) Excited
    d) Hopeful

Passage 4

Jerry left home on Saturday morning. This is the longest he has been away ever since they got married. The house seemed very quiet without Jerry as Marion had no one to talk to. He had left on a hunting trip with his best friend Alfred.

On Sunday the following evening he arrived back home. "I'm home!" Jerry shouted happily as he walked through the front door. "It's good to be home!"

Marion came running down the stairs to greet him. She gave him a big hug and a kiss. “Did you kill anything?" Marion asked, not anticipating much.

Jerry responded, "You're not going to believe it." Jerry opened his chilly bin, and pulled out some freshly cut deer meat.

Marion was surprised, “Wow, what a kill! “I didn’t know you were such a great hunter”. Marion made him a cup of coffee and started to unpack his truck. As Marion was unpacking his stuff, she found a receipt and some grocery bags from the butchers. It was dated from this morning. She was disappointed but not surprised with what she found. This reminded her of the fishing trip Jerry
took with Alfred and the perfectly filleted fish he brought back a while ago.

She walked back into the house and threw the receipt into the bin. She sat down next to Jerry and continued to chat with him about his trip listening to his stories about how he killed the deer.

22. Where did Jerry go?
    a) Road trip
    b) Fishing trip
    c) Hunting trip
    d) Shopping trip

23. Which if these statement is **TRUE**?
    a) Jerry is Marion’s husband
    b) Jerry and Marion are friends
    c) Alfred and Marion are married
    d) Jerry and Alfred live are housemates

24. What did Jerry bring back from his trip?
    a) Filleted fish
    b) Dear meat
    c) Groceries
    d) Beef

25. How long do you think Jerry was away from home?
    a) A week
    b) Four days
    c) A fortnight
    d) A weekend

26. Why was Marion happy to see Jerry?
    a) Marion missed him so much
    b) Jerry came home with a big kill
    c) Jerry was supposed to be back after a week
    d) Marion needed to go out with her best friend

27. Choose a statement that is **FALSE?**
    a) Jerry is a great hunter
    b) Marion knew that her husband was lying
    c) Jerry always wants to impress his wife Marion.
    d) Marion threw the receipt away because she did not want to hurt his ego

28. Why was Marion not surprised to find the receipt? Which of these statements is **FALSE**?
    a) She knows that Jerry is a big show off
    b) Jerry and Alfred are a good team and hunt well together.
    c) She was not fully convinced that her husband killed the deer.
    d) Jerry had probably lied to her about his ability to hunt for food before

Passage 5

It was summer in New Zealand. Unlike any other summer, the sky was clear, the air was warm but the sun was intense. The sun was beating down on everything and anything. Everything was looking dry. The land had been probably drained of all its moisture. Murphy knelt down and examined the dirt. He was beginning to get annoyed with the sun. The land was parched and sun baked. Murphy sighed to himself, as he looked at his huge field. It was all well sowed for the summer. He had sowed it himself, but he knew nothing could spring from the dirt. He looked up at the sky and said to himself, “Well, there's only one thing left to do.” Murphy got into his car and headed to church.

29. What was the summer sun doing to New Zealand?
    a) It made everything dry
    b) It gave moisture to the land
    c) It made the skies look gloomy
    d) It made the seeds sowed for the summer grow better

30. Why did Murphy look at the sky?
    a) He was looking at the rain clouds
    b) He was looking at the intense sun
    c) He was thinking to himself on what to sow
    d) He was looking at the birds that were after the seeds

31. Choose a statement that is TRUE?
    a) It was a hot summer in New Zealand
    b) The land was ready for sowing
    c) The sky showed signs of rain
    d) Murphy was happy that everything was going according to plan

32. What do you think Murphy does for a living?
    a) Priest
    b) Farmer
    c) Examine soil
    d) Works with weather station

33. Why was Murphy annoyed with the sun?

a) The sun was drying out his crops
b) The sun was tiring him down
c) People were not coming to church
d) It was too hot to travel anywhere else

34. Why did Murphy decide to go to the church?

a) To get water
b) To pray for rain
c) To meet with his church goers
d) To have a rest away from the sun

35. Why do you think the land was parched and sun baked?

a) It was a deserted land
b) It lacked the moisture it needed
c) Murphy forgot to water the land
d) There were too many seeds sown

Name: _____ School: _____

Reading Comprehension

Set B

<u>Instructions</u>.

Read the passages below and circle a, b, c or d depending on what you think is the correct answer.

Passage 1

Suzy was wide awake by 6am. The moment she heard her mum and dad in the kitchen she came running to greet them. She wore a colorful pink Barbie pyjamas with a bright pink house slippers which had tiny little bows. She twirled a couple of times and ran to the bathroom to brush her teeth and put on her best pink clothes and ran towards the huge tree in their living room. The tree was decorated with ornaments, tinsels and lights.

"Mom, Dad! Can I open my present now pleaseee! Suzy's parents made their way to the living room and sat down with a hot cup of coffee. Suzy was so excited and began to open her presents. She tore open the gift wrapper and pulled out the content. It was a set of white towels with a beautiful embroidery.

Suzy became very quiet and continued checking the box. But there was nothing else. Suzy looked at her parents and said, "Oh, towels! Just what I needed," she sighed, walked to her bedroom and lay on her Barbie pillow in silence.

1. Why did Suzy come running to the kitchen?
   a) To get coffee
   b) To greet her parents
   c) To tell her parents to be quiet
   d) To show them her Barbie pyjamas.

2. What did the parents get Suzy on this special occasion?
   a) Set of towels
   b) Pyjamas
   c) Handkerchief with embroidery
   d) Ornaments

3. What is Suzy's favourite colour?
   a) Pink
   b) Blue
   c) White
   d) Green

4. What do you think was the occasion when the event took place?
   a) Birthday
   b) New Year
   c) Christmas
   d) Anniversary

5. In your opinion which of the presents listed below would have made Suzy happy?
    a) Barbie Doll
    b) Toothbrush
    c) Story books
    d) Floral dress
    e)
6. Why do you think Suzy was wide awake at 6am?
    a) She was not tired anymore
    b) She wakes up early everyday
    c) She wanted to see her parents
    d) She was excited to open her presents

7. Why did Suzy make her way to the bedroom after opening her present?
    a) There was nothing else to do.
    b) She wanted to catch up on sleep
    c) She wanted to put away the towels in her cupboard
    d) She was sad that she did not get the present she had hoped for

Passage 2

A partly eaten pizza was left exposed on the counter. Chips and popcorn all over the carpet. Soda cans and plates left overflowing in the trash bin. First glance **looked like it's been hit by a tornado**. Everything was not in place.

Early Monday morning the front door opens, Mr and Mrs Jones walk in with their luggage. They look at each other and screamed unanimously "Samuel! Aidan!"

Samuel and Aidan came running down the stairs. They were shocked to see Mr and Mrs Jones at the door. They looked at each other and said, "What day is it today"?

Without a word, Mrs Jones walked straight into the kitchen, got a trash bag and handed it over to Samuel. After that, Mr and Mrs Jones went out of the house to have a quiet breakfast together.

8. What was left all over the carpet?
    a) Pizza
    b) Cans
    c) Plates
    d) Chips and popcorn

9. Where was Samuel and Aiden when the Joneses entered the house?
    a) Upstairs
    b) Downstairs
    c) In the kitchen
    d) In the garden

10. What does the phrase "**looked like it's been hit by a tornado"** suggest?
    a) It suggest that the house is wet

b) It suggests that the house is in a total mess
c) It suggest that the house has been hit by a tornado
d) It suggest that that someone had broken into the house

11. In your opinion what do you think happened in the house?
    a) Samuel and Aidan had a party
    b) Samuel and Aidan had dinner together
    c) Samuel and Aidan were hit by a tornado
    d) Samuel and Aidan ordered too much food.

12. What is the relationship between Samuel, Aidan and Mr and Mrs. Jones?
    a) Mr and Mrs Jones are Samuel's and Aidan's parents
    b) Mr and Mrs Jones are Samuel's and Aidan's neighbours
    c) Mr and Mrs Jones are Samuel's and Aidan's housemates
    d) Mr and Mrs Jones are Samuel's and Aidan's visiting relatives

13. Why was Samuel and Aidan shocked to see the Joneses? Which of these statement is false.
    a) They lost track of time.
    b) They had not seen them for a long time
    c) They did not expect to see them so soon
    d) They were worried that the Joneses were going to be upset

14. What would the Joneses expect to see when they return?
    a) A clean house
    b) Pizza for lunch
    c) An apology note
    d) Samuel and Aidan out of the house

Passage 3

Paul sat on the front porch of his house holding his mum's hand as she held the letter given to her by the man in uniform standing in front of her. Jane felt her hands shaking as she opened the letter.

As Jane read the letter, she remembered how Paul and Harry used to run around the front yard together as she chatted with the neighbours. The nights that she would sit by their bed and read them bedtime stories until they fell asleep.

Jane's face was drenched in tears by the time she got to the end of the letter. The man in uniform that stood in front of her put his hand on her shoulder and gave her the flag. Jane looked at Paul and held his hands tightly. Just then the fighter jets flew over her house and she **wished for it all to end.**

15. Where did the incident take place?
    a) On the front porch
    b) At the military base
    c) At the school
    d) In the neighbour's house

16. According to the passage above, what did Paul's mum think about as she read the letter?
    a) She thought about the flag they gave her
    b) She thought about Paul sitting on the porch
    c) She thought about the jets that flew over her house
    d) She thought about the time she read bedtime stories to Paul and Harry

17. What did Paul's mum receive at the end of the passage?
    a) The flag
    b) Paul's letter
    c) Fighter jets
    d) Harry's letter

18. Who do you think is the man standing in front of Jane?
    a) Police officer
    b) Military officer
    c) Jane's husband
    d) Harry's classmate

19. Why was Jane's hand shaking as she opened the letter?
    a) Jane was ill
    b) Jane knew it was dreadful news about Harry
    c) Jane was feeling cold as she sat on the porch
    d) Jane was afraid of the man standing in front of her

20. What do you think happened to Harry?
    a) Harry died at war
    b) Harry was taken to prison
    c) Harry ran away from home
    d) Harry met with a car accident

21. What did Jane wish would end at the end of the passage?
    a) Jane wished for the war to end
    b) Jane wished for her problems to be over
    c) Jane wished for the flag to be taken away.
    d) Jane wished to stop receiving letters from Harry

Passage 4

Flora sat next to her husband in a beautiful room covered in floral wallpaper. She held a picture of a new born baby in a hospital in her hands. She remembered being so thrilled then as they prepared the nursery for the arrival of their baby girl a few years back.

Flora smiled at her husband and walked towards the cupboard and began to carefully pull out all the lovely tiny clothes that were neatly folded. They felt that after all these years of waiting they were finally ready to move on. Flora was ready to move forward.

She painted the room blue and got some toy trucks and blocks ready. Flora and her husband waited patiently the whole week for him to arrive, they had done all the paperwork months before. On Friday morning the doorbell rang.

On the same day a second hand clothes shop at the corner of Wembley Avenue not far from where Flora and her husband lived had a sign on their shop **"For sale, baby clothes that have never been worn".**

22. Who was with Flora as she sat in the beautiful room?
    a) Her husband
    b) Her baby girl
    c) Her baby boy
    d) She was alone

23. Why were they preparing the nursery a few years back?
    a) They wanted to have a baby
    b) They were going to have a baby girl
    c) They were going to have a baby boy
    d) They were redecorating their house

24. What did Flora do once she painted the room blue?
    a) She bought some toys
    b) She bought some clothes
    c) She bought some wallpaper
    d) She bought some colouring paper

25. In your opinion what were they waiting for patiently the whole week?
    a) They were waiting to go to the hospital to have a baby
    b) They were waiting for the arrival of their adopted child
    c) They wanted to go out and buy some toys the flowing week
    d) They were waiting for the doorbell to ring to show the house to new buyers.

26. Why do you think there was a sign stating **"For sale, baby clothes that have never been worn"** on a shop window not far from where Flora and her husband lived?
    a) The shop was having a sale
    b) The shop was closing down
    c) Flora gave away the baby clothes she was holding on to
    d) The baby had far too many clothes, so some had to be given away

27. What was Flora and her husband doing all these years?
    a) Grieving for their baby that died years ago
    b) Busy working to save up for a new baby
    c) Saving enough money to buy toys and paint the room
    d) They were redecorating their home

28. Which of the flowing statements is **TRUE?**
    a) They are adopting a baby boy
    b) They are waiting for some paperwork from the lawyers
    c) They decided to sell the house
    d) They owned a shop at Wembley Avenue

Passage 5

Dad arrived in time for dinner. Mum has just got the chicken out of the oven when dad's mobile phone rang. The call was for dad and I could hear him talking in the other room. He sounded very serious.

"How bad it is"? "Is he conscious"? "I am on my way, won't be long now". Dad came back to the table and apologised to mum. He grabbed his office coat and car keys and walked towards the main door. Mum ran after him and said "Drive carefully its late". She placed an apple in his hand "One for the road "she said smiling.

29. What are they having for dinner?
    a) Beef
    b) Stew
    c) Pork
    d) Chicken

30. What was dad doing in the other room?
    a) He was doing his work
    b) He was talking to mum
    c) He was talking to the writer
    d) He was talking on the phone

31. What did dad grab on his way out?
    a) Coat and keys
    b) Coat and apple
    c) Apple and keys
    d) None of the above

32. What is the dad's job
    a) A chef
    b) A driver
    c) A doctor
    d) A policeman

33. Who do you think was probably on the telephone?
    a) A nurse
    b) A customer
    c) A policeman
    d) Another chef

34. Why did dad apologise to mum?

a) Because he had to get back to work
b) Because he was very loud on the phone
c) Because he did not want to have roasted chicken
d) Because it was rude of him to be on the phone during dinner

35. Why did mum give dad an apple before he left?

a) Because he liked apples
b) Because it was getting late
c) Because he did not have any dinner
d) Because mum had apples for dinner

Name: _____ **School: _____**

Listening Comprehension

Set A

<u>Test Instruction</u>

Listen carefully to the recording.

Do not answer the questions or write anything while the recording is playing. The recording for each passage will be played once. Once the recording stops, you will be given time to answer the questions. Please circle a, b, c or d depending on what you think is the correct answer.

Passage 1

1. What did the lion see sleeping?
    a) Mouse
    b) Rabbit
    c) Horse
    d) Deer
2. What happened as the lion was about to catch the rabbit?
    a) The rabbit got away
    b) A young horse came by
    c) Another lion came by
    d) None of the above
3. Why did the lion begin chasing the horse?
    a) The horse was his friend
    b) He didn't like the horse
    c) The horse was a bigger meal
    d) The horse was about to catch the rabbit
4. How did the lion feel upon returning to the place he found the rabbit?
    a) Sleepy
    b) Jealous
    c) Excited
    d) Disappointed

5. What is the moral of this passage?
    a) Don’t be greedy
    b) Don’t listen to others
    c) Go for the better option
    d) Keep chasing after your dreams

Passage 2

6. What was the farmer doing when he came across the eagle?
    a) Farming
    b) Travelling
    c) Having his supper
    d) Resting under the oak tree
7. Where was the farmer sleeping?
    a) In his house
    b) Under a tree
    c) In a field
    d) In the barnyard
8. What was the farmer in danger of?
    a) Rain
    b) Lightning
    c) Flying eagle
    d) Wavering oak tree
9. Why did the farmer help set the eagle free?
    a) The farmer loved birds
    b) The farmer knew the eagle
    c) The farmer wanted to sell it
    d) The farmer was afraid of the other eagles

10. Why did the eagle help the farmer?

a) The eagle was close by

b) The eagle returned the favour

c) The farmer was the owner of the eagle

d) None of the above

Passage 3

4. Why did they kill the hen?

e) They wanted to eat it

f) They hen was getting old

g) The hen stopped laying eggs

h) They were looking for more gold

5. Where did the man and woman live together?

e) In a barn

f) In a field

g) In the city

h) In a cottage

6. What made the hen so special?

e) It was a pet hen

f) It laid golden eggs

g) It was a very big hen

h) It was a special colour

14. What was the reason behind the couples weeping after killing the hen?

e) They didn't like the meat

f) They were sad they killed their pet

g) They realised they killed the wrong hen

h) They realised that they were not going to have golden eggs anymore

15. What is the moral of this story?

    e) Don’t be greedy
    f) Don’t kill animals
    g) Don’t torture animals
    h) Do what you want others to do to you

16. What was the future looking like for the couple in the story

    e) They were going to be very rich
    f) They were going to remain poor
    g) They were going to inherit a lot of gold
    h) They were going to have many more hen

Passage 4

17. Why was the snake unable to stay warm?

    a) It was dying
    b) It was young
    c) It had been in water
    d) It had scales instead of fur

18. What season was it?

    a) Spring
    b) Winter
    c) Autumn
    d) Summer

19. Where did the farmer place the snake once he found it?

    a) In the barn
    b) Near the fire
    c) In the garden
    d) Near the backdoor

20. What would have the snake be covered in when the farmer found it?

a) Snow

b) Leaves

c) Sand

d) Water

21. What kind of a person is the farmer?

a) Kind

b) Clever

c) Greedy

d) Adventurous

22. What was the farmer's reaction to this whole situation?

a) He was happy he could help the snake

b) He regretted helping the snake

c) He was excited to have the snake as a pet

d) He was envious of the snake's scales

Passage 5

23. Where did the incident take place?

a) Zoo

b) Field

c) Forest

d) Dessert

24. What lifted the cage and set the lion free?

a) A passer-by

b) A hurricane

c) A strong burst of wind

d) An animal that happen to pass by

25. What was the fox doing to the lion?

a) The fox was insulting the lion

b) The fox was showing off his meal

c) The fox was trying to help the lion

d) The fox was trying to attack the lion

26. How was the lion feeling at the beginning of the story?

a) The lion happy

b) The lion was excited

c) The lion was tired

d) The lion was unhappy

27. Why was the lion happy at the end of the story?

a) The lion ate the fox

b) The fox rescued the lion

c) The lion had his revenge

d) The lion and the fox became friends

Passage 6

28. When does the fig tree shed its leave?

a) Winter

b) Spring

c) Summer

d) Autumn

29. Which tree was proud?

a) Fig tree

b) Olive tree

c) None of the trees

d) Both the fig tree and olive tree

30. Why is it important for the tree to shed the leaves?

a) So tree can grow more beautiful in the spring

b) So the branches can avoid breaking from the snow build up

c) So it can rest in the winter

d) So everyone knows it’s the winter season

Name: _____ School: _____
Date: _____

Listening Comprehension

Set B

<u>Test Instruction</u>

Listen carefully to the recording.

Do not answer the questions or write anything while the recording is playing. The recording for each passage will be played once. Once the recording stops, you will be given time to answer the questions. Please circle a, b, c or d depending on what you think is the correct answer.

Passage 1

1. Where were the animals kept?
    a) Cage
    b) Ranch
    c) Village
    d) Barnyard

2. What did the pig do when the farmer caught it?
    a) It laughed
    b) It resisted
    c) It ran away
    d) It went quietly

3. Why were the sheep and goat laughing?
    a) Because they knew the farmer was kind and treated them well
    b) Because they knew the farmer loved them and took special care of them instead of the pig
    c) Because they knew the farmer did not like pigs and wanted to send the pig away
    d) Because they knew the farmer always returns them to the barnyard every time he takes them and could not understand why the pig was unhappy

4. What was the farmer's intention when he grabbed the pig?
    a) The farmer wanted to feed it.
    b) The farmer wanted to kill it
    c) The farmer wanted to clean it
    d) The farmer wanted to move it

Passage 2

5. How was the boy feeling?
    a) Happy
    b) Fearful
    c) Surprised

d) Disappointed

6. Based on the story who gave the boy an advice?
   a) An old saying
   b) An old lady
   c) An old teacher
   d) An old man

7. What is your impression of the boy?
   a) He is kind
   b) He is clever
   c) He is greedy
   d) He is helpful

8. What is your impression of the old man?
   a) He is wise
   b) He is greedy
   c) He wants the marble
   d) He is upset with the boy

9. What is the moral of the story?
   a) Try until you succeed
   b) The more the marbles the better
   c) Half a portion is better than none
   d) Have courage to do whatever it takes

Passage 3

10. Where did the lion and the bear stop to drink water?
    a) Lake
    b) River
    c) Small pond
    d) Small well

11. Why did the lion and the bear fight?
    a) They wanted to eat each other
    b) They both wanted to eat the vultures
    c) They both wanted to drink water first
    d) They were not happy with the weather.

12. Why did the lion and bear stop fighting over who drinks the water first?
    a) The bear was no longer thirsty
    b) The lion decided to let the bear drink first
    c) The vultures wanted to be friends with the lion and the bear
    d) The lion and the bear did not want to kill each other and let the vultures eat them

13. What is the moral of the story?
    a) The strongest always wins
    b) One must always fight till the end
    c) Being competitive is always necessary to get the best
    d) One must act according to the situation and should learn to compromise

Passage 4

14. What were the two animals fighting for?
    a) The goat
    b) The fox
    c) The tiger
    d) The lion

15. Why was the fox circling the commotion?
    a) It was trying to snatch the goat
    b) It was trying to hide from both the animals
    c) It was observing the situation to see who would win the fight
    d) None of the above

16. The lion and the tiger would have felt _____ at the end of the story?
    a) Happy
    b) Jealous
    c) Excited
    d) Disappointed

17. Which animal finally ate the goat?
    a) Lion
    b) Fox
    c) Tiger
    d) Lion and the bear

18. Which is the wisest animal in this story?
    a) Fox
    b) Lion
    c) Goat
    d) Tiger

Passage 5

19. Who caught the bat?

    a) A weasel

    b) A bird

    c) A mouse

    d) Another bat

20. What did the bat say he was in order to break free from the animal that caught him?

a) The bat said he was mouse

b) The bat said he was a bat

c) The bat said he was a bird

d) The bat said he was also a weasel

21. Why did the bat pretend to be a mouse?

a) The bat knew weasels do not eat mouse

b) The bat wanted to be friends with the weasel

c) The bat really thought he was a mouse

d) The bat was being trying to be funny

Passage 6

22. What were the shepherds doing when the wolf passed them by?
a) They were hunting
b) They were having their meal
c) They were looking for the wolf
d) They were looking after their sheep

23. What was the fire for?
a) To cook
b) To keep warm
c) To ask for help
d) For protection from the wolf

24. Why was the wolf laughing at their action?
a) The shepherds were unaware of the wolf close by
b) The shepherds were supposed to be protecting the sheep
c) They had a large meal and refused to share with the wolf
d) The shepherds were having a good time feasting instead of working

Passage 7

25. Why did the mice call for a council meeting?
a) To get to know one another
b) To discuss which hole to hide in when the cat approaches
c) To discuss about who should be the leader
d) To decide how to warn each other of the approaching cat

26. What was their best proposal?

a) To hide and never come out
b) To tie a bell to the cat's neck
c) To tie a bell to the mice's neck
d) To ring a bell when the cat approaches

27. Who volunteered to tie the bell on the cat?
a) The oldest mice
b) The youngest mice
c) No decision was made.
d) The mice that called for the meeting

28. Why didn't any of the mice volunteer for the task?
a) They disliked the cat
b) They knew it was a dangerous task
c) They knew the cat did not like bells
d) The cat was big and scary

Appendix B: Interview Questions

Dear Participant,

Thank you for taking the time to assist me in my project.

These interview questions aim to explore how teaching reading in an innovative learning environment or traditional single cell-classroom may influence teacher practices. I would like to encourage you to explain your views in detail during the interview.

If you require additional information, you can email me at yogeetha.balasubramaniam@pg.canterbury.ac.nz

Interview questions with some sample prompts.

How long have you been teaching in this school?

How has the learning environment influenced the ways you teach reading?

I. For example, what activities are you able to carry out in a reading lesson in this type of environment?

1. What factors about this learning environment do you think enhances your reading programme?
   I. Why do you say these factors enhance teaching reading in general?
   II. How does these factors facilitate the teaching of:-
      - Asian students who students who speak English as an additional
2. What is it about this type of learning environment that makes it challenging when teaching reading in general?
   I. How do you overcome these challenges?
   II. How does these challenges affect Asian students who speak English as an additional language?
3. Can you comment on the aspect of teacher collaboration in your type of learning environment in teaching reading?
   I. What type of collaboration usually takes place? When does this take place?
   I. Effects of teacher collaboration on students?
4. Based on your observations, how do students manage their time when working independently during a reading lesson?
   I. Do you see any barriers or supports for independent learning in your learning environment?
   II. When working on a task what have you noticed about student participation/engagement in your reading class in general.

Appendix C: Ethical Approval Letter

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

Ref: 2018/04/ERHEC

18 April 2018

Yogeetha Devi Bala Subramaniam
School of Teacher Education
UNIVERSITY OF CANTERBURY

Dear Yogeetha

Thank you for providing the revised documents in support of your application to the Educational Research Human Ethics Committee. I am very pleased to inform you that your research proposal **"**Teaching Reading to Students with English as an Additional Language in a Flexible Learning Space in Comparison to a Traditional Classroom" has been granted ethical approval.

Please note that this approval is subject to the incorporation of the amendments you have provided in your emails of 5th and 28th March and 13th April 2018; a**nd the following**:

- Please include the full title of the College of Education, Health and Human Development in the main body of the information sheet as previously requested;
- Please remove the additional apostrophe in the Pilot Parents' information sheet as previously requested;
- Please include that the data will be stored for ten years "*and then deleted*" to the teachers' and parents' information sheets.

Should circumstances relevant to this current application change you are required to reapply for ethical approval.

If you have any questions regarding this approval, please let me know.

We wish you well for your research.

R. Robinson

Yours sincerely

Dr Patrick Shepherd

Chair
Educational Research Human Ethics Committee

Please note that ethical approval relates only to the ethical elements of the relationship between the researcher, research participants and other stakeholders. The granting of approval by the Educational Research Human Ethics Committee should not be interpreted as comment on the methodology, legality, value or any other matters relating to this research. **F E S**